

Kirtland AFB Joint Land Use Study

June 30, 2010

**Prepared for:
Mid-Region Council of Governments
of New Mexico**



**Funded by:
Department of Defense
Office of Economic Adjustment**

**With Assistance from:
Mid-Region Council of Governments of New Mexico
County of Bernalillo**

Volume I of II

Prepared by: Keystone International, Inc.



KEYSTONE
INTERNATIONAL, INC.

TETRA TECH



Participating Organizations

- | | |
|---|---|
| Albuquerque Association of Realtors | Mid-Region Council of Governments of New Mexico |
| Albuquerque Bernalillo County Water Utility Authority | NM Congressional Delegation |
| Greater Albuquerque Chamber of Commerce | NM Office of Military Base Planning and Support |
| City of Albuquerque City Council | NM State Senate |
| Albuquerque Economic Development | NM State Land Office |
| Albuquerque International Sunport | Pueblo of Isleta |
| Albuquerque Public Schools | Rio Metro Regional Transit District |
| Bernalillo County Commission | Sandia National Laboratories |
| Bernalillo County Manager's Office | Sandia Science and Technology Park |
| City of Albuquerque | Sandoval County |
| City of Belen | Socorro County |
| Village of Tijeras | Sun Tran of Albuquerque |
| FBT Architects | Technology Ventures Corporation |
| French Mortuary | <i>The Independent</i> (Edgewood, NM Newspaper) |
| GCC Portland Cement | Torrance County |
| Albuquerque Hispano Chamber of Commerce | U.S. Department of Energy |
| Kirtland Air Force Base | U.S. Forest Service |
| Kirtland Partnership Committee | University of New Mexico |
| La Semilla Trust | Valencia County |
| Village of Los Lunas | Village of Corrales |
| Forest City Covington, NM, LLC (Mesa del Sol) | Village of Los Ranchos |

For Further Information Contact:

Mid-Region Council of Governments of New Mexico
809 Copper Ave., NW
Albuquerque, NM 87102
505-247-1750
<http://www.mrcog-nm.gov/>

The Mid-Region Council of Governments of New Mexico (MRCOG) is an association of local governments and special units of government within the state of New Mexico's Third Planning District. MRCOG represents the counties of Bernalillo, Sandoval, Valencia, and Torrance.

This study was prepared under contract with the Mid-Region Council of Governments of New Mexico, with financial support from the Office of Economic Adjustment, Department of Defense. The content reflects the views of the Mid-Region Council of Governments of New Mexico and does not necessarily reflect the views of the Office of Economic Adjustment.



FOREWORD

The Department of Defense (DoD) Office of Economic Adjustment (OEA) assists communities to coordinate local development with the ongoing activities and operations of their military installations. OEA manages this community planning assistance through financial grants, offered through the Joint Land Use Study (JLUS) Program, to undertake community compatible land use planning efforts. The goal of OEA's JLUS Program is to promote collaboration between military commanders and local leaders to ensure that local development is compatible with current and future military activities and operations; to help resolve current incompatibility problems; and to avoid future conflicts.

The Mid-Region Council of Governments (MRCOG) of New Mexico is a multi-county agency chartered to assist the counties of Bernalillo, Valencia, Tarrant and Sandoval and their communities plan regionally and to provide a forum for the region's elected officials to meet and discuss issues that extend beyond their respective political jurisdictions. MRCOG recognized the imperative to continue the region's historic, strong support of the Albuquerque International Sunport (Sunport) and Kirtland Air Force Base (AFB) and the increasingly difficult challenges of coordinating this support within the context of the inter-jurisdictional reality of the region's numerous land use authorities and diverse governmental entities.

MRCOG accepted administrative responsibility for completion of this JLUS to characterize the shared and competing interests of the region's land use stakeholders, the Sunport and Kirtland AFB, and to develop recommendations and strategies to sustain aviation, military and other federal activities as well as support community development. MRCOG engaged a team of military installation and planning experts led by Keystone International, Inc. (Keystone) of Albuquerque, New Mexico to accomplish the JLUS.

Dynamic Environment

MRCOG, as a regional council of governments, does not have the jurisdictional authority to implement JLUS recommendations. Hence, MRCOG clearly understood that its JLUS success would depend on creating consensus amongst the diverse group of stakeholders throughout the process. MRCOG emphasized to its contractor the need to maintain existing regional relationships and establish necessary new ones amongst its members and non-MRCOG stakeholders. An overriding

desire was for the JLUS to fully enable compatible land uses and planning to support the region, Kirtland AFB and the Sunport.

JLUS Challenges

MRCOG recognized prior to initiation of the JLUS there were two regional issues, not normally included in significant detail in a JLUS, which would be critical to consensus building amongst stakeholders. The JLUS would require an assessment of the effectiveness and efficiency of the region's transportation associated with Kirtland AFB and the Sunport. Also, MRCOG required JLUS analysis to identify a consistent method of calculating and discussing the economic significance of the installation and the Sunport on the MRCOG region. The results of the transportation and economic impact assessments and analyses are summarized in the JLUS and reported fully in JLUS Appendices.

Recommendations

Part IV includes those recommendations considered by the stakeholders to be realistic, executable and achievable. Each recommendation is based on the individual and collective Team members' expertise and professional judgment in the associated area, applicable industry best practices, or actions taken successfully in other communities or by community/installation partnerships. Recommendations were assessed for appropriateness by the JLUS Advisory and Technical Committees as part of taking the JLUS from its initial Draft to Final version. Some recommendations may not currently fit existing stakeholder intentions or planning visions; however, the information may be useful to future community leaders and installation officials if conditions, requirements and/or priorities change in the future.



EXECUTIVE SUMMARY

What is a Joint Land Use Study?

A Joint Land Use Study (JLUS) is a collaborative land use planning effort between military installations, affected land use planning authorities and regional governments. The JLUS Program is administered by the Department of Defense (DoD) Office of Economic Adjustment (OEA). This JLUS was funded by OEA, the Mid-Region Council of Governments of New Mexico (MRCOG) and the County of Bernalillo.

The JLUS program encourages “cooperative land use planning between military installations and the surrounding communities so that future community growth and development are compatible with the training and operational missions of the installations, and to seek ways to reduce the operational impacts on adjacent land.”¹

A JLUS is a best-faith effort by the community and military installation to compile, analyze and use data, stated requirements and desires for community development to achieve the common goal of planning a compatible future.

Why is a JLUS Needed?

During the past several decades, the Albuquerque region has experienced robust growth that is anticipated to continue. As a consequence, the once isolated Kirtland Air Force Base (AFB) and Albuquerque International Sunport (Sunport) are now adjacent to vibrant community businesses and residences and/or potentially valuable development lands. Given the many land use jurisdictions impacted by activities at Kirtland AFB and the Sunport, the JLUS process allows a comprehensive and collective approach to future regional planning while coordinating individual land use concerns and desires of individual jurisdictions.

The sustainability and long-term viability of Kirtland AFB, the Sunport and the Albuquerque metro area are largely dependent upon each other. In effect, the installation, Sunport and Albuquerque metropolitan area constitute a “virtual ecosystem” that serves the economic and community needs of a large region. One constant of military installations, aviation activities and communities is

change, and the JLUS can be used to help manage these changes.

Program Goals

The primary JLUS Program goal is: to develop a set of recommendations – through close collaboration between military installations and affected local land use and governmental entities – that “present a rationale and justification, and provide a policy framework to support adoption and implementation of compatible development measures designed to prevent urban encroachment; safeguard the military mission; and protect the public health, safety, and welfare.”²

The Kirtland AFB JLUS has the following goals:

- ✓ A comprehensive analysis of issues identified by regional stakeholders and interested citizens.
- ✓ Develop recommendations that protect the health, safety and welfare of communities.
- ✓ Identify regulatory and policy actions to balance sustainment of military and federal agency missions, operations of the Sunport and the region’s future needs and land use vision.
- ✓ Identify land use opportunities and implications from the existing transportation network or plans impacting, or impacted by Kirtland AFB or Sunport operations.
- ✓ Complete a comprehensive economic analysis of Kirtland AFB and its activities.
- ✓ Strengthen relationships between MRCOG and its members, Kirtland AFB, the Sunport and the region.

What Makes This JLUS Challenging?

The majority of JLUS efforts focus on “an” installation and relatively homogeneous region; this is not the case for the Kirtland AFB JLUS that must address a complex and unique set of circumstances. Representative examples of the region’s complexity include: a large number of stakeholders with varying perspectives, visions and goals, as well as operating and political autonomy; Native American tribal interests that require appropriate, government-to-government relationships; a significant number of sensitive and/or national security missions with special requirements; a unique airfield relationship between

¹ Joint Land Use Study Program Guidance Manual, Office of Economic Adjustment, August 2002; p. 2 (“Manual”)

² Description, p. 2.



the Sunport and Kirtland AFB; the desire for an in-depth understanding of the economic impacts of the Sunport and Kirtland AFB – and the ability to clearly communicate that impact to the region’s citizens; an expectation the JLUS will enable – not inhibit – land uses in the region; the need to create consensus throughout the process since no single, regional jurisdiction can mandate recommendations implementation; and the desire to develop recommendations that address transportation issues critical to the region, Sunport and Kirtland AFB.

include a variety of opportunities for interested regional residents and stakeholders to provide input for the study. It included interviews of over 80 representatives of a five-county area and face-to-face meetings with key stakeholders including Kirtland AFB, Pueblo of Isleta, Bernalillo County, Mesa del Sol and both the former and current City of Albuquerque Administrations. Additionally, a web-based public survey was developed and the input received from 1,362 respondents was incorporated in the JLUS analysis.

Kirtland AFB occupies slightly over 80 square miles; provides approximately 34,750 direct, indirect and induced jobs; contributes more than \$4.4 billion annually to the regional economy; represents the largest employment entity in the region and is a critical economic contributor. The majority of people who work on Kirtland AFB live, shop, attend school, worship and recreate in the Albuquerque region. Similarly, the Sunport provides approximately 8,000 jobs and contributes in excess of \$1.4 billion annually to the region’s economy. Employment and spending of Kirtland AFB and the Sunport account for one in every nine regional jobs and 17.5% of all regional wages or salaries.

JLUS Direction

The JLUS was guided by two committees – the JLUS Advisory Committee (AC) and JLUS Technical Committee (TC). Both committees were established at the beginning of the project to provide guidance and input on policy issues; provide overall direction to the process and review study findings and recommendations. Committee members were identified by MRCOG, Kirtland AFB, the Sunport, elected officials and community leaders. The committees included Federal, State, county and community organizations and agencies, as well as Native American; academic, business and community development representatives.

Public Participation

The JLUS process was designed to create a regional, community-based plan to strengthen relationships, build consensus and gain support from the many stakeholders including public and private land owners, residents, elected officials, the many Kirtland AFB associated units, neighboring educational institutions and surrounding tribal governments.

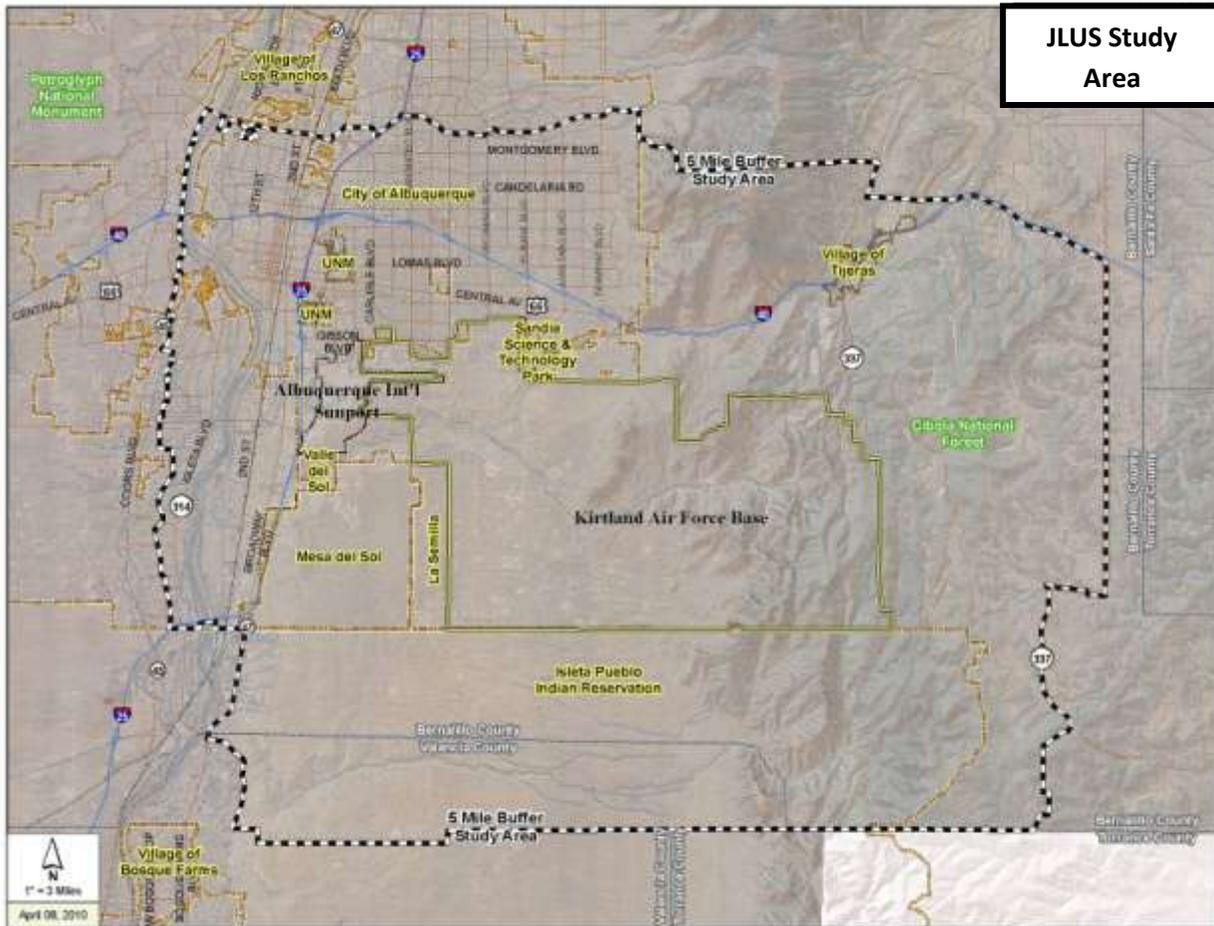
To achieve the Advisory Committee’s objectives for public participation, an outreach process was developed to





JLUS Study Area

The JLUS Study Area was created by extending the Kirtland AFB boundaries by approximately 5-miles in all directions to focus JLUS analysis and recommendations on the most appropriate region.



JLUS Organization

The Kirtland AFB JLUS is organized into seven (7) parts

Part	Description	Part	Description
I	Introduction – introductory and background materials.	V	Economic Analysis Summary.
II	Kirtland AFB JLUS Process, Principals and Stakeholders – the organizations involved in the JLUS and how they pursued the goals and objectives.	VI	Transportation Analysis Summary.
III	Compatibility – planning considerations, issue identification and analysis.	VII	Appendices – Important explanatory or supplemental materials and examples of other successful JLUS actions.
IV	Recommendations – The recommendations represent consensus actions the AC considered realistic, achievable and executable to support the “JLUS Objectives.”		



JLUS Analysis and Objectives

The JLUS analysis identified the need to focus on four major objectives and create a series of recommendations that can be adopted by regional jurisdictions and embraced by the business community and residents.

✓ Planning Regionally.

The analysis of land use planning and development adjacent to and around Kirtland AFB and the Sunport indicated few significant problems for the Base and its associates' missions or the conduct of commercial and military aviation operations. However, the lack of significant issues can be attributed more to the historic "spirit of cooperation" in the region rather than a robust, coordinated, collaborative land use planning process. Therefore, establishing procedures and processes to focus on consideration of land use planning and zoning decisions with regional impacts is the first objective.

✓ Sustaining Kirtland AFB.

The analysis of Kirtland AFB operations identified the need to focus on two, distinct types of activity groupings – non-aviation-related and flying missions. Based on clearly articulated Air Force preferences and underscored by over 15 years of base infrastructure analysis and decisions, the military value of the Base is enhanced by having both aviation and non-aviation missions; activities directly supporting national security strategy; unique research and development programs; training of high-value, low-density combat forces; and a host of other characteristics that make Kirtland AFB a special installation for Federal Agencies, not just the Air Force.

Although already home to over 100 agencies and organizations, the Base still has capacity to support additional mission growth. As encroachment issues at other installations adversely impact their capabilities, it is likely DoD will continue to move missions into the "relatively wide-open" Southwest area – Kirtland AFB is well positioned to support that growth and identifying strategies to leverage its enduring capabilities is the second objective.

✓ Sustaining Flying Missions and Long Term Viability of DoD Aviation Activities.

As noted in the foregoing, the analysis identified that the Base is enhanced by hosting both aviation and non-aviation missions. Therefore, the third objective focuses on addressing issues important to the sustainment of flying missions and the long-term viability of the Sunport to support DoD aviation activities. These include flight safety, use of the airdrome by military aircraft, flying training and land use capability near the airfield and training areas.

✓ Enabling Community Development.

One of the primary purposes of the JLUS Program is to identify ways to *balance* sustainment of military missions and community development. The first three objectives focused on the importance of collaborative planning to achieve the desired balance and sustainment of both non-aviation-related and flying missions along with the viability of the Sunport to support future DoD aviation activities. This fourth objective focuses on enabling compatible development, both part of, and apart from, Base activities.

JLUS Recommendations

The heart of any JLUS is the set of strategy recommendations (Part IV) developed to address the JLUS Objectives. JLUS strategies may incorporate a wide range of actions, such as modification of comprehensive planning processes; revisions to land development regulations; changes to controlling activities such as zoning, subdivision regulations, structural height restrictions and increased sound attenuation in existing and new buildings; promotion of planned unit development; purchase or exchange of property; acquiring control of property through land use agreements and restrictions; transfer of development rights; real estate disclosures; etc.

The Kirtland AFB JLUS includes a total of 33 recommendations that are summarized in the following chart, which includes the recommendation number, title, general subject area addressed, suggested implementation timing and brief remarks about the strategy and/or its applicability to the JLUS Objectives.



Kirtland AFB Joint Land Use Study

June 2010



Number	Title	General Subject Area	Timing (Years)				Remarks
			0-2	3-5	5-10	On-going	
1	Establish a JLUS Implementation Committee	Implementation and Management	X			X	Coordinating JLUS implementation is a local responsibility; however, there is currently no standing, regional organization chartered, empowered or resourced for multi-jurisdictional, regional land use planning.
2	Develop Memoranda of Understanding (MOU)		X			X	A MOU is an agreement between two or more parties that describes a relationship and assigns roles and responsibilities for actions. These agreements are particularly helpful where multi-jurisdictional constituencies may have both shared and disparate interests. The complexity of actions needed and diversity of stakeholders involved in implementing JLUS recommendations suggests there is great value in the use of MOUs.
3	Establish a Regional Planning Forum (RPF)		X				The multi-jurisdictional responsibility for land use that impacts or is impacted by Kirtland AFB and Sunport activities demands a regional approach to sustaining the Base and Sunport existing and potential operations. Currently, there is no RPF-like entity that can facilitate a regional approach to implementing JLUS recommendations and coordinating future land use decisions to ensure the proper balance between mission sustainment and community development.
4	Establish a Kirtland AFB Planning Area (KPA)	Compatible Land Use Planning	X				The KPA is based on an OEA tool to define a geographic planning area identifying where Kirtland AFB and/or Sunport operations may impact surrounding stakeholders or where action by surrounding stakeholders may impact the ability of the Base and Sunport to accomplish its missions. The goal of the KPA is to help regional stakeholders integrate the Base and Sunport mission activities with a comprehensive picture of the region's land use vision.
5	Request an Air Installation Compatible Use Zone (AICUZ) Study	Compatible Land Use Planning	X				The AICUZ program is a DoD program designed to promote compatible land use around military airfields by providing aircraft-related planning information to local officials. The purpose of the AICUZ program is: 1) to promote the public health and safety through the local adoption of compatible land use controls and 2) to protect the operational capability of the air installation. The development of a Kirtland AFB AICUZ would provide a key ingredient to ensuring long range compatible land use for military aviation and missions in the Greater Albuquerque Region.
6	Support Codifying New Mexico Executive Order No. 2004-046 into State Law		X				In the absence of formal land use planning authority for areas around military installations in New Mexico, Governor Bill Richardson issued Executive Order Number 2004-046 in August 2004. The Order's purpose was to ensure compatible land use development near New Mexico's military installations, and the language addresses the need to ensure military missions remain unencroached. Several states have enacted statutes to ensure the requirements endured longer than the administration enacting an Executive Order. The Executive Order's intent and purpose should be continued to preserve the viability of the long-term military mission needs for Kirtland AFB organizations.
7	Support State Designations of Regional Military Influence (RMI)		X			X	A RMI designates a geographic area to recognize the interdependence of military installations, missions, operating areas and training venues. It is a way to add additional emphasis to the need for careful planning to guard against unintended, adverse impacts on defense activities' capabilities. The ability to designate areas where impacts can be made, but that are not necessarily contiguous to a military installation, a RMI extends across the obvious relationships between military installations and their immediate neighbors and directs additional attention to other land use authorities whose actions could affect needed training areas for one or more installations.





8	Pursue Designation as Area of Critical State/Local Concern and Interest	Compatible Land Use Planning	X			X	An Area of Critical State Concern is similar, but more limited than a RMI and can be designated by either state or local government. When designated by a state, the geographic boundaries can be far ranging, but are restricted to state boundaries. When designated by a local government or regional consortium of governments, the boundaries would be restricted to areas over which they have land use authority.	
9	Evaluate Formal Coordination of Local Comprehensive Planning (Plan)		X	X				A Comprehensive Plan is the tool used by counties and municipalities to summarize their long-term vision for growth; outline policies to guide land use decisions; identify development goals and objectives and document priorities. Each Plan is, in effect, a roadmap to that community's future. In the Kirtland AFB region, there are multiple Plans belonging to multiple Stakeholders adding difficulty to the goal of increasing the effectiveness of regional planning efforts. The intent is to evaluate if formal coordination of the comprehensive planning process is possible and valuable. There is no intent for Stakeholders to surrender existing land use or decision making authority.
10	Formalize Relationship Between the Pueblo of Isleta and Kirtland AFB		X				X	The Pueblo of Isleta and Kirtland AFB share a common boundary. Development or significant change in proximity to this boundary by either party can impact activities of the other, possibly in unintended ways. In support of regional planning and recognition of the Pueblo of Isleta as a Sovereign Nation deserving special consideration, it is only natural that a special relationship exists. Historically, there has been good communication between the Pueblo of Isleta and Kirtland AFB leadership.
11	Ensure an Aviator Advisor is Included in Development of Alternative Energy Projects and Leases		X				X	The national impetus on alternative energy development is creating significant activity to take advantage of technologies and geographic areas that can efficiently support them. As these efforts continue, it is essential the potential impacts to flight safety – life and aircraft – presented by these projects are carefully considered. Including an aviator advisor in development of alternative energy projects and leases will provide the technical expertise needed to ensure projects support a safe flying environment and do not encroach on mission accomplishment.
12	Consider Small Area Feasibility Study of Southern Entrance to Kirtland AFB if Base Missions Change							There is considerable interest for enhanced access to the Base from the south. However, Base officials consider threats to operations, safety, and security issues associated with improving southern access would create significant encroachment on existing missions. There could be an opportunity for enhanced southern access in the long-term, but it is dependent upon mission changes for the Base that would eliminate adverse impacts on its missions and allow mitigation of the existing safety and security issues. Currently, there are no existing, planned or anticipated changes.
13	Support Remediation of Unexploded Ordnance (UXO) on Kirtland AFB					X	X	The existence of UXO has been found on and near the perimeter of Kirtland AFB in areas that provide a security buffer to Base operations, but also in areas that are attractive to citizens for recreational use. Environmental remediation of these areas is being addressed by the Base, but the magnitude of the challenge makes full remediation years away.
14	Consider Designations of Clear Zones and Accident Potential Zones for Selected Support Runways		X					Regional land use authorities have the ability to designate acceptable uses for property within their jurisdictions. Using this authority, the City of Albuquerque and Bernalillo County can designate areas at the ends of key Sunport runways as critical safety areas to ensure land uses are compatible with military aviation activities.
15	Consider Acquisition of Property to Ensure Land Use Compatibility	Local Administrative Actions	X				X	There are several ways to acquire property to ensure land use compatibility for existing and potential, future Kirtland AFB missions and Sunport operations. The strategies can be used to acquire property currently entitled or parcels not yet zoned. Options include purchase, donation and condemnation. Although an option, there is no recommendation to revoke entitlements; impact existing, approved developments; or down-zone property. This strategy provides tools that can be used to eliminate existing incompatibilities and provide protection from inadvertently creating new ones.





16	Consider Acquiring Control of Property to Ensure Land Use Compatibility	Local Administrative Actions	X			X	Where property is not acquired, there are tools to control its use and ensure compatibility with existing and potential, future Kirtland AFB missions and Sunport operations. These include lease, easements, management agreements, purchase of development rights and zoning control.
17	Consider Transfer of Property or Development Rights to Ensure Land Use Compatibility		X			X	In the absence of sufficient funding to purchase or acquire control of property using other strategies, land exchange and transfer of development rights offer additional tools. These tools are similar in that both involve the voluntary shift of development from areas needing protection from certain types of growth to areas where a broader range of land uses are encouraged. Land exchanges involve a transaction other than a sale that transfers land between owners. Transfer of development rights applies to entitled property and does not physically transfer property ownership; rather, it transfers development rights of similar value.
18	Ensure Conditions of Approval and Developer Agreements Support Land Use Compatibility		X			X	Conditions of Approval and Developer Agreements refine land uses by establishing actions required to develop property zoned for specific uses. Land use authorities use these tools to ensure policies requiring actions such as noise disclosures, explosive testing advisory notices, aviation easements, etc., are included in documents transferring real estate ownership between parties.
19	Leverage Capital Improvement Programs		X			X	Capital Improvement Programs are used by government to forecast and budget for capital requirements over time. They help identify needs, develop a timeline for execution and program needed funds. The key to leveraging these programs is early identification and inclusion of information about out-year requirements.
20	Building Codes and Code Enforcement	Building and Structural Codes	X			X	Building codes establish construction requirements to ensure structures are safe and habitable. Acceptable types of building materials and minimum acceptable requirements for structural characteristics, noise attenuation and capacity and configuration of electrical, natural gas, ventilation, plumbing and lighting systems are representative of the subjects addressed with building codes. The primary goal of using building codes is to provide healthy and safe residential and working environments and provide government the means to ensure they will be maintained.
21	Mandatory Referral of Development Applications	Development Review Process	X			X	The most efficient way to evolve a strong, regional planning process is to ensure that appropriate stakeholders' views are solicited as early in the development process as possible. Mandatory review of development applications amongst offices within local governments has long been the standard. Including a mandatory review by Kirtland AFB and Sunport officials of applications that could impact, or be impacted by, their operations will enhance coordination of actions. Also, early input by Kirtland AFB and Sunport officials could identify acceptable alternatives to the initial application and result in enhanced project compatibility.
22	Military Participation on Local Planning Boards		X			X	DoD policy permits installation commanders to advise local planning authorities and government about concerns and anticipated impacts of land use decisions on their base operations. Early involvement of a military representative could provide consistent and professional interaction to support effective and efficient regional planning
23	Mandatory Referral of Documents Requiring Environmental Review					X	Projects and documents requiring National Environmental Policy Act (NEPA) and/or State-mandated environmental review should be referred to Kirtland AFB and the Sunport to ensure their views are solicited as early in the development process as possible. Similarly, Kirtland AFB and Sunport officials should involve appropriate stakeholders in review of their projects that require environmental review. The goal of a robust analysis of actions that significantly impact the human environment would be enhanced by expanded coordination.





24	Regional Transportation Planning and Land Use Compatibility	Compatible Land Use Planning/Local Review Process				X	Coordinated transportation planning is a critical element of regional land use planning. The capacity, effectiveness and efficiency of the individual and collective stakeholders' transportation systems directly impact the quality of life, environmental quality of the region and ability to support Kirtland AFB and Sunport activities. Also, the impact of transportation issues on air quality can have significant implications for Air Force retention and/or growth of aviation activities at Kirtland AFB.
25	Real Estate Disclosures	Local Administrative Actions				X	Disclosures are used to ensure that the sellers, buyers and agents involved in real estate transactions are protected from potential liability for not having informed the other parties of circumstances that may not be evident by simply viewing a property.
26	Real Estate Disclosures – Zoning and Development Agreements	Land Use Regulations	X			X	Disclosures are also important to ensure zoning and development agreements accurately reflect or consider the implications of property encumbrances.
27	Avigation Easements	Local Administrative Actions	X			X	Easements are conditions voluntarily accepted by property owners or purchased by agencies to secure the rights to allow or limit specific property uses or development. An Avigation Easement is a special type of easement tailored to aviation activity. Uses allowed include overflight by aircraft and creation of attendant noise, dust, vibration, etc. or use of the property for landing or aviation-related training – drop of material or personnel, maneuver of troops, etc. Examples of uses restricted include building structures that violate height, lighting or location restrictions or development of land uses that attract birds.
28	Light Control		X			X	Several critical missions conducted by Kirtland AFB organizations rely on dark night sky conditions. One recent comprehensive set of initiatives at fugitive light control are the standards created by the City of Albuquerque, in conjunction with Kirtland AFB, for the Mesa del Sol development. An efficient way to implement formal light controls could be the adoption of these standards for regulatory amendments to zoning or development agreement approval by other stakeholders. These standards should be enforced for all new development, as well as for renovations and retrofits of existing fixtures
29	Preserve La Semilla as a Buffer	Other	X			X	La Semilla exists as a 100-year DOE lease from the State Land Office for the express purpose of insulating a portion of Kirtland AFB from surrounding land adjacent to the southwestern portion of the base and its potential, future development. Any development within the buffer or modification to the currently agreed-to use of the buffer could present a form of encroachment on the installation impacting both DoD and DOE missions.
30	Fuel Plume and Mixed Waste Landfill Advisories		X			X	While neither the Fuel Plume nor Mixed Waste Landfill represents a current land use issue, they are both high visibility issues of significant interest to the DOE, Air Force, State and local governments, and local communities that are in close proximity to impacted areas. DOE and Kirtland AFB hold a joint, semi-annual environmental public meeting to update local residents and interested parties regarding all environmental issues on the Base that includes the Fuel Plume and Mixed Waste Landfill. In addition to these two public meetings, Kirtland AFB posts all briefings and information relevant to the fuel plume characterization and remediation on its public website; holds quarterly meetings with a Citizens Advisory Board; and meets with local neighborhood associations regularly to demonstrate the Base's commitment to public participation and information sharing on plume remediation.





31	Ensure Compliance with FAA Parts 77 and 150	Land Use Regulations		X	X	The requirements of FAA Parts 77 and 150 are fundamental to the Sunport retaining certification as a civilian airfield. FAA Part 77 addresses obstructions of navigable airspace and compliance is mandatory. FAA Part 150 provides the basis for aircraft noise analysis and noise contour mapping of civilian airports. And compliance with its planning guidance is voluntary, but an approved Part 150 is a primary vehicle to obtain approval for applications for federal grants for noise abatement programs.
32	Biennial Press Release Concerning Economic and Employment Impacts of Kirtland AFB and the Sunport	Other		X	X	Ensuring regional citizens, as well as government and planning officials, remain cognizant of regional economic reliance on the Base and Sunport could help create a broad-based consensus on encouraging compatible land uses and discouraging those that would adversely impact Base or Sunport missions. The intent should be to ensure that the overall regional impact is highlighted and citizens do not incorrectly attribute the economic and employment benefits to only jurisdictions immediately adjacent to Kirtland AFB and the Sunport.
33	Pursue Mission Growth and Seek New Missions for Kirtland AFB				X	Kirtland AFB is a large installation and hosts a diverse group of missions and units and has the capacity to support mission growth. Also, the flying conditions, access to valuable training ranges and airspace and investments in specialized equipment could be attractive for additional or emerging, new missions.

Next Step

The executive summary provides the focus and recommendations from the Kirtland AFB JLUS, but it is not intended as a standalone document. The main body of the JLUS contains the majority of analysis and results; however, there is a wealth of supplemental information in the appendices.

The communities and jurisdictions comprising the MRCOG region and others in New Mexico where Kirtland AFB units train historically support Kirtland AFB missions. However, impacts from recent population growth and projected growth over the next decade require a more coordinated approach to local land use planning to protect Kirtland AFB assets and facilities used for training and to support national security functions. A coordinated approach should fully consider the land use needs and desires of regional jurisdictions and the Base to ensure Kirtland AFB's varied missions and organizations can be sustained into the future.

Part III (Compatibility) of the JLUS is especially critical to understanding why the thirty-three (33) recommendations detailed in Part IV (Recommendations) are made. Responsibility for prioritizing and implementing the recommendations continues with the JLUS stakeholders. At this point, recommendation consideration and implementation should begin to ensure local communities, jurisdictions, stakeholders and the Base will benefit from future efforts that are carefully coordinated and fully supported.

Due to increasing land use complexity and competition, onetime fixes or occasional intervention in land use decisions by elected leaders across the region may be insufficient to sustain Kirtland AFB missions and Sunport operations. The need for land use coordination and cooperation is important because the Base's missions are critical to national security, and the economic impacts from Base and Sunport operations on the region's economy are significant. The key to sustaining Kirtland AFB missions and Sunport operations is – and will remain – JLUS stakeholder coordination and cooperation in the MRCOG region.

Complete JLUS Information

The Kirtland AFB JLUS can be accessed through the MRCOG website at: <http://www.mrcog-nm.gov/>





TABLE OF CONTENTS

Section	Contents
Volume I – Joint Land Use Study	
FW	Foreword
ES	Executive Summary
TOC	Table of Contents
Part I	Introduction
	1 Report Organization
	2 Background
	3 Study Area
	4 Goals and Objectives
Part II	JLUS Process, Principals & Stakeholders
	1 MRCOG
	2 Kirtland Air Force Base
	3 Albuquerque International Sunport
	4 Stakeholders
	5 Committees
	6 Public Outreach
	7 JLUS Review and Adoption
	8 Implementation
Part III	Compatibility
	1 Introduction
	2 Regional Planning Considerations
	3 Economic Impact
	4 Transportation Considerations
	5 JLUS Issues & Analysis
Part IV	Recommendations
Part V	Economic Analysis - Summary
Part VI	Transportation Analysis - Summary



Section	Contents
Volume II - Appendices	
A	Acronyms & Terms
B	Economic Report – Full
C	Transportation System Report – Full
D	Public Meeting Presentation
E	Example Noise Disclosure Statement
F	Example Kirtland AFB/Dark Skies Lighting Ordinances
G	AICUZ Land Use Compatibility Guidelines
H	Sunport Runways 03, 08, 26 and 30 Land Use Designations
I	Mesa del Sol Measurements Report
J	New Mexico Executive Order No. 2004-046
K	Purchase and Sale Agreement – Commercial
L	Residential Real Estate Disclosure Statement
M	Avigation Easement Examples (2)
N	Public Participation Plan
O	JLUS Survey – Overview
P	JLUS Survey – Summary
Q	JLUS Survey – Question 8 – Work Travel To/From Kirtland AFB
R	JLUS Survey – Question 9 – Kirtland AFB Importance
S	JLUS Survey – Question 10 – Sunport Importance
T	JLUS Survey – Question 11 – Surrounding Areas
U	JLUS Survey – Question 15 – Public Transportation
V	JLUS Survey – Question 16 – Land Use
W	JLUS Survey – Question 17 – Comments on JLUS Survey
X	Key Figures as 11 x 17 Images



PART I – INTRODUCTION

Section No.	Section Contents	
	Title	Page No.
1.0	Report Organization	I – 1
2.0	Background	I – 2
2.1	What is a Joint Land Use Study?	I – 2
2.2	Why is a JLUS Needed?	I – 3
2.3	Program Goals and Actions	I – 3
2.4	Program Products and Benefits	I – 5
2.5	What Makes This JLUS Challenging?	I – 5
3.0	Study Area	I – 6
4.0	Stakeholder Goals and Objectives	I – 7
5.0	List of Figures	
	I - 1: JLUS Study Area	I – 6
6.0	List of Tables – None	-



Part I includes introductory information about the report organization, Joint Land Use Study (JLUS) Program background and how it applies to the Kirtland Air Force Base (AFB) JLUS, the JLUS Study and goals and objectives of both the community – Mid Region Council of Governments (MRCOG) Region – and Kirtland AFB.

1.0 Report Organization

The report is organized into seven (7) parts:

Table with 2 columns: Part, Description. Rows I-VII detailing report sections from Introduction to Appendices.

2.0 Background

2.1 What is a Joint Land Use Study?

A JLUS is a collaborative land use planning effort between military installations, affected land use planning authorities and regional governments. The JLUS Program is administered by the Department of Defense (DoD) Office of Economic Adjustment (OEA) and is one of several programs intended to provide technical assistance to help understand, assess and control the impacts on civilian and military populations of potential adverse implications on each other from their respective activities and land uses.

A JLUS is requested by a military installation with concern for existing, planned or potential encroachment of its missions. If supported by the installation's major command and military department, OEA completes a review of the potential encroachment concerns and determines if a local government entity will accept responsibility for the project.

For this JLUS, the installation's request was supported by the Department of the Air Force, OEA validated the appropriateness of a JLUS project and MRCOG accepted responsibility on behalf of the region.

The JLUS program encourages "cooperative land use planning between military installations and the surrounding communities so that future community growth and development are compatible with the training and operational missions of the installations, and to seek ways to reduce the operational impacts on adjacent land." 1

A JLUS is intended to help the region understand the economic and physical impact of a military installation on their communities and develop how to evaluate potential impacts of land use proposals on the long term viability of existing military missions or potential growth opportunities. In this JLUS effort, the sustainability and compatibility of both Kirtland AFB and the Albuquerque International Sunport ("Sunport") are addressed based on their unusual, but significant relationship. A JLUS will also allow installation and Sunport leaders to better understand the economic and physical "actual or opportunity cost" to the community that results from a community denying development proposals for potential land uses.

Originally, Congress granted authority for DoD to provide JLUS grants to communities to "help better understand and incorporate Air Installation Compatible Use Zone (AICUZ) ... technical data into local planning programs." 2 However, the JLUS Program has evolved to address virtually any local condition or issue that could impact military missions or potential local development.

In addition to AICUZ noise concerns, a JLUS will evaluate actual/potential impacts on, and from, aircraft flight operations, explosives safety, ammunition storage, loss of night sky darkness, dust, frequency-spectrum interference and others. Unlike an AICUZ, the JLUS analysis and recommendation development effort is led by local government and is completed using a process visible to the general public.

A JLUS is a best-faith effort by the community and military installation to compile, analyze and use data, stated

1 Joint Land Use Study Program Guidance Manual, Office of Economic Adjustment, August 2002; p. 2 ("Manual")

2 Joint Land Use Program Description; Office of Economic Adjustment; July 8, 2004; p. 2. ("Description")





requirements and desires for community development to achieve the common goal of planning a compatible future. The JLUS is not a substitute for ongoing planning activities between installations and communities, but can be a powerful tool to focus organizational and policy efforts over the long term.

Measures to implement JLUS recommendations may involve revisions to comprehensive plans and land development regulations based on consideration of factors such as zoning, subdivision regulations, structure height restrictions, promotion of planned unit development, increased sound attenuation in existing and new buildings, land exchanges, transfer of development rights and real estate disclosure. As a collaborative process, the JLUS can address planning considerations on the installation and at the Sunport – as well as in non-contiguous properties in the area – leading to voluntarily-accepted restrictions on certain types of activities inside their boundaries to protect the future compatibility of land uses throughout the region.

2.2 Why is a JLUS Needed?

As noted in the foregoing, a JLUS is a best faith effort by the community and military installation to achieve the common goal of planning a compatible future. During the past several decades, the Albuquerque region has experienced robust growth that is anticipated to continue. As a consequence, the once isolated Kirtland AFB and Sunport are now adjacent to vibrant community businesses and residences and/or potentially valuable development lands. Moreover, existing and possible land use in the region could impact, or be impacted by, current and future operations at the installation and the Sunport. Given the many land use jurisdictions impacted by activities at Kirtland AFB and the Sunport, use of the JLUS process allows a comprehensive and collective approach to planning the future of the region while coordinating the individual land use concerns and desires of individual jurisdictions.

Both Kirtland AFB and the Sunport are valued partners to the Albuquerque region. Kirtland AFB occupies slightly over 80 square miles, provides approximately 34,750 direct, indirect and induced jobs, contributes more than \$4.4 billion to the regional economy and represents the largest employment entity in the region and a critical economic contributor. The great majority of the personnel and families who work on Kirtland AFB live, shop, attend

school, worship and recreate in the Albuquerque region. Similarly, the Sunport provides approximately 8,000 jobs and contributes in excess of \$1.4 billion to the region's economy. It is the primary commercial airport for the State of New Mexico and provides commercial air service to nearly three-quarters of New Mexico's residents and a large percentage of the traveling and business population of southern Colorado and eastern Arizona.

The sustainability and long-term viability of Kirtland AFB, the Sunport and the Albuquerque metro area are largely dependent upon each other. In effect, the installation, Sunport and Albuquerque metropolitan area constitute a "virtual ecosystem" that serves the economic and community needs of a large region. One constant of military installations, aviation activities and communities is change. As the sponsor of this JLUS, MRCOG committed to lay the foundation to help its members effectively manage this change and sustain these important activities, as well as balance Kirtland AFB and Sunport needs and desires with the ability of the region to achieve its future land use vision.

2.3 Program Goals and Actions.

The primary JLUS Program goal is: to develop a set of recommendations – through close collaboration between military installations and affected local land use and governmental entities – that "present a rationale and justification, and provide a policy framework to support adoption and implementation of compatible development measures designed to prevent urban encroachment; safeguard the military mission; and protect the public health, safety, and welfare."³

Through this close collaboration, a JLUS is intended to help the region understand the installation's economic and physical impact on their communities and develop means to evaluate potential impacts of land use proposals on the long-term viability of existing military missions or potential growth opportunities. At the same time, a JLUS allows installation leaders to understand the economic and physical "actual or opportunity" cost to the community that results from community denial of land use possibilities.

Achieving these goals requires a number of fundamental, valid assumptions, including: the community will receive strong support from installation leaders and staff; the

³ Description, p. 2.



installation will directly participate throughout the study and that there exists a good community/installation relationship. One of the most important lessons learned from completed JLUS that has been identified by OEA is "Consensus building before, during and after the study is of paramount importance. It is nearly impossible to do this unless all interested parties are meaningfully involved from the beginning of the process."⁴

The Kirtland AFB JLUS has the following goals:

- ✓ Ensure the city, county, state, Federal and Native American entities, along with residents and private sector stakeholders within the study area are fully involved in all stages of data collection, analysis and development of suggested recommendations.
- ✓ Develop recommendations that protect the health, safety and welfare of both the civilian and military communities.
- ✓ Identify regulatory and policy actions to balance sustainment of military and federal agency missions at Kirtland AFB, operations of the Sunport and the region's future needs and land use vision.
- ✓ Identify land use opportunities and implications from the existing transportation network or plans impacting, or impacted by Kirtland AFB or Sunport operations.
- ✓ Complete a comprehensive economic analysis of Kirtland AFB and its activities to establish a current, definitive baseline for regional economic impact discussions.
- ✓ Enhance the effectiveness of communication and cooperation between MRCOG, its members, Kirtland AFB, the Sunport and other regional stakeholders.

To achieve these goals, the following general steps were taken:

- ✓ Creation of an Advisory Committee comprised of officials from MRCOG, its members' organizations, regional political jurisdictions, Native American Pueblos, the Office of the Governor of New Mexico, State Agencies, Sunport, Kirtland AFB, major Federal Agencies associated with the installation, and the

most significant private sector and development interests that impact, or could be impacted by, land use policy associated with Kirtland AFB and the Sunport. The Advisory Committee provided overall direction to the contractor, appointed a Technical Committee and provided policy guidance to the contractor and Technical Committee.

- ✓ Creation of a Technical Committee comprised of professional staff representing Advisory Committee entities to identify and study specific issues and provide technical expertise to the contractor and advise the Advisory Committee.
- ✓ Creation of a Study Area to focus JLUS analysis and recommendations on the region deemed most appropriate by the Advisory Committee.
- ✓ Identification of operational requirements for Kirtland AFB and the Sunport based on existing users, approved programs and desired, future visions.
- ✓ Identification of existing, future and anticipated land uses within the Study Area that could impact Kirtland AFB and Sunport operations.
- ✓ Identification of impacts on the Study Area outside the boundaries of Kirtland AFB and the Sunport from existing, programmed, and desired future operations.
- ✓ Evaluation of existing and, as required, develop new land use recommendations to assist land use authorities balance sustainment of military and Federal Agency missions at Kirtland AFB, Sunport operations and the region's needs and future vision.
- ✓ Evaluation of the region's transportation system and vision within the context of how it affects land use impacting, or impacted by, Kirtland AFB and Sunport locations and operations.
- ✓ Analysis and characterization of the annual economic impact on the regional economy from Kirtland AFB, installation agencies and the Sunport.

⁴ Manual, p. 8.



2.4 Program Products and Benefits.

The JLUS report describes the *existing* status of land uses, military and airport operations, identifies *possible* incompatibilities based on known mission changes or development plans, and suggests *potential* future impacts. It also recommends specific strategies to help the region *mitigate existing* problems; *minimize potential incompatibilities*, and facilitate regional planning processes to avoid future, incompatible development.

2.5 What Makes This JLUS Challenging?

The majority of JLUS efforts focus on “an” installation and relatively homogeneous region. This is not an accurate template for the Kirtland AFB JLUS which must address a complex and unique set of circumstances. Representative examples of the region’s complexity include:

- ✓ Stakeholders. The Kirtland AFB JLUS had to accommodate a large number of stakeholders with varying perspectives, visions and goals, as well as operating and political autonomy. These stakeholders each manage significant information and data – much of it in different formats – that required correlation before it could be analyzed.
- ✓ Tribal Interaction. The JLUS needed to ensure that appropriate, government-to-government relationships and customs were honored with MRCOG’s Native American stakeholders.
- ✓ Sensitive Missions. Kirtland AFB and the Federal Agencies on Base operate sensitive missions within the JLUS study area. While the installation property is the responsibility of Base leadership, many potential land use issues – both inside and outside the Base – derived from compatibility concerns with non-Air Force operations.
- ✓ Unique Airfield Status. The unique relationship between the Sunport and Kirtland AFB added an interagency component, introduced more extensive public outreach challenges than normal and complicated the application of the usual DoD and Air Force JLUS planning conventions and assumptions. Specifically, the City of Albuquerque owns the airdrome, and military flying resources use the airport through a series of agreements between the Air Force and Albuquerque.
- ✓ Economic Impact. MRCOG’s desire for a full and in-depth understanding of the economic impact of the

Sunport and Kirtland AFB – and the ability to clearly communicate that impact to the region’s citizens – demanded a more focused and precise economic analysis than is usual in a JLUS. This required adoption of an Economic Study Area different from the Land Use Study Area.

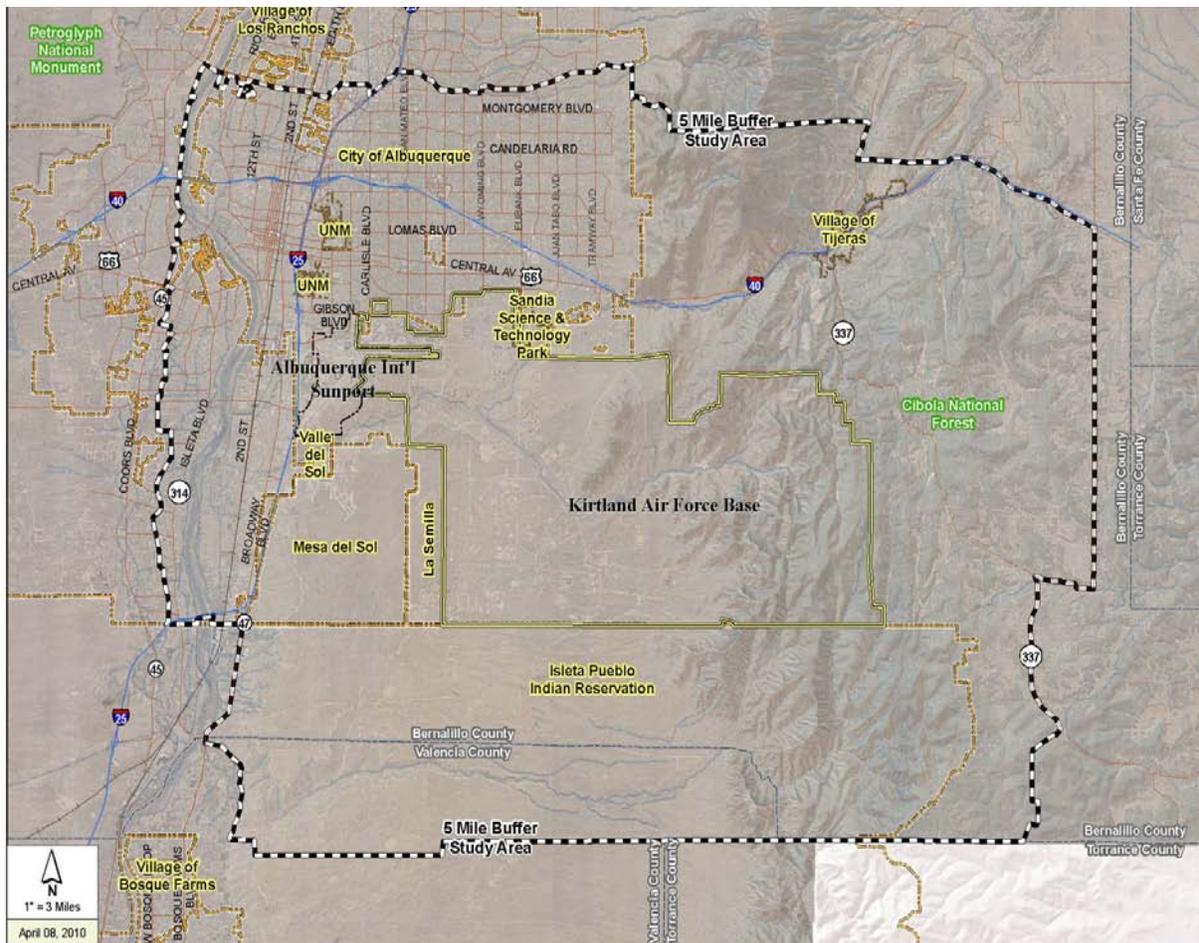
- ✓ Land Use Planning. Unlike some communities, the region expected the JLUS to enable – not inhibit – land uses in the region. While recognizing there may be incompatible land uses that must be cured, the focus was placed on partnering with the Sunport and Air Force to leverage compatible uses. This emphasis demanded extremely close coordination with all affected land use authorities and a demand for creating a realistic, executable and achievable set of JLUS-recommended actions.
- ✓ MRCOG Role. Since a JLUS must be sponsored by a local governmental entity and the region hosting Kirtland AFB is a large, diverse area with multiple governmental entities, MRCOG accepted this role. As a regional council of governments, MRCOG and the other stakeholders understood the success of this JLUS depends on creating consensus throughout the process in general and specifically in the JLUS recommendations. Some JLUS sponsors can mandate implementation of recommendations; however, MRCOG’s inability to unilaterally take such actions demanded significant attention to carefully collaborating with diverse stakeholders throughout the project.
- ✓ Transportation Vision. One of the fundamental goals of this JLUS was to also identify, validate, analyze and develop recommendations to facilitate resolution of transportation issues that are critical to future land use in the region and support of the Sunport and Kirtland AFB. This task included complex issues with passionate advocates and adversaries that demanded great effort to sufficiently understand, properly frame and successfully address recommendations with the various stakeholders and community-at-large.

The foregoing examples of the characteristics of the Albuquerque metropolitan area, installation, and Sunport environments, along with many other “nuances” not described, makes this effort one of the most “regional” and challenging efforts undertaken within the JLUS program.

3.0 Study Area

A JLUS for a traditional Air Force installation includes a study area beginning at the center of the airdrome and encompassing lands that are critical to Air Force operations while minimizing adverse impacts to surrounding communities. In the case of the MRCOG JLUS, the City of Albuquerque owns and operates the airdrome that is on the western edge of Kirtland AFB. Furthermore, the bulk of the installation's mission activities are not its flying operations. Therefore, the Advisory Committee took a distinctly different approach to identifying the appropriate area for JLUS analysis. The intent was to ensure the lands associated with all Kirtland AFB missions and Support operations were included in the analysis. Figure I-1 depicts a roughly five-mile extension of Kirtland AFB boundaries in all directions. The "basically" rectangular area encompasses the JLUS Study Area.

Figure I - 1: JLUS Study Area





4.0 Stakeholder Goals and Objectives

The JLUS Stakeholders (discussed in Part II, Section 4) share the goal of successfully addressing the identified JLUS issues discussed in detail in Part III, Section 5.

- ✓ Planning Regionally,
- ✓ Sustaining Kirtland AFB,
- ✓ Sustaining Flying Missions and Long Term Viability of DoD Aviation Activities, and
- ✓ Enabling Community Development.

The following overarching statements characterize the general focus of representative, but not all inclusive, desired objectives.

- ✓ Balance the operational requirements of Kirtland AFB and the Sunport with the ability of the regional communities to satisfy their development needs and achieve their future visions.
- ✓ Increase appreciation for the potential, adverse impacts on Kirtland AFB and the Sunport from incompatible community development.
- ✓ Increase appreciation for the potential adverse impacts on the region's population from certain types of operations by Kirtland AFB or the Sunport.
- ✓ Enhance regional land use authority relationships to enable greater, formalized collaboration in developing land use consideration and approval processes, as well as increasing coordination of land use decisions.
- ✓ Enhance communications between representatives of regional and Native American governments, local neighbors, community and business stakeholders, Kirtland AFB, and the Sunport.
- ✓ Improve regional land development regulations.
- ✓ Address the region's health, safety and welfare concerns associated with Kirtland AFB operations.



PART II – JLUS PROCESS, PRINCIPALS & STAKEHOLDERS

Section No.	Section Contents Title	Page No.
1.0	MRCOG	II – 2
1.1	Introduction	II – 2
1.2	Role in Regional Planning	II – 3
1.3	Role in Joint Land Use Study	II – 3
1.4	Desired Joint Land Use Study Emphasis Areas	II – 3
1.4.1	Effective Regional Political and Planning Collaboration	II – 3
1.4.2	Transportation Planning to Support Effective Land Use	II – 4
1.4.3	Consistent Impact Analysis of the Support's and Kirtland AFB's Value to the Regional Economy	II – 4
2.0	Kirtland AFB	II – 4
2.1	Introduction	II – 4
2.2	Multi-Mission/Agency Support	II – 5
2.3	Location, Size and Operations	II – 5
2.4	Relationship to Albuquerque International Support	II – 6
3.0	Albuquerque International Support	II – 6
3.1	Introduction	II – 6
3.2	Role for Albuquerque and New Mexico	II – 6
3.3	Size, Location and Operations	II – 6
3.4	Support to Kirtland AFB	II – 7
4.0	Stakeholders	II – 7
5.0	Committees	II – 8
5.1	Organization	II – 8
5.2	Meetings	II – 8
6.0	Public Outreach	II – 10
6.1	Stakeholder Meetings	II – 10
6.2	Survey	II – 12
6.2.1	Data Gathering	II – 12
6.2.2	Interviews	II – 12
6.2.3	Survey Data Collection	II – 12

Section No.	Section Contents Title	Page No.
6.2.4	Protection Measures	II – 12
6.3	Public Participation Meetings	II – 12
6.4	Public Outreach Materials	II – 13
7.0	JLUS Review and Adoption	II – 13
8.0	Implementation	II – 13
9.0	List of Figures	
	II – 1: MRCOG Planning Area	II – 2
	II – 2: Kirtland AFB Location	II – 5
	II – 3: Team Kirtland	II – 6
10.0	List of Tables	
	II – 1: Committee Membership	II – 8
	II – 2: Committee Meetings	II – 9
	II – 3: Public Participation Meetings	II – 13



This Part identifies the Kirtland AFB JLUS process, principals – MRCOG, Kirtland AFB and the Sunport – and other stakeholders. It includes discussion of how the stakeholders organized to guide the project and conduct public outreach.

like Albuquerque Public Schools, the Middle Rio Grande Conservancy District and regional Pueblos constitute its membership. As an advisory agency, MRCOG provides its members data and plans to help better inform individual decisions and regional plans.

1.0 MRCOG¹

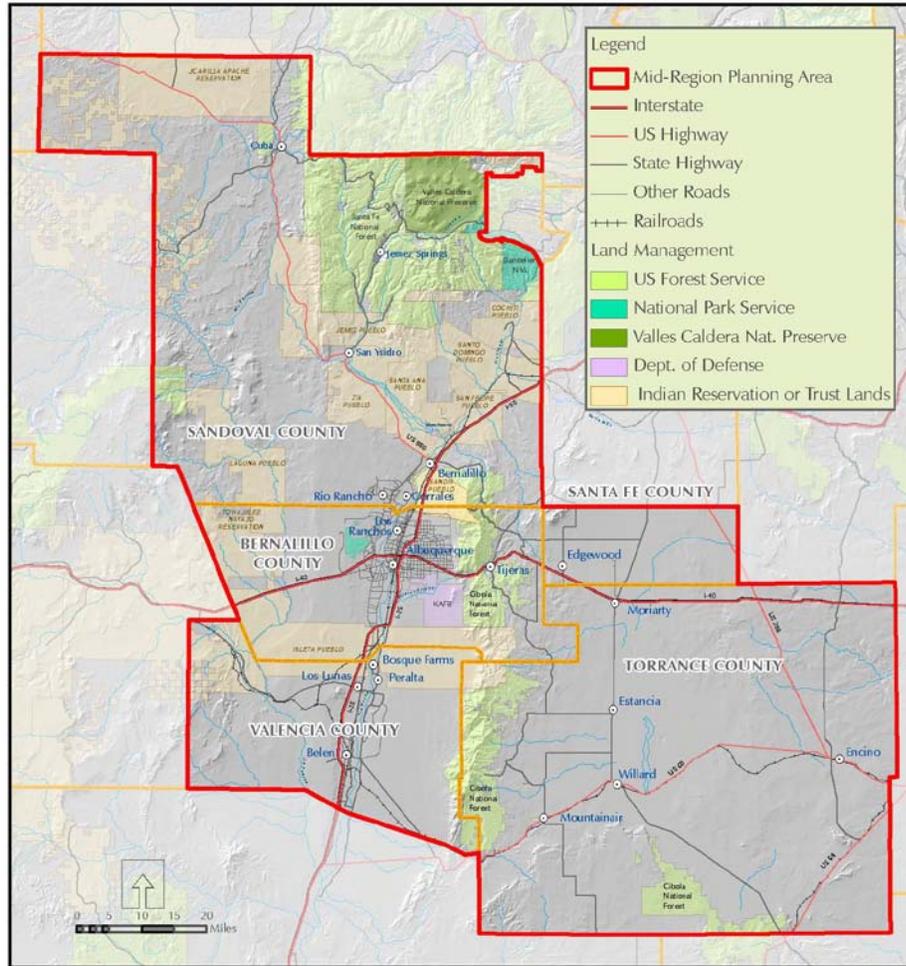
1.1 Introduction.

The Mid-Region Council of Governments of New Mexico (MRCOG) was established in 1969 as an association of local governments and special units of government within New Mexico's Third Planning District. Municipal and County governments in Bernalillo, Valencia, Torrance, and Sandoval Counties, Edgewood in Santa Fe County, groups

The MRCOG mission is to strengthen individual communities by identifying and initiating regional planning strategies through open dialogue and collaboration between member governments.

Figure II – 1 depicts MRCOG's Planning Area – an area with nearly 740,000 residents, more than 9,000 square miles and including all or part of the lands for 13 Native American populations.

Figure II -1: MRCOG Planning Area



¹ MRCOG (<http://www.mrcog-nm.gov/>) and U.S. Census Bureau (http://factfinder.census.gov/home/saff/main.html?_lang=en).

MRCOG also serves as the metropolitan planning organization (MPO) for the Albuquerque Metropolitan



Planning Area (AMPA). A major responsibility of the MPO is coordination with Federal, State, and local transportation planning organizations to develop the Unified Planning Work Program (UPWP) that identifies transportation planning priorities for the Albuquerque metropolitan area.

Funded through a combination of participation fees, Federal, State and other grants, MRCOG provides a range of services to its members.

1.2 Role in Regional Planning

As noted in the foregoing, MRCOG provides advisory services to its member organizations and supports data collection, analysis and tailoring to assist their elected officials and planning staffs with consideration of regional impacts and implications of possible transportation, agricultural, workforce, employment, land-use, water, and economic development actions. As a significant stakeholder in the region, MRCOG also coordinates with Kirtland AFB and its associates' activities.

1.3 Role in Joint Land Use Study

MRCOG recognized the need to continue the historic, strong support of the Sunport and Kirtland AFB in a context that addressed the increasingly difficult challenges of the inter-jurisdictional reality of the region's numerous land use authorities and governmental bodies. As the recognized regional advisory body, and with the concurrence of its Board of Directors, MRCOG accepted the role of administrator for an OEA grant to sponsor the Kirtland AFB JLUS. MRCOG's intent was to fully characterize the complex, shared and competing interests of the region's stakeholders and develop strategies to sustain the viability of Kirtland AFB and its non-aviation, national security-related missions; the Sunport's capability to support defense-related aviation; and enable compatible community development.

Unlike some communities, MRCOG expects the JLUS to enable – not inhibit – regional land uses. Recognizing that there may be incompatible land uses surrounding the Sunport and Kirtland AFB, MRCOG required the JLUS contractor to focus on partnering with the Sunport, Air Force, DOE, installation associates and other Federal Agencies to leverage compatible uses to the maximum extent practicable. Further, MRCOG required the contractor to work closely with all affected land use

authorities to create a realistic, executable and achievable set of JLUS actions and recommendations. The ultimate goal was for a JLUS that reflected both the requirements and the "spirit" of the OEA's JLUS program.

1.4 Desired Joint Land Use Study Emphasis Areas

In addition to the traditional focus of the JLUS program, MRCOG provided the contractor with direction to emphasize three areas – Regional Collaboration, Efficient Transportation and Economic Impact Analysis. The emphasis was based on MRCOG's experience with the region, regional planning and commitment to ensuring its lessons learned would fully inform the JLUS analysis and outcomes. These areas are discussed in more detail in the following sections.

1.4.1 Effective Regional Political and Planning Collaboration

MRCOG understood that the success of the JLUS would depend on creating consensus throughout the process and in developing the JLUS recommendations. Unlike other JLUS sponsors that have jurisdictional authority to implement JLUS recommendations, MRCOG's inability to unilaterally take such actions demanded significant attention on carefully collaborating and reaching consensus with stakeholders throughout the project. Thus, MRCOG emphasized that the project be strongly focused on maintaining existing and establishing new relationships amongst its members and other non-MRCOG stakeholders. The goal was to ensure the successful relationships and collaborations used during the JLUS would continue and facilitate future cooperation to address land use and policy decisions that could impact the Sunport and/or Kirtland AFB. Embracing a formalized, regional approach intended to include the Sunport and Base ensured that all stakeholders had the necessary information and data needed to allow decisions by all parties to be made with appropriate consideration of the needs and desires of their regional partners. An overriding MRCOG desire was for its JLUS to fully enable compatible land uses supporting the region, Kirtland AFB and the Sunport. One of the most significant areas where such cooperation and collaboration is needed is in transportation planning based on its direct, significant implications for enabling and limiting land use.





1.4.2 Transportation Planning to Support Effective Land Use

As one of the country's fastest growing metropolitan areas with a transportation system that has evolved over the decades, MRCOG wanted to ensure the JLUS assessed how the Sunport and Kirtland AFB inhibited or could facilitate an optimized transportation system supporting compatible land uses in the region. It tasked the contractor to identify, validate, analyze and develop recommendations to support resolution of historical transportation issues that are critical to the region's future. Recognizing this task involved complex issues with passionate advocates and adversaries, MRCOG felt the overriding nature of transportation as a regional issue demanded the JLUS characterize and assess transportation needs and alternatives key to satisfactorily informing future land use decisions.

1.4.3 Consistent Impact Analysis of the Sunport's and Kirtland AFB's Value to the Regional Economy

The Sunport and Kirtland AFB have large economic impacts in the region; however, MRCOG members have historically been required to deal with a range of different approaches to impact analysis. Moreover, the combination of Air Force, DoD, contractor and supporting companies have always presented complex and multi-layered challenges to obtaining data necessary for consistent economic analysis.

These challenges are complicated by the classified or sensitive nature of some of the Base's missions and reluctance of several organizations to share economic data. Acknowledging the validity of different approaches to previous analyses, MRCOG believed its members would receive value from a comprehensive evaluation of the economic impact as part of the JLUS. Once a standard methodology was prepared and adopted, such an analysis could be periodically updated and provide a consistent analytical approach to assessing economic impacts.

The goal was to obtain a defensible approach and analysis that could be replicated in the future to provide a common economic understanding for considering regional actions that could impact the Sunport and/or Kirtland AFB. Since a credible cost-benefit analysis is essential to most land use considerations, securing a common baseline to use throughout the region was a special emphasis item.

2.0 Kirtland AFB

2.1 Introduction

Kirtland AFB is in southeast Albuquerque, between the Sandia and Manzano mountain ranges. According to DoD property records, it is comprised of approximately 51,600 acres – more than 80 square miles. It is home to the Air Force Nuclear Weapons Center and over 100 mission partners, including headquarters or elements of the Defense Threat Reduction Agency, the Air Force Safety Center, the Air Force Inspection Agency, the Air Force Operational Test and Evaluation Center, the 58th Special Operations Wing, the Air Force Research Laboratory, the New Mexico Air National Guard's 150th Fighter Wing, the Department of Energy, the National Nuclear Security Administration and Sandia National Laboratories.

Kirtland AFB's development began with three private airfields dating to 1928. These airfields were private ventures, and the two runways on Albuquerque's East Mesa became Oxnard Field, named for James G. Oxnard who bought one of the airfields in 1928. Over the next decade, Army and Navy pilots used Oxnard Field for refueling and maintenance during a variety of military flight operations. In late 1939, the Army Air Corps leased 2,000 acres to neighboring Albuquerque Airport which was west of Oxnard Field. The Army eventually bought the Oxnard Field property, and its subsequent transfer to the Federal government restricted the runways to military use only.

Construction of Albuquerque Army Air Base began in January 1941 and was completed in August. In February 1942, the Base was named Kirtland Army Air Field in honor of Col. Roy C. Kirtland, one of the Army's oldest aviation pioneers. In February 1945, Kirtland Field was engaged in training combat crews to fly special B-29 bomber aircraft, nicknamed the "Superfortress," made famous by dropping atomic bombs on Hiroshima and Nagasaki and supporting an end to hostilities with Japan.

In February 1946, Kirtland Field was placed under the Air Materiel Command, and its flying training activities ceased. Its new mission entailed flight test activities for the Manhattan Engineer District, the wartime organization that helped produce the atomic bomb.

The new role for Kirtland Field was to develop aircraft modifications for special weapons delivery and to determine ballistic characteristics for future weapons.





Kirtland Field's role in testing and evaluating special weapons increased in 1947, as the U.S. Army Air Forces became the U.S. Air Force. At that time, Kirtland Army Air Field, with a population of 972 military and civilian personnel, became Kirtland AFB. Most of the weapons' testing was conducted on a 46,000-acre tract in the Manzano Mountains, on the southern part of what is now known as Kirtland AFB, including Forest Service lands withdrawn for testing purposes.

In December 1949, Kirtland AFB became headquarters for the newly created Special Weapons Command. The Command became the Air Force Special Weapons Center on April 1, 1952, and was a unit of the Air Research and Development Command. The Special Weapons Center assumed management of Air Force Systems Command's test and evaluation facilities at Holloman AFB, near Alamogordo, New Mexico, during the summer of 1970.

Kirtland AFB history is further related to three bases merged in 1971 from Kirtland AFB, Manzano and Sandia Bases that brought the three installations under one command creating the third largest installation in Air Force Material Command and one of the largest in the Air Force.

In December 1962, Kirtland AFB deeded the airdrome complex to the City of Albuquerque in exchange for joint aviation use. As part of several renegotiations of transfer terms, the Air Force agreed to provide crash, fire, rescue and perimeter security support to the Sunport in exchange for use of the airdrome by the Base's associate flying units.

2.2 Multi-Mission/Agency Support

Kirtland AFB is one of Air Force Material Command's 11 "bases" and is significantly more complex than most Air Force installations, essentially, a "Federal Campus." The Air Force Nuclear Weapons Center, with support from the 377th Air Base Wing (ABW) and 498th Nuclear Systems Wing, hosts activities from more than 100 Air Force, DoD and Federal organizations, including personnel from the Air Combat Command, Air Education and Training Command, Defense Threat Reduction Agency, Missile Defense Command, Air Force Safety Center, Air Force Inspection Agency, Air Force Operational Test and Evaluation Center, Space and Missile Systems

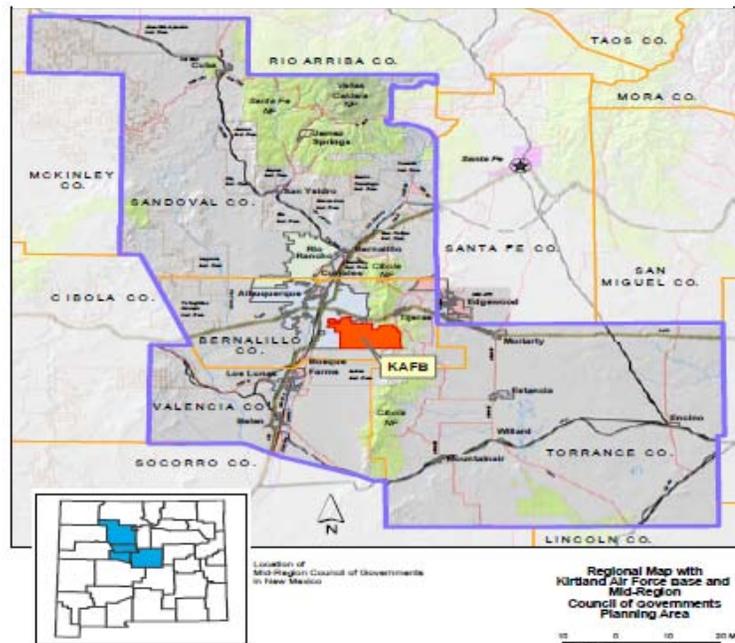
Center, Air National Guard, Air Force Research Laboratory, Veterans Administration, Department of Energy, National Nuclear Security Administration and Sandia National Laboratories.

2.3 Location, Size and Operations

As shown in Figure II - 2, Kirtland AFB is located in southeast Albuquerque. The installation owns or controls the use of approximately 51,600 acres – over 80 square miles. With approximately 7.3 million square feet of facilities, DoD real estate documents report its Plant Replacement Value² as nearly \$2.8 billion.³ In addition to the Air Force facilities and infrastructure, several other organizations on Kirtland AFB own and operate highly specialized and/or unique equipment that are critical assets in the U.S. national security portfolio.

The Air Force Nuclear Weapons Center (AFNWC) oversees the 377th ABW, the installation's command element, and the 498th Nuclear Systems Wing (NSW), responsible for enterprise-wide execution of the AFNWC

Figure II - 2: Kirtland AFB Location



² PRV is the cost of replacing the facility and its supporting infrastructure using 2009 construction cost (labor and material for the Albuquerque area) and standards (methodologies and codes).

³ DoD Base Structure Report, FY 2009 Baseline (A Summary of DoD's Real Property Inventory), DUSD (Installations & Environment), p. Air Force – 10 (155).



mission.

Operationally, the installation hosts Air Education and Training Command's (AETC) 58th Special Operations Wing (SOW) to provide Air Force special operations and Combat Search and Rescue (CSAR) training to Air Force Special Operations Command and Air Combat Command personnel, respectively. The Base also hosts the operations of New Mexico's Air National Guard unit, the 150th Fighter Wing (FW), and is home to a Consolidated Armed Forces Reserve Center.

Kirtland AFB has several other defense agency tenants, including the DOE's National Nuclear Security Administration (NNSA) Service Center; Office of Secure Transport (OST); National Training Center; and Sandia Site Office of Sandia National Laboratories (SNL/NM), operated for DOE by the Lockheed Martin Corporation.

Together, the units of Kirtland AFB constitute *Team Kirtland* and represent key operational, management, research, development, testing, acquisition and training for some of the most sensitive or unique components of the



nation's national defense strategy.

2.4 Relationship to Albuquerque International Sunport

Kirtland AFB is adjacent to the Sunport and operates its military aviation activities from dedicated ramp areas and maintains aircraft support facilities to conduct flying missions from the Sunport. Originally built, owned and operated by the Air Force, the airdrome complex was transferred to the City of Albuquerque, and Kirtland AFB's

military flying activities share use of the Sunport's runways. In exchange for the City's maintenance of the airdrome and use of its runway-taxiway complex, the Air Force provides fire, crash and rescue services that meet more stringent military standards to general and commercial aviation users.

3.0 Albuquerque International Sunport

3.1 Introduction

The Albuquerque International Sunport (Sunport) is a major, commercial airport operating 365 days a year. Roughly 18,000 commercial airline passengers arrive and depart daily. The ground elevation of the Sunport varies from 5,310 feet above sea level on the west to 5,351 feet on the east. The primary runway (08/26) is 13,893 feet long, and the secondary runway (03/21) is 10,000 feet long. A tertiary runway (17/35) is 10,000 feet long, but it is scheduled by the City of Albuquerque and Sunport officials to be closed and demolished in the near future. A general aviation runway (12/30) is 6,000 feet long and intersects the secondary runway.

The Sunport is a dual-use, commercial/general aviation and military aviation facility bounded on three sides by Kirtland AFB. The joint use nature of the airfield – owned by the City of Albuquerque and used by Kirtland AFB through a joint use agreement – is very unusual and common to only two other Air Force bases with active military flying units.

3.2 Role for Albuquerque and New Mexico

The Sunport is New Mexico's largest commercial airport. The Sunport is operated by the City of Albuquerque's Aviation Department and serves residents of northern and central New Mexico, as well as southern Colorado. As noted in the foregoing and discussed in detail in the Economic Analysis – Summary (Part V) and Appendix B, the Sunport is a major employment and economic contributor to New Mexico, supporting more than 8,000 jobs and adding approximately \$1.4 billion annually to the regional economy.

3.3 Size, Location and Operations

The Sunport is located on approximately 2,000 acres approximately four miles south of the City's major business districts and adjacent to Kirtland AFB. In 2009, it served nearly 6 million passengers and moved over 61,000 tons of



cargo. There were a total of about 158,400 takeoffs and landings reported by type of service as: 64% commercial and commuter, 21% general aviation and 15% military.

3.4 Support to Kirtland AFB

The Sunport maintains and operates the airdrome and provides airport services to Kirtland AFB's military activities. In return for these services, the Air Force provides fire, crash and rescue services that meet military standards to all Sunport users.

The Sunport and Kirtland AFB have a special relationship based on the City of Albuquerque's ownership of the airfield. In December 1962, the Air Force transferred ownership of the airdrome to the City and executed a lease for joint use of the airdrome complex through June 30, 2035. The specifics of this joint use agreement for the airdrome adds significant complexity to safety zone considerations since the Federal Aviation Administration (FAA) and DoD do not operate with identical standards. The implications of operating within two sets of guidance are addressed in Part III, Section 5.3.

4.0 Stakeholders

MRCOG identified involvement of an initial list of stakeholder organizations for data gathering, review of the analysis and development of JLUS recommendations. The initial list was expanded, and the following *organizations* were involved in JLUS preparation:

- ✓ MRCOG
- ✓ New Mexico Congressional Delegation Staff Members
- ✓ State of New Mexico
- ✓ State Land Office
- ✓ Native American Governments
- ✓ Bernalillo, Sandoval, Socorro, Torrance and Valencia Counties
- ✓ Villages, Towns or Cities of Albuquerque, Belen, Bernalillo, Corrales, Los Lunas, Los Ranchos, Rio Rancho, Socorro and Tijeras
- ✓ Albuquerque International Sunport
- ✓ Kirtland AFB to include many of its agencies, organizations and associate units
- ✓ Kirtland Partnership Committee
- ✓ Kirtland Technology Park
- ✓ Sandia National Laboratories
- ✓ Sandia Science and Technology Park

- ✓ National Nuclear Security Administration
- ✓ Department of Energy
- ✓ U.S. Forest Service
- ✓ University of New Mexico
- ✓ Forest City Covington, NM, LLC (Mesa del Sol)
- ✓ Various Neighborhood Associations
- ✓ Greater Albuquerque Chamber of Commerce
- ✓ Albuquerque Hispano Chamber of Commerce
- ✓ Albuquerque Public Schools
- ✓ Albuquerque Association of Realtors
- ✓ Middle Rio Grande Conservancy District
- ✓ Office of Economic Adjustment

Identifying stakeholders is a key component to any planning process. Informing and involving them early in the project is instrumental in the identification of concerns and the development of plans to address these concerns. Stakeholders include individuals, groups, organizations, and political entities interested in, affected by, or affecting the outcome of a decision or project. For this project, the *types of organizations* represented amongst the JLUS stakeholders included, but were not limited to:

- ✓ City, county and state elected officials, representatives, and staff
- ✓ DOD officials and military installation personnel
- ✓ DOE officials and affiliated organizations
- ✓ Environmental advocacy organizations
- ✓ Institutions of higher learning
- ✓ Local, regional, State and Federal planning, regulatory and land management agencies
- ✓ MRCOG members and employees
- ✓ Native American tribes
- ✓ Nongovernmental organizations (NGOs)
- ✓ Other special interest groups
- ✓ Private (individual and corporate) landowners
- ✓ Public landowners and other interested persons

Discussed in Section 6.1, the Team completed over 80 stakeholder personal meetings or telephone interviews.





5.0 Committees

Kirtland AFB JLUS development was guided by two committees, the JLUS Advisory Committee and JLUS Technical Committee. Both committees were established at the beginning of the project to provide guidance and input on policy issues; provide overall direction to the process and review study findings and recommendations. Committee members were identified by MRCOG, Kirtland AFB, the Sunport, elected officials, community leaders and the JLUS contractor, Keystone International, Inc.

5.1 Organization

The Advisory Committee was comprised of representatives from the counties and cities in the MRCOG region, Kirtland AFB, DOE, tribal officials and other stakeholder groups. It was the senior, advisory body and formed to provide policy guidance; oversee the contractor's progress; review study findings, analysis and recommendations; appoint, advise and direct the Technical Committee and advocate for affected governing bodies to accept the completed JLUS. This Committee met throughout the process to ensure appropriate issues were identified and addressed.

The Technical Committee was formed to provide technical expertise to the Advisory Committee and contractor team. It was comprised of county, city and military planners and technical specialists; State Agency representatives, community organizations and land owners/developers.

In addition to supporting the consulting team, both committees served as liaisons to their respective stakeholder groups. Committee members were asked to communicate JLUS activities and information to their organizations, stakeholders or constituents, as well as sharing their organization's suggestions and comments with the committees and consulting team.

Table II – 1 lists the agencies and organizations included in the Advisory and Technical Committees.

Table II - 1: Committee Membership

Committee/Roles	Organizations	
Advisory	• MRCOG	• NM Office of Military Base Planning & Support
	Policy	• Pueblo of Isleta • Sandoval County
	Oversight	• Torrance County • Valencia County • Village of Corrales
	Review	• Kirtland AFB • Kirtland Partnership Committee • National Nuclear Security Administration
JLUS Adoption	• Sandia National Laboratories • Department of Energy	• U.S. Forest Service • Office of Economic Adjustment
	Technical	• MRCOG
Subject Matter Expertise		• Pueblo of Isleta
	• Sandoval County	• Torrance County
	• Valencia County	• City of Albuquerque
	• Kirtland AFB	• Kirtland Partnership Committee
	• National Nuclear Security Administration	• Sandia National Laboratories • University of New Mexico • Mesa del Sol

Committee Members were also responsible as liaisons to their stakeholder groups and to ensure Committee activities and contractor progress were provided to their constituencies, as well as supply their organizations' comments and suggestions to the other Advisory and Technical Committee members.

5.2 Meetings

Nine committee meetings were held to ensure the JLUS identified and addressed the land use issues essential to Kirtland AFB, the Sunport and the region. Once the key issues were identified, the majority of the meetings combined the technical and advisory committees.

Dates and purpose of the Advisory, Technical and Combined Committee Meetings are listed in Table II - 2. Discussion about the conduct and content of each meeting follows.





Table II - 2: Committee Meetings

Committee	Date	Purpose
Kickoff Meeting	Jan. 15, 2009	Project Kickoff
Advisory # 1	Apr. 7, 2009	Committee and Keystone Team Roles and Responsibilities
Technical # 1		
Advisory # 2	Jun. 23, 2009	GIS Efforts, Study Area, Economic Focus Area and Public Participation Survey
Technical # 2		
Technical # 3	Oct. 30, 2009	Map and Issues Review
Advisory / Technical (Combined # 1)	Nov. 9, 2009	Map and Issues Approval, Economic Update
Advisory / Technical (Combined # 2)	Feb. 25, 2010	Economic Results, Transportation, Public Relations and Public Outreach, Project Timeline
Advisory / Technical (Combined # 3)	Apr. 8, 2010	Input on DRAFT Report and obtain approval for Public Participation Presentation

January 15, 2009: This meeting kicked off the JLUS process. Gary Kuwabara represented OEA and provided a brief introduction and overview of the JLUS process. Additional Technical and Advisory Committee members were identified and the objectives and scope of the JLUS along with the role of the committees was discussed. Lawrence Rael, the former MRCOG Executive Director, explained MRCOG’s role in the JLUS and particular interest in developing a tool for accurately estimating Kirtland AFB’s and the Sunport’s economic impact on the region and transportation issues.

April 7, 2009:

AC Meeting. The role of the Advisory Committee was detailed; the project timeline was reviewed; the complexity of the study was discussed; the options for the study area were outlined; and potential JLUS issues and focus areas were identified. Also, the public participation plan and survey requirements were approved.

TC Meeting. The role of the Technical Committee was detailed; the project timeline was reviewed; the complexity of the study was discussed; the options for the study area were outlined; and potential JLUS issues and focus areas were identified. The Technical Committee identified current and potential public land use issues in the area, most focusing on land to the south of Kirtland AFB. Also, the public participation plan and survey requirements were approved.

June 23, 2009:

AC Meeting. The Advisory Committee met to give input on the first list of JLUS issues; review land use maps; and discuss the economic impact study. Amanda Fagan, OEA Project Manager, attended the meeting. There was extensive discussion on unavailability of military airfield accident potential zone (APZ) and clear zone (CZ) and noise contour information. Ms. Fagan explained to the committees that APZs and CZs are key elements in a JLUS and no JLUS had been done without them. The final study area definition was approved.

Lawrence Rael, former MRCOG Director, explained the importance of the transportation study to the MRCOG region and asked to specifically meet with the transportation planners to give input into the JLUS study.

Erin Ward, Keystone, Inc., economic analyst, explained the task requirements related to the economic impact study, and Mr. Rael explained why, from MRCOGs perspective, the economic impact study is the most important aspect of the JLUS. The Advisory Committee voted to focus the economic study on the MRCOG four county area plus the town of Edgewood.

The initial results of the online JLUS Public Survey input were reviewed by Dr. Jackie Hood. The Survey was still open to participants and continued until June 30. Grace Solis presented an overview of the JLUS project’s Microsoft SharePoint © site.

TC Meeting. The Technical Committee met following the Advisory Committee. The discussions conducted and decisions made by the AC were reviewed with the committee members. The majority of the discussion focused on APZs, CZs and the FAA equivalents, and the noise contours. Ms. Fagan provided some OEA online references to the TC to provide a better understanding of APZs, CZs, and noise contours. The ownership of the airdrome by the City of Albuquerque and the unknown, future of the New Mexico ANG makes noise contours more difficult to analyze at this point.

October 30, 2009: The Technical Committee met to provide input on the draft JLUS maps and the list of identified land use issues. The issues were categorized as Emerging Major Issues, Emerging Important Issues, and Other Issues.





November 9, 2009: A combined Technical and Advisory Committee meeting was held to review changes to the JLUS maps and issues lists as a result of the October 30th Technical Committee meeting. Several minor edits to the maps were identified, but the committees agreed that these were the maps to be used for the study.

The depiction of APZs and CZs on the maps was debated extensively with the resulting consensus to include APZs and CZs on the maps and address the related issues in the report narrative.

The Forest Service withdrawn areas were discussed to provide clarification on the definition of a withdrawn area and the depiction of these areas on the maps. The issue prioritization was debated and adjustments to the lists were made.

The process for including the new City of Albuquerque Mayor and his staff into the JLUS was discussed.

February 25, 2010: A combined Technical and Advisory Committee meeting focused on key topics for the report that included: the notion of "Regionalness, Economic Impact Findings, Transportation focus areas, land use overview, the identified issues, and public outreach. Ms. Amanda Fagan, OEA, and Mr. Jim Holland, Deputy for Installation Policy, Secretary of the Air Force (Installations & Environment), attended the meeting.

Mr. Tom Berardinelli, the Kirtland AFB primary point of contact, expressed strong concern about the focus on a base access point on the south side of the Base (the South Gate) and explained how this could impact the viability of Base missions.

A detailed discussion on conducting an AICUZ study for Kirtland AFB took place since none had been completed previously. Ms. Fagan explained that the AICUZ would have recommendations with a regional focus, as well as issues drilled down to individual jurisdictions that they would need to adopt to implement the recommendations.

The JLUS' public meeting process was discussed, and it was agreed that MRCOG's method of conducting public meetings would be used. MRCOG (Ms. Julie Heinrich) would take the lead in advertising the public meetings. The timeline for completing the JLUS was reviewed.

April 8, 2010: A combined Technical and Advisory Committee meeting was held to gather input on the draft report and to provide a sample of the public input

presentation. Ms. Amanda Fagan participated in the meeting via conference call. Significant negative input was given on the structure/organization of the report and concern was raised about the emphasis on transportation and economic impact as compared to land use. Mr. Tom Berardinelli again raised concern about the focus on a Base access point from the south (South Gate) and the related potential impacts on Base missions. The concerns over different viewpoints on the withdrawn areas and UXO were discussed by Ms. Cid Morgan and Mr. Berardinelli. The Advisory Committee directed the Keystone Team to provide updated issues and a more specific list of recommendations to the Committee for review prior to the public participation meetings.

6.0 Public Outreach

The JLUS process was designed to create a regional, community-based plan to strengthen relationships, build consensus and gain support from the many stakeholders including public and private land owners, residents, elected officials, the many Kirtland AFB associated units, neighboring educational institutions and surrounding tribal governments.

To achieve the Committee's objectives for public participation, an outreach process was developed to include a variety of opportunities for interested regional residents and stakeholders to provide input for the study. The approved JLUS Public Participation Plan is included at Appendix G.

6.1 Stakeholder Meetings

Over 80 stakeholders representing a five-county area were interviewed in person or by telephone. Multiple meetings were held with key stakeholders including Kirtland AFB, the City of Albuquerque, Pueblo of Isleta, Bernalillo County and Mesa del Sol. Also, in December 2009, a new Mayor for the City of Albuquerque was sworn in requiring additional multiple stakeholder meetings to brief the new Mayor's appointees and staff on the JLUS effort. The following list includes significant stakeholders whose contributions to the JLUS were essential to the quality of analysis and recommendations.

- ✓ 377th ABW, Tom Berardinelli, Executive Director
- ✓ Albuquerque Association of Realtors, Julie Glover-Goode
- ✓ Albuquerque Association of Realtors, Janice McCrary



- ✓ Greater Albuquerque Chamber of Commerce, Terri Cole, CEO
- ✓ Greater Albuquerque Chamber of Commerce, Stephanie Maez-Gibson, Government Relations Committee, and 9 Committee members
- ✓ City of Albuquerque City Councilor, Isaac Benton
- ✓ City of Albuquerque City Councilor, Rey Garduno
- ✓ Albuquerque Economic Development, Gary Tonjes, President
- ✓ Albuquerque Public Schools, Karen Alarid, Executive Director of Capital
- ✓ Albuquerque Public Schools, Kizito Wijenje, Director
- ✓ City of Belen, Andrew Camillo, City Planner
- ✓ City of Belen, Sally Garley, City Manager
- ✓ City of Belen, Robert Uecker, Airport Manager
- ✓ Bernalillo County, Enrico Gradi, Planner
- ✓ Bernalillo County Commissioner, Deanna Archuleta
- ✓ Bernalillo County Commissioner, Michael Brasher
- ✓ Bernalillo County Commissioner, Art De La Cruz
- ✓ Bernalillo County Commissioner, Michael Weiner
- ✓ Bernalillo County Commissioner, Maggie Hart-Stebbins
- ✓ Bernalillo County Manager's Office, Julie Baca
- ✓ Bernalillo County Manager's Office, Sandy Fish
- ✓ Bernalillo County Manager's Office, Thaddeus Lucero
- ✓ City of Albuquerque, Ed Adams, CAO ⁴
- ✓ City of Albuquerque, Nick Bakas, Director of Aviation
- ✓ City of Albuquerque, Russell Brito, Planning Department
- ✓ City of Albuquerque, David Campbell, CAO ⁵
- ✓ City of Albuquerque, Richard Dineen, City Planning Director
- ✓ City of Albuquerque, Paula Donahue, Planning Department
- ✓ City of Albuquerque, Dierdre Firth, Manager, Economic Development Department
- ✓ City of Albuquerque, John Garcia, Director, Economic Development Department
- ✓ City of Albuquerque, John Hartmann, Transportation Chief, Department of Municipal Development
- ✓ City of Albuquerque, Jim Hinde, Aviation Department
- ✓ City of Albuquerque, Mary Lou Leonard, Environmental Engineer
- ✓ City of Albuquerque, Carmen Marrone, Division Manager, Planning Department
- ✓ City of Albuquerque, Debbie Stover, Planner
- ✓ Office of U.S. Representative Martin Heinrich, Heather Brewer
- ✓ Office of U.S. Representative Martin Heinrich, Antonio Sandoval
- ✓ Corrales, Philip Gasteyer, Mayor
- ✓ Department of Energy, Karen Boardman, Albuquerque Site Office
- ✓ Department of Energy, Susan Lacy, NNSA/SSO
- ✓ Department of Energy, Dennis Martinez, Albuquerque Site Office
- ✓ FBT Architects, Jared Larsen, Associate Architect (Valle del Sol)
- ✓ French Mortuary, Chet Stewart, Owner
- ✓ French Mortuary, Duffy Swan, President
- ✓ GCC Portland Cement, David Seagart
- ✓ Albuquerque Hispano Chamber of Commerce, Alex Romero, President
- ✓ Pueblo of Isleta, Robert Benavides, Governor
- ✓ Pueblo of Isleta, Simon Shima, Planner
- ✓ Kirtland AFB, Barry Shupe, Office of the Staff Judge Advocate
- ✓ Kirtland AFB, Col. Mike Duvall, Commander
- ✓ NM Office of Military Base Planning and Support, Hanson Scott, Director
- ✓ Technology Ventures Corporation, Sherman McCorkle, President and CEO
- ✓ NM State Land Office, Larry Kehoe, Assistant Commissioner for Surface Resources
- ✓ Kirtland Partnership Committee, Stuart Purviance
- ✓ La Semilla Trust, Ray Powell
- ✓ Village of Los Lunas, Peter Fernandez, City Manager
- ✓ Village of Los Lunas, Art Mondragon, Community Planner
- ✓ Mesa Del Sol, Harry Relkin, Senior Vice President
- ✓ MRCOG, Jack Lord, Transportation Program Manager
- ✓ MRCOG, Joe Quintana, Regional Planning Manager
- ✓ Rio Metro, Bruce Rizzieri, Regional Transit Manager
- ✓ Sandia Science and Technology Park, Jim Clinch, Program Leader
- ✓ Sandoval County, Juan Vigil, Manager
- ✓ State Senator, Tim Keller
- ✓ Socorro, Ravi Bhasker, Mayor
- ✓ Sun Tran, Keith Perry, Marketing & Planning Division Manager

⁴ Chavez Administration

⁵ Berry Administration



- ✓ Sun Tran, Andrew DeGarmo, Transit Planner
- ✓ The Independent, Wally Gordon
- ✓ Village of Tijeras, Daniel Abram, Planner
- ✓ Village of Tijeras, Gloria Chavez, Mayor
- ✓ Torrance County, Joy Ansley, Manager
- ✓ University of New Mexico, Mary Kenny, Planner
- ✓ US Forest Service, Cid Morgan, Sandia District Ranger
- ✓ Valencia County, Eric Zamora, Manager
- ✓ The Group, Hank Rosoff, Civil Engineer (Valle del Sol)
- ✓ Village of Los Ranchos, Larry Abraham, Mayor
- ✓ Albuquerque Bernalillo Water Utility Authority, Deanna Archuleta
- ✓ Albuquerque Bernalillo County Water Utility Authority, Barbara Gastian
- ✓ Albuquerque Bernalillo County Water Utility Authority, Frank Roth, GIS Division
- ✓ Albuquerque Bernalillo County Water Utility Authority, Mark Sanchez, Director

6.2 Survey

The Team used a combination of methods to “survey” regional officials, stakeholders and residents about JLUS issues. It included formal interviews, a web-based survey tool and individual and small group discussions. The findings and results of all methods were provided to Team experts for integration into the task elements to better inform the analysis, issue identification and recommendation development.

6.2.1 Data Gathering

The original JLUS specifications called for a paper survey to be used to gather data on potential incompatible land use threats within the study area. However, a more precise process of interviews was used to procure this information due to the advantages the interview method of gathering data has over other methodologies. One-on-one interviews provide the advantage of higher quality due to the ability to delve into the “whys” behind participants reactions and that the individual’s ideas are not influenced by others, as occurs in focus groups or through possible “leading questions” in a survey. Interviews offer more quantity of information than other research methodologies and more depth based on the ability to capture interviewees’ exact and complete responses, as well as the ability to ask probing, follow up questions. Given the complexity of the JLUS and gathering information from a large disparate group of individuals and organizations,

interviews were selected as a primary data gathering technique.

6.2.2 Interviews

As noted in Section 6.1, local government officials, State and Federal Agency representatives, and nonprofit and private entities, along with individual landowners and developers, were interviewed to gather insight and data on current, proposed and potential land uses in the study area, along with particular issues of importance to the respondent. More than 80 interviews were conducted, each lasting from 1 – 2 hours.

6.2.3 Survey Data Collection

Surveys are used to gather data from large numbers of individuals and are a cost effective method of gathering the same data from diverse respondents. In this case, a survey was provided to the public on the MRCOG website. The subject population was city, county and state agencies; members of nearby communities and tribal entities; and other stakeholders in the proposed land use area. The intent was to survey as many individuals as possible so that anyone living or working in the region would have the opportunity to participate. The baseline survey instrument included both closed-ended (multiple choice) and open-ended (narrative) questions related specifically to land use or issues associated with safety; the environment; lighting; noise and other important elements related to land use; and transportation and demographics.

Participation in the survey was voluntary, and to the extent possible, the public responses were kept anonymous. The primary researcher determined the voluntary nature of the survey respondents’ participation indicated they gave their consent to participate. There were 1,362 respondents. The survey, results summary and comments on work travel to/from Kirtland AFB; the importance of Kirtland AFB and the Sunport; view of the areas surrounding them; assessment of the effectiveness of associated public transportation; and additional comments on surrounding land uses or the survey overall, are contained in Appendices O – W.

6.2.4 Protection measures

Agency participants can be identified by name. Public participants were kept as confidential as possible. Interview and survey questions were reviewed for content and were deemed non-offensive. Participants were



informed that they could cease participation at any time and for any reason without prejudice.

6.3 Public Participation Meetings

In addition to the JLUS Committee meetings, stakeholder interviews and one-on-one meetings, and the JLUS Survey, six public meetings were held to accept input. The purposes of the meetings were to present an overview of the JLUS Project, information collected, analysis completed, issues identified, recommendations developed and to solicit comments and additional input to refine the JLUS Report. The meetings were scheduled at times and in locations MRCOG considered would best serve the region's residents. Each meeting began with an introduction by a MRCOG representative followed by a presentation (Appendix D), facilitated discussion and time for one-on-one discussions of the JLUS with team members. The locations and target audience of the Public Meetings are below.

Table II – 3: Public Participation Meetings

No.	Location	Target Audience
1	MRCOG Offices	Elected Officials in the MRCOG region and the Advisory and Technical Committees
2	Mountain View Community Center	General Public
3	Pueblo of Isleta	Tribal Officials from all Tribes in the Study Area
4	Manzano Mesa Community Center	General Public
5	Kirtland AFB	Kirtland AFB Community
6	Los Vecinos Community Center	General Public

6.4 Public Outreach Materials

A copy of the presentation used for the Public Participation Meetings is at Appendix D.

7.0 JLUS Review and Adoption

The Draft JLUS Report was reviewed by the Advisory and Technical Committees and revised to incorporate their individual members' and organizational comments. Over 40 sets of comments were received and used in the revision. The final JLUS Report represents the consensus of the Advisory Committee Members that the program goals have been matched to the specific characteristics, requirements and interests of their organizations.

8.0 Implementation

Implementation of the JLUS Recommendations (Part IV) requires a combination of individual and multiple stakeholder actions. The fact stakeholders "adopt" the JLUS does not mean their organizations automatically adopt the recommendations.

The JLUS contains recommendations, based on proven strategies intended to result in compatible land uses that support the overarching interests identified. In the case of this JLUS, there are four overarching interests: (1) Plan Regionally, (2) Sustain Kirtland AFB, (3) Sustain Flying Missions and the Long Term Viability for DoD Aviation Activities and (4) Enable Community Development. Each is discussed in detail in Part III.

Recognizing the varied organizations and interests involved in JLUS implementation, the first three recommendations are ways that stakeholders can organize themselves to efficiently pursue the remaining recommendations. One of these key, first steps is establishment of a "Regional Planning Forum" to facilitate discussions, coordinating actions and addressing unanticipated challenges for the jurisdictions and organizations represented by the stakeholders.

The most successful JLUSs are those where the majority of the stakeholder approved recommendations are subsequently implemented by their organizations. There should be no illusion the process will be easy, but there should be every confidence that compatible development to balance the long-term needs of Kirtland AFB and the Sunport with the region's vision for its future will be worth the effort.





PART III – COMPATIBILITY

Section No.	Section Contents Title	Page No.
1.0	Compatibility Factors	III – 3
2.0	Regional Planning Considerations	III – 4
2.1	Land Use and Growth	III – 5
2.1.1	Community Development	III – 6
2.1.1.1	City of Albuquerque	III – 6
2.1.1.2	Mesa del Sol	III – 6
2.1.1.3	La Semilla	III – 7
2.1.1.4	Valle del Sol	III – 7
2.1.1.5	Land Withdrawals for DoD and DOE Use	III – 7
2.1.1.6	Pueblo of Isleta	III – 7
2.1.2	Community-Installation Partnering	III – 7
2.1.2.1	Sandia Science and Technology Park	III – 8
2.1.2.2	Kirtland Technology Park	III – 8
2.1.3	Alternative Energy Development	III – 8
2.1.4	Environmental Justice	III – 9
3.0	Economic Impact	III – 9
4.0	Transportation Considerations	III – 9
5.0	JLUS Issues & Analysis	III – 10
5.1	Planning Regionally	III – 10
5.1.1	Lack of Formal Collaborative Planning	III – 10
5.1.2	Economic Impact	III – 11
5.1.3	Transportation	III – 11
5.1.4	Air Quality	III – 11
5.1.5	Summary	III – 12
5.2	Sustaining Kirtland AFB	III – 12
5.2.1	Perimeter Boundary Development	III – 13
5.2.2	Southern Entrance to Kirtland AFB	III – 14
5.2.3	Open Space	III – 15
5.2.3.1	Tijeras Arroyo	III – 15
5.2.3.2	Valle del Sol	III – 15

Section No.	Section Contents Title	Page No.
5.2.4	Mesa del Sol Development	III – 16
5.2.4.1	Transportation	III – 16
5.2.4.2	Light Pollution	III – 16
5.2.4.3	Noise Impacts	III – 16
5.2.5	La Semilla	III – 18
5.2.6	Dark Skies Initiative	III – 18
5.2.6.1	Light Encroachment	III – 18
5.2.6.2	Starfire Optical Range	III – 18
5.2.6.3	University of New Mexico Observatory	III – 19
5.2.6.4	Dark Sky Legislation	III – 19
5.2.6.4	Summary	III – 19
5.2.7	Land Withdrawals for DoD and DOE Use	III – 20
5.3	Sustaining Flying Missions and Long-Term Viability for DoD Aviation Activities	III – 21
5.3.1	Flight Safety and Mission Training	III – 21
5.3.1.1	Federal Aviation Administration (FAA) Civil Airport Runway Zones	III – 22
5.3.1.2	Military Runway Safety Zones	III – 22
5.3.2	Low Altitude Tactical Navigation - Helicopters	III – 24
5.3.3	Military Training Routes – MC-130	III – 25
5.3.4	Drop Zones and Landing Zones	III – 26
5.3.5	Night Vision Goggle Training	III – 26
5.3.6	58 th SOW Arrival and Departure Routes	III – 27
5.3.7	New Mexico Air National Guard	III – 28
5.3.8	Development of Wind Farms	III – 28
5.3.8.1	Doppler Shift	III – 28
5.3.8.2	Energy Transmission Lines	III – 28
5.3.8.3	Significance to DoD Aviation Activities	III – 29
5.3.9	Air Quality	III – 29
5.4	Enabling Community Development	III – 30



Section No.	Section Contents Title	Page No.
5.4.1	Noise and Human Health	III – 30
5.4.1.1	Physical Characteristics and Measurement	III – 30
5.4.1.2	Most Common Measure	III – 30
5.4.1.3	Aircraft Noise and Noise Contours	III – 31
5.4.2	Munitions Firing and Explosive Safety	III – 36
5.4.3	Impulse Noise, Chestnut Range Explosives Range and Simulation Site and Small Arms Ranges	III – 37
5.4.3.1	Impulse Noise	III – 37
5.4.3.2	Chestnut Range Explosives Range and Simulation Site	III – 37
5.4.3.3	Small Arms Ranges	III – 38
5.4.4	Unexploded Ordnance on Perimeter of Kirtland AFB	III – 38
5.4.5	Gibson Boulevard Corridor and Gate Area Development Potential	III – 38
5.4.6	Lovlace Respiratory Research Institute and Land Transfers	III – 40
5.4.7	Fuel Leak Plume Remediation	III – 40
5.4.8	Mixed Waste Landfill (MWL)	III – 41
5.4.9	University of New Mexico (UNM) South Campus Student Housing	III – 42
5.4.10	UNM Property in Mesa del Sol Development Area	III – 42
5.4.11	Relocation of UNM Observatory to La Semilla Property	III – 42
6.0	List of Figures	
	III – 1: Encroachment – A Two Way Street	III – 3
	III – 2: Camp Pendleton, CA, Encroachment 1950 – 1990	III – 4
	III – 3: Study Area – Vacant Land Parcels	III – 5
	III – 4: Mesa del Sol and La Semilla	III – 6
	III – 5: South Gate and Context	III – 14
	III – 6: Aircraft Routes – Mesa del Sol	III – 17
	III – 7: Withdrawn Areas	III – 20

Section No.	Section Contents Title	Page No.
	III – 8: Runway Safety Zones	III – 22
	III – 9: Example of Military Training Routes	III – 25
	III – 10: Arrival and Departure Routes	III – 27
	III – 11: Representative Sound Levels and Effect on Human Hearing	III – 31
	III – 12: Noise Footprint	III – 33
	III – 13: Noise Footprint and Existing Land Use	III – 34
	III – 14: Existing Land Use Legend	III – 35
	III – 15: Explosive Noise Radii	III – 36
	III – 16: Explosive Noise	III – 37
	III – 17: Mixed Waste Landfill	III – 41
7.0	List of Tables	
	III – 1: FAA Land Use Noise Matrix	III – 32



The first section of Part III addresses general compatibility considerations for planning associated with Kirtland AFB, the Sunport and within the MRCOG region. The second section identifies four primary JLUS issues and provides analysis of their related factors. Where appropriate, discussion items are followed by a list of recommendations from Part IV intended to address the factors identified. These are listed as "Applicable Recommendation(s)." Where recommendations are considered to be of special relevance, they are in **bold font**.

1.0 Compatibility Factors

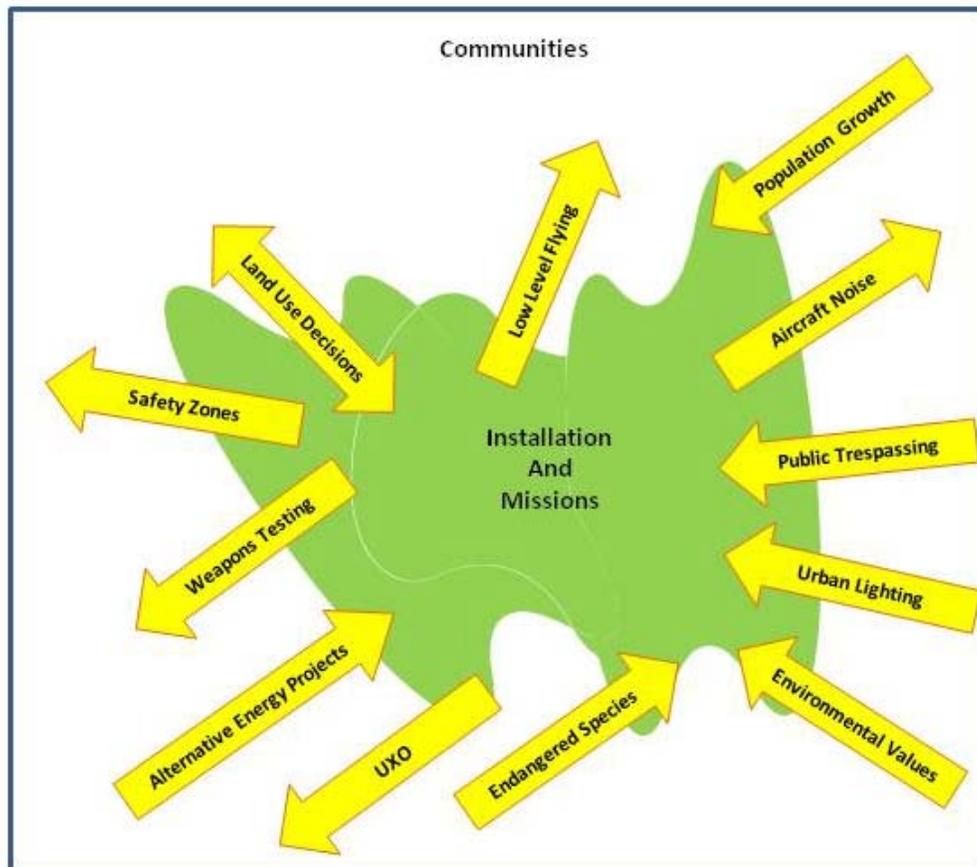
A JLUS strives to identify ways to enable compatibility between military facilities and a community or region's ability to develop. If the objective was simply to protect an installation's ability to operate, the solution to compatibility challenges would be significantly easier- prohibit all civilian development within a set zone around the base. However, balancing the need to prevent encroachment of an installation's missions and, simultaneously, enable the economic and cultural vision of the local region is more

difficult – an "exclusion zone" will not work.

Fundamental to addressing compatibility within the context of balancing needs and interests is the appreciation that encroachment is a two way street. Just as community development can encroach upon an installation, installation missions can encroach upon communities. When an installation performs its missions in other locations – low level flying, insertion or extraction of ground forces, airborne delivery of equipment, etc. – encroachment also becomes an issue for geographically separated communities. Figure III – 1 depicts how some factors can have encroachment implications for either or both an installation and its supporting communities. Since this is the case at Kirtland AFB, issues and recommendations (Part IV) focus on more than just land use authorities adjacent to the installation and Sunport.

Compatibility factors are created by both nature and people. Examples of factors created by nature include water availability and quality, wind and solar resources, threatened and endangered species and minerals or value

Figure III – 1: Encroachment – A Two Way Street





embedded in the ground. The majority of factors derive from peoples' activity and range from the concrete – land use, infrastructure placement, noise, buildings, air quality, safety zones – to the controlling, such as legislative and policy requirements, interagency relationships and processes and values (environmental protection, governments' vs. owners' property rights).

within the five-mile buffer, 92% of this land falls within Bernalillo County. The remainder of land is within the Pueblo of Isleta jurisdiction in Valencia County. Because the overwhelming majority of land in the study area is within Bernalillo County and the City of Albuquerque, it is particularly important that these jurisdictions adopt compatible land use development and zoning policies.

Figure III – 2: Camp Pendleton, CA, Encroachment 1950 – 1990



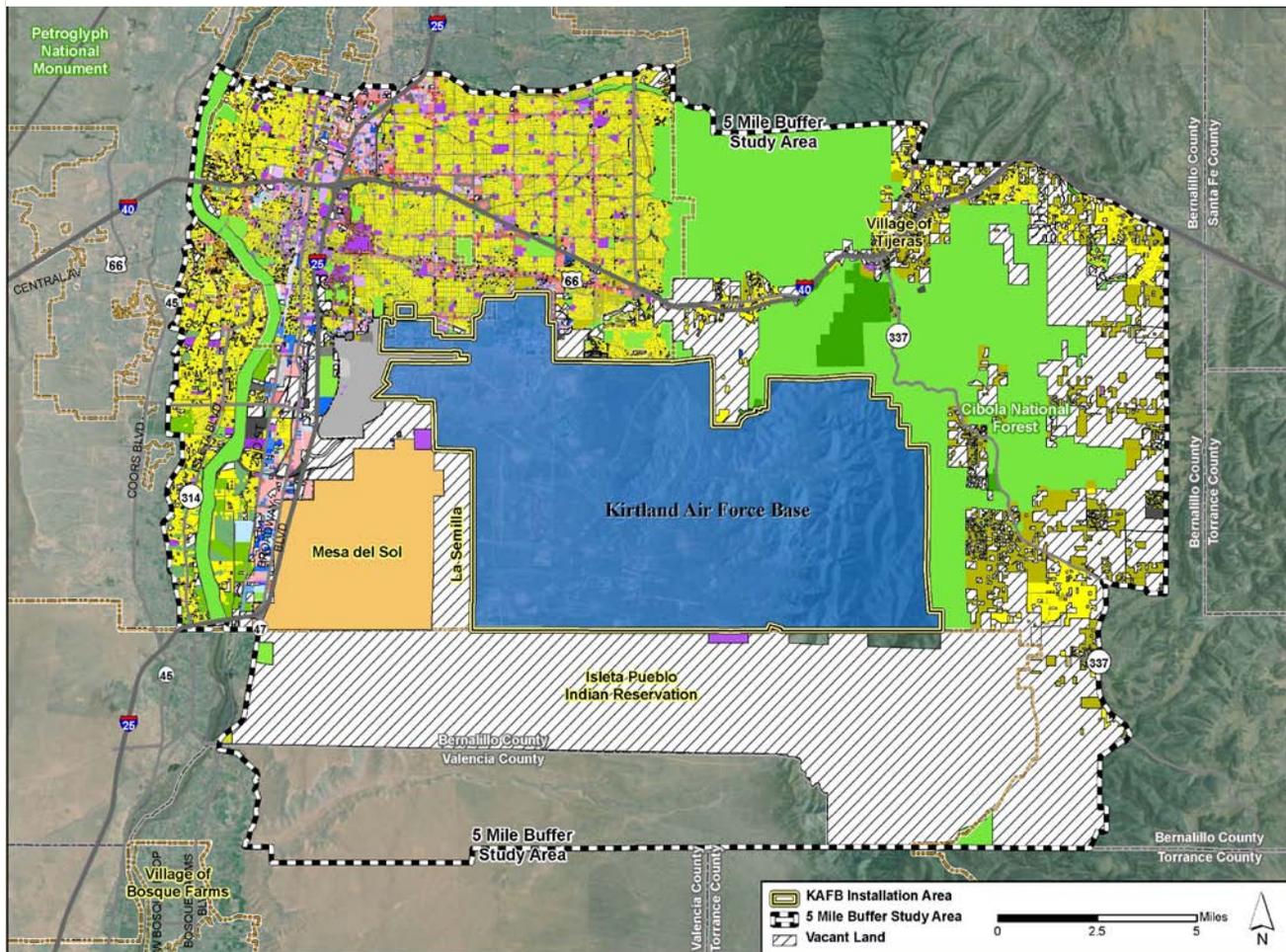
Another significant, encroachment characteristic is that it can occur rapidly – construction of vertical obstructions in low level flying areas such as towers to connect alternative energy projects to the electrical grid, mission changes that increase safety zone requirements – or slowly, such as population growth. Figure III – 2 is an OEA graphic depicting how Camp Pendleton, CA, (center) was slowly encroached over a period of 40 years as the Los Angeles Metropolitan Area grew to the south and the San Diego Metropolitan Area grew to the north. The last 20 years presented continuing encroachment challenges to Camp Pendleton, in large part, because Los Angeles, San Diego and the other municipalities surrounding Camp Pendleton did not act regionally in regard to the installation. Focusing on the potential unintended consequences, not just the outcomes desired, is one of the most effective ways to prevent potential encroachment from becoming reality.

2.0 Regional Planning Considerations

As noted in the foregoing, one of the primary objectives of a JLUS is to promote compatible land use in communities that support military installations. At Kirtland AFB, Albuquerque and Bernalillo County are the immediately adjacent jurisdictions. Of the 272,840-acre study area,

Understanding the land use development patterns within the study area helps agencies identify locations where potential land use conflicts may arise. As seen in Figure III – 3 (a larger version is in Appendix X), much of the land in the JLUS study area is already developed land; land with approved development entitlements; and land with some type of preservation status. Roughly one third of the total non-military land in the study area is developed, with a large majority dedicated to low-density, residential housing. Another third of the non-military land in the study area is part of the U.S. Forest Service's Cibola National Forest, the Rio Grande Valley State Park, and various other smaller parcels of City and County parks and open space. There is also a relatively small amount of agricultural land, which could be preserved as a compatible land use. The final third is undeveloped land. These lands should be particularly targeted to implement compatible use zoning codes and for land preservation strategies associated with Recommendations 15, 16 and 17 (Part IV). The legend for land uses shown in Figure III – 3 are shown in Figure III – 14 (p. III – 34).

Figure III – 3: Study Area – Vacant Land Parcels



The single largest tract of land that is currently undeveloped is within the Pueblo of Isleta reservation. There is a buffer approximately 2.5 miles wide in Bernalillo County, and 2.5 miles wide in Valencia County, that is currently undeveloped. The remainder of the undeveloped land primarily surrounds the Tijeras Arroyo, the East Gateway foothills, and on the east side of the Manzano Mountain Range. These tracts are generally unincorporated lands in Bernalillo County.

Mesa del Sol is the single largest undeveloped tract of land in Albuquerque. This land has been rigorously planned in conjunction with the City and Kirtland AFB and has development entitlement rights. Its planning has been a model for an appropriate coordination process with Kirtland AFB to minimize negative land use impacts on either side of the installation boundary and maximize compatible land uses.

2.1 Land Use and Growth

MRCOG projects that by 2030 the Albuquerque Metropolitan Area will grow significantly in housing, population, and jobs. The large number of new households and the economic activity that will support them will translate into demand for more neighborhoods, businesses and construction. Given existing local government policies on more efficient development, much of the new growth is likely to occur at higher intensities than past growth.

This pending community development can create land use issues and opportunities that will need to respond to the broad objective of preserving the viability of Kirtland AFB and Support missions and operations. Responsible land use and design policies will be extremely important to the safety and quality of life in local communities and will also contribute essential support to continuation of Kirtland AFB





as a major national defense installation and economic contributor to the region and the State.

Conflicts caused by some compatible land uses allowed in areas of low aircraft flyovers and noise potential, by excessively tall structures in flight paths, and by buildings and parking facilities with excessive lighting in areas where Base operations require dark skies can all be avoided by ongoing collaborative planning and decision making in community development.

2.1.1 Community Development

As discussed in the foregoing, population growth and community development present significant encroachment pressures that must be addressed by local development planning and decision making. General, regional growth and specific planned or potential growth in designated areas are important planning considerations for Kirtland AFB and the Sunport. These issues are discussed in this section, along with an important area set aside to provide a buffer to Base missions.

2.1.1.1 City of Albuquerque

From a population in 1890 of 3,785, the City has grown to 525,000 and become one of the country's fastest growing communities. Albuquerque is the largest city in New Mexico and the larger metropolitan area is home to approximately one-half of the State's population. When combined with other region residents, the City is part of the 59th largest metropolitan area in the United States.

In 2008, Forbes Magazine ranked the City as the 13th best city in America for business and careers. Additionally, the City and region offer a very high quality of life and significant opportunities for educational advancement, cultural enjoyment, personal development and recreation. Albuquerque is a leader in high technology businesses and known for being on the leading edge of America's Green Revolution. These attributes will continue to attract people needing homes and business leaders needing skilled workers. As seen in Figure III – 3, Albuquerque and Bernalillo County have significant land that can help the region satisfy those demands. Additionally, both jurisdictions have a substantial amount of underutilized properties with redevelopment potential. The Southeast Heights in particular has a large proportion of these properties, many of which are within or near the Gibson

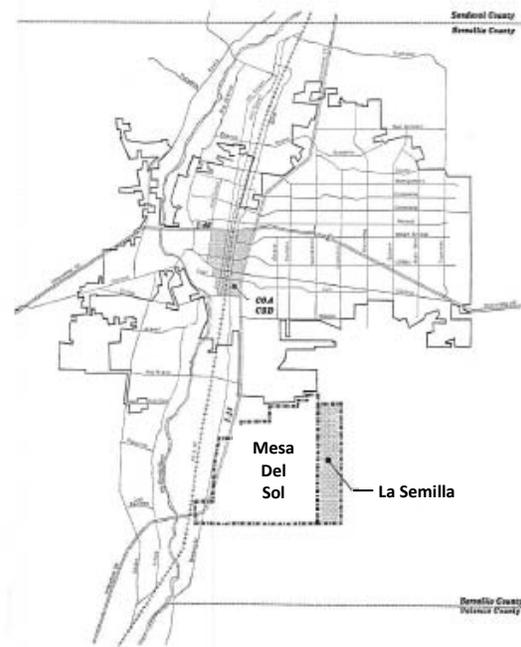
Boulevard Corridor. City of Albuquerque planning initiatives aim to promote both residential and commercial redevelopment in an effort to forestall the spread of blight from closed and declining businesses and apartment complexes. Similarly, Bernalillo County has carried out planning projects designed to redevelop and diversify long-standing, but low quality, industrial areas of the South Valley between I-25 and the Rio Grande.

The possible implications for the Base and Sunport from development of raw land and redevelopment of existing properties are important planning considerations.

2.1.1.2 Mesa del Sol

Mesa del Sol (Figure III – 4¹) is a 12,000-acre planned community, with an approved Level A Master Plan that

Figure III – 4: Mesa del Sol and La Semilla



includes long-term, mixed-use community development. Its size and proximity to the Base and Sunport may present land use compatibility challenges as it is developed. Significant effort and resources have been invested by the developer, City of Albuquerque and Kirtland AFB to ensure anticipated impacts are identified and processes designed to prevent encroachment issues. The overall approach

¹ La Semilla Master Plan





taken to consider and approve Mesa del Sol's development plans and implementation processes could be a model for future development planning.

Given Mesa del Sol's development occurring over several years, possibly decades, near a military installation hosting a large number of missions – and having the capacity to host many more – and close to a major metropolitan airport, there may be unanticipated land use challenges. These challenges could be related to transportation or light pollution encroachment, for example, on Base missions or aircraft noise from overflight of Mesa del Sol property encroaching upon its residents. Therefore, Mesa del Sol constitutes an important planning consideration and is discussed in greater detail in Section 5, *JLUS Issues and Analysis*.

2.1.1.3 La Semilla

La Semilla (Figure III - 4) is located along the eastern edge of Mesa del Sol, and designed to serve as a buffer to the military and research activities that take place on Kirtland AFB. It is composed of approximately 2,700 acres of land held in trust by the New Mexico State Land Office on a 100-year lease to DOE. The La Semilla Master Plan was developed in coordination with Kirtland AFB and DOE to ensure future, compatible land uses.

Any development within the La Semilla buffer or modification to the currently agreed-to use could present encroachment issues on the installation impacting both DoD operations and DOE missions, testing, evaluation and experimentation. Continuation of the La Semilla buffer is an important planning consideration.

2.1.1.4 Valle del Sol

Valle del Sol is a 540-acre property partially within the 65 dB noise contour and CZ and APZ 1 of Runway 03. Valle del Sol has been proposed as a planned community with a mix of residential, commercial, industrial and open space land uses. The Horne Family has tried for years to develop some portion of Valle del Sol, and both the City of Albuquerque and Mesa del Sol have attempted on several occasions to acquire the property. A development permit was denied – as recently as April 2010 – and the owner's intent to continue property development is unknown. The property's proximity to the runway and location within the 65 dB noise contour means development would encroach

on Sunport operations and could threaten the long-term viability of the airdrome to support military aviation missions. Valle del Sol land use is an important planning consideration.

2.1.1.5 Land Withdrawals for DoD and DOE Use

Approximately 20,000 acres of the Cibola National Forest, on the east side of Kirtland AFB, is part of a 1943 "Military Withdrawal" of public lands for the purpose of conducting World War II (WW II) training exercises. The withdrawn land is currently used by DoD and DOE for training and research and development activities. Public use of the land is prohibited; however, unauthorized use of the trails in the withdrawal lands occurs regularly. While there is some disagreement about primary jurisdiction between DoD and the U.S. Forest Service, the JLUS planning consideration is that these 20,000 acres are currently being used to satisfy mission requirements for units on Kirtland AFB. Therefore, land use planning should consider how possible actions could adversely impact the ability of this land to support the Base and its associate units' mission requirements.

2.1.1.6 Pueblo of Isleta

The territory of the Pueblo of Isleta jurisdiction is located in Bernalillo and Valencia Counties immediately south of Kirtland AFB and is comprised of approximately 188,000 acres (Figure III – 3). The Federal government has a unique relationship with Native American tribes derived from the Constitution of the United States, treaties, Supreme Court doctrine, Federal statutes, and Executive Orders. The right of self-governance creates a special relationship between the Pueblo and Kirtland AFB that requires government-to-government consultation and coordination of actions. Land use policy and practices that can be directed to, or by, State, county or municipal entities must be negotiated and formally adopted by the Pueblo's Legislative Branch. The role of the Pueblo's Tribal Planner is essential to a successful JLUS. Close coordination between the Base and the Pueblo is essential to long-term sustainment of Base missions.

2.1.2 Community-Installation Partnering

Partnerships between Federal activities and supporting communities continue to grow. The types of partnerships also continue to increase as community and installation



leaders find new ways to balance growth and mission requirements. Kirtland AFB has two important partnering initiatives and is considering use of Enhanced Use Lease (EUL) authority to allow development of solar energy farms on the installation. Partnering in development of alternative energy sources would support the Base by potentially reducing operating costs and enhancing energy independence. The two existing private developer initiatives are both technology parks with land use implications, but sufficiently different to warrant separate discussion.

2.1.2.1 Sandia Science and Technology Park

The Sandia Science and Technology Park ("Park") is located on approximately 200 master planned acres adjacent to Kirtland AFB, just east of the Eubank Gate. It is affiliated with the Sandia National Laboratories and enjoys partnerships with a large number of States, county and city governments and organizations and private sector companies. It has grown since the first phase of development, and there is every indication that growth will continue. The Park represents both compatible land use on the perimeter of the Base and the ability to leverage that land use to support the mission needs of programs on Kirtland AFB. Land use planners and economic developers should work together to ensure the Park is integrated into their regional strategies.

2.1.2.2 Kirtland Technology Park and Other Enhanced Use Leases (EULs)

Using the Air Force's first EUL authority, a 92-acre, mixed use complex along the northern boundary of the western part of Base is envisioned as a Kirtland Technology Park (KTP) using a 50-year lease. EUL authority permits the Air Force to turn a liability – underutilized property (land currently not needed, but that might be in the future) – into an asset. Similar to the Sandia Science and Technology Park, the KTP will be master planned with the goal of supporting businesses and activities that leverage Base missions. Through June 2010, no lease has been signed.

Two additional EULs within the perimeter of the Base are currently under consideration. These two areas have been identified as potential sites for solar farms that could produce electrical power for the installation. Again, through June 2010, no lease has been signed.

2.1.3 Alternative Energy Development

The national interest and pursuit of renewable energy sources has generated significant industry attention in New Mexico and will impact the State to a much greater degree in the future. Existing energy companies, relatively new companies, entrepreneurs, ranchers and many private citizens will be attracted to the 21st Century version of oil exploration and exploitation. This business area is expected to grow significantly over the next several decades.

Renewable energy generation and operations will impact the MRCOG region and the missions of some units at Kirtland AFB, especially flying units conducting operational and training missions. In general, most non-flying units and Base missions will benefit if energy produced can partially offset current power requirements and lower the energy costs. However, in the case of flying units, the characteristics of the renewable energy hardware can present special challenges and create obstacles that represent safety of flight concerns.

New Mexico is exceptionally well suited to capture sun and wind energy. Given the size and central location of the MRCOG region, it will be involved in these initiatives, such as the current planned wind farm activity in Torrance County. The northern portion of Socorro County, within the JLUS Study Area but outside the MRCOG sphere of influence, anticipates the construction of transmission lines to tie new energy sources in the eastern part of the State, and perhaps the County, into the power grid. Energy transmission lines, wind turbines and solar arrays present the possibility of incompatible land uses based on location.

As alternative energy efforts continue throughout the region, it is essential the dangers to flight safety – life and aircraft – presented by these projects are carefully considered. Given the nature of flying training completed by the 58th SOW, the heights of transmission lines tying new power sources to the electrical grid, supporting towers and wind turbines present obstacles at the altitudes flown on many missions. The rotating blades of the wind turbines can cause a problem referred to as "doppler shift." Under night, low-level flight conditions, aircrews are totally dependent on radar, and doppler shift can cause inaccurate and unreliable information to be displayed on aircraft instrument panels. Moreover, these obstacles are difficult to see at night or in marginal weather, conditions for many military training flights. Even during seemingly





innocuous flight on cloudless days, the sun's reflection from untreated solar panels may cause a significant, momentary drop in a pilot's visual acuity during a critical flight phase.

2.1.4 Environmental Justice

According to the U.S. EPA, environmental justice is:

"... the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies... It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work."²

Government projects are required to analyze if there are disproportionate impacts on particular groups. This is accomplished by analyzing potential effects on social and economic conditions, including loss of community cohesion, accessibility to community facilities or services, availability of multimodal transportation services, compatibility with planned land use, increased traffic noise, displacement of people or businesses, and other factors that affect employment and economic development.

One of the purposes of a JLUS is to reduce existing and potential land use conflicts. As such, a primary goal of the plan is to reduce potential negative impacts that may arise due to the close proximity of Kirtland AFB and adjacent communities. Reduction of negative impacts is applicable regardless of the socio-economic status of adjacent residents. The JLUS planning process included a diligent effort to reach out and involve people in a variety of neighborhoods, each with different socio-economic profiles.

The planning team determined that the issues and concerns that arose during this planning process were not disproportionately targeted at any particular group. Many of the community concerns, including noise, transportation, Base access, pollution and hazardous waste management impact the community at large. The presence of a greater number of minority and economically disadvantaged residents adjacent to the Sunport and Kirtland AFB may be indirectly attributable to the fact that these locations have a

² <http://www.epa.gov/environmentaljustice/>

greater exposure to aviation noise. However, there is no direct correlation between these two phenomena. Regional leaders should consider implications on environmental justice as JLUS recommendations are implemented and future development is pursued.

3.0 Economic Impact

When the impacts from employment and spending at Kirtland AFB and the Sunport are summed, the total impact on the MRCOG region represents 11.2% of all regional employment, or one in every nine regional jobs. Income from Kirtland AFB and the Sunport, added together, represents 17.5% of all earned income in the MRCOG region, or one in every five to six dollars in regional wages or salaries. In total industrial output, Kirtland AFB and the Sunport together account for 12.8% of all industrial activity, or about one in every eight dollars of regional output value.

There are no known institutions or employers in the region that could replace the beneficial economic impacts if Kirtland AFB were to close or experience cutbacks. Because of this circumstance, land use planning that sustains the Base's current missions and preserves the viability for new missions in the future – both aviation and non-aviation related -- is an important regional planning consideration. The economic impact of Kirtland AFB and the Sunport is presented in more detail in Part V and Appendix B.

4.0 Transportation Considerations

With a large, installation-airport complex in the middle of the MRCOG region, the transportation system to, from and around the Base and Sunport – and its efficiency – is a critical component of compatible land use planning.

The transportation system must support up to 20,000 employees, contractors and suppliers accessing Kirtland AFB, SNL, and associated organizations every day. In addition, approximately 18,000 airline passengers arrive and depart from the Sunport daily. These passengers contribute significant vehicle traffic into the ground transportation system.

Regional planning must not only consider the practical issues of how to effectively move traffic, it must also result in responsible environmental stewardship from both quality of life and mission viability perspectives. Transportation systems have a direct impact on air quality, and air quality





has a direct impact on the region's attractiveness for new national security missions. Air Force testimony to the Congress includes statements that the Service actively resists efforts to increase existing mission activities or site new missions in areas of air quality non-attainment. Therefore, land use decisions and the impact those uses can have on the region's air quality should be considered an integral part of compatible land use planning.

Transportation considerations and the transportation system are discussed in more detail in Part VI and Appendix C.

5.0 JLUS Issues & Analysis

5.1 Planning Regionally

The investigation of land use planning and subsequent development adjacent to and around Kirtland AFB and the Sunport indicated few significant problems for the Base and its associates' missions or the conduct of commercial and military aviation operations. However, the lack of significant issues can be attributed more to the historic "spirit of cooperation" in the region rather than a robust, coordinated, collaborative land use planning process.

5.1.1 Lack of Formal Collaborative Planning

There is no designated, regional planning organization with land use authority. It is dispersed over a number of local land use jurisdictions. MRCOG serves as an agency to discuss regional planning issues, but has no authority over the land use planning jurisdictions.

Recognizing there was no formal land use planning input authority for military installations in New Mexico, New Mexico's Governor, Bill Richardson, issued *Executive Order Number 2004-046* in August 2004 that was intended to ensure local, compatible development with New Mexico's military installations. The Order's language clearly addressed the need for availability of unencroached military mission performance that was evaluated during the 2005 Base Realignment and Closure (BRAC) process, a near-term, completed objective. The Order states:

"I ... do hereby direct all appropriate and relevant State agencies, which are involved with land-use planning to ensure compatible development with New Mexico's military installations. Further, I recommend that all political subdivisions and municipalities that adopt land-use plans and

enforce zoning regulations ensure that planned development is compatible with military installations, and that they consider the impact of new growth on "Military Value" when preparing zoning ordinances or designating land uses for land adjacent to military facilities or other parcels of land which are in proximity to military installations."

Numerous other states have enacted various statutes and Executive Orders to allow for military cooperation in land use planning and zoning in close proximity to military installations and training areas. However, most of these states enacted statutes that are still in effect and will be in existence long after departure of the administrations that implemented them. These statutes recognize the long-term nature of planning and zoning decisions and their impacts on military mission performance. While it is not clear if the August 2004 New Mexico Executive Order will have a long-term impact, the purpose and language are clear that military installation mission needs should be considered in land use planning and zoning decisions in New Mexico. The Order's intent and purpose should be continued to preserve the viability of the long-term military mission needs for Kirtland AFB organizations.

Over the years – and without benefit of Governor Richardson's Executive Order – numerous, local land use and governmental jurisdictions and concerned citizen groups considered the implications of their actions on the viability of Kirtland AFB and Sunport activities. However, the considerations of Kirtland AFB's and the Sunport's viability did not result from a regional, institutionalized process. As a result, Kirtland AFB and the Sunport benefit today from a relative lack of mission encroachment because of the collegial nature and foresight of regional government officials and concerned citizens through the years. With the exception of Sunport Runway 17/35, existing land use conditions minimize encroachment and avoid serious or insurmountable problems. After the planned decertification and closure of Runway 17/35, existing, serious encroachment issues off the ends of the runway will be mitigated with no adverse impacts on Base or Sunport operations. Environmental decision making considerations for the closure of Runway 17/35 are underway.

MRCOG's initiative to support a regionally-focused JLUS – and its activity over the last eighteen months – highlighted



the fortuitous circumstances created by past, informal cooperation amongst land use jurisdictions. This insight and analysis of developmental trends made key elected and appointed officials, supervisors, individuals, organizations and agencies of the many regional jurisdictions mindful of the need to adopt a formal process. Individually and collectively, the stakeholders involved in the JLUS process appear to appreciate the imperative of close, collaborative planning to avoid future Kirtland AFB and Sunport mission encroachment issues. The JLUS contains several recommendations to institutionalize land use planning cooperation and collaboration at the regional level to ensure Kirtland AFB's and the Sunport's important national security and domestic missions and the region can continue to develop.

Applicable Recommendation(s): 1, 2, 3, 4, 6, 9, 21, 22, 23

5.1.2 Economic Impact

Discussed in more detail in Part V and Appendix B, the economic contributions of Kirtland AFB and Sunport operations to the region are significant. The significance of these employment and economic inputs into the local economy indicates the need for consideration of the consequences of policy and land use decisions affecting Kirtland AFB and the Sunport by all regional land use jurisdictions in planning and decision making processes. The potential for a land use jurisdiction to independently make a decision that adversely affects the Kirtland AFB and Sunport missions and another part of the region's economy indicates the need for these types of decisions to be discussed and deliberated in a regional forum to determine if there are feasible alternatives available within or between land use jurisdictions. While not having land use authority, such a forum is essential to help identify and enable regional planning strategies needed to sustain the Base and Sunport's existing and potential activities.

Applicable Recommendation(s): 3, 6, 21, 23, 32

5.1.3 Transportation

The transportation system discussed in Part VI and Appendix C assesses the region's ground transportation conditions associated with Kirtland AFB and the Sunport and provides a general overview of the transportation-related context of the study area. The efficiency of the ground transportation system as it affects Kirtland AFB and

the Sunport is critical to assessing current and future land uses in the region.

MRCOG is designated as the regional Metropolitan Planning Organization (MPO) by the Federal and New Mexico governments. It is charged with meeting federal requirements for multi-jurisdictional planning and programming of transportation projects. These ongoing planning processes have broad-based participation, and the plans provide a methodical process for transportation investments and improvements.

Through MRCOG's role to "coordinate with Federal, State, and local transportation planning organizations to develop the Unified Planning Work Program," the agency provides a recognized, regional forum to discuss, deliberate and plan solutions when local land use planning alternatives generate transportation issues that affect Kirtland AFB and the Sunport.

Ground transportation is a major, regional concern that must support both the economic life and quality of the human environment for the region. These realities and the fact that infrastructure has a direct impact on real and expected land uses, regional transportation planning is critical to sound regional land use planning.

Applicable Recommendation(s): 3, 6, 21, 23

5.1.4 Air Quality

Local air quality is an issue that is monitored and response developed on a regional basis. The Clean Air Act of 1963 (amended in 1970 and 1990) is federal legislation developed to reduce air pollution and to protect public health and the environment. The U.S. Environmental Protection Agency (EPA) implements Clean Air Act provisions and is responsible for setting National Ambient Air Quality Standards (NAAQS) to enforce the Act. The primary strategies the EPA uses to improve air quality are reducing outdoor concentrations of air pollutants, reducing emissions of toxic air pollutants, and phasing out use of chemicals that destroy the earth's ozone layer.

The Air Force is sensitive to air quality issues and routinely evaluates the impacts of current or potential, future missions on a region's air quality. Air Force installations, since they possess regional infrastructure and their operations contribute to regional air quality, must comply with and support regional air quality plans. This





establishes a direct connection between regional compliance with Clean Air Act provisions and the ability of Kirtland AFB to perform – and possibly retain – current missions and attract new ones. As noted earlier, the Air Force resists efforts to increase existing mission activities or avoids locating new missions in non-attainment areas.

On January 19, 2010, the EPA proposed to change the national primary and secondary ambient air quality standards for ozone from the current limit of 0.075 parts per million (ppm) to a lower primary standard range of 0.060 to 0.070 ppm, and a weighted secondary standard of 7-15 ppm-hours. Adoption of these more stringent standards could result in one or more counties in the JLUS study area entering a non-attainment status. In the years 2006 to 2008, Bernalillo County is reported to have exceeded the 0.070 ppm ozone level, and Sandoval County exceeded the 0.065 ppm ozone level. EPA has projected that by 2020, Bernalillo, Sandoval, and Valencia Counties will violate a primary 8-hr ozone standard of 0.060 ppm; that Bernalillo County will violate a secondary standard of 15 ppm-hrs and Sandoval County will violate a 7 ppm-hr secondary standard.

The proposed changes by EPA provide added incentive for the region to reduce current levels of ozone emissions. The primary sources of ozone pollution are fixed infrastructure resulting from land use planning and zoning decisions and “mobile sources,” primarily motorized vehicles. The best way to reduce the contribution to air pollution from vehicles is to use less carbon-derived fuels and reduce dependence on vehicles, especially the single-occupancy vehicle. Reducing vehicle miles driven can be accomplished in a number of ways by commuters through ride-sharing, trip chaining, using public transit, and telecommuting. These strategies with possible value to the MRCOG region are discussed in greater detail in Part VI.

Regional air quality is directly linked to, and an inherent byproduct of, the results of land use planning and zoning decisions, as well as transportation system planning and implementation.

Applicable Recommendation(s): 3, 4, 6, 9, 21, 22, 23, 24

5.1.5 Summary

Land use planning and zoning decisions made by the region's jurisdictions directly affect the region's economy, transportation system planning and implementation, and

the region's air quality and compliance with national standards. Transportation system planning and implementation and air quality are monitored and planned on a regional basis, but land use planning is individually managed by local jurisdictions. The need for consideration of land use planning and zoning decisions that have regional impacts is clear. A regional forum is needed to enable discussion of these issues and those described in New Mexico Executive Order Number 2004-046 that potentially affect Kirtland AFB operations. To ensure long-term relevance, the intent and purpose of the Executive Order might follow the lead of numerous other states through State-wide legislation.

5.2 Sustaining Kirtland AFB

This section focuses primarily on non-aviation-related considerations associated with ensuring Kirtland AFB units retain their ability to accomplish existing activities and the installation remains attractive for new missions. As noted in the foregoing, the Base has a broad range of mission types, both aviation and non-aviation related. The sustainment of aviation-related missions is addressed in Section 5.3. Based on clearly articulated Air Force preferences and underscored by over 15 years of base infrastructure analysis and decisions, the military value of the Base is enhanced by having both aviation and non-aviation missions; activities directly supporting national security strategy; unique research and development programs; training of high-value, low-density combat forces; and a host of other characteristics that make Kirtland AFB a special installation for Federal Agencies, not just the Air Force.

Kirtland AFB is home to over 100 agencies and organizations, and it is also the sixth largest Air Force base. The Base still has excess capacity to support additional mission growth. In September 2010, 65 new manpower positions will be added and apportioned between the security forces and several of its more than 100 organizations. There could also be continued growth in organizations such as the Air Force Nuclear Weapons Center and Air Force Research Laboratory – organizations receiving increased visibility and priority by the Air Force. Significantly, the 2005 BRAC process added hundreds of personnel and new activities to the Base in recognition of its ability to support additional missions. As encroachment issues at other installations adversely impact their capabilities, it is likely DoD will continue to move missions





into the “relatively wide-open” Southwest area – Kirtland AFB is well positioned to support that growth.

5.2.1 Perimeter Boundary Development

Development along the perimeter boundary of Kirtland AFB and the Sunport is an important consideration based on the current and future potential for various types of mission encroachment. In general, the majority of Kirtland AFB’s boundary is undeveloped land while the majority of the Sunport’s boundary is occupied by Kirtland AFB and developed lands.

The Sunport is adjacent to and west of Kirtland AFB. It is within the City of Albuquerque and shares its northern border with the City’s Southeast Heights. There is significant commercial activity to the west of the Sunport, much of it related to airport operations and other commercial users, such as general aviation, airfreight, Federal Express, United Parcel Service, car rental businesses, parking facilities, etc. The University of New Mexico (UNM) golf course and the significant change in airfield elevation immediately to the west of the primary runway present obstacles to most development types.

To the south of the Sunport is Valle del Sol’s 540-acre parcel. This property is bisected east-west by Tijeras Arroyo as well as a Federally owned railroad right-of-way. University Boulevard traverses north-south through the parcel and is the primary access road for the area. Valle del Sol’s location and potential development scenarios, if pursued, would pose a major land use compatibility issue for the Sunport and military aviation uses. Both the City of Albuquerque and the Mesa del Sol development have attempted on several occasions to acquire the property. In April 2010, the latest development proposal to the Bernalillo County Planning Commission was denied.

South of the Sunport and on the western boundary of Kirtland AFB, the La Semilla buffer, wildlife habitat, is composed of approximately 2,700 acres of land held in trust by the New Mexico State land Office. The land forms a buffer between Kirtland AFB and the Mesa del Sol development. The La Semilla Master plan was developed in coordination with Kirtland AFB and DOE to ensure future compatible land uses in the buffer area.

The northern border of Kirtland AFB and the Sunport is shared with the Southeast Heights of Albuquerque that is nearly fully built-out. There are portions of land along western Gibson Boulevard that are still undeveloped, as well as land in the eastern Albuquerque foothills. The

Gibson Boulevard corridor has significant potential for redevelopment. Along the northern border, the SSTOP is developing for commercial, institutional, and office space users. Lands east of the SSTOP are developing residential and recreational uses that are addressed in the East Gateway Sector Development Plan, 2010.

The Cibola National Forest is east of Kirtland AFB. A portion, approximately 20,000 acres, of this land was withdrawn from public use in 1943 for military training purposes. Because this entire area is Federal land with mountainous land forms, development potential of the area east of Kirtland AFB is limited.

The southern border of Kirtland AFB is contiguous with the Pueblo of Isleta Reservation. There are rural roads south of Kirtland AFB on the Pueblo of Isleta across the mesa between the Manzano Mountains and the Rio Grande Valley. This portion of the Pueblo of Isleta is primarily used for livestock grazing. Currently, development on the Pueblo of Isleta is concentrated along the Rio Grande Valley. During stakeholder discussions, a representative of the Pueblo of Isleta indicated that they have a good relationship with Kirtland AFB and they understand each other’s interests.

The rural nature and buffered areas along most of Kirtland AFB’s perimeter boundary currently protects the Base from various forms of encroachment. A large part of the Sunport’s perimeter boundary has urban development that currently has significant incompatible development, primarily at the northern end of Runway 17/35. These are noted, but of limited concern, as the environmental decision-making process for closure of Runway 17/35 has begun. When Runway 17/35 is closed, the developments will no longer present a land use compatibility issue.

Minor perimeter boundary issues for Kirtland AFB focus on the Air Force relinquishing ownership of small portions of the Base property. Examples of these issues include consideration by the Air Force to lease property immediately north of Gibson Boulevard and east of Louisiana Boulevard to the City of Albuquerque and efforts in-progress to transfer property near the southern Base boundary to the Lovelace Respiratory Research Institute. There is also a minor boundary dispute between the Hinkle family and the Air Force along the northern boundary, just east of Albuquerque. These issues are noted in the JLUS because they were identified by stakeholders or respondents to the JLUS Public Survey; however, neither the issues, nor their potential resolutions, affect or influence JLUS recommendations.



Applicable Recommendation(s): 3, 4, 6, 9, 10, 14, 18, 21, 22, 23, 29

5.2.2 Southern Entrance to Kirtland AFB

Figure III – 5 shows a southern entrance to Kirtland AFB; however, it is not available for general use by the civilian or military workforce at the Base. The installation opens this gate (“South Gate”) on a limited basis to alleviate some of the congestion on I-25 and Gibson Boulevard during morning and evening rush hour traffic. The JLUS Survey indicated significant community interest in improving access to the Base from the south. Kirtland AFB workers

significant number of commuters – and future commuters based on development plans – south and west of the installation.

Due to operational impact, security, safety and cost issues associated with existing Kirtland AFB missions, there is no current plan, nor anticipated opportunity, to increase the capacity or change the status of the South Gate in the foreseeable future.

There could be an opportunity for enhanced southern access in the long-term, but any possibility of providing a southern entrance hinges on unforeseen mission changes

Figure III - 5: South Gate and Context



who live south and west of the Rio Bravo Boulevard and I-25 intersection in Albuquerque would like the South Gate opened and the necessary road improvements made to support its regular use. This sentiment is also shared by elected officials and County Commissioners representing the southern part of Bernalillo County and Valencia County, as well as Pueblo of Isleta officials who desire unencumbered southern access to the Base. The South Gate could also provide access to and from Mesa del Sol and other, future developments to the south. The five major Kirtland AFB access gates on the north and east sides of the Base are adequate to accommodate commuters; however, they do not efficiently serve a

for the Base that would eliminate adverse impacts on its missions and allow mitigating the existing safety and security issues. This issue is also addressed in Part VI and Appendix C. Until such significant mission changes occur, regional officials should not allow unrealistic expectations of a southern entrance to the Base to grow to the extent that political pressure can jeopardize current and potential future missions.

Applicable Recommendation(s): 3, 4, 6, 12





5.2.3. Open Space

5.2.3.1 Tijeras Arroyo

Tijeras Arroyo is the largest drainage way in the Albuquerque area, draining water from Tijeras Canyon to the Rio Grande. The Arroyo is a broad and meandering channel that is deeply incised in places. Near the confluence of the Arroyo and the Rio Grande, the natural channel has been lined with concrete to facilitate water flows. The concrete channel also carries storm water from southeastern Albuquerque to the Rio Grande, roughly between I-25 and the river itself.

The issues identified relating to Tijeras Arroyo and the JLUS are associated with the preservation of natural habitat along the channel and its function as a wildlife corridor; Base security at the boundary between the Arroyo and Kirtland AFB; and its recreation function as public open space. In the JLUS Public Survey, numerous community members commented on their desire to maintain the existing open space along Tijeras Arroyo for recreational use, especially for off-highway vehicles (OHV) that are currently restricted to Montessa Park. There is historic use of the Arroyo for illegal dumping, as well as an authorized mixed waste landfill. There is concern about future dumping and a desire for regular monitoring of the area to manage this issue.

The City of Albuquerque's Open Space Department is currently working on its Resource Management Plan for the Tijeras Arroyo Biological Zone. The purpose of this plan is to protect existing native plants and wildlife and to restore degraded habitat. The Plan addresses the section of the Arroyo between Carnuel and 1-40 west to the eastern boundary of Kirtland AFB. The City is acquiring land in and adjacent to the Arroyo to further protect natural resources.

In 2007, a Memorandum of Understanding was signed between the City of Albuquerque, Kirtland AFB, and the DOE National Nuclear Security Administration to protect and conserve the Tijeras Arroyo as a wildlife corridor. The three parties agreed to a unified land management and wildlife conservation practice in order to: preserve natural habitat, permit free passage of wildlife, and share information and expertise about the wildlife population.

Urbanization of the land adjacent to the Arroyo is a land use concern for Kirtland AFB. In a letter to the Bernalillo County Board of Commissioners regarding an annexation of 200 acres of land east of Kirtland AFB, the 377th ABW

Vice Commander identified several concerns about developing the Arroyo east of the installation. Additional stormwater runoff generated by development could cause downstream problems such as erosion and flooding at Kirtland AFB, I-25 and the South Diversion Channel. Additionally, there are security issues at the Arroyo fence line because of the difficulty of providing access for stormwater and wildlife while still prohibiting people from entering the installation. Increased stormwater flow could exacerbate the problem because a larger opening in the fence would be required for major weather events. Future development east of Kirtland AFB should address the concerns of the installation's leadership to prevent mission encroachment and follow drainage "Best Management Practices" to avoid creating downstream problems.

Applicable Recommendation(s): 3, 6, 9, 18, 21, 22, 23

5.2.3.2 Valle del Sol

As discussed in the foregoing, Valle del Sol is a 540-acre parcel with portions within the 65 dB noise contour and the approach end CZ and APZ 1 for the Sunport Runway 03. In addition to the physical encroachment its development could create, its unstable soil conditions and steep slopes extending to the floodplain could generate additional runoff and cause downstream problems such as erosion and flooding at Kirtland AFB, I-25 and the South Diversion Channel.

Keeping this property as undeveloped land would be consistent with the City and County open space plans, as well as the Draft Tijeras Arroyo Resource Management Plan prepared by the City Open Space Department. Retaining this property as open space would also contribute to sustaining the long-term viability for DoD aviation activities addressed in Section 5.3.

Applicable Recommendation(s): 3, 4, 5, 9, 14, 15, 16, 17, 21, 22, 23





5.2.4. Mesa del Sol Development

Private planners and developers conceptualized the 12,000-acre Mesa del Sol community as a live-work location for sustainable, high-tech industries. The planning for this development has been pursued in a very deliberate manner to minimize potential land use compatibility challenges, particularly those related to transportation, light pollution and noise issues.

5.2.4.1 Transportation

Mesa Del Sol's proximity to Kirtland AFB makes it a desirable location for employees who work at the Base. As discussed in Section 5.2.2, there is interest in direct access to Kirtland AFB; however there is no way to satisfy this interest in the near term. Regional officials should not allow unrealistic expectations of a southern entrance to the Base to grow that might ultimately create political pressure and actions that will encroach on existing activities and potentially threaten the Base's capability to sustain current and attract new missions.

Applicable Recommendation(s): 3, 4, 6, 12, 24

5.2.4.2 Light Pollution

The degradation of ambient light – natural night sky condition – is a major factor in the quality of NVG training essential to the mission readiness of military aircrews at Kirtland AFB. As Mesa del Sol develops, the development could result in brighter area skies. To mitigate this circumstance, Mesa del Sol has attempted to minimize light pollution in the development as much as practicable. For example, up-lighting is prohibited and street lighting has been designed to significantly reduce skyward light emissions. The more detailed plan covering the community's proposed employment center lists twenty-two specific standards and requirements developed with Kirtland AFB for preservation of dark skies. Lighting reduction is only one example of Mesa del Sol's proactive commitment to preserve Kirtland AFB's and the Sunport's mission capabilities. As development progresses, maintenance of the initial agreements will be important to sustaining the Base's missions.

Applicable Recommendation(s): 3, 4, 6, 20, 21, 26, 28

5.2.4.3 Noise Impacts

There are potential noise impacts for residential development at Mesa del Sol created by operations at the Sunport and from Kirtland AFB's Chestnut Range Explosives and Simulation Test Site. On the Mesa del Sol Master Plan, there is one future Village Center, two residential neighborhoods, and an active adult community that are within the Chestnut Noise Contour. Discussed in Section 5.4.3, development within the Chestnut Noise Contour could result in noise – and possibly structural damage – residents might use to criticize the Base if proper disclosures are not included in real estate transactions.

A portion of the Mesa del Sol development is near two Sunport runways; however, this land is designated for parks and open space – a compatible land use – and there are no incompatible structures or developments proposed within these areas.



As shown in Figure III – 6 (a larger version is included in Appendix X), there are several Kirtland AFB military training routes (MTRs) used for flight training that currently traverse Mesa del Sol.

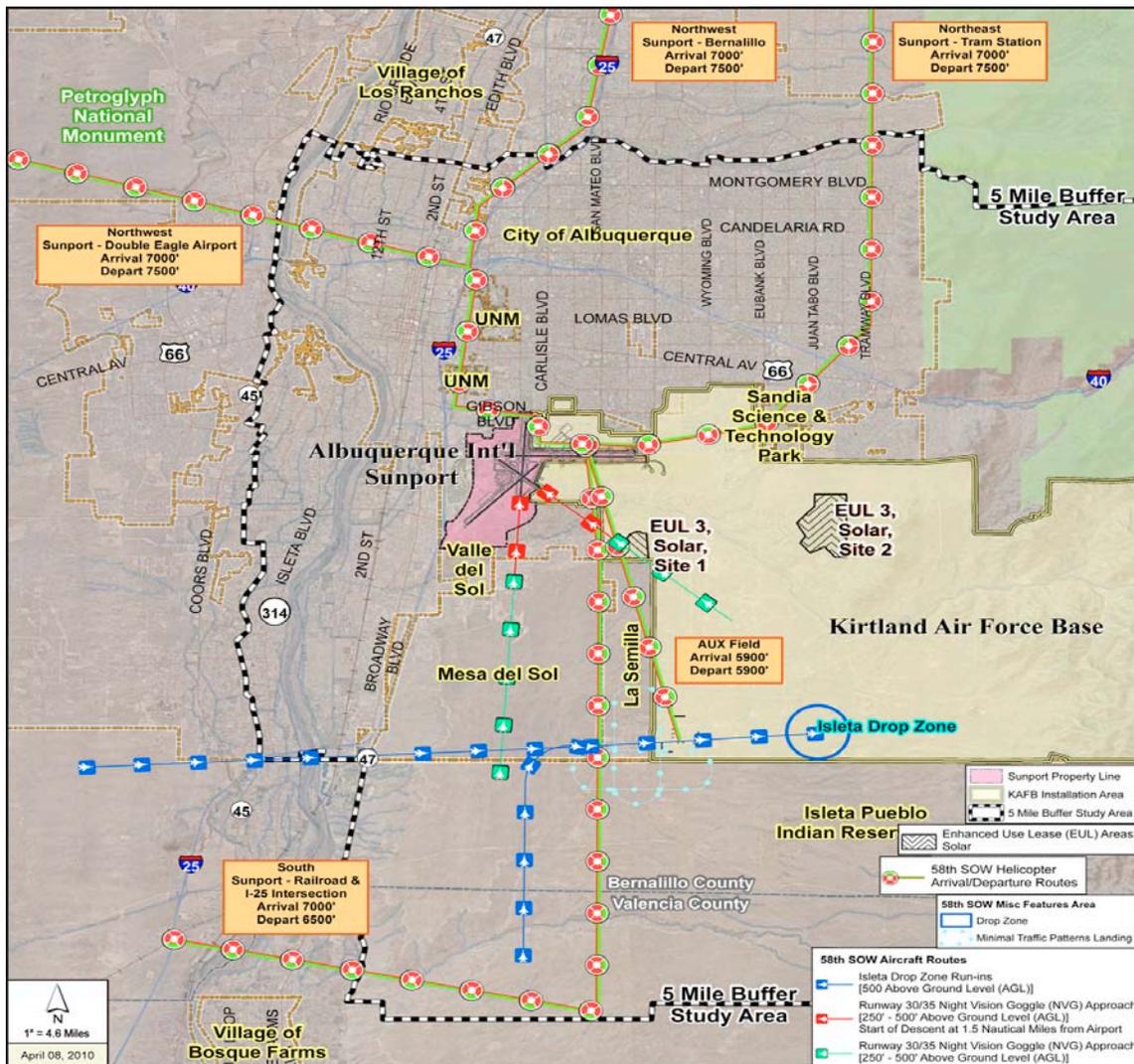
- ✓ There is a MTR that crosses directly through the Mesa del Sol development area, north to south.
- ✓ The approach path to Runway 35 also crosses through the center of Mesa del Sol, going from the south to the north. The 58th SOW performs NVG Landing Training on Runway 35 with flight routes that are between 250 to 500 feet above ground level.
- ✓ The Pueblo of Isleta Drop Zone flight path crosses the southern portion of the development, land designated

for future residential, commercial, and open space. Drop Zone flights are performed at an elevation of 500 feet above ground level.

- ✓ The 58th SOW Helicopter arrival and departure routes traverse the eastern portion of the development along its border with La Semilla.
- ✓ Not specifically shown, the entire development lies within the five-mile buffer along the flight path where altitudes for C-130 aircraft can be as low as 100 feet.

The Mesa del Sol developer has agreed to encumber the portions of the property with a noise easement and ensure disclosure of its proximity to the Sunport is recorded in real estate documents. This agreement is based on the mutual

Figure III – 6: Aircraft Routes – Mesa del Sol





understanding that the development's proximity to the Base has potential adverse environmental and noise impacts for future land uses. The agreement states that:

"Kirtland AFB generates aircraft, rocket testing and explosives maintenance and testing noise, which noise might change over time by virtue of greater numbers of aircraft, different or new types of aircraft, increased rocket and explosive testing frequency, testing of different or new types of rockets and explosives, seasonal and atmospheric variations, time-of-day or night variations, and/or changes in test equipment, and these changes could result in increased noise exposure, which may adversely impact portions of the Mesa Del Sol Property."

Kirtland AFB and Mesa del Sol agreed to hold bi-annual meetings to discuss the status of the development and issues arising from future development. There have been discussions of possibly shifting flight patterns slightly to the east to reduce the impact on future residential development and shifting the run-in to the Isleta drop zone slightly to the south.

Applicable Recommendation(s): 3, 4, 6, 20, 22, 25, 27,

5.2.5. La Semilla

As noted in Section 2.1.1.3, La Semilla (center left of Figure III - 6) is located along the eastern edge of Mesa del Sol, and designed to serve as a buffer to the military and research activities that take place on Kirtland AFB.

Protection of the agreed-to use of the buffer is essential to not encroaching on the Base's existing missions or limiting future DoD or DOE opportunities.

Applicable Recommendation(s): 3, 4, 6, 22, 29

5.2.6. Dark Skies Initiative

The Air Force's military training mission and Starfire program of research and development (R&D) at Kirtland AFB rely on night skies free from light pollution. Fortunately, New Mexico has a combination of qualities that support the Air Force's need for dark skies better than most other states. These qualities include: the high desert elevation and a regional climatology that affords cloudless or near cloudless skies, low population density across most of the State, and low average relative humidity. These characteristics also support other mission activities at Kirtland AFB, such as optical, directed energy and communications technologies that are most effective when

not adversely impacted by weather-induced visibility degradation or light pollution.

5.2.6.1 Light Encroachment

Light encroachment in the context of a JLUS normally refers to adverse light or light intensity in the vicinity of a commercial airport or a military airport due to nearby population and/or commercial activities. The impacts from light pollution on general flight safety are marginal. Most experienced pilots agree that overall flight safety is only slightly degraded by nighttime flying conditions. For inexperienced pilots, night operations present a more dangerous flight condition based on degraded contrast and increased difficulty in detecting and tracking other aircraft or observing the airdrome and runway environment.

Light encroachment can be an inconvenience for commercial aviation, but a significant issue for a military installation such as Kirtland AFB which has both military aviation training and R&D missions. Light encroachment exists on much of the north and west sides of Kirtland AFB. The impact of dark skies issues on flying training is addressed in Section 5.3 as part of the discussion about sustaining flying missions.

Applicable Recommendation(s): 3, 4, 6, 18, 20, 22, 28

5.2.6.2 Starfire Optical Range

The Starfire Optical Range ("Starfire") is a division of the Directed Energy Directorate of the Air Force Research Laboratory. It is a national asset with a mission to develop and demonstrate optical control technologies. Research areas include tracking satellites. It houses a 3.5 meter telescope (one of the largest telescopes in the world equipped with adaptive optics), a 1.5 meter telescope, and a 1.0 meter beam director. In addition to its primary research charter, Starfire also supports experiments by others involved in the use of adaptive optics to remove the effects of atmospheric turbulence.

Starfire is near the center of the southern boundary of Kirtland AFB and well over six miles from significant population areas. However, it is still impacted by the loss of the region's traditionally darker night skies. Since hardware devices at Starfire transmit into and receive light from the sky, light pollution can significantly degrade device performance. Because most of the research and development activity involves extremely faint sources, Starfire light detecting equipment is extremely sensitive. Development that increases light emissions in the vicinity of the Starfire Optical Range degrades the effectiveness of



this unique facility. Therefore, if light pollution of the range area continues to increase, it will become a major issue for national research and development programs conducted at Starfire.

Applicable Recommendation(s): 3, 4, 6, 18, 20, 22, 28

5.2.6.3 University of New Mexico Observatory

The University of New Mexico (UNM) is considering the desirability and feasibility to relocate its observatory from its present North Campus location to either the southern part of La Semilla, to the fairways on the South Campus golf course or near the southern perimeter of Kirtland AFB. UNM is considering the relocation to reduce the amount of light pollution currently impacting observatory capabilities. Relocated activities would include the regular Friday night public stargazing activity that would increase traffic volume to the area and possible light pollution from vehicle headlights. Kirtland AFB should be engaged in discussion about potential impacts on its missions, as well as possible impacts from its missions on observatory equipment – explosive testing, for example – if UNM decides to pursue a possible relocation.

Applicable Recommendation(s): 3, 4, 6, 18, 20, 22

5.2.6.4 Dark Sky Legislation

The State of New Mexico enacted the Night Sky Protection Act (NMSA) in 1999, for the purpose of regulating “outdoor night lighting fixtures to preserve and enhance the state's dark sky while promoting safety, conserving energy and preserving the environment for astronomy.”³ While this law has had some impact on lessening the light pollution that normally accompanies urban development, it has a fairly limited scope – it prohibited use of mercury vapor lighting systems after 2000, and required shielding of all incandescent lights after January 1, 2000, except in limited cases. However, the Act only requires extinguishing large light sources – such as athletic stadium lighting systems – after 11:00 PM.

The City of Albuquerque proposed a City-wide night sky protection ordinance in 2004. Public hearings held by the Environmental Planning Commission on the proposed legislation prompted much public input and considerable support by members of the public. Kirtland AFB representatives also provided comments and general support for the ordinance. However, City administrative

support for the legislation was eventually withdrawn, and no further action on this initiative has been taken.

Applicable Recommendation(s): 3, 6, 22

5.2.6.4 Summary

There are no current, significant lighting issues providing an opportunity to act before a problem is possibly created by continued development that could lead to mission encroachment of activities dependent upon dark skies. One example of how light pollution impacts can be prevented or mitigated is Mesa del Sol's lighting design standards that will minimize light pollution to the south of the Sunport and its airdrome complex.

³ 74-12-1 NMSA 1978

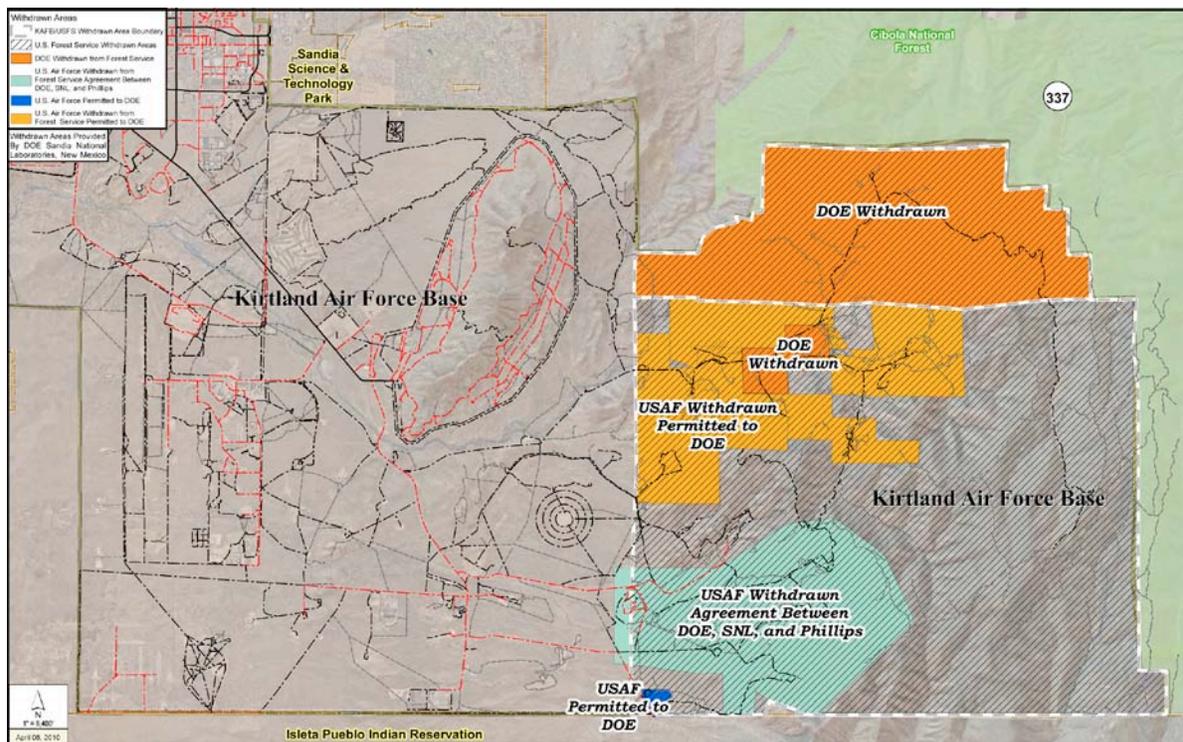
5.2.7. Land Withdrawals for DoD and DOE Use

As noted in Section 2.1.1.5, Kirtland AFB and its associates use approximately 20,000 acres of withdrawn public lands (Figure III – 7 – a larger version is in Appendix X) to satisfy mission requirements. Originally withdrawn from the U.S. Forest Service in 1943, the use has been extended until 2013, unless DoD determines it is not needed earlier. Currently, there is some disagreement

protect the public from UXO deposited during artillery munitions tests in the 1940s and 1950s. The public, supported by several prominent elected officials, was strongly opposed to this action because it would greatly impact area recreational opportunities.

In 2007, Kirtland AFB decided to not build the Otero Canyon fence. UXO presence continues as an unresolved public safety issue, and the continued use by the public for

Figure III – 7: Withdrawn Areas



between DoD and the U.S. Forest Service about which agency has primary jurisdiction over the withdrawn lands and the matter is in the hands of the U.S. Justice Department for a decision. In 1969, a Public Land Order was issued that withdrew U.S. Forest Service lands for DOE to perform research and development for the Atomic Energy Commission.

Public use of the withdrawn land is prohibited; however, unauthorized and informal use of the trails in the withdrawn lands occurs regularly. The presence of public uses in an unrestricted area so close to Kirtland AFB has raised safety and security concerns about the existing land uses. In 2002, Kirtland AFB initiated a process to evaluate the feasibility of a continuous perimeter fence through the Otero Canyon area to secure the military installation and

recreation without UXO remediation could be problematic. Remediation to a limited level is included in the Base's Military Munitions Response Program (MMRP), but remediating the entire area is estimated to require "potentially in the hundreds of millions of dollars" and removal of the majority of existing vegetation to identify and recover the UXO. The issue of mission requirement, human health and safety and the public's desire for recreational opportunities makes addressing the compatibility of withdrawal lands a difficult, but essential task for the region.

Applicable Recommendation(s): 3, 4, 6, 13, 22



5.3 Sustaining Flying Missions and Long-Term Viability for DoD Aviation Activities.

Applicable Recommendation(s): 3, 4, 5, 6, 14, 15, 16, 17, 20, 22, 25, 26, 27

As noted in the introduction to Section 5.2, the military value of the Base is enhanced by hosting both aviation and non-aviation missions. Section 5.2 focused primarily on Kirtland AFB non-aviation-related missions. This section addresses issues important to the sustainment of its flying missions and the long-term viability of the Support to support DoD aviation activities. These include flight safety, use of the airdrome by military aircraft, flying training and land use capability near the airfield and training areas.

5.3.1. Flight Safety and Mission Training

As the local population increases, development needed to support it may become increasingly dense and/or spread into previously rural and undeveloped lands. This phenomenon introduces additional people into areas originally suitable for high speed, low altitude flight operations and testing and training missions. Additional people also bring increased requirements for infrastructure, including outdoor lighting and communication towers, both impacting flight operations

Air Force studies of aircraft accidents have shown the majority occur either on or adjacent to airfields. A similar situation exists underneath airspace designated for low altitude military flight operations, especially where aircraft transition into airfields for approach and departure patterns. Assessing existing conditions in the vicinity of airfields and underneath airspace designated for low altitude military flight operations begins the process of establishing land use designations to protect and promote public health and safety while maintaining the ability to conduct military mission(s).

Incompatible development can threaten public safety if accidents occur in the areas surrounding an installation. Though not the dominant factor, the extent of incompatible adjacent development is considered when determining the future viability of an installation for military aviation missions. The emphasis on incompatible development is increasing as the Air Force begins to consider how to most efficiently base the declining number of aircraft in its inventory. The loss of New Mexico's Air National Guard F-16s is an example of how fewer aircraft will result in fewer flying units and, ultimately, locations with fewer – or less intense – flying missions.





5.3.1.1 Federal Aviation Administration (FAA) Civil Airport Runway Zones

Since the Sunport is owned and operated by the City of Albuquerque, it must comply with FAA safety zone requirements to protect aircraft, people, and vehicles moving across airport runways and taxiways. The safety zones are determined in coordination with the FAA based on airfield configuration, types of aircraft being flown and number of flights. Because of the higher incidence of aircraft accidents on or adjacent to airfields, areas of high accident potential are established by the FAA at the ends of civilian runways. Civilian runways utilize Runway Protection Zones (RPZs) and Runway Object Free Areas (ROFA). Shown in Figure III – 8 as blue trapezoids, these zones exist at both ends of the runway and function to prevent incompatible land uses. (A larger version of Figure III – 8 is included in Appendix X.)

The ROFA is the most restrictive and is a rectangular clearance zone that overlaps the RPZ and prohibits any above-ground objects. Additional safety zones are described in the following:

- ✓ The Obstacle Free Zone (OFZ) is a defined volume of airspace centered above the runway centerline. This airspace is above a surface whose elevation at any

point is the same as the elevation of the nearest point on the runway centerline. The runway OFZ typically extends 200 feet beyond each end of the runway and is usable for aircraft operations.

- ✓ Inner-approach Obstacle Free Zone is the airspace above a surface centered on the extended runway centerline. It applies to runways with an approach lighting system.
- ✓ Inner-transitional Obstacle Free Zone is the airspace above the surfaces located on the outer edges of the runway Obstacle Free Zone and the Inner-approach Obstacle Free Zone. It applies to precision instrument runways.

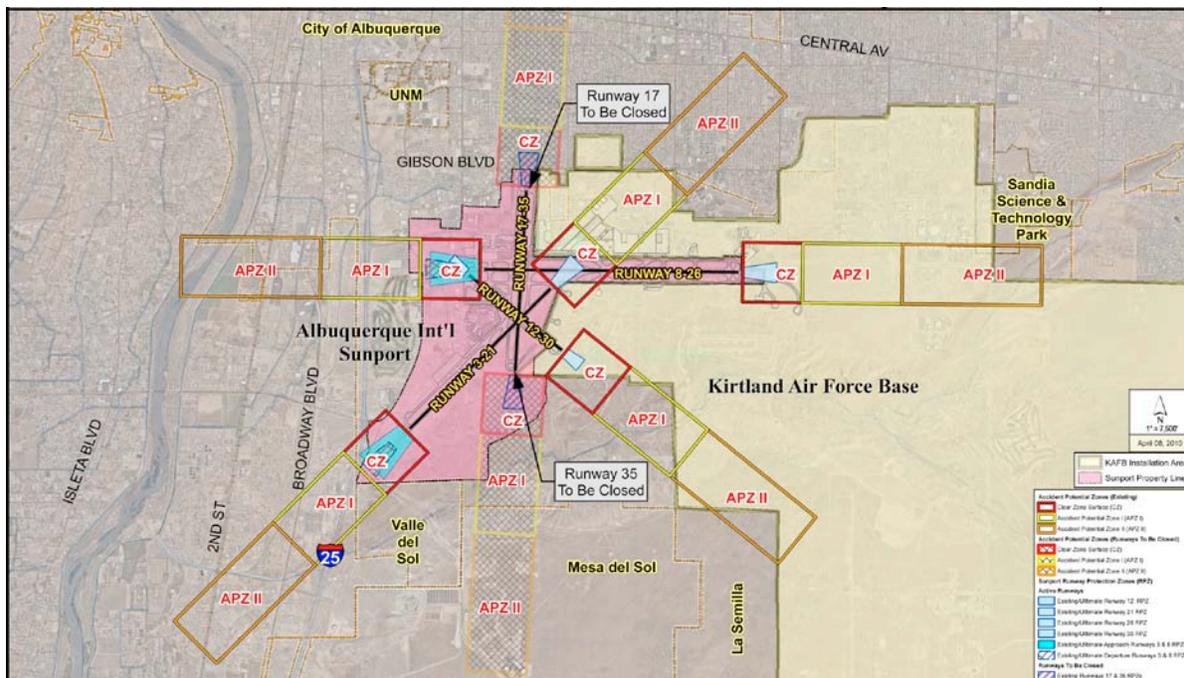
Applicable Recommendation(s): 3, 4, 6, 20, 22, 31

5.3.1.2 Military Runway Safety Zones

The Air Force also designates safety zones, but uses larger, Clear Zones (CZs) and Accident Potential Zones (APZs) I and II to identify where the risk of aircraft accidents justifies special land use restrictions. These are shown as squares and rectangles on Figure III – 8.

The zones are located at each end of the runway and are 3,000 feet wide (1,500 feet on either side of runway centerline). The zones begin with the CZ (3,000 feet long), followed by APZ I (5,000 feet long) and APZ II (7,000 feet

Figure III – 8: Runway Safety Zones





long) for a total of 15,000 feet from the end of each runway used by military aircraft. Modifications to the zone criteria are considered based on frequency of use, prevailing wind conditions, local accident history, or other unusual existing conditions. The potential for aircraft accidents drops dramatically from the CZ to APZ I, and then slightly from APZ I to APZ II. However, enough potential exists for aircraft accidents within both APZs that incompatible development in the APZs remains an obvious risk factor. Since accident potential is highest within the CZ, this area is preferably owned by the Air Force, resulting in military control of land use within the CZ, helping to ensure no people-intensive facilities are located within it.

Air Force Handbook 32-7084 guides preparation of the Air Installation Compatible Use Zone (AICUZ) Study and includes land use compatibility guidelines for CZ, APZ, and noise contours. Appendix G includes the relevant pages from this document. In addition, it specifically prohibits the following five land uses within a CZ:

- ✓ A use releasing any substance into the air, such as steam, dust, and smoke.
- ✓ A use producing electrical emissions that interfere with aircraft operations, communications, or navigational aid systems or equipment.
- ✓ A use that produces light emissions directly or indirectly.
- ✓ A use unnecessarily attracting birds or waterfowl.
- ✓ A use involving explosives.

While the percentages of aircraft accidents within the APZs are much lower than within the CZ, some type of land use control is recommended to reduce the density of people living, gathering, or working within an APZ. Compatible land uses within APZ I and II include industrial/manufacturing, transportation, communication/utilities, wholesale trade, open space, recreation, and agriculture. Residential development is not recommended in APZ I. However, in APZ II, low-density residential (one dwelling/acre) and low intensity personal/business services and commercial/retail trade uses are acceptable. High-density functions such as multi-story buildings, places of assembly, and high-density office uses are not considered appropriate even for APZ II.

Figure III – 8 depicts the locations and the sizes of the CZs and APZs for Sunport runways. Based on military aircraft

use and runway characteristics, only the safety zones associated with Runway 08-26 (east-west) and the approach ends to Runways 03 (southwest most zones) and 30 (southeastern most zones) are recommended for use by the Sunport.

- ✓ Clear Zones. With two exceptions, the CZs of the Sunport runways are within the perimeters of either Kirtland AFB or the Sunport. The most significant exception is associated with Runway 17/35; however, there is a current program in progress to deactivate this runway and, when completed, land use will no longer be an issue.

The CZs associated with portions of Runways 03 and 30 are not fully owned by the Base or Sunport, but these areas are free of residential areas and encompass relatively unpopulated land.

The Runway 03 CZ includes 11 parcels with five different existing land use designations – Aircraft Transportation, Food/Kindred Products, Motor Vehicle Transportation, Scientific Optical Products and Undeveloped Land and Water Areas.

The CZ associated with Runway 30 includes seven parcels with three types of land use designations – Governmental, Motor Vehicle Transportation and Undeveloped Land and Water Areas.

- ✓ Accident Potential Zones. A larger issue is that the existence and purpose of recommended APZs are not generally known by residents and businesses in these areas. Of those recommended, the APZs associated with the southwestern end of Runway 03 and western end of Runway 26 extend well beyond the Kirtland AFB and Sunport boundaries.

Only a small portion of APZ II for the eastern end of Runway 08 extends beyond the perimeter of Kirtland AFB. Runways 03 and 08/26 are heavily used for approach and landing of all types of commercial and military aircraft operating into and out of the Sunport. Runway 08/26 is used almost exclusively for departures.

Because Runway 03 would rarely be used for departures and Runway 21 would rarely be used for landings, concern is realistically limited to APZs immediately to the west and southwest of the Sunport.





The breakdown of the existing land use designations for Runways 03, 08, 26 and 30 are provided in Appendix H

Applicable Recommendation(s): 3, 6, 7, 8, 10, 15, 16, 21, 22, 33

It is not clear if the people and businesses living and operating in APZs know they are within approach and departure zones for the Sunport.

For airdromes owned or operated by the Air Force, periodic AICUZ Studies are required and the safety zones are mandatory. Airdromes with Air Force operations are encouraged to complete an AICUZ, in collaboration with the Air Force, and adopt use of the safety zones; however, this is not mandatory. To sustain the long-term viability of the Sunport to support DoD aviation activities, protection of land uses within the military safety zones is recommended.

Land use within the zones is generally compatible so the result of adopting use of CZ and APZ for the recommended runways (both ends of Runway 8-26 and approach end of Runway 3 – southwest most zones – and approach end of Runway 30 – southeast most zones) will require protection of future uses rather than mitigation of current ones. If the recommendation for an AICUZ Study or adoption of CZs and APZs are not adopted, it would be prudent to disclose aviation safety issues to land owners in these areas.

Applicable Recommendation(s): 3, 4, 5, 6, 14, 25, 26, 27, 31

5.3.2. Low Altitude Tactical Navigation – Helicopters

Flight operations within helicopter low level training areas and Military Training Routes (MTRs) avoid areas that present potential flight safety hazards – such as tall objects. This method of navigation reduces the potential risk presented by tall objects, but also reduces the overall space available for training and increases the risk factor of mid-air collisions between aircraft. As the number of tall objects increase within the MTRs, already limited training airspace is further reduced. The areas in which tall objects interfere with flight training are “Military Training Routes,” “Low Level Training Areas,” and the “Height Restrictions Due to Air Traffic.”

The portions of the low level MTRs particularly sensitive to the number and height of tall objects are those where flight operations are close to the ground and slow as the aircraft prepares to land or drop people and/or cargo. Total exclusion of tall objects within the entire, low level route is not required to continue safe training operations. Specific zones within the route can accommodate taller or shorter objects.





5.3.3 Military Training Routes – MC-130

The Lockheed MC-130 is the basic designation for a family of special mission aircraft operated by the Air Force Special Operations Command (AFSOC), a wing of the Air Force's Air Education and Training Command, and a soon-to-be AFSOC-associated wing of the New Mexico Air National Guard. Based on the design of the MC-130 Hercules transport aircraft, its mission is the infiltration, exfiltration, and resupply of special operations forces; psychological operations support; and the air refueling of (primarily) special operations helicopter and tilt-rotor aircraft.

Figure III – 9 was provided by the 58th SOW and depicts five of the MTRs routinely used in its training programs. The routes are identified by route designations in white labels – i.e., IR 137 just northeast of Albuquerque – and outlined in red to indicate the training corridor. As can be seen, the routes overfly a significant portion of the region, traverse a variety of terrain types and extend over much of New Mexico and into both Arizona and Colorado.

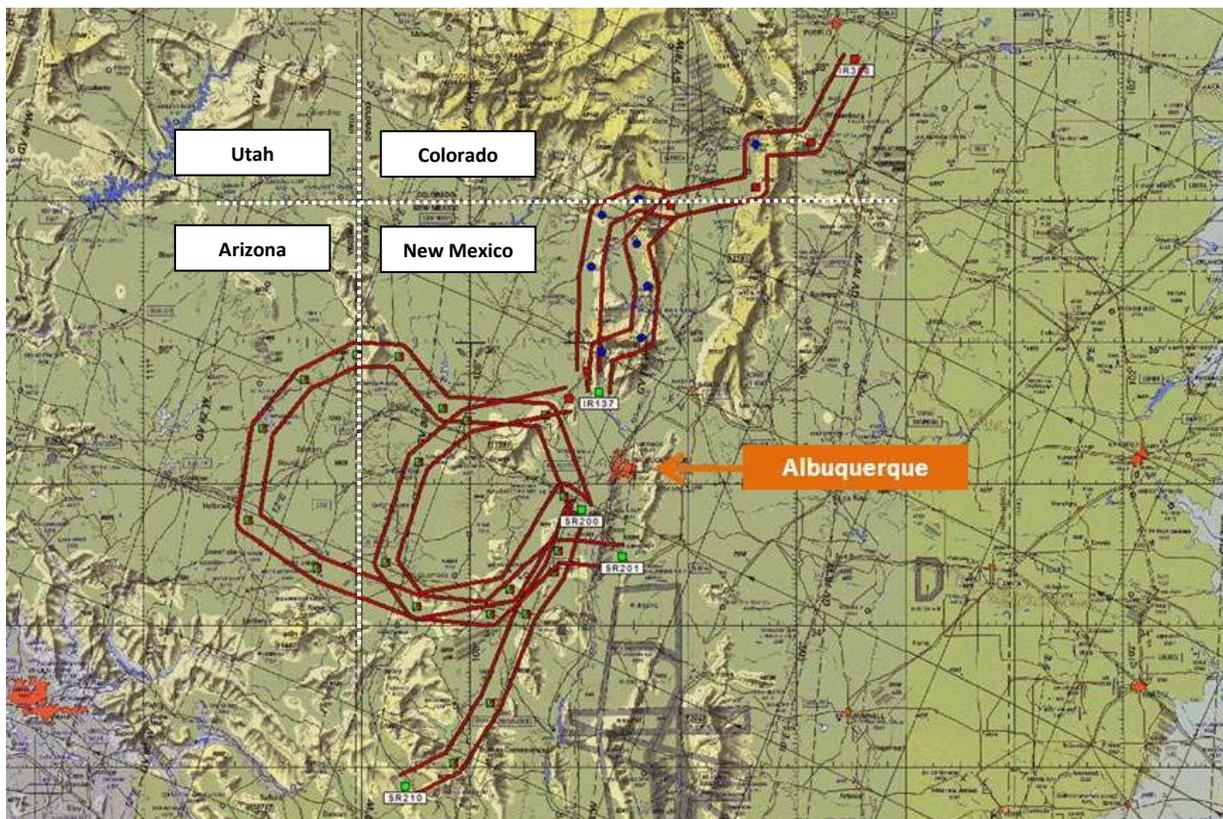
The MTRs used by the 58th SOW are long, low-altitude corridors serving as a flight path to a particular destination.

The corridors are often 10 miles wide, 70 to 100 miles long, and may range from 500 to 1,500 feet above ground level; occasionally, they are higher. MTRs are designed to provide realistic low-altitude training conditions for pilots permitting essential training in strictly defined airspace that is designed to accomplish specific objectives in an environmentally responsible way.

Tactical aircraft often fly hundreds of miles at very low altitude over varying terrain to avoid detection by enemy radar. Navigation is extremely difficult at low-altitude, making it imperative that pilots have ample opportunity to practice these necessary and demanding skills. Unlike some aircraft mission training that requires strict adherence to the "centerline" of the MTR, special operations flights can use the entire corridor. As discussed previously, simulating special operations missions requires special operations crews to train at night and in adverse weather. The combination of training profiles that encourage using the entire MTR, night flying and inclement weather makes identification of obstacle placement anywhere within the MTR important to safety of flight.

Applicable Recommendation(s): 3, 6, 7, 8, 15, 16, 21, 22, 33

Figure III – 9: Example of Military Training Routes





5.3.4 Drop Zones and Landing Zones

One of the primary missions of Air Force special operations forces is to infiltrate special operations teams; supply their operations, if needed; and exfiltrate these forces from contested areas or deep behind enemy lines. The 58th SOW must have access and the right to use a variety of drop zones (DZ) and landing zones (LZ) for its aircrews to accomplish this required mission training. Drop zones are applicable to fixed wing aircraft, and landing zones are applicable to helicopters and tilt-wing aircraft.

There are three primary DZs and a number of LZs used by the 58th SOW; the majority of these are outside the MRCOG region. The DZ within the region is the Isleta DZ. This DZ was created in 1988, is used daily for cargo drops – no personnel drops or rescue drops are permitted - and is used by various military units. The approach is from west to east only and it traverses the southern boundary of Mesa del Sol. Requirements relating to altitude, speed, and direction must be met and neither multiple orbits nor high altitude deliveries are authorized.

Valencia and Socorro Counties offer additional opportunities in rural areas that provide differing types of terrain to add further value to mission training. In some cases, individual land owners have entered into arrangements directly with the Air Force to allow use of their land for aircrew training. Taking a regional approach to cooperation, as well as planning, could facilitate these kinds of formal and informal opportunities.

Applicable Recommendation(s): 3, 6, 7, 8, 15, 16, 21, 22, 33

5.3.5 Night Vision Goggle Training

Night vision training is dependent upon ambient lighting – very modest illumination attributed to moonlight and starlight during hours of darkness and unpolluted by artificial illumination. Any other type of illumination degrades, to some degree, the quality of night vision training.

Night vision goggles (NVG) are devices worn by users to magnify ambient light and allow operations without artificial light. The advantages of NVG have been exploited by the military for decades and by civilians for about 10 years. As the number of users-turned-instructors has grown and the technology has improved, NVG training has increased in both breadth and depth. Good night vision provides pilots

the ability to distinguish objects along MTRs and at landing zones relying on ambient lighting.

Special operations forces make extensive use of NVG and the initial qualification training for Air Force special operations forces is completed by the 58th SOW. This type of initial qualification to operate mission aircraft within confined areas – such as MTRs and during aircraft approach and landing – is amongst the most complex instruction related to NVG use. Even with NVG, obstructions found at low level altitudes – such as wires, transmission lines and other vertical obstacles – can be virtually invisible to see at night or in adverse weather.

Since outdoor lights degrade night vision devices and instrumentation and can interfere with a pilot's vision acuity, they can also cause difficult and unsafe flying conditions when located near airfields. Outdoor lighting near or within the approach and landing zones of Sunport Runway 30 is especially critical to the long-term ability of the 58th SOW to meet its NVG training requirements.

Examples of ground lighting that can interfere with night vision equipment include uncontrolled lighting of residential areas, commercial facilities, recreational venues such as ball fields, golf courses and driving ranges and parking lots. Mobile lights (from sources such as motor vehicles or roaming spotlights) can also cause difficulty with night vision equipment.

Increasingly, military units – particularly aviation units – rely on the ability to train NVG users. Sustaining the training opportunities at the airfields, DZs, and MTRs currently available to Kirtland AFB is important to sustaining both the existing flying missions and the long-term viability of the Sunport for DoD aviation activities.

Applicable Recommendation(s): 3, 4, 6, 7, 8, 20, 21, 22, 23, 25, 26, 27, 28





5.3.6 58th SOW Arrival and Departure Routes

The 58th SOW has four arrival/departure routes to/from Kirtland AFB as depicted in Figure III – 10 () and described in the following sections.⁴ (A larger version of Figure III – 10 is included in Appendix X.) Regional planners should ensure the flight paths associated with these routes remain unencroached to sustain existing flying missions and the ability to possibly accept others in the future.

✓ Northwest

- Arrival - From Bernalillo, proceed south along I-25 to the intersection of I-25/I-40 ("Big I"). From other areas to the northwest, proceed directly to the "Big I." From the "Big I," continue South to Gibson Boulevard, East to the end of Runway 17, South on Runway 17 to taxiway A and East on Taxiway A to the helipads. Unless otherwise approved by Terminal Radar Approach Control (TRACON), maintain 7,000 feet MSL until east of I-25, and then expect descent to 6,000 feet MSL or below. If directly overflying Double Eagle II airport, aircrew must maintain 8,000 feet MSL over the airport, and then can descend to 7,000 feet MSL once east of the petroglyphs, unless

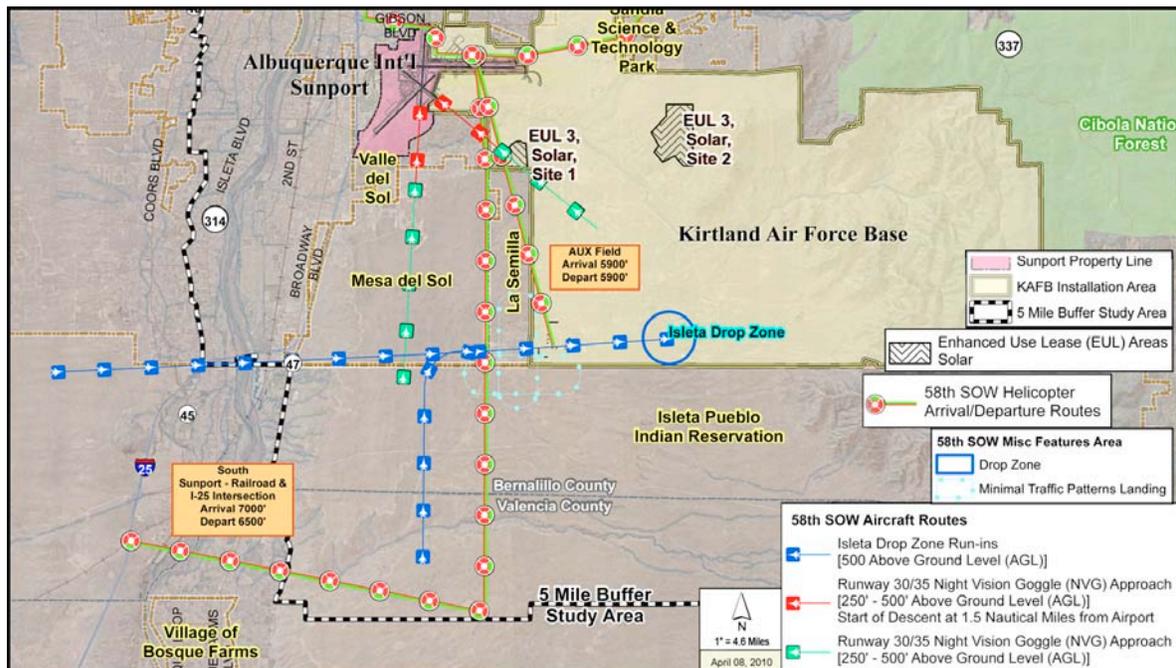
otherwise directed/approved by TRACON.

- Departure - From the helipads, fly west down Taxiway A (remain well clear of Runway 8/26) to Runway 35, north to Gibson Boulevard, west to I-25, then north along I-25 to the Big I. Aircrews continuing north to the Jemez LATN area should continue to follow I-25 north to Bernalillo. Aircrews continuing to the northwest LATN should turn and fly directly over Double Eagle II airport. Unless otherwise approved by TRACON, climb and maintain 8,000 feet MSL on departure.

✓ Northeast

- Arrival - From abeam the lower tram station south along Tramway Boulevard, maintain 7,000 feet MSL. Then southwest to the Kirtland AFB Eubank gate at the intersection of Gibson and Eubank Boulevards.
- Departure - From the Kirtland AFB Eubank Gate at Gibson and Eubank Boulevards northeast to the intersection of Lomas and Tramway Boulevards at 7,500 feet MSL, then north along Tramway Boulevard to a point abeam the low tram station.

Figure III – 10: Arrival and Departure Routes



⁴ Source: 58th SOW



✓ Auxiliary Field

- Arrival - From the Aux Field North along the boundary fence to Tijeras Arroyo, maintain 5,900 feet MSL or below. Higher altitude may be approved by Albuquerque Tower.
- Departure - Unless otherwise stated by the Tower, direct to Aux Field at 5,900 feet MSL.

✓ South

- Arrival - From the intersection of I-25 and the railroad tracks, track east bound to Hell's Canyon Wash then north bound heading 350 degrees to the airport at 6,000 feet MSL.
- Departure - From Kirtland AFB south heading 170 deg. to 1 NM south of Hell's Canyon Wash (10 NM total) then west heading 270 degrees for 6.4 miles at 6,500 feet MSL. Route ends where I-25 and the railroad tracks cross.

Applicable Recommendation(s): 3, 4, 5, 6, 9, 10, 14, 15, 16, 18, 21, 22, 23, 27

5.3.7 New Mexico Air National Guard

The Base's two major flying units – the 58th SOW and New Mexico's Air National Guard, the 150th Fighter Wing (FW) – have always helped sustain the installation within the Air Force and support its growth. The current Air Force program will result in the loss of the 150th FW's F-16s, but retention of the unit designation and merger of its personnel into 58th SOW operations. There are ongoing discussions and negotiations to determine the most effective way to consolidate the units and personnel.

Retaining the identity of these two units is important to help ensure Kirtland AFB continue its viability for aviation activities and allow the region to seek additional missions of all kinds. Completion of an AICUZ Study (Study) could also help conceptualize the types and sizes of aviation missions compatible with Base and Support facilities and regional training venues. The Study would then be valuable to regional planners and decision makers to help develop appropriate controls and processes to ensure land use would support desirable aviation activities if the Base is selected for additional or other aviation activities.

Applicable Recommendation(s): 5, 33

5.3.8 Development of Wind Farms

New Mexico is exceptionally well suited to convert wind energy for power generation. Wind farms and energy transmission lines in the 58th SOW training areas could present significant danger to pilot safety and training mission viability. Most of the 58th SOW's training flights are conducted at night, at low altitude and occasionally in bad weather. The aircrews flying these missions depend upon obstacle and terrain avoidance radar to identify and steer clear of all forms of obstacles that could endanger the crews and/or destroy aircraft.

In addition to the height of wind turbines, wind farms pose two distinct dangers to the safety of low flying aircraft – Doppler Shift and energy transmission lines.

5.3.8.1 Doppler Shift

The rotating blades of wind turbines create a technical hazard based on the Doppler Effect. The result is to diminish the accuracy of radar returns using aircraft Doppler radar. This "Doppler Shift" can cause display of inaccurate and unreliable information on aircraft instrument panels. When flying in night, low level, instrumented conditions, aircrews are dependent on radar for safe aircraft operations and the error tolerances are very narrow. Doppler Shift incidents could prove fatal to aircrews and/or result in destruction of specialized aircraft.

5.3.8.2 Energy Transmission Lines

The second and more dangerous safety issue associated with wind farms and other new energy projects is the danger posed by electrical transmission lines. These lines represent physical hazards to low flying aircraft that are difficult to detect, especially at night – when the majority of 58th SOW training takes place.

Grids of electrical transmission lines, built over decades, are spread across wide swaths of the United States. Until recently, wires transferring power to-and-from high voltage lines were generally near highways and rail lines, and usually no higher than 75 feet. The relatively recent expansion of renewable energy projects has introduced new concerns for the aviation community based on these smaller transmission lines. At one end of the project spectrum could be a rancher or farmer in a remote location erecting a small number of wind turbines to provide electrical power to his property and then constructing a





transmission line across open land to sell excess power into the region's power grid. These lines will most likely not be annotated on aviation charts.

At the other end of the project spectrum are high voltage transmission lines and large energy projects. The lines are normally suspended from towers, typically 200 feet or more in height, and generally follow as straight a line from the source to the power grid connection as possible based on both economic and efficiency considerations. Large wind farm projects – perhaps consisting of 4,000 or more turbines – are built to sell generated power to markets in neighboring jurisdictions or states via a transmission line. These lines are beginning to crisscross open land in non-traditional ways. Eventually, new high voltage lines will be depicted on aeronautical charts and maps providing aircrews information needed for flight safety. At present, two large wind farm projects are in the planning phase in Torrance County. If approved, these projects will also require transmission lines to convey generated energy to the electrical grid.

In both the foregoing cases, electrical transmission lines can proliferate at a rate that seriously challenge State and county regulatory agencies and aviation safety, especially in areas used for low altitude military operations and training.

5.3.8.3 Significance to DoD Aviation Activities

The potential danger to 58th SOW aircraft and aircrews – and other low flying military missions – requires the process of locating and developing wind farms and transmission lines to protect flying training areas and those areas adjacent to approved helicopter and fixed-wing low level training routes.

Helicopter LATN areas exist in the MRCOG region – both inside and outside the perimeter of Kirtland AFB. The 58th SOW helicopters fly at very low altitudes in LATNs; typically between 50 and 300 feet above ground level. While there are no current plans to site wind turbines in these areas, they would present serious safety of flight concerns should they be built in the future.

MTRs for MC-130 and HC-130 aircraft also exist throughout the MRCOG region, across New Mexico and into Colorado. These MTRs are FAA approved routes and published in aviation route publications. As noted, development of wind farms – small or large – could

constitute serious safety of flight concerns for fixed-wing aircraft based at Kirtland AFB.

Within the JLUS study area, land agency and regulatory agencies with approval authority over the placement of wind farms and transmission lines may not be fully aware of the seriousness of this issue. Only three of New Mexico's 33 counties have attempted to establish ordinances for locating wind farms. Both San Miguel and Union Counties have ordinances, and Lincoln County is presently going through the ordinance review process. The four counties comprising the MRCOG region plus Socorro County have not adopted similar ordinances. This issue is currently being considered at the federal level and by the State of New Mexico. Part IV includes several recommendations focused on the need for integration of planning across the region, including formal consultation with Kirtland AFB.

Applicable Recommendation(s): 3, 6, 9, 11, 18, 21, 22, 23, 27

5.3.9 Air Quality

As discussed in Sections 4.0 and 5.1.4, the region's air quality has a direct impact on its attractiveness and viability for new military aviation missions. This is particularly true of aviation missions based on their significant addition to mobile sources of pollutants. Since the Air Force strives to not adversely impact its supporting communities' quality of life, basing decisions heavily consider the impacts of potential actions. The Air Force has testified to the Congress multiple times that the Service actively resists efforts to increase existing mission activities or site new missions in non-attainment areas or areas that could be pushed into non-attainment by additional missions. Therefore, regional planning must not only address the implications for existing Kirtland AFB and Sunport operations, it must also consider the potential impacts on future opportunities from the environmental consequences of actions – taken or deferred.

Applicable Recommendations: 3, 6, 7, 8, 9, 21, 22, 23, 24





5.4 Enabling Community Development

One of the primary purposes of the JLUS Program is to identify ways to balance sustainment of military missions and community development. The preceding sections focused on the importance of collaborative planning to achieve the desired balance and sustainment of both non-aviation-related and flying missions, along with the viability of the Sunport to support future DoD aviation activities. This section focuses on mission critical Base activities that can enable compatible development. Some sections provide examples of how this is being achieved, others highlight opportunities and a few identify issues that will help enable future development once they have been resolved.

5.4.1. Noise and Human Health

Noise is a natural by-product of military operations, testing and training, and the noise produced by these activities can affect both the health and quality of life of those exposed to it. As development occurs near military installations and population densities increase, noise effects may be experienced by more people. In the MRCOG region noises result from a wide range of sources that include aircraft takeoff, landing and overflight; weapons practice; and research, development and testing activities. Protection of human health and sustainment of mission capability are issues for land use planning; application of noise attenuation devices in existing and new structures; building code discipline; disclosures; and education to ensure citizens understand possible noise impacts.

5.4.1.1 Physical Characteristics and Measurement

Sound (used interchangeably with "noise" in this section) is a quickly varying pressure wave travelling through a medium. When sound travels through air, the atmospheric pressure varies periodically. The number of pressure variations per second is called the frequency of sound, and is measured in Hertz (Hz) which is defined as cycles per second. The higher the frequency, the more high-pitched a sound is perceived.

Another property of sound or noise is its loudness. A loud noise usually has a larger pressure variation and a weak one has smaller pressure variation. Pressure and pressure variations are expressed in Pascal (Pa) and defined as N/m² (Newton per square meter).

The human ear can perceive a very wide range of sound pressure. The softest sound a normal human ear can detect has a pressure variation of 20 micro Pascals (μPa) which is 20×10^{-6} Pa ("20 millionth of a Pascal") and is called the Threshold of Hearing. At the other end of the pressure continuum, the sound pressure close to some very noisy events – such as launching of the space shuttle or at some concerts – can produce a large pressure variation at a short distance of approximately 2,000 Pa or $2 \times 10^9 \mu\text{Pa}$.

5.4.1.2 Most Common Measure

Sound levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise measurement recommended by the United States Environmental Protection Agency (EPA). The intensity of sound is measured in decibel units. For sound measurements related to human auditory limits, the decibel scale is modified into an "A-weighted" frequency scale and described as "decibels average" (dBA). A-weighting is necessary to compare the range of noise humans can hear, since the human ear is unable to hear the entire range of sounds possible and is less sensitive to low frequencies than to high frequencies. A DNL of 65 dBA is most commonly used for noise planning purposes since it falls within the sound range associated with a conversation. Areas exposed to DNL above 65 dBA are generally not considered suitable for residential use. A DNL of 55 dBA is identified by the EPA as a level below which there are effectively no adverse impacts.

Figure III – 11 is a National Institute on Deafness and Other Communication Disorders table displaying representative sounds, their approximate dBA range, and implications for human hearing.





Figure III – 11: Representative Sound Levels and Effect on Human Hearing

Sound	Noise Level (dB)	Effect
Boom Cars	145	Threshold of pain begins around 125 dB
Jet Engines (near)	140	
Shotgun Firing	130	
Rock Concerts (varies)	110–140	
Oxygen Torch	121	
Discotheque/Boom Box	120	Threshold of sensation begins around 120 dB
Stereos (over 100 watts)	110–125	Regular exposure to sound over 100 dB of more than
Symphony Orchestra	110	
Snowmobile	105	
Jet Flyover (1000 ft.)	103	
Electric Furnace Area	100	
Farm Tractor	98	Very annoying
Newspaper Press	97	
Subway, Motorcycle (25 ft.)	88	
Lawnmower, Food Blender	85–90	
Diesel Truck (40 mph, 50 ft.)	84	Annoying; interferes with conversation; constant
Average City Traffic	80	
Washing Machine	78	
Dishwasher	75	Intrusive; interferes with telephone conversation
Vacuum Cleaner, Hair Dryer	70	
Normal Conversation	50–65	
Quiet Office	50–60	
Refrigerator Humming	40	Very quiet
Whisper	30	
Broadcasting Studio	30	
Rustling Leaves	20	Just audible
Normal Breathing	10	

5.4.1.3 Aircraft Noise and Noise Contours

As shown in Figure III – 11, aircraft operations can generate significant noise. Whether the noise is created during operation or maintenance activities, take-offs or landings, aircraft produce noise and, because of engine characteristics and performance profiles, military aircraft produce more noise than commercial aircraft. Therefore, both Kirtland AFB and the Sunport contribute to the creation of significant aircraft noise.

Kirtland AFB is home to the 58th SOW providing formal aircraft type/model/series training to AFSOC forces and Air Combat Command (ACC) Combat Search and Rescue personnel. The 58th SOW operates the MC-130H Combat Talon II and MC-130P Combat Shadow, HC-130 Hercules, UH-1N Huey, HH-60G Pave Hawk and CV-22 Osprey aircraft. Additionally, the 150th FW of the New Mexico Air National Guard currently operates the F-16 *Fighting Falcon*.



The Sunport supports daily flights in a wide array of commercial aircraft that also contribute to the overall noise environment of the airdrome. Both the FAA and the Air Force characterize the noise environment of airdromes using a “noise footprint” created by scientifically modeling the noise aircraft produce at a specific location based on the numbers and types of aircraft operating, altitudes and ground paths flown, times of flight, surrounding topography, etc. The result is a noise footprint comprised of a series of noise contours with the loudest activity at the center and lesser impacts at the periphery.

Figure III – 13 are the Figure III – 12 noise contours placed over a map of existing land uses. Figure III – 14 is the Existing Land Use Legend for use with Figure III – 13 and Figure III – 3 (p. III – 5). As can be seen, land uses associated with the current noise map are compatible. Undeveloped land is available and development for compatible uses can help the community achieve its growth vision without adversely impacting Kirtland AFB existing missions or the viability of the Sunport to support future DoD aviation activities.

Figure III - 12 illustrates the existing aircraft noise footprint for the Sunport. The FAA and Air Force provide guidance on the kinds of development that is compatible within each noise contour. Both consider residential land use within the 75 dB and greater noise contours to be incompatible. The FAA considers residential uses within the 65-75 dB range as incompatible. The Air Force discourages residential development, but recognizes communities may consider residential use as necessary. In such cases, the Air Force guidance strongly urges Noise Level Reduction (NRL) requirements be included in building codes as a part of development agreements. Air Force guidance is at Appendix G. Table III - 1 displays the FAA Land Use Noise Guidance for major land uses.

Table III – 1: FAA Land Use Noise Matrix		55-65 DNL	65-75 DNL	75+ DNL
Residential	1-2 Family			
	Multi-Family			
	Mobile Homes			
	Dormitories, Etc.			
Institutional	Churches			
	Schools			
	Hospitals			
	Nursing Homes			
	Libraries			
Recreational	Sports/Play			
	Arts/Instructional			
	Camping			
Commercial	All Uses			
Industrial	All Uses			
Agriculture	All Uses			
Per FAA Part 150		Compatible		
		Incompatible		





Figure III – 12: Noise Footprint

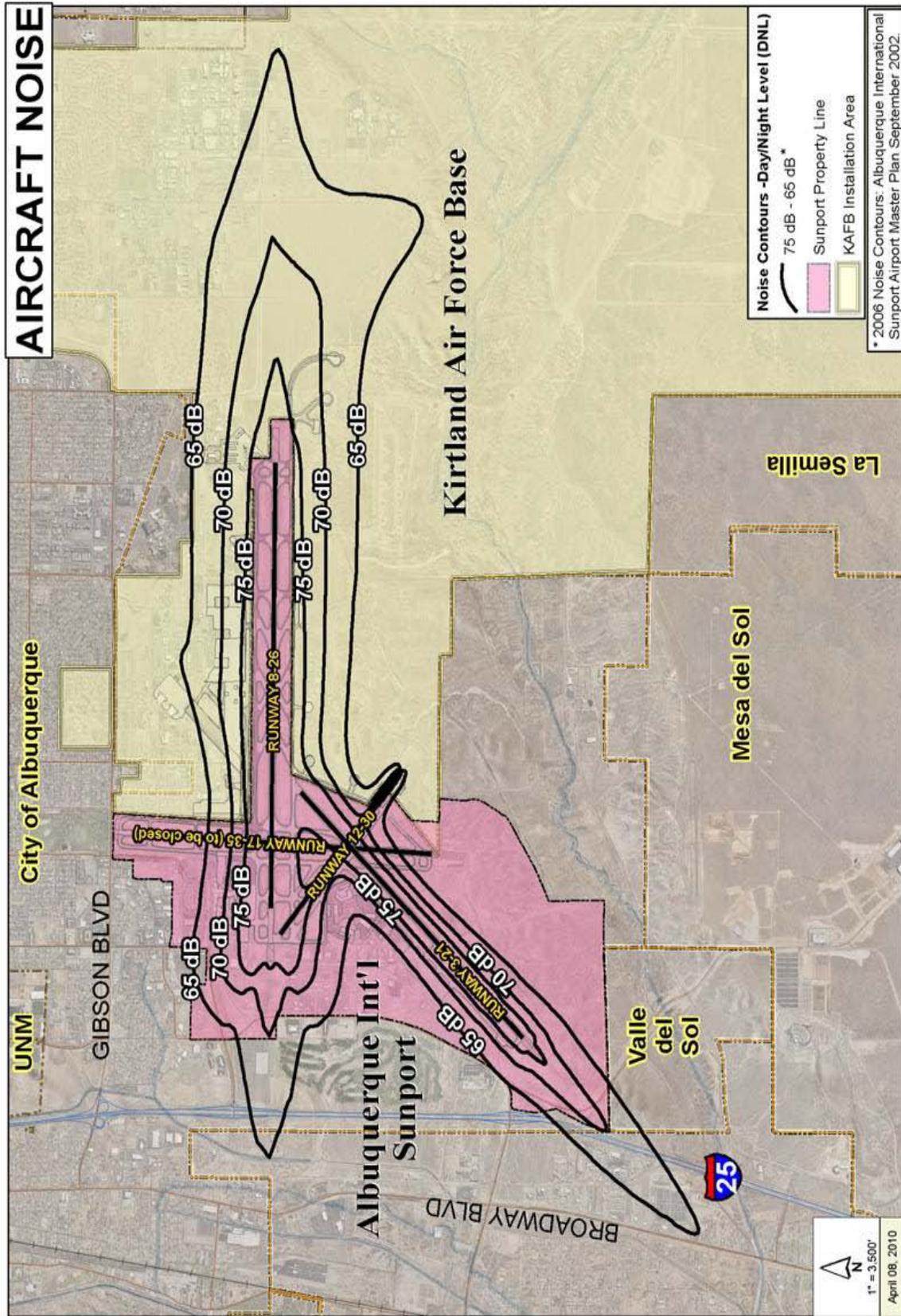




Figure III – 13: Noise Footprint and Existing Land Use

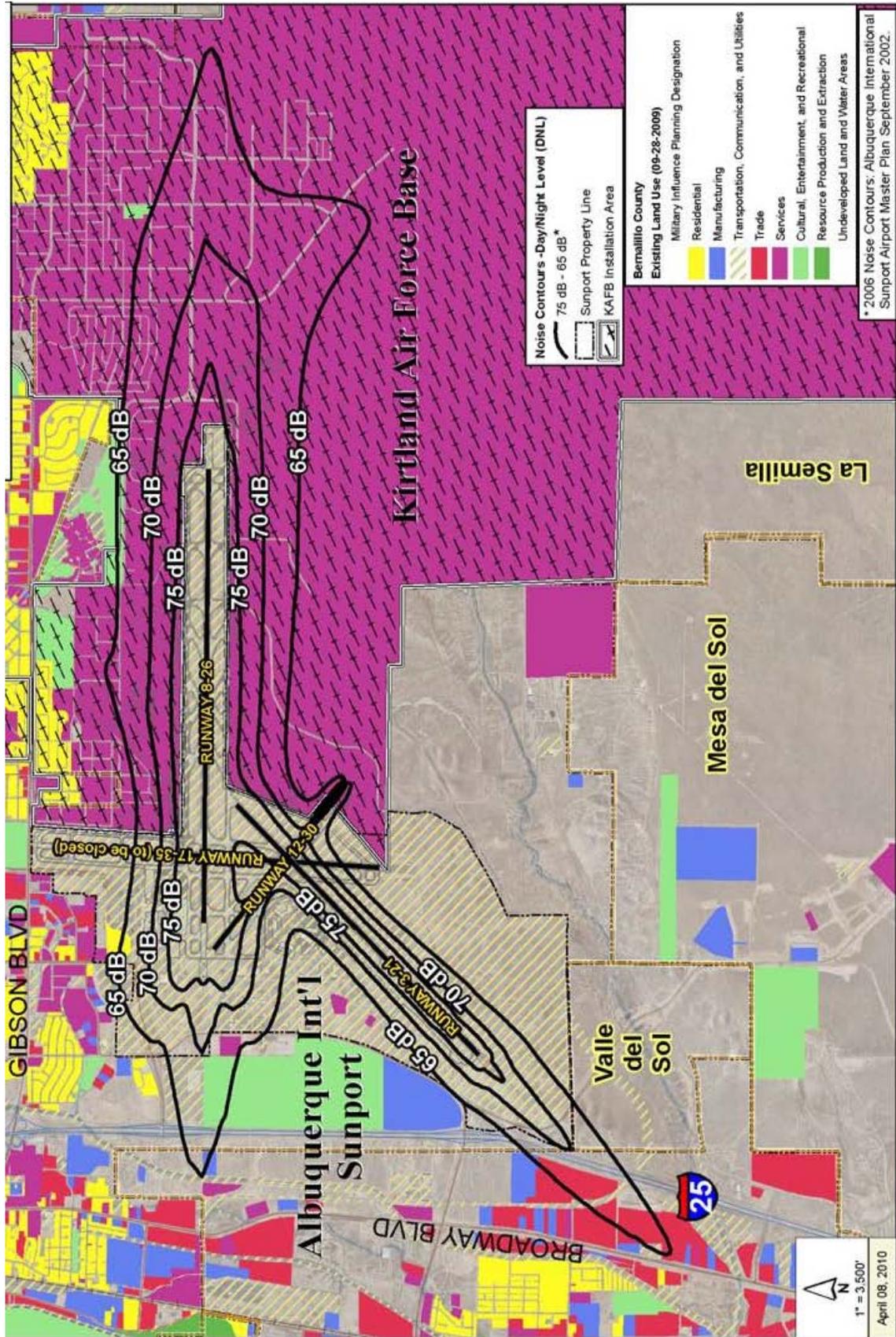




Figure III – 14: Existing Land Use Legend





5.4.2. Munitions Firing and Explosive Safety

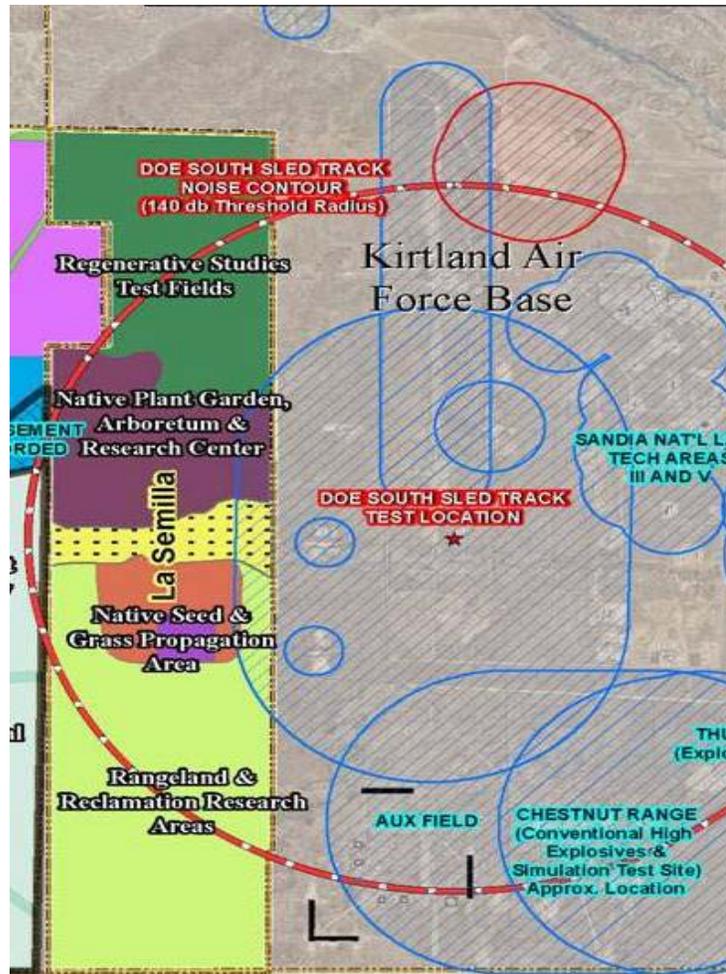
According to the *Air Force System Safety Handbook, July 2000*, the Air Force explosives safety program is designed to provide criteria and actions to prevent mishaps or to mitigate the damage (loss control) when mishaps do occur.

An essential element of the Air Force explosive safety program is to limit public exposure to explosives and training missions. In part, this is done by identifying specific areas where explosive operations are conducted – either intermittently or as ongoing activities. “Operations Intermittent Exposure” areas designate locations where mission or training exercises occur only periodically. “Storage Constant Exposure” areas are locations where there is a continual presence of explosives. “Test Constant/Intermittent Exposure” areas are used to regularly carry out missions and training exercises. All such areas

are within the boundaries of Kirtland AFB with three exceptions. The first are “Operations Intermittent Exposure” areas (not depicted) used for explosives related to aircraft training, loading or unloading. These are located on the airdrome and exclusion areas are activated, as needed. The others are shown in Figure III – 15. One is depicted with blue hatching to show an area of “Test Constant/Intermittent Exposure” that extends past the Base border into La Semilla. The second is shown as a red-dotted line representing the noise radii of the DOE South Sled Track extending across La Semilla. As discussed in foregoing sections, La Semilla was created to provide a buffer between Base missions and the Mesa del Sol development.

Applicable Recommendations: 6, 10, 20, 22, 23

Figure III – 15: Explosive Noise Radii (modified from Figure III – 16)





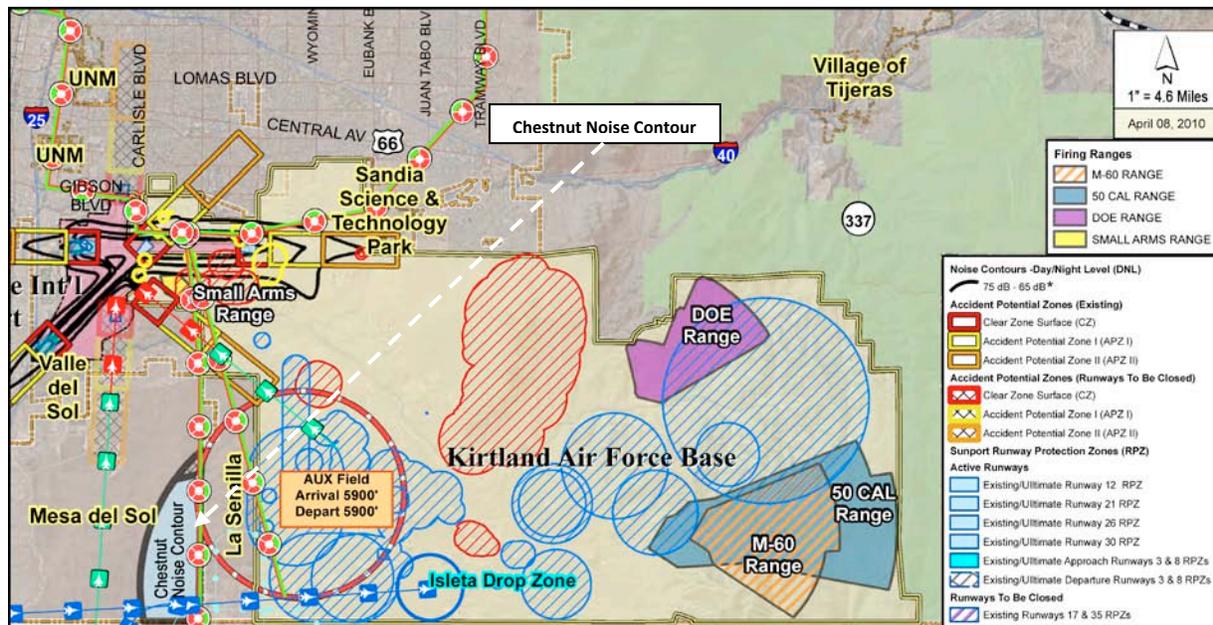
5.4.3 Impulse Noise, Chestnut Explosives Range and Simulation Test Site and Small Arms Ranges

5.4.3.1 Impulse Noise

Impulse noise is a short burst of acoustic energy consisting of either a single impulse or a series of impulses. The pressure-time history of a single impulse includes a rapid rise to a peak pressure, followed by a somewhat slower decay of the pressure envelope and return to the beginning pressure, both occurring within 1 second. When the intervals between impulses are less than 500 milliseconds, the noise is considered continuous, with the exception of successive bursts of automatic weapons fire that is

an analysis was completed to characterize the extent and level of possible impacts on Mesa del Sol from Chestnut Site activities. The result was the Chestnut Noise Contour depicted in Figure III – 16. (A larger version is included in Appendix X.) This contour extends west from the Mesa del Sol and La Semilla boundary and is commonly referred to as the Chestnut Easement based on special development planning for property within the contour and agreement, by the developer, to require a noise easement from affected property owners. According to the Defense Threat Reduction Agency, it limits tests that will produce more than 100 Pa (Pascal) at the boundary between Mesa del Sol and La Semilla based on the Federal Office of Surface

Figure III – 16: Explosive Noise



considered impulse noise. Simply stated, impulse noise is characterized by high-intensity noise over a short duration. Some areas surrounding Kirtland AFB are subject to increased levels of impulse (explosive) noise resulting from explosive testing at the Chestnut Range Explosives and Simulation Test Site and lower levels of explosive noise from small arms ranges.

5.4.3.2 Chestnut Explosives Range and Simulation Test Site

Explosive testing at the Chestnut Range Explosives Range and Simulation Test Site (Chestnut Site) can produce noise impacts for areas around the site, both on-and-off the Base. During planning for the Mesa del Sol development,

Mine Reclamation and Enforcement's determination that overpressures below this level are absolutely safe for avoiding damage to structures. Since 2007, DTRA reports no tests have been completed that exceeded this level at the Mesa del Sol boundary. Based on land use analysis, there is one Village Center, two residential neighborhoods, and an active adult community planned within the Chestnut Noise Contour. While it appears this development will not experience structural damage, there may be noise impacts from the explosive testing at the Chestnut Site.

The northeastern portion of Pueblo of Isleta also lies within the Chestnut Site's noise footprint, although the extent of exposure has not been characterized. Pueblo land within the noise contour is subject to loud intermittent noises as



well as high pressure related to the explosions. The Pueblo government has voluntarily restricted development in this area as long as the current Chestnut Site mission is active.

Applicable Recommendations: 6, 10, 20, 22, 23

5.4.3.3 Small Arms Ranges

Small arms are weapons carried by military personnel, such as revolvers, pistols, submachine guns, carbines, assault rifles, rifles, sniper rifles, squad automatic weapons, light machine guns, and sometimes hand grenades. Shotguns, general purpose machine guns, medium machine guns, and grenade launchers may be considered small arms or as support weapons, depending on the particular armed force. The Base has several ranges for use by small arms. As seen on Figure III – 16, these ranges are in the eastern area of the installation and their impacts are contained within the Base perimeter.

Applicable Recommendations: 6, 10, 20, 22

5.4.4 Unexploded Ordnance on Perimeter of Kirtland AFB

Unexploded Ordnance (UXO) includes ordnance fired, projected, dropped, or placed in such a way that it could be unintentionally exploded and are hazards, regardless of where found. Whether in an area by design or accident, these items have not yet functioned and pose the risk of injury or death to personnel who come across them. Most UXO are found in designated impact areas, are marked on appropriate maps and identified with warning signs and fences. Being able to recognize UXO is the first and most important step in dealing with a UXO hazard. The presence of UXO adjacent to Kirtland AFB represents a significant health and human safety issue that impacts land uses. The Base recognizes the danger and uses its MMRP to address remediation needs.

One perimeter area with UXO that has presented an ongoing management problem is Otero Canyon. As discussed earlier, Otero Canyon, is part of the Military Withdrawal, and a popular outdoor hiking, bicycling and equestrian use area just outside the City of Tijeras with an extensive trail system throughout the Canyon. Public use of this area so close to Kirtland AFB has raised safety and security concerns about existing land uses. In 2002, Kirtland AFB initiated a process to evaluate the feasibility of construction of a continuous perimeter fence through the Otero Canyon area to secure the military installation and

protect the public from UXO deposited during artillery munitions tests in the 1940s and 1950s. Members of the public are strongly opposed to this action because it would reduce recreation opportunities in the area. This pressure, augmented by several Federal, State and local officials, resulted in the 2007 decision by Kirtland AFB to not build the Otero Canyon fence.

The presence of UXO continues as an unresolved public safety issue. Access through this area by emergency responders has added another dimension to the issue. Construction of a fire break outside the fence line for use by emergency responders may address a portion of the issue. Public information campaigns about the risks of trespassing onto DoD/DOE lands certainly help, and facilitated discussion between public advocacy groups, possibly by DoD, DOE, and USFS, may address another element. However, the continued use of the area by the public for recreation without UXO remediation could be problematic. DoD indicated that to remediate the entire testing area would require “potentially in the hundreds of millions of dollars” and would require the removal of the majority of existing vegetation to identify and recover the UXO.

Applicable Recommendations: 3, 4, 6, 13

5.4.5. Gibson Boulevard Corridor and Gate Area Development Potential

Gibson Boulevard is the major thoroughfare north of the Sunport and most of Kirtland AFB and has significant development. There is potential for additional development and redevelopment and a requirement to consult with the Base and Sunport on structure heights over 26 feet.

The major issues identified in the JLUS Public Survey concerning the Gibson Corridor are airport and military activity noise, congestion and urban blight. In regard to blight, the feeling is that vacant storefronts and rundown housing in this area create perceptions of a lack of security and high crime rates. This sentiment was also generally expressed about the whole Southeast Heights area that borders Kirtland AFB. Congestion concerns refer to peak travel hours and were also identified in stakeholder interviews and the public participation survey.





Portions of the Gibson Boulevard Corridor are undergoing redevelopment. These new communities may be desirable for Kirtland AFB personnel and employees of associate units.

State Senator Tim Keller and City Councilor Rey Garduño suggested the possibility of using Kirtland AFB vacant land near the NM Veterans Memorial and the Gibson Gate, as park and recreation land. Kirtland AFB leaders have been approached about deeding the land back to the City. However, changing this property into a park land use may create access issues, land compatibility concerns, and security implications for Kirtland AFB.

There are varying degrees of opportunity for development near Kirtland AFB's access gates that could benefit both the Base and the region.

- ✓ Eubank Gate. The area near the Eubank Gate has experienced substantial development of employment-related land uses in recent years due in large part to the creation of the SSTP just east of Eubank Boulevard across from the Kirtland AFB access gate. There are still a few vacant parcels of land within the SSTP, as well as vacant, commercially zoned land along the west side of Eubank Boulevard just north of the gate adjacent to the property line of the Base. Additional research and development activities and associated offices will probably be built on most of these sites in the future.
- ✓ Wyoming Gate. There is presently no vacant land near the Wyoming Gate, but existing land uses could be viewed as temporary. Current land uses are mainly low intensity and easily movable, such as mobile home parks and businesses, and do not have improvements that represent significant investment value. If Kirtland AFB and its associates evolve in a way that create new demand for near-base housing and ancillary uses, many properties near the Wyoming Gate could be redeveloped with higher and more permanent uses.
- ✓ Louisiana/Gibson Gate. The gate is recessed several hundred feet to the east of the intersection. At one time, right-of-way (ROW) was acquired by the City of Albuquerque to improve circulation and flow. This proposed project and the ROW acquired to support it has been abandoned. However, the abandoned ROW is 150 feet wide and several hundred feet long, representing opportunities for vacant land adjacent to

the gate to be used for "park and shuttle" lots next to Gibson Gate and for park, open space and/or recreational uses further north near the Cesar Chavez Community Center.

- ✓ Properties along Gibson Boulevard between the Louisiana Boulevard and San Pedro intersection are a mix of failed and marginally successful commercial, restaurant and multi-unit residential uses. Several properties are vacant and some are underutilized; others are approaching a blighted condition that could create future demand for their redevelopment, depending on Kirtland AFB activity and redevelopment assistance by the City of Albuquerque.
- ✓ The vacant land between Ridgecrest Drive and Bullhead Park to the east of San Pedro Boulevard, across from and owned by the Veterans Administration, will likely be developed in time with additional Veterans Administration related uses even though it is not adjacent to a Kirtland AFB access gate.
- ✓ Truman Gate. There are no large vacant tracts near the gate, but the first block or two north of Gibson Boulevard between San Mateo and San Pedro Boulevards have several smaller, vacant parcels as well as unoccupied office buildings. Several of these buildings were used by Lovelace Hospital as "annexes" before the hospital ceased much of its operation in 2006 - 2007. Business uses that remain in this area are low intensity and generally do not have structures with significant investment value. Current zoning supports commercial and multi-unit residential land uses in the area, and redevelopment pressures could emerge when new employment activities occupy vacated buildings.
- ✓ Carlisle Gate. Existing development near the Carlisle Gate, like that near several Kirtland AFB access gates, is not intensive or high end. Much of the land along Carlisle may have higher value than the improvements on it, creating redevelopment potential as demand evolves.

When the north-south runway abutting the Gibson Boulevard south ROW is closed, the lack of commercial aircraft activity could fuel speculation about development potential associated with the Puerto del Sol Golf Course just north of Gibson Boulevard. Though prospectively



appealing for commercial development, surrounding neighborhoods and user constituencies (e.g. golfers, joggers), as well as the City of Albuquerque, would be unlikely to support such speculation.

Applicable Recommendations: 3, 4, 6, 15, 17, 18, 19, 20, 21, 22, 24,

5.4.6. Lovelace Respiratory Research Institute and Land Transfers

The Lovelace Respiratory Research Institute (LRRI), established in 1947, is a private biomedical research organization dedicated to improving public health through research on the prevention, treatment, and cure of respiratory disease. Equipped with a broad range of technical expertise and a wealth of research capabilities, LRRI studies respiratory health issues of concern to scientists and health care experts in universities, government, industry, and patient advocacy groups. The Institute's focus is on curing respiratory diseases through research aimed at understanding their causes and biological mechanisms; assessing and eliminating exposures to respiratory health hazards; and developing improved therapeutics, vaccines, and diagnostics. The Institute readily opens its unique research facilities to university, government, and private sector collaborators.

LRRI is a not-for-profit corporation employing approximately 100 PhD level scientists and 540 technicians and support staff. LRRI has approximately 500,000 SF of facilities located in the southeast part of Kirtland AFB and off-Base along the Gibson Boulevard corridor. The on-Base LRRI facility originally focused on large, multi-year federal projects researching the affects of inhaled radioactive particles and studies of therapy for blast and shock injury to the lung. The decision to locate these activities on-Base was driven by project security requirements.

In the late 1980s, the DOE-funded radiation programs at the facility were largely completed, and the facility faced possible closure. At that time LRRI encompassed a unique combination of facilities and staff that could satisfy a wide-range of Federal and non-Federal research needs, but Federal ownership of the facility severely limited access to other sponsors. In 1996, the government-owned facility was privatized, granting Lovelace a long-term lease for its use for other Federal and non-Federal research. Today, the LRRI facility is the nation's largest independent, not-for-

profit organization conducting basic and applied research on the causes and treatments of respiratory illness and disease.

LRRI is located on land that was withdrawn from the Bureau of Land Management for Kirtland AFB and subsequently transferred to DOE. Because the facility is now operating as an independent organization on DOE withdrawn land creates an on-going liability to DOE. As a result, DOE is in the process of transferring ownership of the land and buildings to LRRI. This is a lengthy process that will take several years. In addition to the land withdrawal process, transfer of ownership requires specific deed restrictions specifying that the facility will operate in the future as it does today and that the land will continue to be used in the same manner that it is today.

The LRRI facility conducts research requiring graded levels of security; so the location on Kirtland AFB is beneficial to their operations. The organization's research related to chemical, biological, and radiation exposure on animals presents minimal risk to the surrounding area. Hazardous material quantities are small and most of them exist in New Mexico. To date, the LRRI facility is a good example of cooperation and planning between a private organization, DOE and Kirtland AFB, and is also an example of the need for thoughtful, cooperative planning to ensure that the safety and security of the Base is not compromised. The organization's operations, compatible with installation missions and security considerations, are an excellent example of functions requiring security similar to military activities that offer opportunities not available through traditional economic development strategies.

Applicable Recommendations: 3

5.4.7 Fuel Leak Plume Remediation

During the course of the JLUS analysis, a fuel leak from storage tanks that occurred over many years on and north of Kirtland AFB emerged as a discussion point. While not currently a germane land use issue, the plume "could potentially" develop into one in the future.

The public's concern is that a mixture of aviation gas and jet fuels has reached an area above and on the aquifer providing potable water to much of Albuquerque and Bernalillo County. This fuel spill was initially self-reported by the Air Force, and Base leaders are proactive in providing information regarding the extent of the leak; fuel



spill and plume characterization; ongoing extraction and remediation efforts; plans for remediation methods and timing; actions to repair the source and effort to preclude similar events in the future.

Significant remediation work has been accomplished, but there are differing opinions between Air Force, State and local officials about the most appropriate steps and funding for quick remediation. In May 2010, an announcement was made that following a comprehensive assessment of the plume the Air Force would accelerate the cleanup of the contaminated soil and groundwater. Members of the New Mexico Congressional Delegation committed to ensuring adequate funding for an accelerated schedule.

Applicable Recommendations: 30

5.4.8 Mixed Waste Landfill (MWL)

The MWL is located on Kirtland AFB, managed by DOE and located approximately five miles southeast of the Sunport and one mile east of the eastern boundary of La Semilla (Figure III - 17). Similar to the foregoing discussion of the fuel plume, the MWL is not currently a germane land use issue, but it "could potentially" develop into one.

The landfill is a 2.6 acre site used for disposal of low-level radioactive wastes and minor amounts of non-radioactive wastes from SNL from 1959 through 1988. It contains, about 100,000 cubic feet of low-level radioactive waste, approximately 6,300 curies of radioactivity in 1988. Because a significant portion of the waste is comprised of cobalt 60 (⁶⁰Co), with a half-life of 5.24 years, the radioactivity emanating from the ⁶⁰Co will decline rapidly over the next 30 years. The New Mexico Environment Department

(NMED), with authorization from EPA, is the responsible agency for ensuring corrective action is completed for the site.

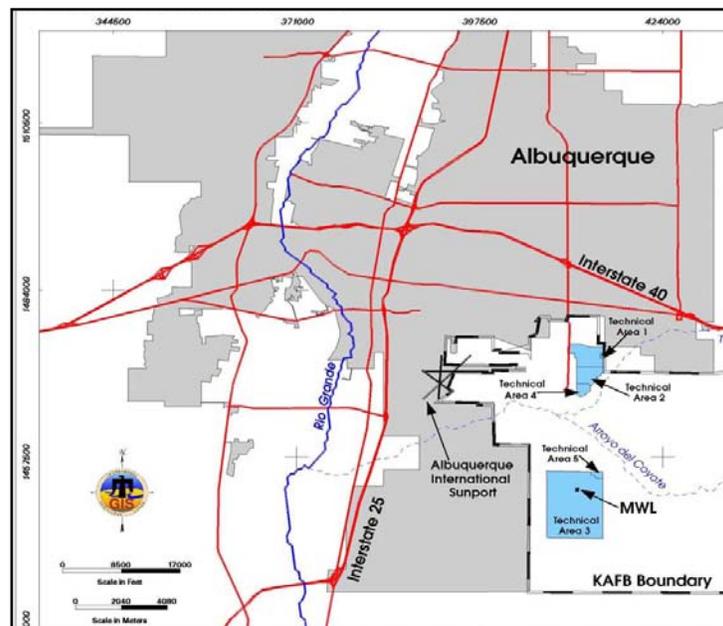
Members of the community and activist groups have lobbied for over a decade to force SNL to excavate the landfill and move the waste to an off-site disposal area. However, the NMED granted final approval to a Corrective Measures Implementation Plan (CMIP) that leaves the waste in place while incorporating an evapotranspirative (ET) soil cover and a bio-intrusion barrier. Construction of the ET cover was completed in September 2009, and the required Corrective Measures Implementation Report was transmitted to NMED on January 26, 2010. DOE expects to receive approval of the report in the near future.

The NMED Final Order and Class 3 Resource Conservation and Recovery Act (RCRA) permit modification that approved the corrective measure also requires development and implementation of a Long-Term Monitoring and Maintenance Plan (LTMMP) for the ET cover. The LTMMP monitoring, maintenance, and implementation of physical and institutional controls must ensure that the measures put into place protect human health and the environment. The Plan also requires a

review of the corrective measures performance every five years, with the stipulation there will be additional controls or actions required if the cover fails to perform as designed. According to DOE, some members of the public have concerns about potential leakage of chemical and radioactive contaminants from the soil into the groundwater, thus they anticipate future requests for public hearings related to required permit amendments. The

continuing community interest in the effectiveness of the

Figure III – 17: Mixed Waste Landfill





MWL corrective action was demonstrated in an April 21, 2010, joint DoD/DOE community public meeting to specifically address the status of the MWL and the ongoing groundwater monitoring program. While resolution of this issue may not enable community development directly, it could make property on-Base available for other uses.

Applicable Recommendations: 30

5.4.9 University of New Mexico (UNM) South Campus Student Housing

UNM plans to expand its student housing stock by constructing new housing and renovating existing housing units on its three Albuquerque campuses – main, north and south. Plans call for developing new upperclassman housing between “The Pit” and I-25. Currently, the goal is to provide 600 townhouse units south of Avenida de Caesar Chavez, as well as retail and mixed uses along Avenida de Cesar Chavez. The new, high-density student housing at this location will have traffic impacts primarily on Avenida de Cesar Chavez and University Boulevard, which connect the residences to I-25 and UNM. The new housing should have a minimal impact on Kirtland AFB, and vice versa.

The University also owns a large tract of land west of University Boulevard and North of Gibson Boulevard. The long range plans are to develop this property for mixed use.

Applicable Recommendations: 3, 4, 6, 18, 21, 22, 25, 26, 28

5.4.10 UNM Property in Mesa del Sol Development Area

Mesa del Sol includes 400 acres of UNM property within the development area and another 40 acres in the area of the proposed Mesa del Sol/I-25 interchange. In 2009, the University’s Film School expanded to include a Digital Film and Media Building at Mesa del Sol’s community center. UNM has a long range vision to open a branch campus at the Mesa del Sol location; however, at this time, there are no specific plans.

5.4.11 Relocation of UNM Observatory to La Semilla Property

As discussed in Section 5.2.6.3, UNM is considering the desirability and feasibility of relocating its observatory from its present location to the southern part of La Semilla. The University is seeking a location with less light pollution that is increasingly becoming an adverse impact on observatory capabilities. Relocated activities would include the Friday night public stargazing activity that would increase traffic volume to the observatory. A higher intensity land use, such as public stargazing, is likely to be considered incompatible with the La Semilla Master Plan. As noted in the earlier discussion, the need to balance the potential adverse impacts from Base missions and UNM desires for the highest quality observatory performance requires close coordination. Relocation into La Semilla would also require a determination that observatory activities and related human impacts will be compatible with the La Semilla purposes.

Applicable Recommendations: 3, 4, 6, 18, 21, 22, 25, 26, 28





PART IV – RECOMMENDATIONS

Section No.	Section Contents Title	Page No.
1.0	Introduction	IV – 2
2.0	Recommendation-to-Strategy Tool Relationship	IV – 2
3.0	Reading the Recommendations	IV – 4
4.0	Recommendations	IV – 5
4.1	Establish a JLUS Implementation Committee	IV – 5
4.2	Develop Memoranda of Understanding (MOU)	IV – 6
4.3	Establish a Regional Planning Forum (RPF)	IV – 7
4.4	Establish a Kirtland AFB Planning Area (KPA)	IV – 8
4.5	Request an Air Installation Compatible Use Zone (AICUZ) Study	IV – 13
4.6	Support Codifying New Mexico Executive Order No. 2004-046 into State Law	IV – 15
4.7	Support State Designations of Regional Military Influence	IV – 16
4.8	Pursue Designation as Area of Critical State/Local Concern and Interest ("Critical Areas")	IV – 17
4.9	Evaluate Formal Coordination of Local Comprehensive Planning	IV – 18
4.10	Formalize Relationship Between the Pueblo of Isleta and Kirtland AFB	IV – 19
4.11	Ensure an Aviator Advisor is Included in Development of Alternative Energy Projects and Leases	IV – 20
4.12	Consider Small Area Feasibility Study of Southern Entrance to Kirtland AFB if Base Missions Change	IV – 21
4.13	Support Remediation of UXO on Kirtland AFB	IV – 22
4.14	Consider Designations of Clear Zones (CZ) and Accident Potential Zones (APZ) for Selected Sunport Runways	IV – 23
4.15	Consider Acquisition of Property to Ensure Land Use Compatibility	IV – 24

Section No.	Section Contents Title	Page No.
4.16	Consider Acquiring Control of Property to Ensure Land Use Compatibility	IV – 25
4.17	Consider Transfer of Property or Development Rights to Ensure Land Use Compatibility	IV – 27
4.18	Ensure Conditions of Approval and Developer Agreements Support Land Use Compatibility	IV – 28
4.19	Leverage Capital Improvement Programs	IV – 29
4.20	Building Codes and Code Enforcement	IV – 30
4.21	Mandatory Referral of Development Applications	IV – 31
4.22	Military Participation on Local Planning Boards	IV – 32
4.23	Mandatory Referral of Documents Requiring Environmental Review	IV – 33
4.24	Regional Transportation Planning and Land Use Compatibility	IV – 34
4.25	Real Estate Disclosures	IV – 35
4.26	Real Estate Disclosures – Zoning and Development Agreements	IV – 36
4.27	Avigation Easements	IV – 37
4.28	Light Control	IV – 38
4.29	Preserve La Semilla as a Buffer	IV – 39
4.30	Fuel Plume and Mixed Waste Landfill Advisories	IV – 40
4.31	Ensure Compliance with FAA Parts 77 and 150	IV – 41
4.32	Biennial Press Release Concerning Economic and Employment Impacts of Kirtland AFB and the Sunport	IV – 42
4.33	Pursue Mission Growth and Seek New Missions for Kirtland AFB	IV – 43
5.0	Summary Table – Recommendation to Stakeholder	IV – 44
6.0	Summary Table – Recommendation to Issue/Factor	IV – 46



1.0 Introduction

Part IV includes the courses of action recommended to address the issues developed in coordination with the JLUS Advisory Committee (AC) and Technical Committee (TC) and approved by the AC. The consensus on these recommendations is that the AC determined each to be realistic, achievable, and executable for the organizations and stakeholders its members represent.

The goal of the recommendations is to address the JLUS Issues discussed in detail in *Part III – Compatibility Issues and Analysis* and provide specific OEA-validated tool(s) for land use authorities and other stakeholders to use. Proper application of these tools will help the region to mitigate existing incompatible land uses and establish procedures and processes to ensure future land use decisions do not inadvertently threaten Kirtland AFB missions or unnecessarily limit regional development. As such, the recommendations help balance sustainment of current Kirtland AFB missions and viability of future possibilities with the development visions of regional governments.

Budget estimates have been included where possible. However, many of the actions will involve levels of effort that cannot be defined that will occur over several years precluding budget estimates. The majority of recommendations are associated with staff actions by stakeholders and similar entities throughout the MRCOG planning region which will require workload adjustments that cannot be projected. For example, there is no way to forecast the number of development applications needing to be referred to the Base or Sunport by various land use authorities.

The recommendations recognize the differences in land use and land use control philosophies amongst the stakeholders by recommending “consideration” versus “implementation” in many cases. This is evident in discussions of land use controls in that recommendations do not specifically call for zoning controls. The use of zoning is a more aggressive step that can be taken by stakeholders comfortable with such a strategy without suggesting zoning is or should be acceptable to all stakeholders. In some cases, such as the Pueblo of Isleta and the other 12 Native American communities within the MRCOG region, zoning could not be applied based on how land is owned. Therefore, recommendations for aggressive kinds and applications of land use controls has been left for the determination by individual stakeholders.

There is no intent for any recommendation to adversely impact existing, approved developments or associated agreements. Compatible land uses by FAA and Air Force safety and noise zones are discussed in Part III, Sections 5.3.11, 5.3.1.2 and 5.4.1.3, respectively.

The recommendations represent agreement by members of the AC that they are suitable for implementation; however, success requires ongoing oversight and coordination. Therefore, a recommendation for a JLUS Implementation Committee composed of members of the AC and led by MRCOG is included until a Regional Planning Forum (RPF) can be established to assume implementation responsibilities and long-term regional planning.

2.0 Recommendation-to-Strategy Tool Relationship

There are a total of 33 recommendations. Wherever possible, each recommendation is anchored on one of the strategies validated by OEA and discussed in its *Practical Guide to Compatible Civilian Development Near Military Installations, Part V (Toolkit)*. The OEA Guide organizes land use and regulatory tools into 6 Subject Areas and 12 Strategies as shown below.

Subject Area	Rec. #
Strategy	
Tool	

Table IV lists the OEA Tools and the related JLUS Recommendation Number, where applicable. Those recommendations that do not easily fit within a Toolkit strategy/tool are categorized as “Implementation and Management” (Recommendations 1, 2, and 3) or “Other” (Recommendations 29, 30, 32, and 33).

Section 3 explains how to read the recommendations. Section 4 includes the description of the applicable strategy/tool along with specific recommendations. Section 5 includes summary tables to serve as a cross reference between recommendations, stakeholders and responsibilities.





Table IV: OEA Strategy Tools¹ & JLUS Recommendations

Compatible Land Use Planning	Rec. #
<i>Land Use Planning Construct</i>	
<i>DoD Support to State and Local Government</i>	13
Military Department's AICUZ Programs	5
OEA JLUS Grant Program	
DoD Conservation Partnering Authority	
<i>State Government Programs</i>	
Legislative Initiatives	6
State Planning Authority	
Regions of Military Influence	7
Areas of Critical State/Local Concern and Interest	8
State Capital Expenditures in Local Improvement Programs	
State Mandates and State Funding	
<i>Local Government Programs</i>	10, 11, 12, 24
The Local Comprehensive Plan	9
Military Influence Planning District	4
Military Influence Overlay District	
Military Influence Disclosure District	
Development Moratorium or "Time Out" on Development Application Processing	
Land Use Regulations	26, 28
<i>Local Building Code</i>	
Euclidian Zoning	
Piecemeal or Parcel-Specific Rezoning	
Comprehensive Zoning Map Amendment	
Comprehensive Downzoning	
<i>Flexible Performance-Based Zoning</i>	31
Floating Zone	
Overlay Zone	
Military Influence Zoning District	
Accident Potential Zones	14
Live Ordnance Aircraft Arrival and Departure Corridors	
Noise Protection (Quiet) Zones	
Maximum Mission Contour	
Planned Unit Development	
Mixed-Use or Multi-User Planned Development	
Agricultural Zoning	16
Transfer of Development Rights	17
Land Subdivision Regulations	
<i>Subdivision Regulations</i>	

Conditions of Approval	18
Developer Agreements	18, 26
Capital Improvement Program	19
Cluster Subdivision	
Special Environmental Considerations	28
Building and Structural Codes	
<i>Building Codes</i>	20, 28
<i>Indoor Sound Level Reduction</i>	20
International Building Code under the International Code Council	
Building and Structure Height Limitation	20
The Development Review Process	
<i>Local Government Development Application Review Processes</i>	23
Mandatory Referral of Development Applications	21
Military Participation on Local Planning Boards as Seated Ex Officio Board Member	11, 22, 24
Local Administrative Actions	
<i>Real Property Transaction Strategies</i>	15, 17, 25
<i>Easements</i>	16
Avigation	27
Conservation Easements and Partnering	16
Open Space	16
Less than Fee Simple Acquisition	15
Covenant and Deed Restriction	
Purchase of Development Rights	16
Land Swaps/Transfers	17
Property Tax Incentives	
Fee Simple Acquisitions	15

¹ Practical Guide to Compatible Civilian Development Near Military Installations, <http://www.oea.gov/oeaweb.nsf/PG?readform>



3.0 Reading the Recommendations

Each recommendation is presented as shown in the example below and includes a Title and General Subject Area; Recommendation Number; Description; Area of

Applicability; Lead, Action and/or Supporting Stakeholders, as applicable; Budget Estimate and Possible Funding Sources; Proposed Completion Timeframe and cross reference to the Issues/Factors the recommendation targets.

Table IV – X: Recommendation Title (This is an example.) General Subject Area

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders			
						L	A	S	Other
B	Establish a Kirtland AFB Planning Area (KPA). Establish a KPA comprised of four (4) sectors – KPA I, KPA II, KPA III and KPA IV (depicted in Figures IV – 1 and IV – 2). Stakeholders should use the KPA sectors to focus extra planning attention on land uses based on the potential to adversely impact Kirtland AFB missions or Sunport operations. Establishment of the KPA sectors will: <ul style="list-style-type: none"> • Provide a regional context for planning with consideration of the impacts on Kirtland AFB and the Sunport. • More accurately identify areas affected by Kirtland AFB and Sunport operations. • Assist land use authorities to integrate Kirtland AFB and the Sunport into on-going planning considerations for the region's future development. • Protect Kirtland AFB missions and Sunport operations and potential. • Allow jurisdictions to focus on potential health, safety and welfare implications from Kirtland AFB missions and Sunport operations. • Enable more deliberate planning of compatible and complementary land uses. 	X	X	X	X	L	Regional Planning Forum	A	Torrance County
							MRCOG	A	Valencia County
						S	Sunport	A	City of Albuquerque
						S	Kirtland AFB	A	Pueblo of Isleta
						A	Bernalillo County	S	University of New Mexico
						A	Sandoval County		U.S. Forest Service
						A	Socorro County	S	Department of Energy
Budget Estimate: Staff Time. Possible Funding Sources: Stakeholder budget redistribution, if required. Updates to formal plans would be funded as project costs at time of update.						Timing			
F						0-2 Years	3-5 Years	5-10 Years	On-going
						X		G	

Issues/Issue Factors: X.5.1, 5.2, 5.3 and 5.4.

Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.

- A** – Table number, name and recommendation focus.
- B** – Recommendation number for reference.
- C** – Description of recommendation and actions required.
- D** – Where actions will apply. Application of actions may not be appropriate for all four areas.
- E** – Stakeholders to take actions. “L” – Lead Stakeholder, “A” – Action Required by Stakeholder and “S” – Supporting (Coordinating) Stakeholder. Not all Recommendations require all types of Stakeholders.
- F** – Budget estimate and possible funding source(s). Budget estimate may be expressed as “Staff Time” or in monetary terms.
- G** – Timing for completion. Where actions should be recurring, “On-going” is indicated.
- H** – Addresses Issues/Issue Factors. Some recommendations will focus on Issues; others will be more narrowly written to address an individual factor or group of factors. References are to paragraph numbers
- I** – Legend.



4.0 Recommendations

There are 33 recommendations of which three are categorized as "Implementation and Management;" 26 are associated with a Toolkit strategy/tool; and four are considered "Other."

4.1. Establish a JLUS Implementation Committee (Recommendation 1).

Coordinating JLUS implementation is a local responsibility; however, there is currently no standing, regional organization chartered, empowered or resourced to multi-jurisdictional, regional land use planning. Therefore, as an interim measure to designating a Regional Planning Forum (Recommendation 3), a JLUS Implementation Committee

should be established and led by MRCOG. MRCOG is a proven and successful regional coordinator and can serve as the facilitator of continuing regular meetings of the Advisory Committee (AC) stakeholders to enable the formalized communication process that will be necessary to implement the multi-jurisdictional JLUS recommendations. The JLUS Implementation Committee should have technical support, as needed, and ensure that necessary discipline expertise is available to Committee Members and their decision makers.

Table IV – 1: Establish a JLUS Implementation Committee					Implementation and Management												
#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
1	<p>Establish a JLUS Implementation Committee.</p> <p>Establish a JLUS Implementation Committee to coordinate actions and resolve potential conflicts between Stakeholders, property owners, regional organizations and the public to efficiently implement the JLUS recommendations.</p> <ul style="list-style-type: none"> The JLUS Implementation Committee should be established as soon as practical after acceptance of the JLUS Report, but not later than 6-months. Until a Regional Planning Forum is established, the JLUS Implementation Committee shall be facilitated by MRCOG. The minimum membership should be one representative from the Stakeholders included on the JLUS Advisory Committee (AC). Additional members or organizations may be included if the JLUS Implementation Committee determines it appropriate. The Chairperson shall be selected and serve a term determined by Committee Members. The original members of the AC may be changed at Stakeholder discretion. The JLUS Implementation Committee will meet quarterly, or as agreed to by its members. The JLUS Implementation Committee technical experts will meet as requested by the Committee Ad hoc meetings of the members of the Implementation Committee and technical support function may occur, as needed, to ensure timely action on implementation actions. 	X					Regional Planning Forum	A	Torrance County								
						L	MRCOG	A	Valencia County								
						A	Sunport	A	City of Albuquerque								
						A	Kirtland AFB	A	Pueblo of Isleta								
						A	Bernalillo County	A	University of New Mexico								
						A	Sandoval County	A	U.S. Forest Service								
						A	Socorro County	A	Department of Energy								
						<p>Budget Estimate: Staff Time.</p> <p>Possible Funding Sources: Stakeholder budget redistribution, if required.</p>						<p>Timing</p> <table border="1"> <thead> <tr> <th>0-2 Years</th> <th>3-5 Years</th> <th>5-10 Years</th> <th>On-going</th> </tr> </thead> <tbody> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>				0-2 Years	3-5 Years
0-2 Years	3-5 Years	5-10 Years	On-going														
X			X														
<p>Issues/Issue Factors: 5.1.1</p> <p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	



4.2. Develop Memoranda of Understanding (MOU) (Recommendation 2).

A MOU is an agreement between two or more parties that describes a relationship and assigns roles and responsibilities for actions. It can be complicated or simple, formal or informal and binding or advisory as deemed appropriate by the signatories. Such agreements permit parties to focus on specific objectives and clearly articulate their individual and collective responsibilities. MOUs are used to establish an organizational structure that supports the most efficient and effective approach to coordination. MOUs also limit unnecessary involvement of parties in matters of no interest to the constituencies or

interests represented. These agreements are particularly helpful where an organization is composed of a large number of members representing multi-jurisdictional constituencies that may have both shared and disparate interests. When used properly, MOUs enable efficient and effective coordination between parties. The complexity of actions needed and diversity of stakeholders involved in implementing JLUS recommendations suggests there is great value in the use of MOUs.

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders												
2	<p>Develop Memoranda of Understanding (MOU)</p> <p>The JLUS Implementation Committee should develop a series of MOUs to identify objectives, assign responsibilities and codify the necessary processes and relationships to support recommendation implementation. MOU development is a necessary, early step in implementation; therefore, MRCOG should assume the lead role until a Regional Planning Forum (Recommendation 3) or similar entity is created to oversee JLUS implementation.</p> <p>At a minimum, there should be an overarching MOU describing the process to be used by the JLUS Implementation Committee to coordinate actions. Ensuring Kirtland AFB and Sunport representatives are comfortable with how their organizations will be expected to interact with and support the JLUS Implementation Committee is essential to the overarching MOU.</p> <p>Additional MOUs between individual or groups of stakeholders should be developed as action on each JLUS recommendation begins. These MOUs should address coordination amongst the stakeholders and with the JLUS Implementation Committee.</p> <p>Unless clearly inappropriate, all MOUs should include Kirtland AFB and the Sunport as signatories.</p> <p>All MOUs should transfer to whatever organization or organizations are established or chartered to manage long-term, regional planning related to Kirtland AFB and the Sunport.</p>						Regional Planning Forum	A	Torrance County									
						L	MRCOG	A	Valencia County									
						A	Sunport	A	City of Albuquerque									
						A	Kirtland AFB	A	Pueblo of Isleta									
						A	Bernalillo County	A	University of New Mexico									
						A	Sandoval County	A	U.S. Forest Service									
						A	Socorro County	A	Department of Energy									
<p>Budget Estimate: Staff Time.</p> <p>Possible Funding Sources: Stakeholder budget redistribution, if required.</p>							<p>Timing</p> <table border="1"> <thead> <tr> <th>0-2 Years</th> <th>3-5 Years</th> <th>5-10 Years</th> <th>On-going</th> </tr> </thead> <tbody> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			X
0-2 Years	3-5 Years	5-10 Years	On-going															
X			X															
Issues/Issue Factors: 5.1.1																		
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.																		



4.3. Establish a Regional Planning Forum (RPF) (Recommendation 3).

The multi-jurisdictional responsibility for land use that impacts or is impacted by Kirtland AFB and Sunport activities demands a regional approach to sustaining the Base and Sunport existing and potential operations. Establishing a RPF does not assume regional stakeholders would cede existing authority but does require a high level of commitment from all stakeholders to achieve compatible land uses whenever and wherever possible. The purpose of the RPF is to provide a facilitator and forum in which matters associated with JLUS implementation and long-term, coordinated planning of actions that could impact Kirtland AFB and Sunport activities can be pursued in an efficient way in each land use jurisdiction. Currently, there is no RPF-like entity that can facilitate a regional approach to implementing JLUS recommendations and coordinating future land use decisions to ensure the proper balance

between mission sustainment and community development. MRCOG provides an excellent model for such an organization and might – with appropriate changes to its charter and resources – serve the RPF role. Another alternative might involve the City of Albuquerque or Bernalillo County assuming the role as facilitator. Stakeholders should quickly work to identify potential solutions for a RPF. Together, they should assess each alternative's respective pros and cons and select a method to ensure formal, regional planning that will be supported by their constituencies. The RPF should be a partner to the stakeholders, property owners and the public to help effectively implement the JLUS recommendations and assist in the integration of long-term planning to support regional needs.

Table IV – 3: Establish a Regional Planning Forum (RPF)					Implementation and Management													
#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders												
3	<p>Establish a Regional Planning Forum (RPF)</p> <p>Establish a RPF to provide a forum to coordinate land use actions and communications between the Stakeholders, property owners, agencies and the public. The RPF should serve to ensure potential decisions made by the multiple jurisdictions with land use authority or activities with operations that can impact – or be impacted by – Kirtland AFB and the Sunport are efficiently and effectively integrated to ensure the proper balance between mission sustainment and community development.</p> <p>MRCOG provides an excellent model for such an organization and might – with appropriate changes to its charter and resources – serve the RPF role. Therefore, MRCOG should lead the effort to assess the best alternative for a RPF. Given land use responsibility for property adjacent to the Base and Sunport, the City of Albuquerque or Bernalillo County could be considered for the RPF role. All Stakeholders are significantly vested in the creation of a RPF and should be fully engaged in determining the best organizational structure, responsible parties and processes to ensure long-term planning supports the needs of the Base, Sunport, the region and their constituencies.</p>						Regional Planning Forum	A	Torrance County									
						L	MRCOG	A	Valencia County									
						A	Sunport	A	City of Albuquerque									
						A	Kirtland AFB	A	Pueblo of Isleta									
						A	Bernalillo County	A	University of New Mexico									
						A	Sandoval County	A	U.S. Forest Service									
						A	Socorro County	A	Department of Energy									
<p>Budget Estimate: Staff Time.</p> <p>Possible Funding Sources: Stakeholder budget redistribution, if required.</p>							<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td>X</td> <td></td> <td></td> <td></td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			
0-2 Years	3-5 Years	5-10 Years	On-going															
X																		
<p>Issues/Issue Factors: 5.1, 5.2, 5.3 and 5.4.</p>																		
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																		



4.4. Establish a Kirtland AFB Planning Area (KPA) (Recommendation 4).

The KPA is based on OEA's Military Influence Planning District Tool. It is a geographic planning area identifying where Kirtland AFB or Sunport operations may impact surrounding stakeholders or where action by surrounding stakeholders may impact the ability of the Base and Sunport to accomplish its missions. The goal of the KPA is to help regional stakeholders integrate the Base and Sunport mission activities with a comprehensive picture of the region's vision for its future. The purposes include, but are not limited to:

- Sustainment of Base missions and Sunport operations.
- Promotion of an orderly transition and rational organization of land uses.
- More accurately identifying areas affected by Base and Sunport operations.
- Enabling a compatible mix of land uses.

There is no intent for planning within the KPA to adversely impact existing, approved developments or associated agreements nor result in loss of entitlements or down zoning.

- Protection of the public's health, safety, and welfare.

Table IV – 4: Establish a Kirtland AFB Planning Area (KPA) Compatible Land Use Planning

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders												
						L	A	S	A									
4	<p>Establish a Kirtland AFB Planning Area (KPA).</p> <p>Establish a KPA comprised of four (4) sectors – KPA I, KPA II, KPA III and KPA IV (depicted in Figures IV – 1 through IV – 4 below) for Kirtland AFB and the Sunport. Stakeholders should use the KPA sectors to focus extra planning attention on land uses based on the potential to adversely impact Kirtland AFB missions or Sunport operations. Establishment of the KPA sectors will:</p> <ul style="list-style-type: none"> • Provide a regional context for planning with consideration of the impacts on Kirtland AFB and the Sunport. • More accurately identify areas affected by Kirtland AFB and Sunport operations. • Assist land use authorities to integrate the Kirtland AFB and Sunport into on-going planning considerations for the region's future development. • Protect Kirtland AFB missions and Sunport operations and potential. • Allow jurisdictions to focus on potential health, safety and welfare implications from Kirtland AFB missions and Sunport operations. • Enable deliberate planning of compatible and complementary land uses. <p>The KPA Sectors are depicted on Figure IV – 1 and IV – 2 and defined as:</p> <ul style="list-style-type: none"> • KPA I – Includes the MRCOG Region. • KPA II – Includes the Clear Zones (CZ) and Accident Potential Zones I and II (APZ I and APZ II) for Runways 08/26 and approach ends of 03 and 30. • KPA III – Includes areas associated with aircraft noise and impulse noise. It includes land within the 65dB CNEL noise contours provided by the Sunport (Figure III – 12) and the Chestnut Noise Easement (Figure III - 33). • KPA IV – Includes areas associated with land beneath and adjacent to the ground tracks of aircraft conducting low level flights to-and-from the Sunport. KPA-IV is focused on compatible density, limiting object height and protection from light encroachment. 	X	X	X	X		Regional Planning Forum	A	Torrance County									
							MRCOG	A	Valencia County									
						S	Sunport	A	City of Albuquerque									
						A	Kirtland AFB	A	Pueblo of Isleta									
						A	Bernalillo County	S	University of New Mexico									
						A	Sandoval County		U.S. Forest Service									
						A	Socorro County	S	Department of Energy									
<p>Budget Estimate: Staff Time.</p> <p>Possible Funding Sources: Budget reallocation, if required. Updates to formal plans would be funded as project costs at time of update.</p>							<p>Timing</p> <table border="1"> <tr> <th>0-2 Years</th> <th>3-5 Years</th> <th>5-10 Years</th> <th>On-going</th> </tr> <tr> <td>X</td> <td></td> <td></td> <td></td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			
0-2 Years	3-5 Years	5-10 Years	On-going															
X																		
<p>Issues/Issue Factors: 5.1.1, 5.1.4, 5.2, 5.3 and 5.4.</p>																		
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																		



Figure IV – 1: Proposed Kirtland Planning Area (KPA) Sector KPA I

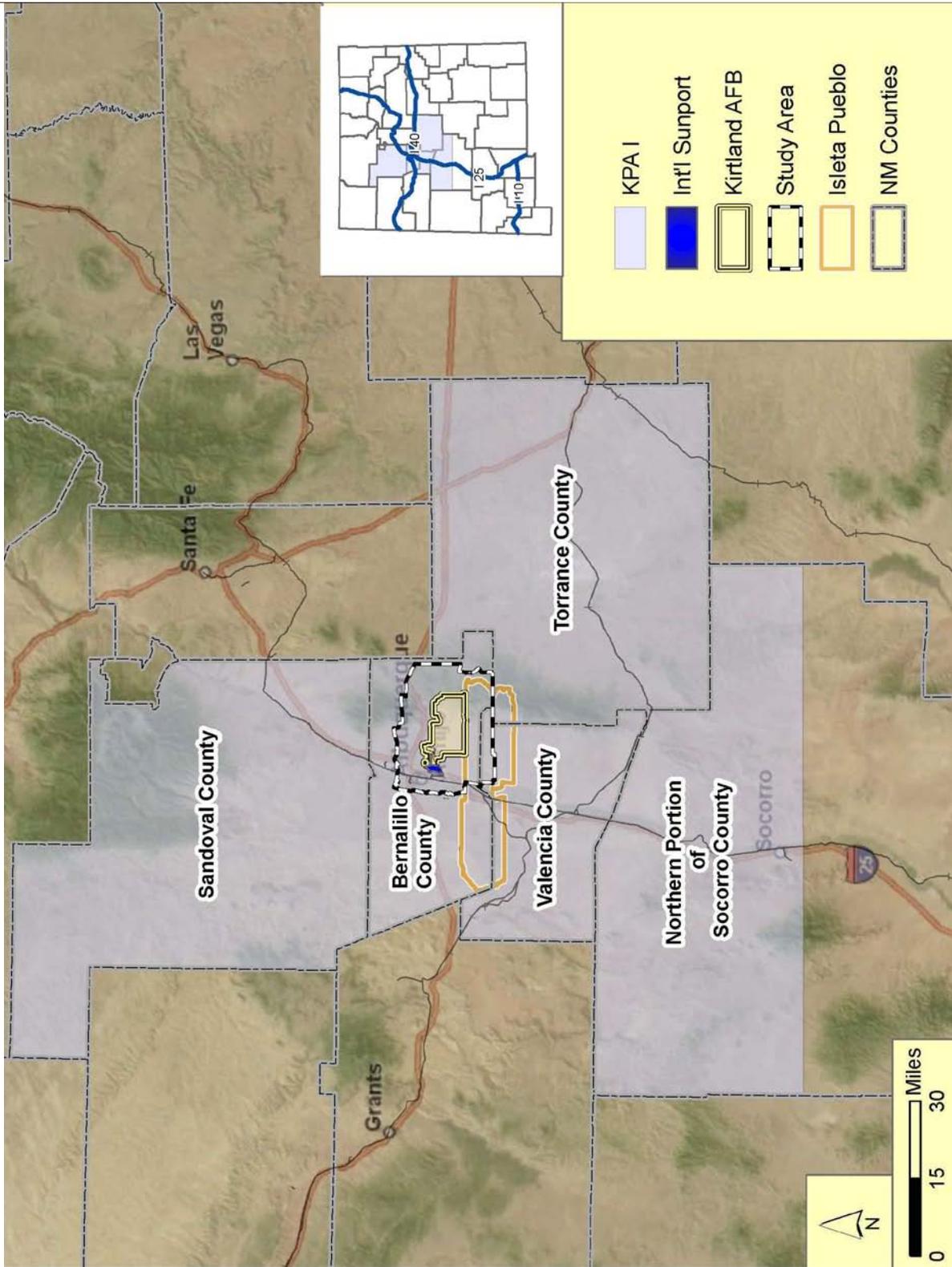




Figure IV – 2: Proposed Kirtland Planning Area (KPA) Sector KPA II

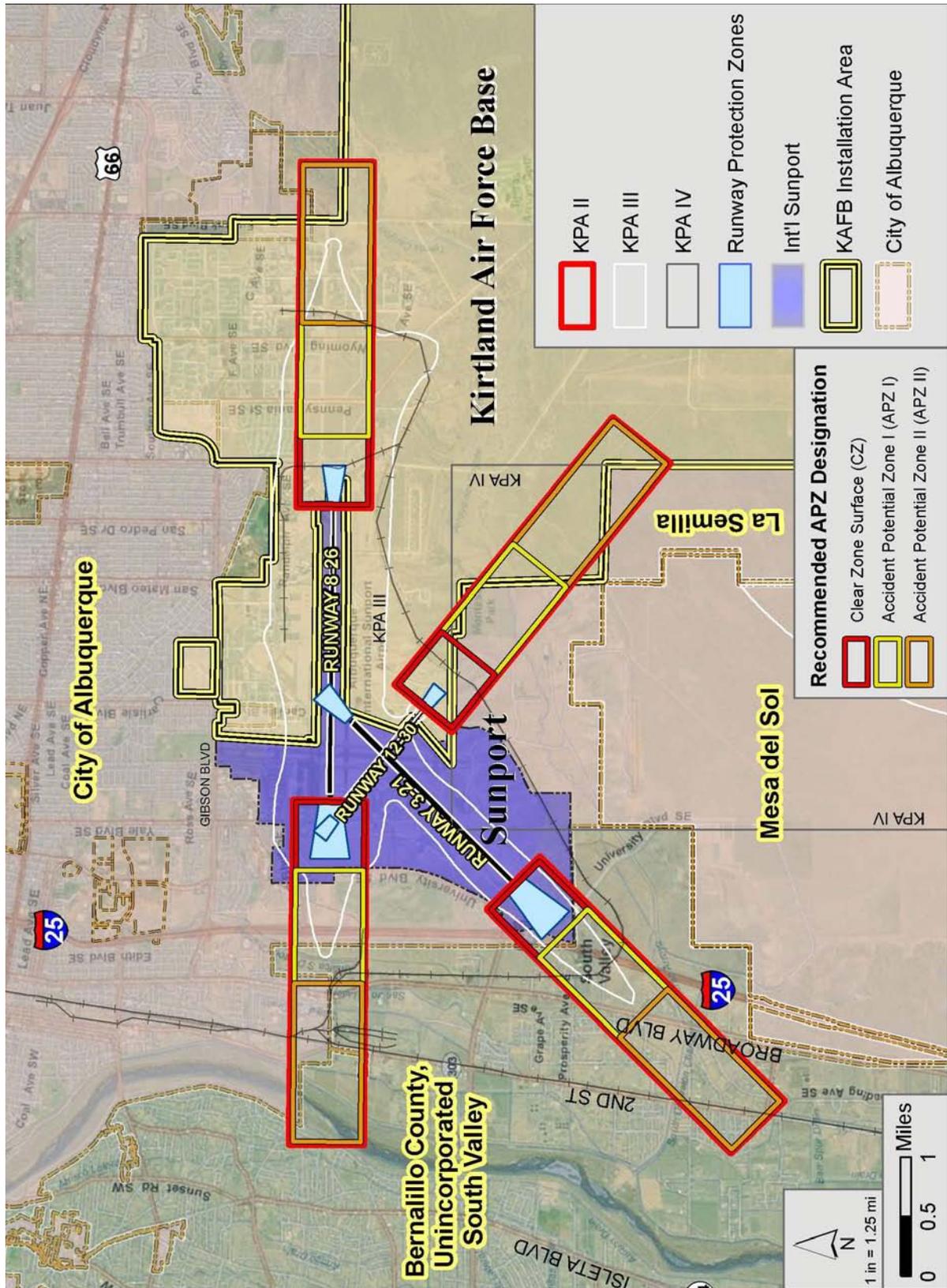




Figure IV – 3: Proposed Kirtland Planning Area (KPA) Sector KPA III

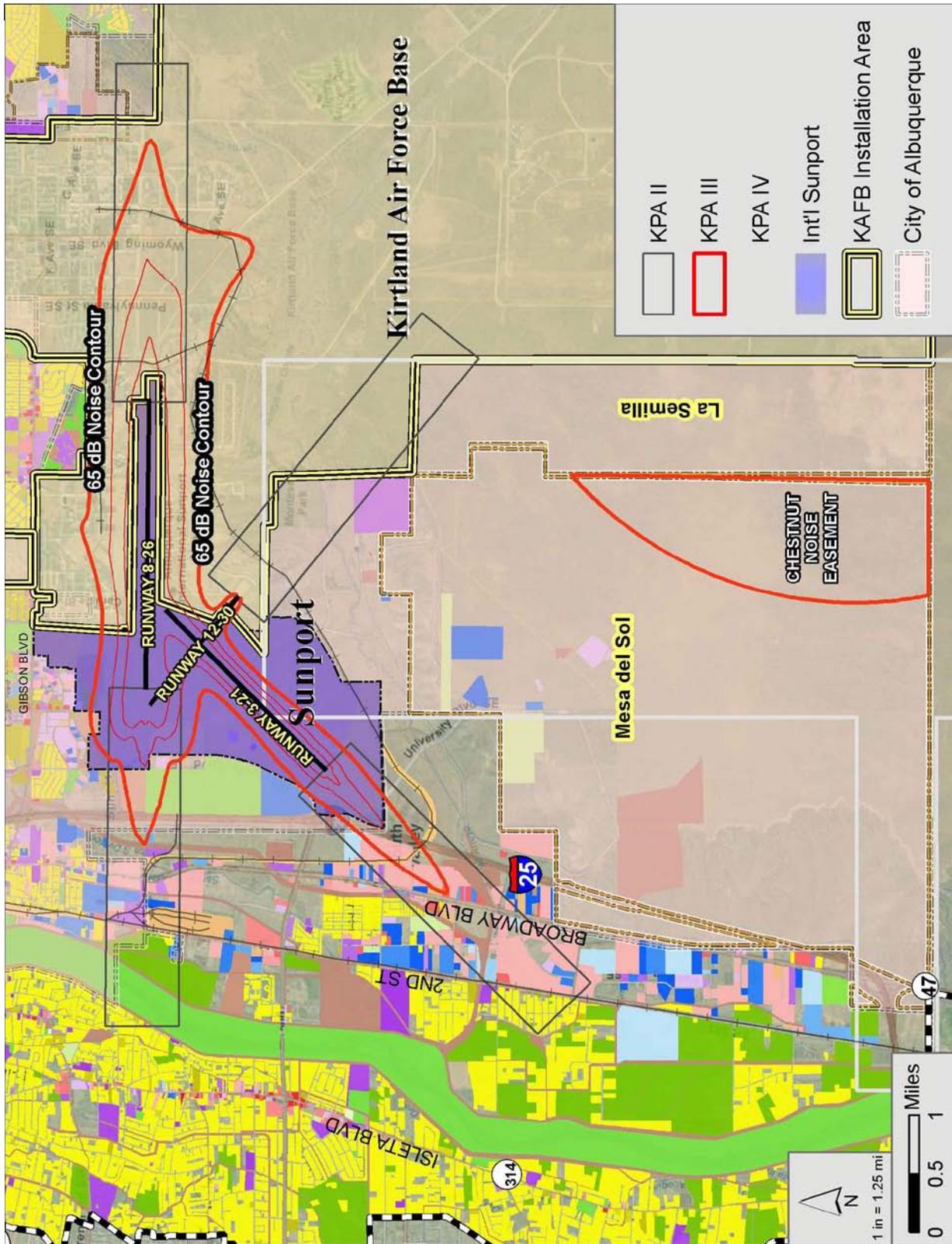
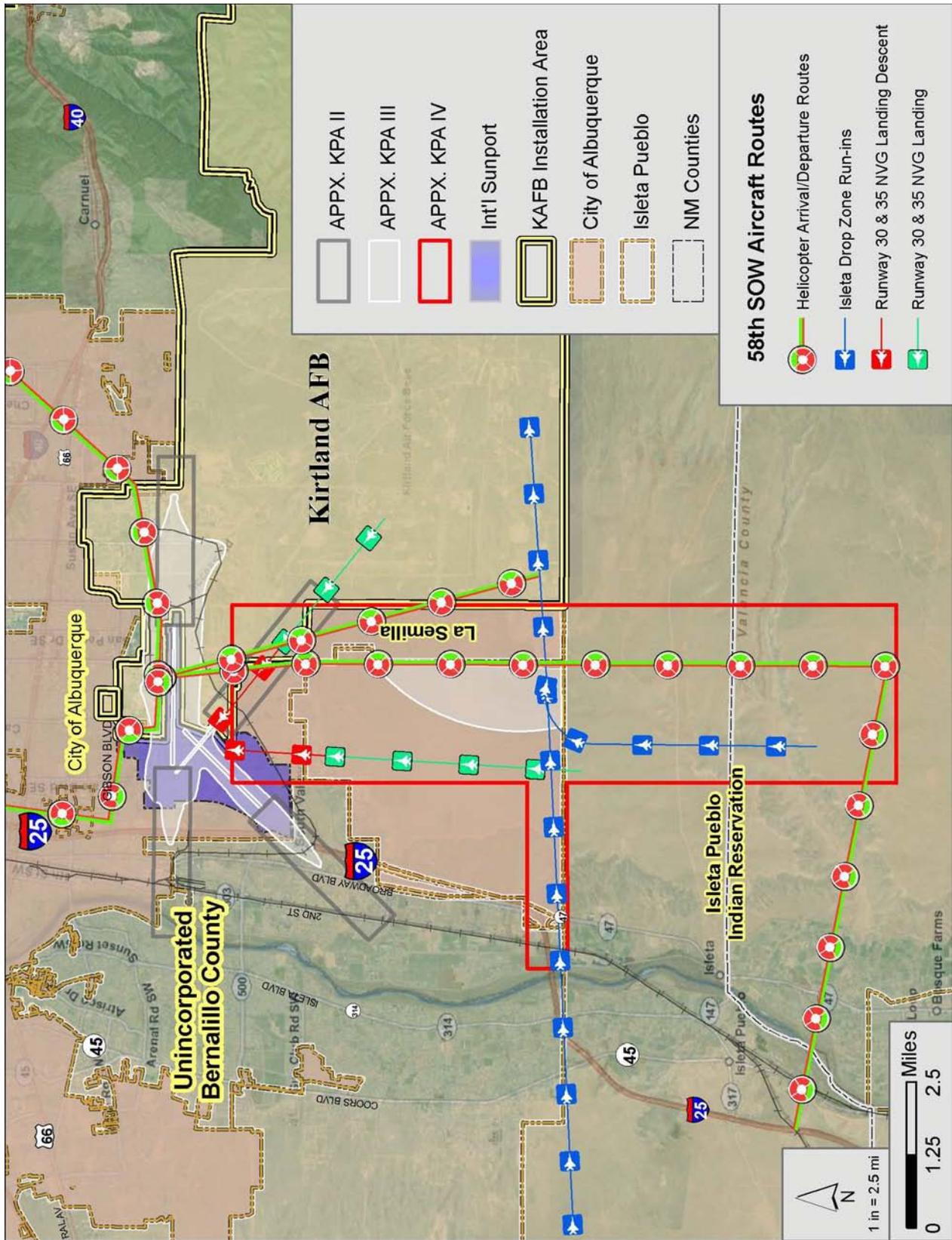




Figure IV – 4: Proposed Kirtland Planning Area (KPA) Sector KPA IV





4.5. Request an Air Installation Compatible Use Zone (AICUZ) Study (Recommendation 5).

The AICUZ program is a DoD program designed to promote compatible land use around military airfields by providing aircraft-related planning information to local officials.

The military services maintain an AICUZ program in an effort to protect the operational integrity of their flying missions. DoD Instruction 4165.57 establishes the AICUZ program which is similar to the Federal Aviation Administration's Federal Aviation Regulation Part 150 program for civil airports. It is important to recognize that the AICUZ program is a land use planning tool, not a land acquisition or land management program. The purpose of the AICUZ program is twofold: (1) to promote the public health and safety through the local adoption of compatible land use controls and (2) to protect the operational capability of the air installation.

Unless required by a mission change, an AICUZ study is requested by an installation, managed by Air Force headquarters and completed by a contractor/team expert in aviation planning, military aircraft operations and noise modeling. Funding is generally provided by Air Force headquarters. Each AICUZ requires a large volume of detailed, current data on a wide range of factors and is specifically tailored to the installation location; current, planned and potential future missions and existing and possible future aircraft operations.

The program is required for all Air Force bases operating airdromes and specifically authorizes completion of AICUZ studies for Air Force activities, such as Kirtland AFB – one of three Air Force bases with an active duty flying unit, as opposed to Air Force Reserve or Air National Guard unit using a community airdrome.² When an AICUZ Study is prepared for an airdrome operated by a municipality, funding is normally split between the Air Force and airdrome owner.

The basic AICUZ report provides background information on the program including the purpose, need, process and procedures involved. It also explains the installation's

mission, flying activities and the economic impact that the installation has on the community. The core of the report describes actions the installation has taken to minimize the noise effects of their aircraft operations. It also provides recommendations for achieving land use compatibility with respect to aircraft accident potential, noise, height restrictions and additional local considerations. It includes graphics showing noise contours and APZs overlaid on a vicinity map. It addresses the relationship between noise exposure and accident potential to existing land use, zoning, and projected future land use, and analyzes potential incompatibilities. The report includes appendices providing more detailed discussions about the AICUZ concept, program, methodology and policies plus technical explanations of the APZs, the noise environment, and height and obstruction criteria. It also contains references to guidelines for reducing noise levels in buildings. In addition to the AICUZ report, a Citizen's Brochure summarizing key points of the study and showing the noise contours and APZs along with generalized land use recommendations is prepared.

An AICUZ is always *advisory*, not *directive*, in nature. It is intended to provide information to regional stakeholders that will allow better-informed decisions about how future land use decisions may support or adversely impact the ability to sustain Kirtland AFB and Sunport as suitable for current and future "military aviation uses." In order to obtain the most value from an AICUZ, local authorities must incorporate planning factors for identified CZs, APZs and noise zones into their local plans. The requirement to identify and model a potential, future mission could be important to the region. In effect, selection of the future mission for evaluation establishes an "outer limit" to what the region considers an acceptable basis for land use planning. It would allow analysis of actual, as well as opportunity costs and benefits, of different scenarios and support rational, focused assessment of decisions related to land uses in proximity to Kirtland AFB and the Sunport.

Because the Sunport airdrome is owned and operated by the City of Albuquerque, Kirtland AFB has followed FAA and Sunport master planning guidance and policies in regard to compatible land use planning. The Base uses the noise contours that are developed by the Sunport and the City, but an AICUZ has not been prepared. The development of a Kirtland AFB AICUZ would provide a key ingredient to ensuring long range compatible land use for

² AFI 32-7063, *Air Installation Compatible Use Zone Program*, Sec. 3.3.3 and AFH 32-7084, *AICUZ Program Manager's Guide*, Sec. 2.4.4.



military aviation and missions in the Greater Albuquerque Region.

Table IV – 5: Request an Air Installation Compatible Use Zone (AICUZ) Study

Compatible Land Use Planning

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders			
5	<p>Request an Air Installation Compatible Use Zone (AICUZ) Study.</p> <p>Request an AICUZ Study to identify the relationship between noise exposure and accident potential to existing land use, zoning, projected future land use and potential incompatibilities with Kirtland AFB aviation activities. Once completed, regional stakeholders should use the results in conjunction with FAA standards to make better-informed decisions about land uses to ensure they support, not adversely impact, the ability to sustain Kirtland AFB and the Sunport as suitable for "military aviation uses" in the future.</p> <p>In coordination with regional stakeholders, Base leaders should identify an acceptable potential, future mission scenario for analysis by the AICUZ contractor. The selected scenario should represent what region leaders consider an acceptable basis for land use planning in proximity to Kirtland AFB and the Sunport:</p> <p>An AICUZ is recommended, with the municipality as the lead and supported by Air Force participation where an airdrome is used by Air Force activities, but owned and/or operated by a non-DoD entity.</p> <p>If no action is taken on this recommendation, see Recommendation 14, <i>Consider Designations of Clear Zones (CZ) and Accident Potential Zones (APZ) for Selected Sunport Runways.</i></p>	X	X	X	X		Regional Planning Forum		Torrance County
						S	MRCOG	S	Valencia County
						L	Sunport	A	City of Albuquerque
						A	Kirtland AFB	S	Pueblo of Isleta
						S	Bernalillo County		University of New Mexico
						S	Sandoval County		U.S. Forest Service
							Socorro County		Department of Energy
						<p>Budget Estimate: \$100,000.</p> <p>Possible Funding Sources: Headquarters U.S. Air Force New Mexico Department of Transportation Stakeholders</p>			
						0-2 Years	3-5 Years	5-10 Years	On-going
						X			
<p>Issues/Issue Factors: 5.2.3.2, 5.3.1, 5.3.1.2, 5.3.6, 5.4.4, 5.4.5, 5.4.9 and 5.4.10</p>									
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>									



4.6. Support Codifying New Mexico Executive Order No. 2004-046 into State Law (Recommendation 6).

In the absence of formal land use planning authority for areas around military installations in New Mexico, Governor Bill Richardson issued Executive Order Number 2004-046 (Appendix J) in August 2004. The Order's purpose was to ensure compatible land use development near New Mexico's military installations, and the language addresses the need to ensure military missions remain unencroached.

The Order *directs* State agencies "involved with land-use planning to ensure compatible development with New Mexico's military installations." It *recommends* all "political subdivisions and municipalities ... adopt land-use plans and enforce zoning regulations [so] that planned development is compatible with military installations..." The intent of the Governor was to ensure proper consideration of the effects of development on "Military Value"³ was properly considered when making land use decisions near military installations or their training areas.

Several states have enacted various statutes and Executive Orders to allow installation leaders to participate in land use planning near military bases and training areas. Those examples could provide useful insight and help New Mexico tailor a similar act to its unique circumstances. Most of these states selected statutes to ensure the requirements endured longer than the administration enacting an Executive Order. These statutes recognized the long-term nature of planning and zoning decisions and their impacts on military mission performance. While it is not clear if the August 2004 New Mexico Executive Order will have a long-term impact, the purpose and language are clear that military installation mission needs should be considered in land use planning and zoning decisions in New Mexico. The Order's intent and purpose should be continued to preserve the viability of the long-term military mission needs for Kirtland AFB organizations. Such a law would be directive to State, county, municipal and local agencies and organizations and also apply to all military installations in the State.

Table IV – 6: Support Codifying New Mexico Executive Order No. 2004-046 into State Law Compatible Land Use Planning

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
						S	A	S	S								
6	<p>Support Codifying New Mexico Executive Order No. 2004-046 into State Law.</p> <p>Support efforts to codify New Mexico Executive Order No. 2004-046 into State law to ensure State, county and local agencies and governments formally consider the impact of local decisions on the viability of New Mexico's military installations and missions.</p> <p>Initial support for this action should be sought from the New Mexico Office of Military Base Planning & Support. Stakeholders should also express their support for this initiative to their State Legislators and seek assistance from other elected officials, their constituencies and the regional business community.</p>					S	Regional Planning Forum	S	Torrance County								
						A	MRCOG	S	Valencia County								
						S	Sunport	S	City of Albuquerque								
						S	Kirtland AFB	S	Pueblo of Isleta								
						S	Bernalillo County	S	University of New Mexico								
						S	Sandoval County		U.S. Forest Service								
						S	Socorro County		Department of Energy								
						<p>Budget Estimate: Staff Time. Possible Funding Sources: N/A</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td>X</td> <td></td> <td></td> <td></td> </tr> </table>				0-2 Years	3-5 Years
0-2 Years	3-5 Years	5-10 Years	On-going														
X																	
<p>Issues/Issue Factors: 5.1, 5.2, 5.3 and 5.4.</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	

³ Military Value is a metric used by DoD to assess the relative merit of installations. It is comprised of several factors related to installation capability and capacity, mission effectiveness, cost of operations, growth potential, etc.



4.7. Support State Designations of Regions of Military Influence (Recommendation 7).

A Region of Military Influence (RMI) designates a geographic area to recognize the interdependence of military installations, missions, operating areas and training venues. An RMI can extend across state boundaries when state governments collaborate to sustain the viability of defense missions and effectiveness of training areas they share. A RMI can be “anchored” on an installation or describe areas contiguous to, near, or needed for mission accomplishment by one or more military installations. The intent of RMI designation is to highlight the collective importance of New Mexico’s defense activities to National Security; their importance to the State’s economy; and their activities do not exist independently, but are linked to each other and to training areas around the State. It is a way to add additional emphasis to the need for careful planning to guard against unintended, adverse impacts on defense activities’ capabilities. The ability to designate areas where impacts can be made, but that are not necessarily contiguous to a military installation, a RMI extends across the obvious relationships between military installations and

their immediate neighbors and directs additional attention to other authorities whose actions could affect needed training areas for one or more installations. Use of RMIs complements Recommendation 6 as such designations help identify areas where impacts on defense-related missions are important and should be considered, but in locations where implications of local actions on military activities may not be clear.

There could be several numbers and configurations of RMIs in New Mexico. For example, one alternative could be to anchor a RMI on Kirtland AFB, encompass training areas in-and-near the MRCOG region and include White Sands Missile Range, or a portion of it, based on the criticality of those venues to Base missions. Another alternative could be to anchor a RMI on White Sands Missile Range and include Kirtland AFB, Holloman AFB and training areas in New Mexico used by forces at Fort Bliss, TX.

If the decision is made to not pursue this recommendation, see Section 4.8, Recommendation 8.

Table IV – 7: Support State Designations of Regions of Military Influence (RMI) Compatible Land Use Planning

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders			
7	<p>Support State Designations of Regions of Military Influence (RMI) Support State efforts to designate RMIs and include Kirtland AFB and training venues essential for the efficient and effective accomplishment of missions. Engage the New Mexico Office of Military Base Planning & Support in discussions of the possibility of designating RMIs; their configurations; timing to pursue the initiative with the State legislature; and the most effective way to obtain support from other State agencies. Stakeholders should build support for designations with their State Legislators, elected officials that would be impacted by a Kirtland AFB-related RMI, their constituencies and the regional business community. If determination is made to not pursue RMI designations, see Section 4.8, Recommendation 8.</p>					L	Regional Planning Forum	A	Torrance County
						A	MRCOG	A	Valencia County
						S	Sunport	A	City of Albuquerque
						S	Kirtland AFB	A	Pueblo of Isleta
						A	Bernalillo County	S	University of New Mexico
						A	Sandoval County	S	U.S. Forest Service
						A	Socorro County	S	Department of Energy
Budget Estimate: Staff Time. Possible Funding Sources: N/A						Timing			
						0-2 Years	3-5 Years	5-10 Years	On-going
						X			X
Issues/Issue Factors: 5.3.2, 5.3.3, 5.3.4, 5.3.5 and 5.3.9									
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.									



4.8. Pursue Designation as Area of Critical State/Local Concern and Interest (“Critical Areas”) (Recommendation 8).

An Area of Critical State Concern is similar, but more limited than the RMI discussed in Section 4.7. It can be designated by either state or local government. When designated by a state, the geographic boundaries can be far ranging, but are restricted to state boundaries. When designated by a local government or regional consortium of governments, the boundaries would be restricted to areas over which they have land use authority.

Critical Areas designations have historically been used to protect environmentally sensitive areas of importance to a state – Massachusetts’ Cape Cod, North Carolina’s Outer Banks, Florida’s Keys, etc. The goal of designating Critical

Areas is to provide an additional control on land development to ensure compatibility with the characteristics of the Critical Areas. As such, states have determined the concept of protecting critical interests can be applied to economic, as well as physical, interests and used to protect defense activities from adverse impacts. The National Governors Association considers applying a Critical Areas strategy to help protect against military mission encroachment a best practice.

The designation of Critical Areas would complement Recommendation 6. No action should be taken on this recommendation, if the State pursues Recommendation 7.

Table IV – 8: Pursue Designation as Area of Critical State/Local Concern and Interest (“Critical Areas”) Compatible Land Use Planning

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
						L	A	S	On-going								
8	<p>Pursue Designation as Area of Critical State/Local Concern and Interest (“Critical Areas”)</p> <p>If the State does not pursue RMI designations, pursue designation of the MRCOG region as a Critical Area based on the significant economic impact of Kirtland AFB and its associated units.</p> <p>Engage the New Mexico Office of Military Base Planning & Support in discussions of the possibility of obtaining State designation as a Critical Area. If the Office is receptive, assist in developing the necessary background information and advocacy materials to pursue the designation and decide on the best timing and how to obtain State Legislative and other agency support.</p> <p>If the State does not pursue a State designation as a Critical Area, regional stakeholders should work to use local government to designate a Local Critical Area.</p> <p>In either case, stakeholders should build support for designation with the appropriate State and local officials, their constituencies, the regional business community and the public.</p> <p>If the State pursues a RMI designation (Recommendation 7), no action should be taken on this recommendation.</p>					Regional Planning Forum	A	Torrance County									
						MRCOG	A	Valencia County									
						Sunport	A	City of Albuquerque									
						Kirtland AFB	A	Pueblo of Isleta									
						Bernalillo County	S	University of New Mexico									
						Sandoval County	S	U.S. Forest Service									
						Socorro County	S	Department of Energy									
<p>Budget Estimate: Staff Time. Possible Funding Sources: N/A</p>						<p>Timing</p> <table border="1"> <thead> <tr> <th>0-2 Years</th> <th>3-5 Years</th> <th>5-10 Years</th> <th>On-going</th> </tr> </thead> <tbody> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			X
0-2 Years	3-5 Years	5-10 Years	On-going														
X			X														
<p>Issues/Issue Factors: 5.3.2, 5.3.3, 5.3.4, 5.3.5 and 5.3.9</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	



4.9. Evaluate Formal Coordination of Local Comprehensive Planning (Recommendation 9).

A local Comprehensive Plan (“Plan”) is the tool used by counties and municipalities to summarize their long-term vision for growth, outline policies to guide land use decisions, identify development goals and objectives and document priorities. The Plan addresses the myriad topics and considerations needed by community leaders and officials, planning staff, residents, government agencies and developers to provide a useable framework for considering or pursuing future land uses, public services, transportation, infrastructure or other community-related decision making. The Plan also addresses issues of special interest to the community – either highly valued or needing mitigation to support the desired quality of community life – such as noise, safety, and environmental concerns. Each Plan is, in effect, a roadmap to that community’s future. In the Kirtland AFB region, there are multiple Plans belonging to multiple Stakeholders adding difficulty to the goal of increasing the effectiveness of other regional planning efforts. Therefore, the intent of this

recommendation is to evaluate if formal coordination of the comprehensive planning process is possible and valuable. The recommendation includes an assumption that Kirtland AFB and the Sunport would provide the latest, relevant information about their activities and operations as each Plan is updated. There is no intent for Stakeholders to surrender existing land use or decision making authority. The recommendation suggests a formal coordination between Stakeholders during each Plan’s update. It is possible other recommendations, if successfully pursued, could render this effort less valuable. However, the more Stakeholders integrate their individual planning efforts, the more smoothly they should be able to achieve their collective goal of making the most fully informed decisions on issues that could impact, or cause their constituents to be impacted by, Kirtland AFB missions and Sunport operations.

Table IV – 9: Evaluate Formal Coordination of Local Comprehensive Planning Compatible Land Use Planning

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
9	<p>Evaluate Formal Coordination of Local Comprehensive Planning</p> <p>Multiple Stakeholders have Comprehensive Plans (Plan), each of which includes a vision, policies, goals, objectives and priorities that guide land use decisions that can impact, or be impacted by, Kirtland AFB missions and Sunport operations. Coordinating these Plans should help minimize the potential for individual actions to collectively create undesirable outcomes.</p> <p>Each Stakeholder should formally coordinate the update of their individual Plan with other regional Stakeholders. This should include Kirtland AFB and the Sunport to ensure the latest, relevant information about their activities and operations is used for updating Plans.</p> <p>There are two timing windows for completion.</p> <p>0-2 Years targets completion of initial coordination during incorporation of changes necessary to implement JLUS recommendations.</p> <p>3-5 Years recognizes that Plans are updated on individual schedules specific to their jurisdiction. There is no intent to recommend out-of-cycle review and Plan updates.</p>					L	Regional Planning Forum	A	Torrance County								
						S	MRCOG	A	Valencia County								
						S	Sunport	A	City of Albuquerque								
						S	Kirtland AFB		Pueblo of Isleta								
						A	Bernalillo County	S	University of New Mexico								
						A	Sandoval County		U.S. Forest Service								
						A	Socorro County	S	Department of Energy								
<p>Budget Estimate: Staff Time.</p> <p>Possible Funding Sources: N/A for initial coordination. Coordination during formal Plan updates would be funded as project costs at time of update.</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td>X</td> <td>X</td> <td></td> <td></td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X	X		
0-2 Years	3-5 Years	5-10 Years	On-going														
X	X																
<p>Issues/Issue Factors: 5.1.1, 5.1.4, 5.2.1, 5.2.3.1, 5.2.3.2, 5.3.6, 5.3.8.3 and 5.3.9</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	



4.10. Formalize Relationship Between the Pueblo of Isleta and Kirtland AFB (Recommendation 10).

The Pueblo of Isleta and Kirtland AFB share a common boundary. Development or significant change in proximity to this boundary by either party can impact activities of the other, possibly in unintended ways. In support of regional planning and recognition of the Pueblo of Isleta as a Sovereign Nation deserving special consideration, it is only natural that a special relationship exists. A special, formalized relationship is further supported by the way

leadership of the Pueblo of Isleta and management of its operations because they are different from other regional jurisdictions.

Historically, there has been good communication between the Pueblo of Isleta and Kirtland AFB leadership. Institutionalizing regular communication between the Pueblo and the Base will further enhance the existing relationship.

Table IV – 10: Formalize Relationship Between the Pueblo of Isleta and Kirtland AFB Compatible Land Use Planning

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
10	<p>Formalize Relationship Between the Pueblo of Isleta and Kirtland AFB</p> <p>The Pueblo of Isleta and Kirtland AFB share a common boundary where activities or development can impact the other, possibly in unintended ways. In support of regional planning and recognition of the Pueblo of Isleta as a Sovereign Nation deserving special consideration, recommend:</p> <ul style="list-style-type: none"> The Pueblo of Isleta Governor and the 377th Air Base Wing Commander designate staff members as the primary contacts for coordinating activities and protecting against inadvertent conflicts on shared interests. Staff designees establish a protocol of periodic, routine communications not limited to conflict events. The Pueblo of Isleta Governor direct staff to contact Kirtland AFB associated organizations – including Department of Energy (DOE) and Sandia National Laboratories (SNL), and others with current or potential land use issues of interest – to evaluate, and enhance if needed, the quality of relationships considering (a) effectiveness of current communication procedures, (b) knowledge of the Pueblo of Isleta leadership structure and supporting agencies, and (c) familiarity with decision makers and staff. 	X			X	S	Regional Planning Forum		Torrance County								
						S	MRCOG	S	Valencia County								
						S	Sunport		City of Albuquerque								
						L	Kirtland AFB	A	Pueblo of Isleta								
						S	Bernalillo County		University of New Mexico								
							Sandoval County		U.S. Forest Service								
							Socorro County	S	Department of Energy								
<p>Budget Estimate: Staff Time. Possible Funding Sources: N/A.</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			X
0-2 Years	3-5 Years	5-10 Years	On-going														
X			X														
<p>Issues/Issue Factors: 5.2, 5.3.2, 5.3.6, 5.4.2, 5.4.3.2 and 5.4.3.3</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	



4.11. Ensure an Aviator Advisor is Included in Development of Alternative Energy Projects and Leases (Recommendation 11).

The national impetus on alternative energy development is creating significant activity to take advantage of technologies and geographic areas that can efficiently support them. New Mexico has great potential for exploiting wind and solar energy and there is an increasing interest in wind farms, solar arrays and their associated transmission lines. As these efforts continue, it is essential the dangers to flight safety – life and aircraft – presented by these projects are carefully considered. Given the nature of flying training completed by the 58th SOW, the heights of transmission lines tying new power sources to the electrical grid, supporting towers and wind turbines present obstacles at the altitudes flown on many missions. Moreover, these obstacles, particularly the transmission lines, are difficult to see at night or in marginal weather, conditions for many military training flights. Even during seemingly innocuous flight on cloudless days, the sun’s

reflection from untreated solar panels may cause a significant, momentary drop in a pilot’s visual acuity during a critical flight phase.

Including an aviator advisor in development of alternative energy projects and leases will provide the technical expertise needed to ensure projects support a safe flying environment and do not encroach on mission accomplishment. Involvement of an aviator advisor will also assist in developing materials to inform pilots, aircrews and other aviation users of these projects, their characteristics and locations. The goal of this recommendation is to ensure aviators operating in regional airspace can operate as safely as possible. The advisor could be from either Kirtland AFB or the Sunport, but should be an experienced, current in low-level flight operations and a frequent aviator operating in regional airspace.

Table IV – 11: Ensure an Aviator Advisor is Included in Development of Alternative Energy Projects and Leases Compatible Land Use Planning

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
11	<p>Ensure an Aviator Advisor is Included in Development of Alternative Energy Projects and Leases</p> <p>Efforts to exploit alternative energies, present dangers to flight safety – life and aircraft – that must carefully considered. The heights of transmission lines, supporting towers and wind turbines present obstacles at the altitudes routinely flown on 58th SOW training missions and are particularly difficult to see at night or in marginal weather, conditions for many military training flights. Even during flight on cloudless days, the sun’s reflection from untreated solar panels can present threats to safety of flight as a drop in a pilot’s visual acuity occurs during a critical flight phase.</p> <p>Including an aviator advisor in development of alternative energy projects and leases will provide the technical expertise needed to ensure projects support a safe flying environment and do not encroach on Base missions.</p> <p>The advisor could be from either Kirtland AFB or the Sunport, but should be an experienced, current in low-level flight operations and a frequent aviator operating in regional airspace.</p>	X	X	X	X	S	Regional Planning Forum	A	Torrance County								
						S	MRCOG	A	Valencia County								
						S	Sunport	A	City of Albuquerque								
						S	Kirtland AFB	A	Pueblo of Isleta								
						A	Bernalillo County	A	University of New Mexico								
						A	Sandoval County	A	U.S. Forest Service								
						A	Socorro County	A	Department of Energy								
<p>Budget Estimate: Staff Time. Possible Funding Sources: N/A.</p>						<p>Timing</p> <table border="1"> <thead> <tr> <th>0-2 Years</th> <th>3-5 Years</th> <th>5-10 Years</th> <th>On-going</th> </tr> </thead> <tbody> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			X
0-2 Years	3-5 Years	5-10 Years	On-going														
X			X														
Issues/Issue Factors: 5.3.8.3																	
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.																	



4.12. Consider Small Area Feasibility Study of a Southern Entrance to Kirtland AFB if Base Missions Change (Recommendation 12).

The JLUS Survey, stakeholder interviews and JLUS Committee meetings document considerable interest for enhanced access to the Base. Access on the south side of the Base is limited, and there really is no access from the east or west perimeters, although the Eubank Gate provides an eastern access to main base complex. Interest focused on increasing access via the existing southern entrance to Kirtland AFB for existing and future residents of Mesa del Sol and other developments to the south. Kirtland AFB, County Commissioners, Pueblo of Isleta officials and transportation planners agree significant and costly road improvements would be required, both on- and off-Base, to allow regular use of a southern entrance. More importantly, Base officials consider threats to operations, safety, and security issues associated with improving southern access would create significant encroachment on existing missions.

There could be an opportunity for enhanced southern access in the long-term, but it is dependent upon mission changes for the Base that would eliminate adverse impacts on its missions and allow mitigation of the existing safety and security issues. Currently, there are no existing, planned or anticipated changes. Were Base mission changes made that would make enhanced southern access viable, Base leaders believe an analysis of alternatives would be appropriate.

Over the longer term, however, regional officials should not allow unrealistic expectations of a southern entrance to the Base to grow that might ultimately create political pressure and actions that will encroach on existing activities and potentially threaten the Base's capability to sustain current and attract new missions.

Table IV – 12: Consider Small Area Feasibility Study of a Southern Entrance to Kirtland AFB if Base Missions Change Compatible Land Use Planning

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders			
12	<p>Consider Small Area Feasibility Study of a Southern Entrance to Kirtland AFB if Base Missions Change</p> <p>There is considerable interest in enhanced access to the Base from the south. Currently this is not possible based on the threats increased use would present to operations, safety, and security issues. However, Base officials believe an opportunity for enhanced southern access in the long-term could be possible, but would be dependent upon mission changes that would eliminate adverse impacts on its missions and allow mitigation of the existing safety and security issues.</p> <p>Recommend a small area study on the feasibility of enhancing southern access to Kirtland Base be considered if future mission changes occur that would make enhanced southern access viable. Such analysis would probably be led by MRCOG as the Metropolitan Planning Organization.</p> <p>There is no estimate for a study budget since the effort's scope and price would be based on an unknown time frame and uncertain conditions.</p>	X	X			S	Regional Planning Forum		Torrance County
						L	MRCOG	S	Valencia County
						S	Sunport	A	City of Albuquerque
						A	Kirtland AFB	S	Pueblo of Isleta
						A	Bernalillo County	A	University of New Mexico
							Sandoval County		U.S. Forest Service
						S	Socorro County	S	Department of Energy
Budget Estimate: Staff Time. Possible Funding Sources: N/A.						Timing			
						0-2 Years	3-5 Years	5-10 Years	On-going
Issues/Issue Factors: 5.2.2, 5.2.4.1 and 5.4.4									
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.									



4.13. Support Remediation of UXO on Kirtland AFB. (Recommendation 13).

The existence of Unexploded Ordnance (UXO) has been found on and near the perimeter of Kirtland AFB in areas that provide a security buffer to Base operations, but also in areas that are attractive to citizens for recreational use. Much of the land affected by UXO is on U.S. Forest Service land withdrawn from public use to support the DoD and DOE. Environmental remediation of this area is being addressed by the Base, but the magnitude of the challenge makes full remediation years away.

The Military Munitions Response Program (MMRP) addresses the remediation of UXO at locations, such as this, that are not associated with operational ranges. MMRP is a type of Hazardous Mitigation Plan, but specifically focused on one type of hazard – UXO in specific locations. The purpose of the program is to “make munitions response sites safe and clean for reasonably anticipated future use.”⁴ Note the program’s intent is to make sites safe and not fully remediate them for public use. Kirtland AFB has an aggressive MMRP program

combining strategies to keep people away from the UXO in the near term and to remove the UXO hazard as a danger in the long term. The Base’s effort has been recognized for its thoroughness by the Air Force program manager, the Air Force Center for Engineering and Environmental Excellence (AFCEE). Since FY 2005, over \$17 million has been invested through the MMRP at Kirtland AFB, but the estimated cost for full remediation of UXO is in the hundreds of millions of dollars. While funds from other Federal, State, regional government, conservation agencies or other public/private organizations could supplement Air Force resources, identifying and securing them could be difficult. Additionally, participation by some organizations could make increased or guaranteed public access a condition of funding; an outcome potentially unacceptable to the Base because of security or other safety considerations. Therefore, it appears the successful remediation of UXO around the Base depends upon continued Air Force funding of the Kirtland AFB MMRP.

Table IV – 13: Support Remediation of UXO on Kirtland AFB Compatible Land Use Planning

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
13	<p>Support Remediation of UXO on Kirtland AFB</p> <p>The Military Munitions Response Program (MMRP) is used to address remediation of UXO at locations not associated with operational ranges. It is funded annually by the Congress and allocated to each Military Department based on program needs. Since FY 2006, Kirtland AFB has invested more than \$17 million to remediate UXO, but the costs to fully remediate identified sites is estimated in the hundreds of millions of dollars. Other organizations could supplement MMRP funding. Absent such support, the continued funding of this program is essential to successfully remediating UXO associated with the Base.</p> <p>Stakeholders should work with interested agencies and organizations to encourage funding support for Base efforts to remediate perimeter areas and reduce the danger of UXO exposure.</p> <p>Kirtland AFB should continue to seek robust funding of its MMRP for remediation of all UXO sites.</p> <p>Stakeholders should work with State and Federal legislators to advocate for robust funding of UXO remediation programs to reduce potential adverse human and ecological impacts.</p> <p>Timing estimates are based on annual funding history and likelihood that full remediation will require 10+ years.</p>	X				S	Regional Planning Forum		Torrance County								
							MRCOG		Valencia County								
							Sunport	A	City of Albuquerque								
						A	Kirtland AFB		Pueblo of Isleta								
						A	Bernalillo County		University of New Mexico								
							Sandoval County	S	U.S. Forest Service								
							Socorro County	A	Department of Energy								
<p>Budget Estimate: \$200 million.</p> <p>Possible Funding Sources: DoD, State, Public/Private Philanthropic Organizations or Conservation Agencies</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td></td> <td></td> <td>X</td> <td>X</td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going			X	X
0-2 Years	3-5 Years	5-10 Years	On-going														
		X	X														
<p>Issues/Issue Factors: 5.2.7</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	

⁴ Air Force Center for Engineering and Environmental Excellence (AFCEE), <http://www.afcee.af.mil/resources/ranges/munitions/index.asp>



4.14. Consider Designations of Clear Zones (CZ) and Accident Potential Zones (APZ) for Selected Sunport Runways (Recommendation 14).

Recommendation 5 addresses the completion of an AICUZ to supplement the Airport Land Use Compatibility Plan (ALUCP) for the Albuquerque Sunport. If recommendation 5 is not adopted, there is an alternative that can be used to ensure compatible land use in areas important to the viability of military aviation activities. The alternative is based on regional land use authorities' ability to designate acceptable uses for property within their jurisdictions. Using this authority, the City of Albuquerque and Bernalillo County can designate areas adjacent to the ends of Runways 08, 26 and 03 using the geometric descriptions of CZ and APZs discussed in Part III, Section 5.3.1. Further, development can be limited by the compatible guidance recommended by Air Force planning guidance shown in Appendix G.

Protecting land use in these zones – a total of 1,500 feet either side of runway centerline and extending 15,000 feet from the end of each runway – will significantly add to sustaining the long term viability of the Sunport for use by

military aviation. Ensuring compatible land uses in areas off the ends of the runways used by military aircraft and within the 65 dB noise contour created by aircraft operations are two of the most important elements of ensuring the Sunport will be viable for military aviation activities. Such action will also help sustain/enhance the military value of Kirtland AFB. Committing to compatible land uses in these critical areas will provide valuable input for planners and result in better-informed development decisions based on how they may support or adversely impact the Sunport's suitability for military aviation users in the future. Military aviation sustainability is extremely important to enabling the 58th SOW to satisfactorily executing its training mission and enhancing Kirtland AFB's suitability for potential additional flying missions.

This recommendation should be pursued whether or not an AICUZ is completed as part of JLUS implementation. If an AICUZ is completed, local authorities must incorporate CZ, APZ and noise zone planning considerations into their local plans to sustain aviation capabilities. If an AICUZ is not pursued, the designations of CZs and APZs should be considered in order to protect the long-term viability of the Sunport to support DoD aviation activities.

Table IV – 14: Consider Designations of Clear Zones and Accident Potential Zones for Selected Sunport Runways Compatible Land Use Planning

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
14	<p>Consider Designations of Clear Zones (CZ) and Accident Potential Zones (APZ) for Selected Sunport Runways</p> <p>Recommend the City of Albuquerque and Bernalillo County consider designation of the areas adjacent to the ends of Runways 08, 26 and 03 as the equivalent of Air Force CZ and APZs. Development within these areas should be limited to uses compatible with Air Force planning guidance.</p> <p>Protecting land use in these zones will add significantly to the long term viability of the Sunport for use by military aviation and help sustain/enhance the military value of Kirtland AFB. This action will also support analysis of land use actions as to how they may support or adversely impact the ability to sustain the Base and Sunport for suitability of military aviation. Military aviation sustainability is extremely important to enabling the 58th SOW to satisfactorily executing its training mission and enhancing Kirtland AFB's suitability for potential additional flying missions.</p> <p>This recommendation should be pursued whether or not an AICUZ is completed. If an AICUZ is completed, local authorities must incorporate CZ, APZ and noise zone planning considerations into their local plans to sustain aviation capabilities. If an AICUZ is not pursued, the designations of CZs and APZs should be considered in order to protect the long-term viability of the Sunport to support DoD aviation activities.</p>	X				Regional Planning Forum		Torrance County									
						MRCOG		Valencia County									
						A Sunport	L	City of Albuquerque									
						S Kirtland AFB		Pueblo of Isleta									
						A Bernalillo County		University of New Mexico									
						Sandoval County		U.S. Forest Service									
						Socorro County		Department of Energy									
<p>Budget Estimate: Staff Time.</p> <p>Possible Funding Sources: N/A for initial designation. Incorporation during formal Plan updates would be funded as project costs at time of update.</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td>X</td> <td></td> <td></td> <td></td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			
0-2 Years	3-5 Years	5-10 Years	On-going														
X																	
Issues/Issue Factors: 5.2.1, 5.2.3.2, 5.3.1, 5.3.1.2 and 5.3.6																	
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.																	



4.15. Consider Acquisition of Property to Ensure Land Use Compatibility (Recommendation 15).

This section recommends the consideration of using a range of strategies to acquire selected property to ensure land use compatibility for existing and potential, future Kirtland AFB and Sunport operations. The strategies can be used to acquire property currently entitled or parcels not yet zoned. Although an option, there is no intent to suggest revoking entitlements; impacting existing, approved developments; or down-zoning property. This series of strategies is intended to provide tools that can be used to eliminate existing incompatibilities and provide protection from inadvertently creating new ones. In the majority of cases, communities and Air Force installations focus on property within noise and accident potential zones near the airdrome. The mission types of Kirtland AFB non-aviation associates and the amount and type of training conducted by the 58th SOW and Air National Guard make these acquisition and disposal strategies relevant to all regional land use authorities. Potential candidate properties can be identified using Figures III – 3 and III -14 (Part III, p. III – 5 and III – 37, respectively). Acquisition strategies of potential use include:

- **Fee Simple Acquisition.** This strategy is normally the most expensive and involves property purchases from

willing sellers. The result is full ownership and land use control.

- **Fee Simple/Lease Back.** In this strategy property is purchased from a willing seller whose intent is to surrender title in exchange for the combination of payment and right to future use of the property in an acceptable manner. Uses are controlled by lease terms. Examples include sale and lease back of property for commercial or agricultural uses and animal grazing.
- **Property Donation.** Owners can relinquish private rights and donate property to the government with or without use conditions. These arrangements may be of interest to conservation organizations, if use conditions support their interests.
- **Eminent Domain.** This is the power of government to take privately owned property for public use in exchange for fair market value. While a powerful authority, “taking private property” can be a difficult and time consuming process. It can also potentially open the “taking” entity to unanticipated liabilities if the “fair market value” or the land use on which the government calculated that value is successfully challenged by the property owner.

Table IV – 15: Consider Acquisition of Property to Ensure Land Use Compatibility Local Administrative Actions

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
						L	S	A									
15	<p>Consider Acquisition of Property to Ensure Land Use Compatibility</p> <p>Land use stakeholders should identify property with existing, planned or potential incompatible development for possible acquisition and disposal for compatible uses.</p> <p>Kirtland AFB and Sunport officials should work closely with the land use stakeholders to identify those parcels that will most adversely impact mission activities.</p> <p>Kirtland AFB and Sunport officials should also help identify the types of compatible uses that can be allowed on undeveloped and developed property.</p> <p>Stakeholders should work with regional officials, business interests, State and Federal representatives and conservation organizations to obtain funding support to acquire property, if deemed appropriate.</p> <p>Land use authorities should ensure necessary plans and programs are in place to accept property if volunteered by property owners.</p> <p>Applicability of this recommendation extends beyond the KPAs and includes all property that can impact the viability of the Base or Sunport operations or the quality of the training conducted by Kirtland AFB assigned units.</p>	X	X	X	X	Regional Planning Forum	A	Torrance County									
						MRCOG	A	Valencia County									
						Sunport	A	City of Albuquerque									
						Kirtland AFB	A	Pueblo of Isleta									
						Bernalillo County	S	University of New Mexico									
						Sandoval County		U.S. Forest Service									
						Socorro County	S	Department of Energy									
<p>Budget Estimate: Staff Time, Unknown Funding.</p> <p>Possible Funding Sources: Local, State and Federal Agencies, Conservation Organizations, Congressional Funding, business community.</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			X
0-2 Years	3-5 Years	5-10 Years	On-going														
X			X														
<p>Issues/Issue Factors: 5.2.3.2, 5.3.1, 5.3.2, 5.3.3, 5.3.4, 5.3.6 and 5.4.5</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	



4.16. Consider Acquiring Control of Property to Ensure Land Use Compatibility (Recommendation 16).

This section recommends the consideration of acquiring control of selected property to ensure compatibility with existing and potential, future Kirtland AFB and Sunport operations. The strategies can be used to acquire control of property currently entitled or parcels not yet zoned. This series of strategies is intended to provide tools to eliminate existing incompatibilities and protect from inadvertently creating new ones. Communities and Air Force installations normally focus on property acquisition within noise and accident potential zones near the airdrome. However, the mission types for Kirtland AFB non-aviation associates and the amount and type of training conducted by the 58th SOW and Air National Guard make the control of property away from the airfield relevant to all regional land use authorities. Acquisition strategies to control land use without ownership include:

- Lease. When an owner is unwilling or unable to relinquish ownership but is willing to restrict its use, a lease arrangement can be used to control compatible land use. The types of use and duration are controlled by lease terms. Government agencies at all levels, land use jurisdictions, businesses, private individuals and conservation organizations can negotiate leases.
- Easements. Easements are conditions voluntarily accepted by property owners or purchased by interested agencies to restrict property uses. In some cases, easements restrict development, development type or extent. In other circumstances, easements allow certain activities, such as overflight by military aircraft. (These are addressed in a separate recommendation.)

Easements can be donated for no consideration or donated in exchange for payment. Some easements provide owners tax incentives or advantages. Types of easements include:

- Open Space. The owner agrees to ensure use of the property meets the definition of open space in the lease terms which can include unused, used only for agriculture or grazing with-or-without specifically designated structures, undeveloped, developed with height restriction, use type and

density limitations, etc. The terms can be as imaginative as the parties can agree.

- Conservation. Conservation easements normally focus on retention of property for public use or to protect environmentally sensitive areas, species, ecosystems, etc. Most of these types of easements restrict development and limit population density supporting uses that are compatible with aviation activities.
- Management Agreements. Normally used by land trusts, a management agreement specifies how property will be used. Where a property owner considers a lease or formal easement as too formal a relationship, a management agreement can be used to secure use limitations. Property owners can enter agreements for no payment or be compensated for managing, or allowing their property to be managed, in a particular manner. These agreements are flexible and conditions, duration and terms are negotiated in individual agreements.
- Purchase Development Rights. When an owner is unwilling to sell property, he is sometimes willing to sell its development rights. Since the land use authority can manage development type, the result can be control of land use through the developer instead of the owner. This reality makes such agreements complicated. Purchasing development rights is sometimes done by an adjacent land owner concerned about the potential for incompatible or competing development of adjacent or nearby property – mirroring the concerns of stakeholders for property development to support the Base and Sunport.
- Zoning. Authorities can zone open parcels to ensure permissible development will be compatible with Kirtland AFB and Sunport operations.



Table IV – 16: Consider Acquiring Control of Property to Ensure Land Use Compatibility Local Administrative Actions

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders															
						L	A	S	Timing												
16	<p>Consider Acquiring Control of Property to Ensure Land Use Compatibility</p> <p>Land use stakeholders should identify property with existing, planned or potential incompatible development whose control can be secured.</p> <p>Kirtland AFB and Sunport officials should work closely with land use stakeholders to identify those parcels that will most adversely impact mission activities.</p> <p>Kirtland AFB and Sunport officials should also help identify the types of compatible uses that can be allowed on undeveloped and developed property.</p> <p>Stakeholders should ensure strategies to secure the proper types and duration of land use controls are identified and implemented.</p> <p>Stakeholders should work with regional officials, business interests, State and Federal representatives and conservation organizations to obtain funding support to acquire control of the property, if deemed appropriate.</p> <p>Land use authorities should ensure necessary plans and programs are in place to accept control of property if volunteered by its owners.</p> <p>Applicability of this recommendation extends beyond the KPAs and includes all property that can impact the viability of the Base or Sunport operations or the quality of the training conducted by Kirtland AFB assigned units.</p>	X	X	X	X	L	Regional Planning Forum	A	Torrance County												
						S	MRCOG	A	Valencia County												
						S	Sunport	A	City of Albuquerque												
						S	Kirtland AFB	A	Pueblo of Isleta												
						A	Bernalillo County	S	University of New Mexico												
						A	Sandoval County		U.S. Forest Service												
						A	Socorro County	S	Department of Energy												
<p>Budget Estimate: Staff Time, Unknown Funding.</p> <p>Possible Funding Sources: Local, State and Federal Agencies, Conservation Organizations, Congressional Funding, business community.</p>						<table border="1"> <thead> <tr> <th colspan="4">Timing</th> </tr> <tr> <th>0-2 Years</th> <th>3-5 Years</th> <th>5-10 Years</th> <th>On-going</th> </tr> </thead> <tbody> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>				Timing				0-2 Years	3-5 Years	5-10 Years	On-going	X			X
Timing																					
0-2 Years	3-5 Years	5-10 Years	On-going																		
X			X																		
<p>Issues/Issue Factors: 5.2.3.2, 5.3.1, 5.3.2, 5.3.3, 5.3.4 and 5.3.6</p>																					
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																					



4.17. Consider Transfer of Property or Development Rights to Ensure Land Use Compatibility (Recommendation 17).

In the absence of sufficient funding to purchase or acquire control of property using other strategies, land exchange and transfer of development rights offer additional tools. These tools are similar in that both involve the voluntary shift of development from areas needing protection from certain types of growth to areas where a broader range of land uses are encouraged.

Land exchanges involve “any transaction other than a sale that transfers publically owned land ... from one owner to another.”⁵ Although traditionally used for “... consolidating public lands, simplifying federal land boundary management and [acquiring] important resource lands,” this strategy can be applied by local authorities to transfer public lands suitable for planned growth for property within KPA sectors to ensure its development will be compatible with Kirtland AFB and Sunport missions and opportunities.

Transfer of development rights applies to entitled property

and does not physically transfer property ownership; rather, it transfers *development rights* of similar value. The result is an owner accepting an range of control over future land use of his/her property – from voluntarily restricting development to those types acceptable to the land use authority to acceptance of a protective easement. Both strategies assume willing owners and land use authorities with property or development rights in areas where opportunities will be attractive to land owners of property needing protection.

Both tools have been used by communities to protect agricultural, cultural, environmental or historic areas from undesired encroachment. Applying these strategies to protecting Kirtland AFB or the Sunport operations from encroachment potentially offers two more ways to ensure compatible development. The advantage of these strategies is encroachment protection without significant financial investment.

Table IV – 17: Consider Transfer of Property or Development Rights to Ensure Land Use Compatibility Local Administrative Actions

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
						L	Regional Planning Forum	A	Torrance County								
17	<p>Consider Transfer of Property or Development Rights to Ensure Land Use Compatibility</p> <p>Land use stakeholders should Identify property with existing, planned or potential incompatible development for possible acquisition.</p> <p>Kirtland AFB and Sunport officials should work closely with land use stakeholders to identify those parcels that will most adversely impact mission activities.</p> <p>Kirtland AFB and Sunport officials should also help identify the types of compatible uses that can be allowed on undeveloped and developed property.</p> <p>Land use authorities should ensure necessary plans and programs are in place to perform land swaps or transfer of development rights with willing owners for property identified.</p> <p>Applicability of this recommendation extends beyond the KPAs and includes all property that can impact the viability of the Base or Sunport operations or the quality of the training conducted by Kirtland AFB assigned units.</p>	X	X	X	X		MRCOG	A	Valencia County								
						S	Sunport	A	City of Albuquerque								
						S	Kirtland AFB	A	Pueblo of Isleta								
						A	Bernalillo County	S	University of New Mexico								
						A	Sandoval County		U.S. Forest Service								
						A	Socorro County	A	Department of Energy								
						<p>Budget Estimate: Staff Time.</p> <p>Possible Funding Sources: N/A.</p>						<p>Timing</p> <table border="1"> <thead> <tr> <th>0-2 Years</th> <th>3-5 Years</th> <th>5-10 Years</th> <th>On-going</th> </tr> </thead> <tbody> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>				0-2 Years	3-5 Years
0-2 Years	3-5 Years	5-10 Years	On-going														
X			X														
<p>Issues/Issue Factors: 5.2.3.2, 5.3.1 and 5.4.5</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	

⁵ Sierra Club, <http://www.sierraclub.org/policy/conservation/landexchange.aspx>



4.18. Ensure Conditions of Approval and Developer Agreements Support Land Use Compatibility (Recommendation 18).

Conditions of Approval and Developer Agreements refine land uses by establishing actions required to develop property zoned for specific uses. Land use authorities use these tools to ensure policies requiring actions such as noise disclosures, explosive testing advisory notices, aviation easements, etc., are included in documents transferring real estate ownership between parties.

Normally used as part of subdivision regulation, the fundamental principles underlying these tools can also be used to require specific conditions on development when Base organizations negotiate enhanced use leases, developments on government property or developments on government property leased to other entities.

Land use authorities should ensure disclosure, advisory, easement and other controls are included in conditions of approval and developer agreements. Base and local officials should use conditions of approval and developer agreements to effectively link policy guidance to land use execution to ensure compatible development.

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders			
18	Ensure Conditions of Approval and Developer Agreements Support Land Use Compatibility Land use stakeholders ensure disclosure, advisory, easement and other controls are included in conditions of approval and developer agreements. Base and local officials should use conditions of approval and developer agreements to effectively link policy guidance to land use to ensure compatible development.	X	X	X	X		Regional Planning Forum	A	Torrance County
							MRCOG	A	Valencia County
						S	Sunport	A	City of Albuquerque
						A	Kirtland AFB	A	Pueblo of Isleta
						A	Bernalillo County	S	University of New Mexico
						A	Sandoval County		U.S. Forest Service
						A	Socorro County	S	Department of Energy
Budget Estimate: Staff Time. Possible Funding Sources: N/A.						Timing			
						0-2 Years	3-5 Years	5-10 Years	On-going
						X			X
Issues/Issue Factors: 5.2.1, 5.2.3.1, 5.2.6.1, 5.2.6.2, 5.2.6.3, 5.3.6, 5.3.8.3, 5.4.5, 5.4.9 and 5.4.11									
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.									



4.19. Leverage Capital Improvement Programs (Recommendation 19).

Capital Improvement Programs (CIPs) are used by government to forecast and budget for capital requirements over time. They help identify needs, develop a timeline for execution and program needed funds. Funds can be sourced from multi-parties including the Congress, Federal, State and local programs, such as transportation, alternative energy development, etc. Additionally, funding is secured from the private sector when developers increase demand on existing infrastructure or create new requirements. The key to leveraging these programs to support Kirtland AFB, the Sunport and region is early identification and inclusion of information about out-year

requirements. Proper integration of existing, planned, programmed or anticipated requirements can provide financial planners and decision makers valuable insight into how CIPs can most effectively support Base and Sunport activities and enable regional growth.

Table IV – 19: Leverage Capital Improvement Programs					Local Administrative Actions												
#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
19	<p>Leverage Capital Improvement Programs</p> <p>Stakeholders should ensure compatible land use planning assumptions are integrated into CIP development.</p> <p>Kirtland AFB and Sunport officials should ensure projects that will enhance sustainment, operational effectiveness, or support additional missions are identified to the appropriate stakeholder with CIPs.</p> <p>Stakeholders should ensure Base and Sunport needs are incorporated into their CIPs.</p> <p>Stakeholders should seek funding support from State Officials, the Congressional Delegation and Federal and State Agencies to support CIPs.</p>	X	X	X	X	L	Regional Planning Forum	A	Torrance County								
						A	MRCOG	A	Valencia County								
						S	Sunport	A	City of Albuquerque								
						A	Kirtland AFB	A	Pueblo of Isleta								
						A	Bernalillo County		University of New Mexico								
						A	Sandoval County		U.S. Forest Service								
						A	Socorro County	S	Department of Energy								
<p>Budget Estimate: Unknown.</p> <p>Possible Funding Sources: Federal and State programs, Congressional funding, developers.</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			X
0-2 Years	3-5 Years	5-10 Years	On-going														
X			X														
Issues/Issue Factors: 5.4.5																	
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.																	



4.20. Building Codes and Code Enforcement (Recommendation 20).

Building codes establish construction requirements to ensure structures are safe and habitable. Acceptable types of building materials and minimum acceptable requirements for structural characteristics, noise attenuation and capacity and configuration of electrical, natural gas, ventilation, plumbing and lighting systems are representative of the subjects addressed with building codes. The primary goal of using building codes is to provide healthy and safe residential and working environments and provide government the means to ensure they will be maintained. A secondary goal can be to protect local government from liabilities associated with intrusion of known “nuisances” on community members.

One of the most common nuisances is aircraft noise. Therefore, ensuring appropriate noise attenuation standards are included in new construction or significant renovation is an important part of code enforcement near aviation activities.

Table IV – 20: Building Codes and Code Enforcement					Building and Structural Codes					
#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders				
20	<p>Building Codes and Code Enforcement</p> <p>Kirtland AFB and Sunport officials should work with stakeholders to ensure building codes protect the viability of their operations. As additional conflicts are identified, they should be addressed.</p> <p>Stakeholders should include building code requirements to ensure safe and healthy living and work environments in areas impacted by Kirtland AFB and Sunport operations. As additional requirements are identified, building codes should be modified.</p> <p>Appropriate noise attenuation standards should be included in building codes and enforced during construction or significant renovation.</p> <p>Kirtland AFB and Sunport officials should identify code violations, such as height, glare, night sky, etc., to the appropriate stakeholder(s), when noted.</p> <p>Stakeholders should take action, as appropriate, to rectify identified violations.</p>		X	X	X	S	Regional Planning Forum	A	Torrance County	
							MRCOG	A	Valencia County	
						A	Sunport	A	City of Albuquerque	
						A	Kirtland AFB	A	Pueblo of Isleta	
						A	Bernalillo County		University of New Mexico	
						A	Sandoval County		U.S. Forest Service	
						A	Socorro County	S	Department of Energy	
Budget Estimate: Staff Time. Possible Funding Sources: N/A.						Timing				
						0-2 Years	3-5 Years	5-10 Years	On-going	
						X			X	
Issues/Issue Factors: 5.2.4.2, 5.2.4.3, 5.2.6.1, 5.2.6.2, 5.2.6.3, 5.3.1, 5.3.1.1, 5.3.5, 5.4.2, 5.4.3.2, 5.4.3.3 and 5.4.5										
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.										



4.21. Mandatory Referral of Development Applications (Recommendation 21).

The most efficient way to evolve a strong, regional planning process is for land use authorities, Kirtland AFB and the Sunport to ensure that appropriate stakeholders' views are solicited as early in the development process as possible. Mandatory review of development applications amongst offices within local governments has long been the standard. Including a mandatory review by Kirtland AFB and Sunport officials of applications that could impact, or be impacted by, their operations will enhance coordination of actions. Coordination is particularly important for development that will occur within the boundaries of KPA II and KPA III. It will provide professional planning staff and land use authority decision makers early input to the value or concerns of a potential development. Also, early input by Kirtland AFB and Sunport officials could provide the impetus and basis for identifying acceptable alternatives to the initial application and result in enhanced project compatibility. If applications are ultimately rejected based on compatibility concerns, early identification of those issues could insulate local officials from criticism that they knowingly allowed time and financial resources to be spent on proposals they should have known could be rejected

based on compatibility issues.

Similarly, Kirtland AFB and Sunport officials should involve appropriate stakeholders in review of possible development that could have impacts outside their boundaries. Although the process used by the Air Force is not identical to those used by municipalities, it is sufficiently aligned to allow for referral to the local land use jurisdictions that could be impacted. Early identification of potential issues could lead to resolution and a more effective project.

This recommendation is not intended to apply to all development applications; however, the extent of its applicability cannot be determined without insight into the myriad development proposals since review should be based on the potential "impact" and not geography. For example, a proposed 500-foot tower within a Military Training Route included in KPA I should be reviewed. Conversely, the same tower within KPA I, but with no potential impact on Base or Sunport missions would not be referred. The complexity of assessing "impact" will require stakeholders to develop internal processes for determining what applications warrant referral. The Regional Planning Forum should work with the individual stakeholders to establish criteria dictating the mandatory referral of appropriate development applications.

Table IV – 21: Mandatory Referral of Development Applications Development Review Process

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders			
						L	A	S	T
21	Mandatory Referral of Development Applications Stakeholders should refer development applications and request formal assessment and input from Kirtland AFB and Sunport officials. Kirtland AFB and Sunport officials should refer information about possible development that could have impacts outside their boundaries.	X	X	X	X	L	Regional Planning Forum	A	Torrance County
						A	MRCOG	A	Valencia County
						A	Sunport	A	City of Albuquerque
						A	Kirtland AFB	A	Pueblo of Isleta
						A	Bernalillo County	A	University of New Mexico
						A	Sandoval County	A	U.S. Forest Service
						A	Socorro County	A	Department of Energy
Budget Estimate: Staff Time. Possible Funding Sources: N/A.						Timing			
						0-2 Years	3-5 Years	5-10 Years	On-going
						X			X
Issues/Issue Factors: 5.1, 5.2.1, 5.2.3.1, 5.2.3.2, 5.2.4.2, 5.2.7, 5.3.2, 5.3.3, 5.3.4, 5.3.5, 5.3.6, 5.3.8.3, 5.3.9, 5.4.5, 5.4.9 and 5.4.11									
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.									



4.22. Military Participation on Local Planning Boards (Recommendation 22).

As noted earlier, DoD policy permits installation commanders to advise local planning authorities and government about concerns and anticipated impacts of land use decisions on their base operations. Options to support this authority include: (1) having a Kirtland AFB representative as a seated ex officio member on planning boards, (2) ensuring notifications and requests for comment are timely, and (3) developing other procedures aligned with existing stakeholder practices to ensure the

Base is formally involved early in planning processes. The Air Force is considering adoption of an Army program that authorizes each installation a "Community Planner" with liaison responsibilities to local government(s). Regardless, the 377th ABW Commander could appoint staff to participate on his behalf to ensure consistent and professional interaction to support the goal of effective and efficient regional planning.

Table IV – 22: Military Participation on Local Planning Boards					Development Review Process												
#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
22	<p>Military Participation on Local Planning Boards</p> <p>Stakeholders should (1) include the 377th ABW Commander as a seated, ex officio member of their planning boards, (2) ensure timely notifications and requests for comment, and (3) develop alternative procedures to ensure early involvement.</p> <p>The 377th ABW Commander should appoint a member of his staff to represent him at each stakeholder planning board meeting.</p>	X	X	X	X	S	Regional Planning Forum	A	Torrance County								
						S	MRCOG	A	Valencia County								
						A	Sunport	A	City of Albuquerque								
						A	Kirtland AFB	A	Pueblo of Isleta								
						A	Bernalillo County	A	University of New Mexico								
						A	Sandoval County		U.S. Forest Service								
						A	Socorro County		Department of Energy								
<p>Budget Estimate: Staff Time. Possible Funding Sources: N/A.</p>						<p>Timing</p> <table border="1"> <thead> <tr> <th>0-2 Years</th> <th>3-5 Years</th> <th>5-10 Years</th> <th>On-going</th> </tr> </thead> <tbody> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			X
0-2 Years	3-5 Years	5-10 Years	On-going														
X			X														
<p>Issues/Issue Factors: 5.1.1, 5.1.4, 5.2.1, 5.2.3.1, 5.2.3.2, 5.2.4.3, 5.2.5, 5.2.6.1, 5.2.6.2, 5.2.6.3, 5.2.6.4, 5.3, 5.4.2, 5.4.3.2, 5.4.3.3, 5.4.5, 5.4.9 and 5.4.11</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	



4.23. Mandatory Referral of Documents Requiring Environmental Review (Recommendation 23).

For the same reasons as discussed in Section 4.21, *Mandatory Referral of Development Applications*, stakeholder projects and documents requiring National Environmental Policy Act (NEPA) and/or State-mandated environmental review should be referred to Kirtland AFB and the Sunport to ensure their views are solicited as early in the development process as possible.

Similarly, Kirtland AFB and Sunport officials should involve appropriate stakeholders in review of their projects that require environmental review.

The goals of identifying environmental implications of actions, disclosure of proposed actions, soliciting public input for decision makers and completing robust analysis of actions that significantly impact the human environment

would all be furthered by formal and expanded coordination.

Similar to Recommendation 21, the review should be based on the potential "impact" of development and not proximity to the Base or Sunport. The complexity of assessing "impact" will require stakeholders to develop internal processes for determining what applications warrant referral.

Table IV – 23: Mandatory Referral of Documents Requiring Environmental Review Development Review Process

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
23	<p>Mandatory Referral of Documents Requiring Environmental Review</p> <p>Stakeholders should refer documents requiring NEPA and other environmental review to Kirtland AFB and Sunport officials for review and comment.</p> <p>Kirtland AFB should refer documents associated with Base actions that require environmental review to the appropriate stakeholders for review and comment.</p>	X	X	X	X		Regional Planning Forum	A	Torrance County								
							MRCOG	A	Valencia County								
						A	Sunport	A	City of Albuquerque								
						A	Kirtland AFB	A	Pueblo of Isleta								
						A	Bernalillo County		University of New Mexico								
						A	Sandoval County		U.S. Forest Service								
						A	Socorro County		Department of Energy								
<p>Budget Estimate: Staff Time.</p> <p>Possible Funding Sources: N/A.</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td></td> <td></td> <td></td> <td>X</td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going				X
0-2 Years	3-5 Years	5-10 Years	On-going														
			X														
<p>Issues/Issue Factors: 5.1, 5.2.1, 5.2.3.1, 5.2.3.2, , 5.3.2, 5.3.5, 5.3.6, 5.3.8.3, 5.3.9, 5.4.2 and 5.4.3.2</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	





4.24. Regional Transportation Planning and Land Use Compatibility (Recommendation 24).

Coordinated transportation planning is a critical element of regional land use planning. The capacity, effectiveness and efficiency of the individual and collective stakeholders' transportation systems directly impact the quality of life, environmental quality of the region and ability to support Kirtland AFB and Sunport activities. The behavior of individuals, such as use of regional or local transit, car pooling, bicycle commuting, etc., also has direct impact on the efficiency of the transportation system. Overall, the transportation system has implications for land uses by shaping property development that determines where people live, work and recreate. Also, the impact of transportation issues on air quality can have significant implications for Air Force retention and/or growth of aviation activities at Kirtland AFB.

MRCOG is the designated Metropolitan Planning Organization (MPO) and leads efforts to coordinate transportation issues amongst the members of the four-county MRCOG region. MRCOG is the clearinghouse for planning and focal point for effective coordination of

plans, programs and funding the transportation needs of the region. The employment and economic impacts of Kirtland AFB and the Sunport demand regional transportation planning address both their requirements and concerns. As part of the JLUS, a comprehensive transportation analysis was completed to ensure future land use planning could be appropriately informed of the individual requirements and concerns of MRCOG members, public agencies, the business community, citizens, Kirtland AFB leaders and workers, and Sunport users and employees. The results should be compared to existing, planned, programmed and envisioned transportation initiatives contained in MPO and stakeholder documents. To ensure Kirtland AFB and Sunport perspectives are included, each entity should be represented in the MPO review. Kirtland AFB and Sunport representatives should also be included on the MPO Board for all future transportation planning.

Table IV – 24: Regional Transportation Planning and Land Use Compatibility					Compatible Land Use Planning/Local Review Process					
#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders				
24	<p>Regional Transportation Planning and Land Use Compatibility</p> <p>Existing Transportation Plans should be reviewed for compatibility with JLUS recommendations and the associated Transportation System Analysis. MRCOG, as the MPO, should identify areas of conflict and work with its board members to resolve inconsistencies.</p> <p>MRCOG should ensure Kirtland AFB and Sunport representatives are involved in reviewing transportation plans, if desired.</p> <p>Kirtland AFB and Sunport representatives should be included in future transportation planning by the MPO to ensure compatibility of transportation initiatives with their current, planned and possible missions.</p> <p>Stakeholders should encourage alternatives to single vehicle commuting based on the direct connection between transportation practices and air quality, a significant factor in the sustainability of Kirtland AFB and the Sunport for existing and potential new defense aviation activities.</p>	X	X	X	X	S	Regional Planning Forum	S	Torrance County	
						L	MRCOG	S	Valencia County	
						S	Sunport	S	City of Albuquerque	
						S	Kirtland AFB	S	Pueblo of Isleta	
						S	Bernalillo County	S	University of New Mexico	
						S	Sandoval County		U.S. Forest Service	
							Socorro County	S	Department of Energy	
Budget Estimate: Staff Time. Possible Funding Sources: N/A.						Timing				
						0-2 Years	3-5 Years	5-10 Years	On-going	
									X	
Issues/Issue Factors: 5.1.4, 5.2.4.1, 5.3.9 and 5.4.5										
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.										



4.25. Real Estate Disclosures (Recommendation 25).

Disclosures are used to ensure that the sellers, buyers and agents involved in real estate transactions are protected from potential liability for not having informed the other parties of circumstances that may not be evident by simply viewing a property. Noise from a nearby airport or military base; presence in an area considered at possible risk from dropped objects or aircraft accidents; damage to structures from explosive activities; existing easements, etc., should be disclosed to potential buyers. The New Mexico boards that guide transactions for both commercial and residential property have standardized agreements with disclosure sections – included at Appendices K and L, respectively. However, the commercial form is often replaced by a purchase agreement specifically tailored to the property and parties are not required to include disclosures related to airport, military installations or training areas. Both agreements could be strengthened by inclusion of clarifying

language. County, City, Base, Sunport and real estate professionals should determine the precise disclosures, but examples could include:

- There is/is not (circle response) a commercial airport within 3 miles of this property.
- There is/is not (circle response) a military installation within 3 miles of this property.
- This property is/is not (circle response) under or within 1 mile of aircraft flight paths.

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders			
25	<p>Real Estate Disclosures</p> <p>Stakeholders should develop comprehensive, standardized disclosure statements about Kirtland AFB and Sunport activities for inclusion in real estate documents.</p> <p>Kirtland AFB and the Sunport should clearly identify potential issues – noise, vibration, UXO, etc. – and the most appropriate language for the disclosure statements.</p> <p>Stakeholders should work with the State boards of real estate and local real estate communities to ensure these disclosures are provided to potential sellers prior to listing properties and potential buyers at the earliest opportunity.</p> <p>Stakeholders should ensure their land use regulations require appropriate disclosures in developer agreements.</p> <p>Consideration of including clarifying language on all real estate disclosures such as:</p> <ul style="list-style-type: none"> • There is/is not (circle response) a commercial airport within 3 miles of this property. • There is/is not (circle response) a military installation within 3 miles of this property. • This property is/is not (circle response) under or within 1 mile of aircraft flight paths. 	X	X	X	X	S	Regional Planning Forum	A	Torrance County
						S	MRCOG	A	Valencia County
						A	Sunport	A	City of Albuquerque
						A	Kirtland AFB	A	Pueblo of Isleta
						A	Bernalillo County	S	University of New Mexico
						A	Sandoval County	S	U.S. Forest Service
						S	Socorro County	A	Department of Energy
<p>Budget Estimate: Staff Time.</p> <p>Possible Funding Sources: N/A.</p>						Timing			
						0-2 Years	3-5 Years	5-10 Years	On-going
									X
<p>Issues/Issue Factors: 5.2.4.3, 5.3.1, 5.3.1.2, 5.3.5, 5.4.9 and 5.4.11</p>									
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>									



4.26. Real Estate Disclosures – Zoning and Development Agreements (Recommendation 26).

Like the use of disclosures during real estate transactions (Recommendation 25), disclosures are important to ensure zoning and development agreements accurately reflect or consider the implications of property encumbrances.

Table IV – 26: Real Estate Disclosures – Zoning and Development Agreements					Land Use Regulations					
#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders				
26	Real Estate Disclosures – Zoning and Development Agreements Stakeholders should ensure zoning and development agreements reflect and/or include appropriate disclosures and support disclosures developed in Recommendation 25.		X	X	X	Regional Planning Forum	A	Torrance County		
						MRCOG	A	Valencia County		
						Sunport	A	City of Albuquerque		
						Kirtland AFB		Pueblo of Isleta		
						A	Bernalillo County	University of New Mexico		
						A	Sandoval County	U.S. Forest Service		
						A	Socorro County	Department of Energy		
Budget Estimate: Staff Time. Possible Funding Sources: N/A.						Timing				
						0-2 Years	3-5 Years	5-10 Years	On-going	
						X			X	
Issues/Issue Factors: 5.2.4.2, 5.3.1, 5.3.1.2, 5.3.5, 5.4.9 and 5.4.11										
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.										



4.27. Avigation Easements (Recommendation 27).

As discussed in Recommendation 6, easements are conditions voluntarily accepted by property owners or purchased by agencies to secure the rights to allow or limit specific property uses or development. An Avigation Easement is a special type of easement tailored to aviation activity. Uses allowed include overflight by aircraft and creation of attendant noise, dust, vibration, etc. or use of the property for landing or aviation-related training – drop of material or personnel, maneuver of troops, etc. Examples of uses restricted include building structures that violate height, lighting or location restrictions or development of uses that attract birds. In addition to the traditional focus on overflight, required ground training for special operations forces and construction of towers, wind

turbines and related transmission lines that could create safety issues for low flying aircraft could be of particular interest. For example, avigation easements along MTRs could be used to help protect 58th SOW training capabilities.

Avigation easements cannot be accepted by DoD; therefore, local government must be responsible for accepting them and the responsibilities that are attached. In this JLUS, easements should extend to training areas and routes used by the 58th SOW.

Table IV – 27: Avigation Easements					Local Administrative Actions												
#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
27	<p>Avigation Easements</p> <p>Stakeholders should develop or enhance their programs to ensure avigation easements are required for areas needing protection.</p> <p>Kirtland AFB and Sunport officials should assist land use authorities to identify areas needing protections and characterizing the specific protections required.</p> <p>The Regional Planning Forum should facilitate actions to standardize, as much as practical, avigation easement programs amongst the stakeholders.</p> <p>An Avigation Easement example is at Appendix M.</p>		X	X	X	L	Regional Planning Forum	A	Torrance County								
							MRCOG	A	Valencia County								
						S	Sunport	A	City of Albuquerque								
						S	Kirtland AFB	A	Pueblo of Isleta								
						A	Bernalillo County		University of New Mexico								
						A	Sandoval County		U.S. Forest Service								
						A	Socorro County		Department of Energy								
<p>Budget Estimate: Staff Time.</p> <p>Possible Funding Sources: N/A.</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			X
0-2 Years	3-5 Years	5-10 Years	On-going														
X			X														
<p>Issues/Issue Factors: 5.2.4.2, 5.3.1, 5.3.1.2, 5.3.5, 5.3.6 and 5.3.8.3</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	



4.28. Light Control (Recommendation 28).

As discussed in Part III, Section 5.2.6, several critical missions conducted by Kirtland AFB organizations rely on dark night sky conditions. These include research and test missions associated with the Starfire Optical Range and operational training using Night Vision Goggles (NVGs) conducted by the 58th SOW. In 1999, the State of New Mexico passed the “Night Sky Protection Act” to preserve and enhance the State’s night sky. In 2009, enforcement of the Act became mandatory. This legislation provides a framework stakeholders can use to protect night skies. One recent comprehensive set of initiatives at fugitive light

control are the standards created by the City of Albuquerque, in conjunction with Kirtland AFB, for the Mesa del Sol development. An efficient way to implement formal light controls could be the adoption of these standards for regulatory amendments to zoning or development agreement approval by other stakeholders. These standards should be enforced for all new development, as well as for renovations and retrofits of existing fixtures.

Table IV – 28: Light Control Local Administrative Actions

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
						S	A	A	A								
28	<p>Light Control</p> <p>Preserving night sky darkness is critical to the effectiveness of many Kirtland AFB missions. The State of New Mexico adopted the “Night Sky Protection Act” in 1999 to preserve and enhance natural darkness, an effort that supports the Base’s mission requirements. The light and glare controls created for the Mesa del Sol development offers a recent, comprehensive approach to working with Kirtland AFB to protect natural darkness.</p> <p>Stakeholders should develop and/or update light controls to protect Kirtland AFB missions including, but not limited to Starfire Optical Range activities and 58th SOW training.</p> <p>Stakeholders should consider integration of the Mesa del Sol development agreement standards since they have been accepted as effective controls by the Base.</p> <p>Kirtland AFB and the Sunport should work with the stakeholders to refine or supplement the Mesa del Sol standards to their particular circumstances and conditions, as appropriate.</p>	X	X	X	X	S	Regional Planning Forum	A	Torrance County								
							MRCOG	A	Valencia County								
						S	Sunport	A	City of Albuquerque								
						A	Kirtland AFB	A	Pueblo of Isleta								
						A	Bernalillo County	A	University of New Mexico								
						A	Sandoval County	A	U.S. Forest Service								
						A	Socorro County	A	Department of Energy								
<p>Budget Estimate: Staff Time. Possible Funding Sources: N/A.</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			X
0-2 Years	3-5 Years	5-10 Years	On-going														
X			X														
<p>Issues/Issue Factors: 5.2.4.2, 5.3.5, 5.4.9 and 5.4.11</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	



4.29. Preserve La Semilla as a Buffer (Recommendation 29).

Preserve La Semilla as a buffer between Kirtland AFB and Mesa del Sol, the University of New Mexico property and the open office and industrial space immediately south of the Kirtland/Sunport perimeter.

La Semilla exists as a 100-year DOE lease from the State Land Office for the express purpose of insulating a portion of Kirtland AFB from surrounding land adjacent to the southwestern portion of the base and its potential, future development.

Any development within the buffer or modification to the currently agreed-to use of the buffer could present a form of encroachment on the installation impacting both DoD missions and DOE missions, testing, evaluation and experimentation.

Table IV – 29: Preserve La Semilla as a Buffer

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders				Other							
29	<p>Preserve La Semilla as a Buffer</p> <p>Preserve La Semilla as a buffer between Kirtland AFB and Mesa del Sol, the University of New Mexico property and the open office and industrial space immediately south of the Kirtland/Sunport perimeter.</p> <p>La Semilla exists as a 100-year DOE lease from the State Land Office for the express purpose of insulating a portion of Kirtland from surrounding land adjacent to the southwestern portion of the base.</p> <p>Any development within the buffer or modification to the currently agreed to use of the buffer could present a form of encroachment on the installation impacting both DoD and DOE missions, testing, evaluation and experimentation.</p>	X	X	X	X		Regional Planning Forum		Torrance County								
							MRCOG		Valencia County								
							Sunport	A	City of Albuquerque								
						A	Kirtland AFB	S	Pueblo of Isleta								
						A	Bernalillo County	S	University of New Mexico								
							Sandoval County		U.S. Forest Service								
							Socorro County	L	Department of Energy								
<p>Budget Estimate: Staff Time. Possible Funding Sources: N/A.</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td>X</td> <td></td> <td></td> <td>X</td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going	X			X
0-2 Years	3-5 Years	5-10 Years	On-going														
X			X														
<p>Issues/Issue Factors: 5.2.1, 5.5.5, 5.2.6.1, 5.2.6.2 and 5.2.6.3</p>																	
<p>Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.</p>																	



4.30. Fuel Plume and Mixed Waste Landfill Advisories (Recommendation 30).

While neither the Fuel Plume nor Mixed Waste Landfill (Part III, Sections 5.4.7 and 5.4.8, respectively) represent current land use issues, they are both high visibility issues of significant interest to the DOE, Air Force, State and local governments, and local communities that are in close proximity to impacted areas.

DOE and Kirtland AFB hold a joint, semi-annual environmental public meeting to update local residents and interested parties regarding all environmental issues on the Base that includes the Fuel Plume and Mixed Waste Landfill.

In addition to these two public meetings, Kirtland AFB posts all briefings and information relevant to the fuel plume characterization and remediation on its public website; holds quarterly meetings with a Citizens Advisory Board; and meets with local neighborhood associations

regularly to demonstrate the Base's commitment to public participation and information sharing on plume remediation.

In May 2010, the Air Force Assistant Secretary for Installations, Environment and Logistics visited the Secretary of the New Mexico Environment Department to affirm the Air Force commitment to remediating the fuel plume as quickly as possible and to providing necessary resources. There are still many details to be worked regarding the final remediation of the fuel plume, but recent developments appear to be encouraging.

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders				Other	
30	<p>Fuel Plume and Mixed Waste Landfill Advisories</p> <p>Kirtland AFB and DOE officials should continue working with State and local government agencies and the public to provide appropriate release of information on the status of each issue, ongoing actions, future actions and projected end dates on all environmental issues.</p> <p>DOE, Kirtland AFB and regulating agencies in both State and local governments should continue to seek ways to enhance their interaction and cooperation.</p>	X					Regional Planning Forum		Torrance County		
							MRCOG		Valencia County		
							Sunport	A	City of Albuquerque		
						L	Kirtland AFB		Pueblo of Isleta		
						A	Bernalillo County		University of New Mexico		
							Sandoval County		U.S. Forest Service		
							Socorro County	L	Department of Energy		
Budget Estimate: Staff Time.							Timing				
Possible Funding Sources: N/A.							0-2 Years	3-5 Years	5-10 Years	On-going	
							X			X	
Issues/Issue Factors: 5.4.7 and 5.4.8											
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.											



4.31. Ensure Compliance with FAA Parts 77 and 150 (Recommendation 31).

The requirements of FAA Parts 77 and 150 are fundamental to the Sunport retaining certification as a civilian airfield. Recommendations 7 (Request an AICUZ Study) and 14 (Consider Designations of CZ and APZ for Selected Sunport Runways) are intended to supplement underlying FAA requirements and provide additional information to land use authorities.

FAA Part 77 “establishes standards for determining obstructions in navigable airspace, sets forth the notice requirements of certain proposed construction or alteration, provides for aeronautical studies of obstructions to determine their effect on the safe and efficient use of airspace and provides for public hearings on the hazardous effect of proposed construction or alteration.”⁶ Compliance with FAA Part 77 guidance (height) is required, and it must be considered for incorporation by land use authorities associated with the area surrounding the

Sunport and with training areas and military training routes away from the Sunport.

FAA Part 150 provides the basis for aircraft noise analysis and noise contour mapping of civilian airports. Guidance for compatible land use is provided within the 55, 65 and 75 dB noise contours as shown in Table III – 1, Part III, Section 5.1.1.3. Compliance with FAA Part 150 land use planning guidance is voluntary, but an approved Part 150 is a primary vehicle to obtain approval for applications for Federal grants for noise abatement programs.

Table IV – 31: Ensure Compliance with FAA Parts 77 and 150 Land Use Regulations

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders			
31	Ensure Compliance with FAA Parts 77 and 150 Stakeholders should ensure compliance with FAA Parts 77 and 150. Stakeholders with land use authority for training areas and military training routes not contiguous with the Sunport, should consider incorporating FAA Part 77 (height) requirements for property impacting, or impacted by, military aviation training.	X	X	X	X	S	Regional Planning Forum	A	Torrance County
							MRCOG	A	Valencia County
						A	Sunport	A	City of Albuquerque
						S	Kirtland AFB	A	Pueblo of Isleta
						A	Bernalillo County		University of New Mexico
						A	Sandoval County		U.S. Forest Service
							Socorro County		Department of Energy
Budget Estimate: Staff Time: Unknown project costs. Possible Funding Sources: FAA, DoD, State of New Mexico, property developers.						Timing			
						0-2 Years	3-5 Years	5-10 Years	On-going
							X		X
Issues/Issue Factors: 5.3.1.1 and 5.3.1.2									
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.									

⁶ https://oeaaa.faa.gov/oeaaa/external/content/FAR_Part77.pdf
p.14



4.32. Biennial Press Release Concerning Economic and Employment Impacts of Kirtland AFB and the Sunport (Recommendation 32).

The significant economic and employment impacts of Kirtland AFB and the Sunport are documented in Part III, Section 3. Ensuring regional citizens, as well as government and planning officials, remain cognizant of regional economic reliance on the Base and Sunport could help create a broad-based consensus on encouraging compatible land uses and discouraging those that would adversely impact Base or Sunport missions. One of the emphasis elements of the JLUS was creation of a standardized economic analysis of the Base and Sunport operations to support the ability of regional stakeholders to analyze and discuss economic issues using a common baseline. Releasing a periodic reminder of the economic

and employment impacts will provide an incentive to keep that baseline updated. The release should immediately follow the publication of Kirtland AFB's Biennial Economic Impact Statement. Consideration should be given to preparing the Base Economic Impact Statement annually. Differences in the way data is used and analyzed should be highlighted to help residents understand how the assumptions used in the analysis impact results. The intent should be to ensure that the overall regional impact is highlighted and citizens do not incorrectly attribute the economic and employment benefits to only jurisdictions immediately adjacent to Kirtland AFB and the Sunport.

Table IV – 32: Biennial Press Release Concerning Economic and Employment Impacts of Kirtland AFB and the Sunport Other

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders			
						L	A	S	Other
32	<p>Biennial Press Release Concerning Economic and Employment Impacts of Kirtland AFB and the Sunport</p> <p>The Regional Planning Forum should prepare periodic releases concerning the economic and employment impacts of Kirtland AFB and the Sunport.</p> <p>The release should immediately follow the publication of Kirtland AFB's Biennial Economic Impact Statement. Consideration should be given to preparing the Base Economic Impact Statement annually.</p> <p>Differences should be highlighted to ensure an appreciation that the region benefits from Base and Sunport operations and citizens do not incorrectly attribute the economic and employment benefits to only jurisdictions immediately adjacent to the Base and Sunport,</p>	X					Regional Planning Forum		Torrance County
						A	MRCOG		Valencia County
						A	Sunport		City of Albuquerque
						A	Kirtland AFB		Pueblo of Isleta
							Bernalillo County		University of New Mexico
							Sandoval County		U.S. Forest Service
							Socorro County	S	Department of Energy
Budget Estimate: Staff Time. Possible Funding Sources: N/A.						Timing			
						0-2 Years	3-5 Years	5-10 Years	On-going
						X			X
Issues/Issue Factors: 5.1.2									
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.									



4.33. Pursue Mission Growth and Seek New Missions for Kirtland AFB (Recommendation 33).

Kirtland AFB is a large installation and hosts a diverse group of missions and units. Several of the existing DoD missions and other activities support operations that are growing in significance for national security. The Base's size, location and operating environment provides capacity to absorb additional mission growth. Also, the flying conditions, access to valuable ranges and airspace and investments in specialized equipment could be attractive for emerging, new missions. Stakeholders should work with the Kirtland Partnership Committee, the New Mexico

Office of Military Base Planning and Support, State and Federal Delegations, regional business organizations and citizens' activities to pursue mission growth for the Base. Increased mission activity could increase the Base's military value, better leverage taxpayer investments and provide the region greater economic benefits in exchange for limiting land uses to sustain Base and Sunport missions.

Table IV – 33: Pursue Mission Growth and Seek New Missions for Kirtland AFB

Other

#	Description	KPA I	KPA II	KPA III	KPA IV	Action Stakeholders											
33	<p>Pursue Mission Growth and Seek New Missions for Kirtland AFB</p> <p>Stakeholders should work to secure mission growth for existing activities and seek new missions for Kirtland AFB.</p> <p>The Regional Planning Forum should facilitate support to the Kirtland Partnership Committee and assist stakeholders in working with the New Mexico Office of Military Base Planning and Support to leverage the numerous advantages offered by Kirtland AFB, the region and valuable training venues in New Mexico and the Southwest.</p> <p>Appropriate assistance should be sought from State and Federal Delegations, regional businesses and community organizations and other interested groups.</p>	X				L	Regional Planning Forum	A	Torrance County								
						A	MRCOG	A	Valencia County								
						A	Sunport	A	City of Albuquerque								
						S	Kirtland AFB	A	Pueblo of Isleta								
						A	Bernalillo County	A	University of New Mexico								
						A	Sandoval County	A	U.S. Forest Service								
						A	Socorro County	A	Department of Energy								
<p>Budget Estimate: Staff Time, \$50,000/year.</p> <p>Possible Funding Sources: State, regional and local organizations, business interests and support groups.</p>						<p>Timing</p> <table border="1"> <tr> <td>0-2 Years</td> <td>3-5 Years</td> <td>5-10 Years</td> <td>On-going</td> </tr> <tr> <td></td> <td></td> <td></td> <td>X</td> </tr> </table>				0-2 Years	3-5 Years	5-10 Years	On-going				X
0-2 Years	3-5 Years	5-10 Years	On-going														
			X														
Issues/Issue Factors: 5.3.3, 5.3.4 and 5.3.7																	
Legend: KPA (Kirtland AFB Planning Area); L (Lead); A (Action); S (Supporting); Timing (Estimated Completion) See also Section 3.0.																	



5.0 Summary Table – Recommendation to Stakeholder

This section includes a summary of recommendations cross-referenced to stakeholders and responsibilities.

Recommendation Number	Recommendation Title	Regional Planning Forum	MRCOG	Support	Kirtland AFB	Bernalillo County	Sandoval County	Socorro County	Torrance County	Valencia County	City of Albuquerque	Pueblo of Isleta	University of New Mexico	U.S. Forest Service	Department of Energy
1	Establish a JLUS Implementation Committee		L	A	A	A	A	A	A	A	A	A	A	A	A
2	Develop Memoranda of Understanding		L	A	A	A	A	A	A	A	A	A	A	A	A
3	Establish a Regional Planning Forum		L	A	A	A	A	A	A	A	A	A	A	A	A
4	Establish a Kirtland AFB Planning Area	L		S	A	A	A	A	A	A	A	A	S		S
5	Request an Air Installation Compatible Use Zone (AICUZ) Study		S	L	A	S	S	S	S	S	A	S			
6	Support Codifying New Mexico Executive Order No. 2004-046 into State Law	S	A	S	S	S	S			S	S	S	S		S
7	Support State Designations of Regional Military Influence	L	A	S	S	A	A	A	A	A	A	A	S	S	
8	Pursue Designation as Area of Critical State/Local Concern and Interest	L	A	S	S	A	A	A	A	A	A	A	S	S	S
9	Evaluate Formal Coordination of Local Comprehensive Planning	L	S	S	S	A	A	A	A	A	A		S		S
10	Formalize Relationship Between the Pueblo of Isleta and Kirtland AFB	S	S	S	L	S				S		A			S
11	Ensure an Aviator Advisor is Included in Development of Alternative Energy Projects and Leases	S	S	S	S	A	A	A	A	A	A	A	A	A	A
12	Consider Small Area Feasibility Study of Southern Entrance to Kirtland AFB if Base Missions Change	S	L	S	A	A		S		S	A	S	A		S
13	Support Remediation of UXO on Kirtland AFB	S			A	A					A			S	A
14	Consider Designations of CZ and APZ for Selected Support Runways			A	S	A					L				
15	Consider Acquisition of Property to Ensure Land Use Compatibility	L	S	S	S	A	A	A	A	A	A	A	S		S
16	Consider Acquiring Control of Property to Ensure Land Use Compatibility	L	S	S	S	A	A	A	A	A	A	A	S		S
17	Consider Transfer of Property or Development Rights to Ensure Land Use Compatibility	L		S	S	A	A	A	A	A	A	A	S		A



Kirtland AFB Joint Land Use Study

June 2010



Recommendation Number	Recommendation Title	Regional Planning Forum	MRCOG	Support	Kirtland AFB	Bernalillo County	Sandoval County	Socorro County	Torrance County	Valencia County	City of Albuquerque	Pueblo of Isleta	University of New Mexico	U.S. Forest Service	Department of Energy
18	Ensure Conditions of Approval and Developer Agreements Support Land Use Compatibility			S	A	A	A	A	A	A	A	A	S		S
19	Leverage Capital Improvement Programs	L	A	S	A	A	A	A	A	A	A	A			S
20	Building Codes and Code Enforcement	S		A	A	A	A	A	A	A	A	A			S
21	Mandatory Referral of Development Applications	L	A	A	A	A	A	A	A	A	A	A	A	A	A
22	Military Participation on Local Planning Boards	S	S	A	A	A	A	A	A	A	A	A	A		
23	Mandatory Referral of Documents Requiring Environmental Review			A	A	A	A	A	A	A	A	A			
24	Regional Transportation Planning and Land Use Compatibility	S	L	S	S	S	S		S	S	S	S	S		S
25	Real Estate Disclosures	S	S	A	A	A	A	S	A	A	A	A	S	S	A
26	Real Estate Disclosures – Zoning and Development Agreements					A	A	A	A	A	A				
27	Avigation Easements	L		S	S	A	A	A	A	A	A	A			
28	Light Control	S		S	A	A	A	A	A	A	A	A	A	A	A
29	Preserve La Semilla as a Buffer				A	A					A	S	S		L
30	Fuel Plume and Mixed Waste Landfill Advisories				L	A					A				L
31	Ensure Compliance with FAA Parts 77 and 150	S		A	S	A	A		A	A	A	A			
32	Biennial Press Release Concerning Economic and Employment Impacts of Kirtland AFB and the Sunport	L	A	A	A										S
33	Pursue Mission Growth and Seek New Missions for Kirtland AFB	L	A	A	S	A	A	A	A	A	A	A	A	A	A





6.0 Summary Table – Recommendation to Part III Issue Factors

This section includes a summary of recommendations intended to address factors discussed in Part III. Where recommendations are considered to be of special relevance, they are in **bold font**.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	No.	Discussion Area	Page				
																																		5.1	Planning Regionally	III-10			
X	X	X	X		X			X												X	X	X												5.1.1	Collaborative Planning	III-10			
		X			X															X		X								X			5.1.2	Economic Impact	III-11				
		X			X															X		X												5.1.3	Transportation	III-11			
		X	X		X			X												X	X	X	X											5.1.4	Air Quality	III-11			
																																		5.2	Sustaining Kirtland AFB	III-12			
		X	X		X			X	X				X				X			X	X	X							X					5.2.1	Perimeter Development	III-13			
		X	X		X						X																								5.2.2	Southern Entrance	III-14		
		X			X			X									X			X	X	X													5.2.3.1	Tijeras Arroyo	III-15		
		X	X	X				X					X	X	X	X				X	X	X														5.2.3.2	Valle del Sol	III-15	
																																				5.2.4	Mesa del Sol	III-15	
		X	X		X						X													X												5.2.4.1	Transportation	III-16	
		X	X		X														X	X						X		X								5.2.4.2	Light Pollution	III-16	
		X	X		X														X		X					X		X								5.2.4.3	Noise Impacts	III-16	
		X	X		X																X															5.2.5	La Semilla	III-17	
																																				5.2.6	Dark Skies Initiative	III-17	
		X	X		X												X		X		X									X						5.2.6.1	Light Encroachment	III-17	
		X	X		X												X		X		X									X							5.2.6.2	Starfire Optical Range	III-18
		X	X		X												X		X		X									X							5.2.6.3	UNM Observatory	III-18
			X		X																X																5.2.6.4	Dark Sky Legislation	III-18
		X	X		X							X								X																	5.2.7	Land Withdrawals	III-19
																																				5.3	DoD Aviation Activities	III-20	





PART V – ECONOMIC ANALYSIS - SUMMARY

Section No.	Section Contents	
	Title	Page No.
1.0	General Information	V – 2
1.1	Focus and Objectives	V – 2
1.2	Geographic Scope	V – 2
2.0	Regional Information	V – 3
2.1	Population	V – 3
2.2	Economic Benchmarks	V – 4
3.0	Bernalillo County	V – 4
4.0	Sandoval County	V – 5
5.0	Torrance County	V – 5
6.0	Valencia County	V – 6
7.0	Methodology	V – 7
7.1	Data Collection	V – 7
7.2	Kirtland AFB	V – 7
8.0	Data Analysis	V – 7
8.1	Impact Analysis and Multipliers	V – 7
9.0	Findings	V – 8
9.1	Impact from Kirtland AFB	V – 8
9.2	Impact from Albuquerque International Sunport	V – 9

10.0	Recommendations	V – 10
11.0	Summary	V – 10
12.0	List of Figures	
	V-1: Average Annual Population Growth – 1970-2000 and 2000-2008	V – 4
13.0	List of Tables	
	V-1: Population Trends in MRCOG Incorporated and Unincorporated Areas	V – 3
	V-2: Economic Benchmark Data for United States, New Mexico and the MRCOG Four-County Region	V – 6
	V-3: Estimated Impacts of Employment and Spending at Kirtland AFB on the MRCOG Four-County Region	V – 8
	V-4: Estimated Economic Impacts of Sunport - MRCOG Four-County Region	V – 9



1.0 General Information

This section summarizes the complete Economic Analysis report found in Appendix B. For specific economic data, analysis, references or data sources refer to the applicable section of Appendix B.

Kirtland AFB is a sprawling military complex with more than 100 Federal Agencies, commands, administrative offices, research laboratories, test and evaluation facilities, maintenance, air rescue, special operations and training centers. Government contracting opportunities with the Base are plentiful with some \$100 million in local purchases and \$135 million in local service contracts awarded in fiscal year 2008.

In 1995, the Air Force placed the Base on its list of bases to be closed using the Base Realignment and Closure (BRAC) process. Alerted to the threat, the Albuquerque community created an ad-hoc committee to challenge the decision. The community highlighted the significance of the Base as a national resource for research, testing and evaluation, and succeeded in reversing the recommendation. The Base was removed from the closure list prior to the BRAC Commission's vote on the recommendation.

1.1 Focus and Objectives

This report responds to the MRCOG Board's direction to provide an analysis that would help the region better understand the full impact of employment and spending associated with Kirtland AFB and Albuquerque's International Sunport so that regional land use issues affecting Kirtland AFB and Sunport missions could be considered with better understanding of the economic consequences.

This report addresses the objective to provide MRCOG and its member agencies estimated impacts on jobs, income and regional industrial output associated with Kirtland AFB and the Sunport.

1.2 Geographic Scope

The geographic scope of this analysis is defined as the region comprising the four counties of the MRCOG: Bernalillo, Sandoval, Tarrant and Valencia. A newer member of MRCOG, the community of Edgewood in southwest Santa Fe County, is included in the analysis where data are available.





2.0 Regional Information

2.1 Population

Table V-1 displays estimates from the U.S. Census Bureau and places the MRCOG region's four-county population at 845,913, with an additional 2,742 estimated for Edgewood, for a total of 848,655. A competing estimate provided by the and University of New Mexico's Bureau of Business Economic Research (BBER) puts MRCOG's 2008 population at a much larger 875,008.

Table V - 1:
Population Trends in MRCOG Incorporated and Unincorporated Areas

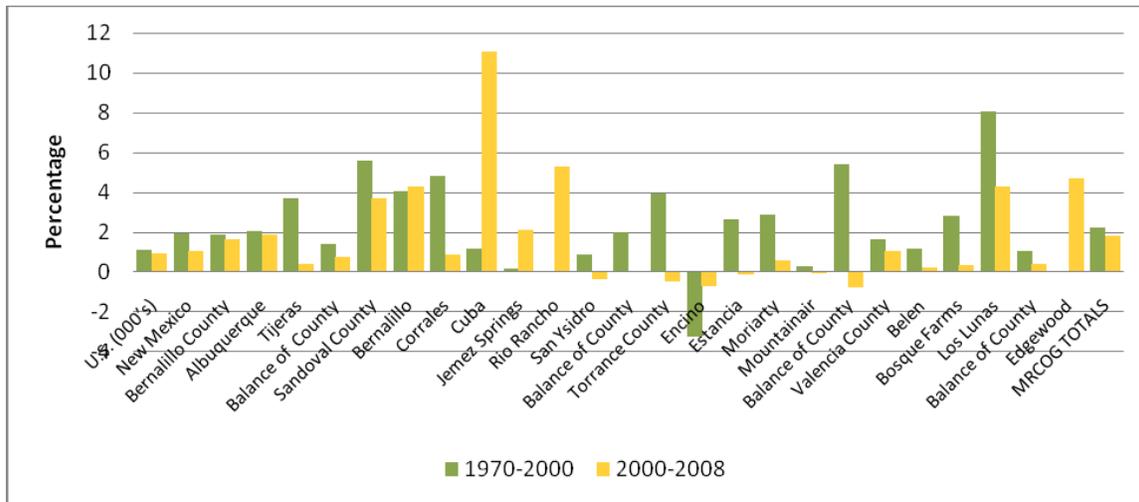
Community	1970	1980	1990	2000	2008 ^r	% Change (1970-2008)
U.S. (000's)	203,302	226,542	248,718	281,422	304,060	49.6
New Mexico	1,017,055	1,303,303	1,515,069	1,819,046	1,984,356	95.1
Bernalillo County	315,774	420,262	480,577	556,678	635,139	101.1
Albuquerque	244,501	332,336	386,988	448,607	521,999	109.8
Tijeras	160	311	478	474	520	225.0
Balance of County	71,113	87,615	93,111	107,597	112,620	58.4
Sandoval County	17,492	34,400	63,319	89,908	122,298	599.2
Bernalillo	2,016	2,988	5,732	6,611	9,237	358.2
Corrales	1,776	2,791	5,503	7,334	7,787	338.5
Cuba	415	609	750	590	1,358	227.2
Jemez Springs	356	316	359	375	439	233.1
Rio Rancho	n/a	9,985	32,551	51,765	79,651	n/a
San Ysidro	182	199	345	238	229	25.8
Balance of County	12,747	17,512	18,079	22,995	23,597	85.1
Torrance County	5,290	7,491	10,285	16,911	16,269	207.5
Encino	250	155	131	94	89	-64.4
Estancia	721	830	800	1,584	1,572	118.0
Moriarty	758	1,276	1,420	1,765	1,952	157.5
Mountainair	1,022	1,170	926	1,116	1,113	8.9
Balance of County	2,539	4,060	7,008	12,352	11,543	354.6
Valencia County	40,576	30,769	45,235	66,152	72,207	78.0
Belen	4,823	5,617	6,555	6,901	7,325	51.9
Bosque Farms	1,699	3,353	3,824	3,931	4,060	139.0
Los Lunas	973	3,525	6,135	10,034	14,153	1354.6
Balance of County	33,081	18,274	28,721	45,286	46,669	41.1
Santa Fe County	Not a member of the MRCOG					
Edgewood	n/a	n/a	n/a	1,893	2,742	n/a
MRCOG TOTALS	379,132	492,922	599,416	731,542	848,655	123.8



Figure V-1 shows the average annual population growth for incorporated and unincorporated areas in the MRCOG region and highlights an estimated slowdown in the

region's growth, a trend that mirrors State and U.S. estimates.

Figure V - 1:
Average Annual Population Growth - 1970-2000 and 2000-2008



2.2 Economic Benchmarks

Table V- 2 (p. V - 6) depicts economic benchmark data for the U.S., New Mexico and MRCOG's four-county region. Analysis reveals the region has outpaced the State and U.S. in average annual growth in population, jobs (employment) and personal income. Median age in the MRCOG region is calculated at 35.8 years, identical to the statewide median age, but one year younger than the U.S. median.

Per capita income, a traditional measure of economic performance, is calculated at \$33,294, averaged across the four-county region. This income level represents 108.4% of the statewide average of \$30,706 but 86.2% of the nation's \$38,615 average, as estimated for 2007.

A notable feature of the regional data is the high level of educational achievement on average across the four counties. Individuals with college bachelor's degrees (or greater) account for 28.0% of the region's population. This statistic compares to 23.5% college-educated for the State and 24.4% for the nation. High education levels typically are associated with strong personal earnings and greater-than-average regional per capita income. While personal earnings and per capita income in the MRCOG region do not exceed the national average, an educated population nevertheless serves as a positive economic indicator and fuels the potential for economic improvement.

In regard to regional poverty, a benchmark indicator known as the "rich-to-poor ratio" is shown for each County. The measure is based on the number of households with incomes less than \$35,000 as a ratio to the number of households earning more than \$100,000. For this indicator, the MRCOG region ranks above the State and below the U.S. averages with 1.42 MRCOG households reporting incomes of less than \$35,000 for every household earning \$100,000. Table V-2 should be referred to for display of values and assessments included in the county analyses (Sections 3 - 6).

3.0 Bernalillo County

Bernalillo County, the largest county in the State in population and industrial output, covers 1,166 square miles of high-desert mesa in central New Mexico. The County is home to nearly one out of every three New Mexicans. From 1970 to 2008, the County's population grew by 319,365, a 101% increase, accounting for an average annual growth of 1.83%, exceeding both the State (1.77%) and national (1.06%) averages.

Employment and income data for Bernalillo County show healthy growth in both jobs and income. From 1970 through 2007, the County recorded an annualized growth in jobs of 3.19%, higher than the State's rate of 2.82% and the 1.86% rate for the United States. Per capita income, a



traditional indicator of economic health, is estimated at \$34,983 for 2007, representing 113.9% of the State (\$30,706) and 90.6% of the national (\$38,615) averages.

The percentage of the adult population in Bernalillo County with a college degree is very high at 30.5% and ranks as the highest among counties in the MRCOG region.

Some 16,898 private, nonfarm establishments are located in the County representing employment of 41.4% of the State's total private, nonfarm job base. Government jobs represent 15.9% of total employment in Bernalillo County compared to 13.4% for the nation, and account for 20.3% of the County's total personal income.

Commuting data from 1981 through 2005 suggest that Bernalillo County is an "employment hub" as income derived from people commuting into the County to work exceeds the income from people commuting out of the County. Regarding employment, over time, the County has seen steady growth in the number of professional, scientific and technical service jobs. A decline was noted in manufacturing jobs. The largest employment sectors today are government (15.9% of total jobs), retail (11.4%), health care and social assistance (11.4%).

4.0 Sandoval County

Sandoval County covers 3,174 square miles of high-desert mesa and includes stretches of the Rio Grande and portions of the Sandia Mountain range. The Census Bureau estimates the County's 2008 population at 122,298, the second largest of the MRCOG counties. From 1970 to 2008, the County's population grew by an extraordinary 599.2%. For the same 38-year period, average annual growth is calculated at 5.25%, a remarkable rate by any standard.

Employment and income data for Sandoval County show strong growth in jobs and income. From 1970 through 2007, the County recorded an annualized growth in jobs of 6.94%, higher than the State's rate of 2.82% and 1.86% for the United States. Per capita income was estimated at \$29,476 for 2007, representing 96.0% of the State's (\$30,706) and 76.3% of the national (\$38,615) averages.

The adult population in Sandoval County with a college degree is 24.8%, higher than the Statewide (23.5%) rate and comparable to the nation's (24.4%) average.

Some 1,699 private, nonfarm firms are established in the County representing employment of 29,687. The largest employment sectors are government, manufacturing, retail,

food and accommodation services. Government jobs represent 18.3% of total employment in the County, but account for merely 9.3% of total personal income. This compares to 13.4% government employment for the nation and the same 13.4% for government's share of the nation's total personal income. Commuting data from 1981 through 2005 suggest that Sandoval County is home to commuters who travel out of the County to work. Income derived from people commuting out of the County exceeds income from people commuting into the County to work.

5.0 Torrance County

Torrance County, covering 3,345 square miles, is home to scenic, gently rolling grasslands at elevations of 6,000 to 6,200 feet. The Census Bureau estimates the County's 2008 population at 16,269, the smallest of the MRCOG's four counties. From 1970 to 2008, Torrance County's population increased 202% accounting for average annual growth of 3.95%, exceeding both the State (1.77%) and national (1.06%) averages. The Census Bureau estimates the County has experienced a recent swing in population with 669 fewer individuals living in the County in 2008 than in 2000. This accounts for an overall negative growth (-0.50%) since 2000. The 2010 Census is likely to clarify which direction the County's population has taken in the past 10 years.

Employment and income data for Torrance County show healthy growth in jobs and income. From 1970 through 2007, the County recorded average annual growth in jobs of 3.12%, higher than rates for the State (2.82%) and the nation (1.86%). Per capita income is estimated at \$25,184 for 2007, lowest among the MRCOG counties, and representing 82.0% of the State (\$30,706) and 65.2% (\$38,615) of the national averages.

The percentage of the adult population in Torrance County with a college degree is low at 14.4%; this compares to 23.5% college-educated for the State and 24.4% for the nation. Some 245 private, nonfarm firms are established in the County and employ 2,342. Government jobs represent 20.7% of total employment, compared to 13.4% for the nation, but account for a much larger 39.5% of total personal income in the County.

6.0 Valencia County

Valencia County covers 1,068 square miles of desert mesa and includes stretches of the Rio Grande and the southern portion of the Manzano Mountains. Much of the County's population is located in small communities established





alongside the Rio Grande. The County is home to an estimated 72,207 people. From 1970 to 2008, the County's population grew by 31,631 individuals, a 78.0% increase, accounting for an annual growth rate of 1.53%, trailing the State (1.77%), but exceeding the national (1.06%) average.

Employment and income data for Valencia County show healthy growth in both jobs and income. From 1970

82.0% of the State (\$30,706) and 65.2% of the national (\$38,615) averages.

The percentage of the adult population in Valencia County with a college degree is low at 14.8%; this compares to 23.5% college-educated Statewide and 24.4% on average for the nation. Some 1,026 private, nonfarm firms are established in the County representing employment of 12,159. Government jobs represent 19.3% of total

Table V-2: Economic Benchmark Data for United States, New Mexico and the MRCOG Four-County Region

Performance Measure	U.S.	NM	Four-County Region				Regional Avg
			Bernalillo	Sandoval	Torrance	Valencia	
Population Growth (Annualized rate, 1970-2008)	1.06%	1.77%	1.86%	5.25%	3.00%	1.53%	2.14%
Employment Growth (Annualized rate, 1970-2007)	1.86%	2.82%	3.19%	6.94%	3.12%	2.60%	8.55%
Personal Income Growth (Adjusted for Inflation, Annualized rate, 1970-2007)	2.75%	3.57%	3.63%	8.09%	5.12%	3.66%	6.63%
Non-labor Income Share of Total Income, 2007	32.3%	34.2%	32.1%	28.4%	34.2%	33.0%	31.7%
Median Age (2008)	36.8	35.8	35.9	34.9	38.6	35.7	35.8
Per Capita Income (2007)	\$ 38,615	\$ 30,706	\$ 34,983	\$ 29,476	\$ 25,184	\$ 26,715	\$ 33,294
Average Earnings Per Job (2007)	\$ 44,605	\$ 37,006	\$ 39,499	\$ 39,847	\$ 29,592	\$ 28,761	\$ 38,442
Education Rate (% of population 25 and over who have a college degree)*	24.4%	23.5%	30.5%	24.8%	14.4%	14.8%	28.0%
Education Rate (% of population 25 and over who have less than a high school diploma)*	19.6%	21.1%	15.6%	14.0%	22.9%	23.9%	16.2%
Rich-Poor Ratio (for each household that made over \$100K, how many households made less than \$35K)*	1.12	1.93	1.45	1.05	...	2.05	1.42
Government share of total employment	13.4%	18.8%	15.9%	18.3%	20.7%	19.3%	16.2%
Government share of total personal income	13.4%	19.1%	20.3%	9.3%	39.5%	10.6%	18.3%

Note: No comparable data for Torrance County rich-poor ration. Total personal income includes net earnings by place of residence; dividends, interest, and rent; and personal current transfer receipts received by the residents of Sandoval County.

Source: All data derived from Regional Economic Accounts, Bureau of Economic Analysis, U.S. Department of Commerce. Found at www.bea.gov with the exception of data marked *, which comes from the 2006-2008 American Community Survey 3-Year Estimates, Bureau of the Census, U.S. Department of Commerce. Found at www.factfinder.census.gov

Author's calculations

through 2007, the County recorded an average annual growth in jobs of 1.86%, less than the State rate (2.82%) but equal to the rate for the U.S. (1.86%). Per capita income was estimated at \$26,715 for 2007, representing

employment in Valencia County, compared to 18.8% for the State and 13.4% for the nation. The government share of employment, while high, accounts for merely 10.6% of



total personal income, compared to 19.1% for the State and 13.4% for the U.S.

7.0 Methodology

7.1 Data Collection

The analysis of impacts from jobs and spending at Kirtland AFB and the Sunport was conducted using input data from Federal Fiscal Year (FY) 2008, the most current year for which consistent data could be found across all agencies. Results were estimated for the 2008 calendar year.

7.2 Kirtland AFB

Kirtland AFB is a large installation with a significant role in many mission areas supporting the Air Force, other major agencies and organizations, and the Nation. The 377th ABW of Air Force Materiel Command manages Base facilities. The installation has over 100 federal government and associate units with thousands of contractors providing support. Some contractors currently work at locations off-site, as space on and near Kirtland AFB is limited.

By far, the largest employers at Kirtland AFB are the U.S. Air Force, SNL and the Albuquerque DOE offices. Other organizations account for merely 4.1% of employment and less than 3.0% of total outside spending.

Considerable effort was made during the course of this analysis to account for employment and spending at all military, defense-related and other organizations associated with Kirtland AFB — military, Federal civilian and contractor. However, some organizations on Kirtland AFB require high levels of security clearance for employment, and the number of jobs, the amount of payroll and contract spending at some of these offices was not unavailable.

8.0 Data Analysis

Input-Output (I/O) analysis is a scientifically reliable method for measuring the economic consequences of employment and spending and was used to determine the impacts on employment (jobs), value-added (income), and total industry output (materials, services, labor and inter-industry dependencies) at Kirtland AFB on the four-county MRCOG region. For this study, I/O also was used to estimate impacts at the county level in jobs and income.

Data on the economic sector linkages for Kirtland AFB was obtained from the IMPLAN 3.0.2.1 (2009) database, a popular software program used to estimate the impact of changes in spending in 436 industrial sectors. Data

analysis took into account two kinds of spending: (1) military procurement, construction and general contracting and (2) household spending from military and associate unit payrolls. Total impact on jobs and income for each kind of spending was calculated as the sum of the direct, indirect and induced effects.

To determine the impact from spending on procurement, construction and general contracting, the model took into account the types of spending. For example, much of the spending at Kirtland AFB serves a research, testing and support mission. This differs from *direct* spending on construction. To account for this difference, each spending sector was assessed a unique industry code.

To determine the impact from payrolls, household spending was modeled using a nationwide median-income sector as a proxy. Because military personnel tend to purchase certain household commodities from military sources on base rather than in the local community, an adjustment factor of 0.85 was used on direct payroll figures, as is standard in studies of this type.

8.1 Impact Analysis and Multipliers

Impact analysis involves the use of multipliers to estimate the direct, indirect and induced impacts of a change in spending on the regional economy. The basic premise underlying the multiplier process is that one individual's spending is another person's income. An initial injection of funds into an economy will stimulate the recipient to spend. The spending will become income for another. The second person will spend some of that income, which will become a third person's income, and so on. Not all of the initial injection of funds stays in the local economy. Some money will be saved; some will be paid in taxes and some will be spent on goods and services outside of the local area.

The size of a community's multiplier is a function of the local economy's propensity to import from outside the area; the propensity of individuals to save and the amount of taxes paid. For the current study, hundreds of multipliers were calculated that were specific to the military and to operations conducting large-scale research, development, and testing operations.





9.0 Findings

9.1 Impact from Kirtland AFB

Table V-3 shows estimated impacts on the four-county MRCOG region from employment and spending at Kirtland AFB including its defense industry tenants, SNL and the DOE Albuquerque Office as well as more than 100 other associate units.

Employment numbers and dollar-value impacts are estimated as direct, indirect, and induced and are summed for their total. Direct impacts are those identified in actual job numbers and dollars spent. Indirect impacts are the result of direct spending in the local economy, allowing for ordinary growth in manpower and costs as local employment and spending changes. Induced impacts are those felt at the level of the household as income changes.

As shown in Table V-3, the analysis finds employment and spending associated with the Kirtland AFB community accounts for regional employment of 34,751, annual wages and salaries of \$2.24 billion, and total industry output of \$4.40 billion. Divided by regional totals, the estimates represent 9.11% of all jobs, 14.96% of all earned income and 9.76% of the region's total industrial output.

Final impacts are presented as a percentage of their contribution to the region's economy (fifth column).

Table V-3: Estimated Impacts of Employment and Spending at Kirtland AFB on the MRCOG Region, 2008

	Military & Civilian Appropriated	Contractor, Construction & Procurement	Totals	% Regional Total
Employment (job number)				
Direct	15,864	4,857	20,721	
Indirect	0	2,887	2,887	
Induced	9,287	1,856	11,143	
Total	25,151	9,600	34,751	9.11
Labor Income (thousands of \$)				
Direct	1,498,093,000	252,469,300	1,750,562,300	
Indirect	0	110,364,261	110,364,261	
Induced	320,135,281	63,496,563	383,631,844	
Total	1,818,228,281	426,330,124	2,244,558,405	14.96
Total Industry Output (thousands of \$)				
Direct	1,809,643,000	1,058,374,000	2,868,017,000	
Indirect	0	334,322,679	334,322,679	
Induced	998,859,955	199,447,306	1,198,307,261	
Total	2,808,502,955	1,592,143,985	4,400,646,940	9.76



9.2 Impact from Albuquerque International Sunport

The Sunport is a large, commercial airport located in southeast Albuquerque, adjacent to Kirtland AFB. It is the largest commercial airport in New Mexico that, in 2008, served a record 6,467,263 passengers and moved 67,000 tons of cargo.

In land area, the Sunport covers 2,039 acres and supports four runways, one of which, 17/25 is slated for closure. It has a single terminal with 25 gates in three concourses. The Sunport is owned by the City and serves as an aviation facility for Kirtland AFB that provides fire, crash and rescue services in return for the Sunport's maintenance and operation of the airdrome.

Table V-4 displays an estimate of the impact of the commercial operations of the Sunport on regional employment, income and total industry output. The impact is provided separately as the Sunport is likely to remain a central hub for regional commercial air traffic with or without the operations of Kirtland AFB.

Table V-4: Estimated Economic Impacts of Sunport
MRCOG Four-County Region, 2008

	Impacts	% Regional Total
Employment (job number)		
Direct	3,400	
Indirect	2,308	
Induced	2,286	
Total	7,994	2.05
Labor Income (thousands of \$)		
Direct	212,492,000	
Indirect	88,907,240	
Induced	77,448,030	
Total	378,847,270	2.52
Total Industry Output (thousands of \$)		
Direct	870,258,900	
Indirect	261,391,100	
Induced	246,886,000	
Total	1,378,536,000	3.06



10.0 Recommendations

There are no recommendations that can be expressed within the context of the JLUS; however the complete Economic Analysis included at Appendix B includes several recommendations that could be useful to MRCOG and its members. Land use issues considered in the MRCOG region that potentially affect Kirtland AFB missions are likely to call for information on the economic impact of employment and spending at the Base, as detailed in this study.

11.0 Summary

When the impacts from employment and spending at Kirtland AFB and the Sunport are summed, the total impact on the MRCOG region represents 11.2% of all regional employment, or *one in every nine regional jobs*. Income from Kirtland AFB and the Sunport, added together, represents 17.5% of all earned income in the MRCOG region, or *one in every five to six dollars* in regional wages or salaries. In total industrial output, Kirtland AFB and the Sunport together account for 12.8% of all industrial activity, or about one in every eight dollars of regional output value.

These numbers are significant and highlight the value of Kirtland AFB and the Sunport to the regional economy. They are intended to provide guidance for local priorities during the planning and land use process, allowing for better, more informed decision making.

There are no known institutions or employers in the region that could replace the beneficial economic impacts if Kirtland AFB were to close or experience cutbacks. Because of this, the impact data draw attention to the need to maintain the viability and capacity of Kirtland AFB to perform its current missions while preserving the capability of the base to assume new missions in the future. The imperative to balance sustainment of the Base and Sunport activities with the MRCOG and its members' vision of future, compatible land use is underscored by the results of this analysis.



PART VI – TRANSPORTATION ANALYSIS - SUMMARY

Section No.	Section Contents	
	Title	Page No.
1.0	General Information	VI – 2
2.0	Air Quality	VI – 2
3.0	Transportation Networks	VI – 3
3.1	Southeast Heights Road Network	VI – 3
3.2	Capacity and Congestion	VI – 3
3.3	Gate Capacity	VI – 4
3.4	South Entrance to the Installation	VI – 4
3.5	Safety	VI – 6
4.0	Mass Transit Services	VI – 6
4.1	NM Rail Runner Express	VI – 6
4.2	Local Transit	VI – 6
4.3	Bicycle Commuting	VI – 7
4.4	Ridesharing	VI – 7
4.5	Flexible Schedules	VI – 7
4.6	Telecommuting	VI – 7
5.0	Gibson Corridor	VI – 7
6.0	Conclusions	VI – 7
7.0	List of Figures	
	VI – 1: Gate Location and Base Area Overview	VI – 3
	VI – 2: South Gate and Context	VI – 5
13.0	List of Tables – None	–



1.0 General Information

This section summarizes the Transportation System Report included at Appendix C and provides a general overview of the transportation related context of the study area. For more specific information about issues pertaining to a specific geographic area, refer to the respective chapter of Appendix C.

Ground transportation is a major concern with up to 20,000 employees and numerous contractors and suppliers accessing Kirtland AFB, SNL, and associated organizations every day. The ground transportation system and its efficiency are critical to assessing current and future land uses in the Kirtland AFB area. According to traffic statistics collected by MRCOG, the daily exchange between Kirtland AFB and the community experiences minimal problems. The occasional exceptions often are effectively solved with temporary actions by Kirtland AFB, or simply by drivers exhibiting patience. In addition, approximately 18,000 airline passengers arrive at and depart from the Sunport daily. This volume of passengers adds a significant amount of vehicular traffic into the ground transportation system. Kirtland AFB and the Sunport are generally open to innovations that can improve the productivity of their work forces, and Kirtland AFB has plans to further evaluate new transportation initiatives in the future.

The access gates to the secure Kirtland AFB and the current roadway system are effective, relatively efficient, and adaptable to future changes in regional land uses. The same is true of mass transit services, and the accommodation of bicycling, ride sharing, and other means of connecting Kirtland AFB and Sunport employees to their work places. There are also existing and effective transportation planning and programming processes in place that assess evolving ground transportation needs affected by Kirtland AFB and the Sunport.

MRCOG is the regional Metropolitan Planning Organization (MPO) designated by the Federal and New Mexico governments. It is charged with meeting Federal requirements for multi-jurisdictional planning and programming of transportation projects. The ongoing planning processes have broad-based participation, and the plans provide a methodical process for making transportation investments and improvements.

Kirtland AFB transportation and infrastructure planning and design on the Base are the responsibility of the Kirtland AFB Civil Engineer.

2.0 Air Quality

The Clean Air Act of 1963 (amended in 1970 and 1990) is federal legislation developed to reduce air pollution, protect public health and the environment. The primary strategies the EPA uses to improve air quality are reducing outdoor concentrations of air pollutants, reducing emissions of toxic air pollutants, and phasing out use of chemicals that destroy the earth's ozone layer. Motor vehicle exhaust, gasoline vapors, chemical solvents, and emissions from industrial and electrical generating facilities are all contributors or precursors to air pollution, including nitrogen oxides (NO_x), volatile organic compounds (VOCs), carbon monoxide (CO), methane (CH₄) and ozone (O₃). The combination of sunlight and high temperatures accelerates the formation of ozone, causing it to be an especially important summertime air pollutant in the MRCOG region, often peaking as a result of traffic congestion during peak commuting times.

In addition to the health effects of high ozone levels, failure by a region to meet ambient air quality standards results in a designation by EPA of "non-attainment" which informs the public that the air in the area is unhealthy to breathe, and requires the affected government to develop and implement control plans to reduce ozone-forming pollution. Non-attainment also impacts Federal funding for transportation projects in the area and imposes strict adherence to additional monitoring and reporting of progress to achieve attainment.¹ Further, being classified as a non-attainment area requires participation by Kirtland AFB in the region's plan to achieve "attainment" status and may have negative impacts on the Base's ability to attract new missions.

Since a major source of air pollution is "mobile sources," primarily motorized vehicles, the best way that an individual can cut down on their contribution to air pollution is to use less carbon-derived fuels and reduce their dependence on their motor vehicles, especially the single-occupancy vehicle. Reducing personal vehicle miles driven can be accomplished by ride-sharing, trip chaining, using public transit, and telecommuting. These strategies for the

¹ Federal Register, Vol. 75, No. 11, p. 2938:
<http://www.epa.gov/groundlevelozone/designations/faq.htm#1>



MRCOG region associated with Kirtland AFB commuters are discussed in greater detail in Section 4.0, Mass Transit.

3.0 Transportation Networks

The regional transportation network directly impacts opportunities and limitations on land use. A large number of Kirtland AFB and Sunport employees live in Albuquerque and Bernalillo County. Those who live outside of the County have to use local streets to get to their final destination. Therefore, much of the analysis of the transportation opportunities and constraints are focused on the local road network.

Regional travelers experience congestion at peak travel times as they travel along the two interstate highways, I-40 and I-25. The interstate highway system is becoming increasingly taxed, which is demonstrated by the increasing travel times from Rio Rancho and Los Lunas. Road system capacity and air quality/pollution concerns make alternatives to single occupancy vehicle commuting increasingly important. These issues and options are addressed in Section 4.0.

3.1 Southeast Heights Road Network

Kirtland AFB borders the southern extent of the Southeast Heights of Albuquerque, an area served by a grid of arterial streets, generally oriented east-west, and north-south. As shown in Figure VI – 1, there are five main access gates along the City and northern Kirtland AFB interface. Each of these are secure gates used by commuters and others having business with various Kirtland AFB missions and/or

tenant organizations. Adjacent to three of the primary access gates are contractor access gates. The contractor gate at Truman is, however, only temporary until the Battle Space Environment MILCON is completed. There is an access gate at or near the terminus of four major arterials and one minor north-south arterial. Gibson Boulevard is the only east-west arterial that provides direct access to Kirtland AFB via the Carlisle, Truman, and Gibson Gates.

The Sunport can be accessed directly from I-25 via Sunport Boulevard, as well as from Yale Boulevard, which is a minor north-south arterial street. Additionally, Gibson Boulevard may also serve travelers going to the Sunport.

There is community concern over traffic congestion and delays at the gates that was expressed in the JLUS Public Survey. Individuals identified congestion points approaching the Kirtland AFB entry gates during the morning, as well as congestion on the arterial roads in the evening commute, especially approaching the interstate on-ramps. High vehicle speeds entering and exiting Kirtland AFB were identified as a safety issue in the JLUS Public Survey. Traffic patterns and roadway safety at school locations also posed a concern for a number of Survey respondents.

3.2 Capacity and Congestion

The highest concentration of commuters to and from Kirtland AFB is in Albuquerque's Southeast Heights with the second highest in the Northeast Heights. Southbound Wyoming Boulevard, as it approaches the Wyoming Gate,

Figure VI – 1: Gate Location and Base Area Overview





is the only road approaching a Kirtland AFB entry gate that qualifies as “severely congested” in the MRCOG 2030 Metropolitan Transportation Plan (MTP). The roadway qualifies as severely congested for both the morning and evening peak travel in the 2004 Kirtland AFB conditions analysis as well as the 2015 projected scenario that accommodates all planned capacity improvement projects in the Transportation Improvement Plan (TIP) and MTP in 2007. However, there are substantial average daily traffic volumes on the Southeast Heights arterials and the perception by commuters and Kirtland AFB employees of a problem with traffic congestion documented in the JLUS Public Survey.

Kirtland AFB Rights-of-way for major arterials in the southeast area typically range between 100 feet and 125 feet wide. In addition to being important to the commute by automobile, most of the major arterials are also designated by the Albuquerque/Bernalillo County Comprehensive Plan as “Major Transit Corridors” and include some of the City’s more frequently scheduled bus service.

Kirtland AFB officials identified one of the most significant constraints to the Kirtland AFB vehicular traffic flow is Wyoming Boulevard on Kirtland AFB, south of the gate entrance. The street narrows to four lanes -- two in each direction -- with no median, bike lanes or pull outs of any kind and no separate turn lanes. The lanes vary from 9 to 11 feet wide, and that is the minimal travel lane width for vehicular traffic. While this condition can slow down and calm traffic, it is not desirable if it causes backups. Kirtland AFB has developed plans to improve this section of the road network and is seeking funding sources; however, because of the high project cost, the Base is currently considering a plan to develop the project in phases.

The Sunport, which generates a different traffic pattern and more evenly distributed travel demand, is generally entered and exited by roadways and means apart from those serving Kirtland AFB. Roadways enabling access to the Sunport operate at a relatively uncongested level.

3.3 Gate Capacity

All the gates used for routine, general purpose access to Kirtland AFB are along the northern interface with Kirtland AFB and Albuquerque’s Southeast Heights. The limited access South Gate is discussed in further detail in Section 3.4. There are contractor gates adjacent to the

Carlisle, Truman, and Eubank entrances. Because of the limited purpose of the contractor gates, any additional impact they may have is considered in conjunction with the adjacent primary public access gate.

Community members and Kirtland AFB employees have expressed concern about traffic congestion at the approaches to the gates and the long queuing times to pass through security. The security checkpoint operation is generally an efficient process, and it is a mandatory requirement for Kirtland AFB operations. However, even in optimal conditions, there will be some traffic delay during peak hours due to the procedural requirements. JLUS Survey respondents indicated that they would like to see the capacity at the gate check points increased during peak commute time periods to reduce waiting times.

All gates are manned by guards who check each vehicle’s occupants and verify their status. This process takes time, resulting in temporary congestion for short distances outside each gate during peak hours – a possible five-to-ten minute delay entering during the morning peak. All gates have at least two moving lanes outbound during the evening peak and present relatively little delay to exiting Kirtland AFB.

3.4 South Entrance to Installation

Shown in Figure VI – 2 is an entrance to Kirtland AFB from the south; however, it is not available for general use by the civilian or military work force at Kirtland AFB. The Base has opened the South Gate on a limited basis to alleviate some of the congestion on I-25 and Gibson Boulevard during morning and evening rush hour traffic. Providing increased capacity at the South Gate was identified by community members as an area of interest. Improving access through the South Gate could potentially relieve congestion at the five primary gates and thoroughfares approaching the north side of Kirtland AFB.

The South Gate location would be advantageous for employees traveling from the South Valley, Pueblo of Isleta, Valencia County, and would also be accessible to and from Mesa del Sol. Elected officials and County commissioners representing the southern part of Bernalillo County, all of Valencia County and Pueblo of Isleta view an unencumbered southern entrance to Kirtland AFB as very desirable.



Additionally, the JLUS Survey indicated that there is public interest in improving access to and operations at Kirtland AFB's South Gate. As Mesa del Sol, immediately

use of this Gate is not envisioned by Kirtland AFB. However, due to the expressed public interest, the concept is further considered in the Transportation Study, and the

Figure VI – 2: South Gate and Context



south of Kirtland AFB, is developed that interest will undoubtedly increase. This community interest prompted an evaluation of possible options; however, the Kirtland AFB Civil Engineer indicated there are several reasons to maintain limited access at the South Gate. These include:

- ✓ Extensive roadway improvements, both on Kirtland AFB and in the City, would be required to serve increased capacity of this access route.
- ✓ There are sensitive and toxic materials located in the area near the South Gate.
- ✓ Increased traffic would create greater safety hazards and security issues, potentially compromising Kirtland AFB's ability to pursue its mission.

The access road crosses a munitions haul route and is periodically used as a transport route for large test equipment that can block traffic for extended periods of time.

Kirtland AFB has indicated that there are a number of safety and security issues associated with increasing use of this gate, as well as roadway capacity deficiencies. Due to these safety, security, and access concerns, increased

Base has expressed willingness to revisit the issue if mission changes in the future would make it feasible.

As mentioned in the preceding paragraph, Kirtland AFB will not entertain recommendations to enhance the limited use of the South Gate for the foreseeable future. Mission execution at Kirtland AFB does not warrant increased southern access, and the costs associated with enhancing the South Gate and the road improvements on-base and off-base are very high. Realistically, they are prohibitive. Most importantly, southern access and egress provide no current military value to Kirtland AFB itself or to any of the numerous, diverse missions sited on the Base. Further, increased access from the south could, in itself, promote encroachment on Kirtland AFB missions by additional commercial and residential development to the south. The Mesa del Sol development, which has already been approved by Bernalillo County, the City of Albuquerque, Kirtland AFB (including DOE) and the Sunport is not included in the foregoing statement.





3.5 Safety

Several Survey respondents commented on the high volume of Kirtland AFB traffic potentially causing safety issues for both motorists and pedestrians. Comments indicate that the high speeds of motorists and high volume of traffic create inherently dangerous conditions. Their concerns were primarily an issue at the gates – Carlisle and Gibson – with nearby schools. School employees noted that school buses and parents have difficulty entering the flow of traffic because of the steady stream of vehicles exiting Kirtland AFB. They also commented on the need for better communication between Kirtland AFB and the schools, as well as improved traffic management during school beginning and ending times.

4.0 Mass Transit Services

Lengthy travel time is an obstacle to using public transportation to commute. However, rising gasoline prices have had a parallel increase on the number of public transit customers across the country.

4.1 NM Rail Runner Express

The NM *Rail Runner* Express (*Rail Runner*) is a major regional rail transit service provider serving Belen, Los Lunas, Pueblo of Isleta, the South Valley, Albuquerque, the North Valley, Bernalillo, and Santa Fe. There are thirteen northbound trains and eleven southbound daily, which are timed to serve the regional commuter population. It serves primarily as regional transportation and also likely serves a minor role for Bernalillo County residents commuting to Kirtland AFB and the Sunport.

At the Downtown Albuquerque *Rail Runner* station commuters can transfer to a number of ABQ Ride routes that will deliver them to various destinations including Kirtland AFB and the Sunport. Of the 4,500 total daily passengers using the *Rail Runner* system, approximately 650 passengers board the trains at the Valencia County stations each weekday, a large proportion of who are morning peak, inbound commuters to Albuquerque. There are no data to indicate the percentage of these regional commuters who travel to, or work at, Kirtland AFB.

In 2007, ABQ Ride added two new commuter connection routes that connect *Rail Runner* passengers to the Sunport and/or Kirtland AFB

Survey respondents indicated that they would like to see improved ABQ Ride bus connections between the *Rail Runner* and Kirtland AFB. Additional connections to the *Rail Runner* could increase future ridership for Kirtland AFB and tenant employees.

4.2 Local Transit

The Rio Metro Regional Transit District is a regional transportation system that serves the residents of Valencia, Bernalillo, and Sandoval Counties. In 2008, residents of all three counties voted to approve a County Regional Transit Gross Receipts Tax of 1/8th of one percent to fund transit services. Los Lunas, Belen, and Rio Rancho have local shuttles that provide service to the NM *Rail Runner* as well as on-demand, curb-to-curb service.

Albuquerque provides the most extensive public transportation service in the region through ABQ Ride, the City's Transit department. Most regional commutes will incorporate ABQ Ride for a portion of their commute between the community at large and Kirtland AFB. In the past five years, ABQ Ride has greatly expanded their services. In 2007, ABQ Ride added three new routes – Route 157, Montano to Kirtland AFB; Route 222, Rio Bravo *Rail Runner* connection to the Sunport; and Route 317, *Rail Runner* connection from Downtown to Kirtland AFB – that serve Kirtland AFB. These three routes provide connections between the community, the *Rail Runner*, and Kirtland AFB.

In Albuquerque, there are eight routes with service connections directly onto Kirtland AFB as well as connections to the *Rail Runner* and Rio Metro bus service in Bernalillo and Sandoval Counties. According to their Transit Planner, ABQ Ride worked with Kirtland AFB to develop the eight routes that have service connections directly onto the Base. At the gate, a Kirtland AFB security guard boards commuter buses and checks the credentials of all passengers before the bus continues onto the Base. As noted in Section 4.0, there are reported delays at the gates due to the passenger verification process.

Most of the eight direct bus service routes run four or five buses in both the morning and afternoon peak; none require a transfer in order to make the commute to Kirtland AFB. Three routes are commuter-oriented “park-and-ride” services, making fewer stops than standard city bus routes.





4.3 Bicycle Commuting

The City of Albuquerque and the greater metropolitan area has over 400 miles of bicycle routes, lanes, and trails that are used extensively for commuting – either bicycling alone or combining a trip with a bus or the train.

Some obstacles to bicycle commuting that JLUS Public Survey respondents mentioned are the lack of connectivity of bicycle facilities in and around Kirtland AFB; the perception of a high rate of crime in the Southeast Heights and fast-moving adjacent traffic. There also is a limited awareness of the City bicycle system, and safe, direct routes to get from home to work.

There is a bicycle circulation system on Kirtland AFB with several multi-use trails, bicycle lanes, and bicycle routes. Kirtland AFB planners would like to improve the internal bicycle facilities with better connections to the external bicycle system, particularly at the Wyoming Boulevard Gate, where a City bicycle route terminates.

4.4 Ridesharing

There is no formally organized rideshare program for Kirtland AFB, SNL, or other tenant employees. Nonetheless, SNL reports a larger number of employees ridesharing daily to Kirtland AFB than the 12.7% Albuquerque average. There are approximately 1,000 registered carpool members, and approximately 40 registered vanpool members. The impediment to a larger proportion of commuters using ridesharing is limited flexibility during the work day, as well as having to depend on someone else's schedule and choice of route and stops for the evening trip home.

4.5 Flexible Work Schedules

While there is no overall integrated plan or program for flexible work force scheduling, the culture at SNL supports the concept. These strategies are already used by a few of the organizations on the installation, but this approach is not typically applicable to military organizations.

4.6 Telecommuting

There is no formalized program or installation-wide policy regarding telecommuting. One of telecommuting's primary benefits that distinguish this strategy from ridesharing, flexible scheduling, public transit and bicycling is that it reduces the total traffic load in the City and on

Kirtland AFB. Because the employee works from home, there is also a reduction in the total VMT related to Kirtland AFB, as well as associated pollution and greenhouse gas emissions.

The classified nature of many of the military missions at Kirtland AFB, as well as the unique requirements of their information processing, greatly restricts telecommuting as an option for military organizations.

5.0 Gibson Corridor

The dense, residential developments adjacent to the north side of Kirtland AFB contribute to the amount of traffic on the arterial streets. Some Kirtland AFB employees and area residents are concerned that the new, high-density residential developments along Gibson Boulevard will increase the traffic density that already exists in this corridor and accessing I-25. However, other residents commented on the desirability of redeveloping Gibson Boulevard with services and restaurants to provide Kirtland AFB employees additional lunch or meeting venues, as well as generally improve the current sense of blight and vacancy along Gibson Boulevard. Additionally, developing a modernized housing stock close to Kirtland AFB may decrease overall congestion in the city by providing employee opportunities for housing closer to the employment center.

6.0 Conclusions

There are established approaches to regional, multi-jurisdictional transportation planning in place for the areas surrounding Kirtland AFB and the Sunport. Only future study of new modal and project initiatives focused on Kirtland AFB-generated traffic appear necessary. Enabling Kirtland AFB representatives to serve on MRCOG transportation planning and programming committees as voting members could institutionalize closer, long-term collaborative planning between the two agencies. At this time, ground transportation problems associated with Kirtland AFB and the Sunport are not perceived by the agencies as sufficient to generate major, new projects, programs, or changes to currently projected priorities.

