

5.1 General Compatibility Tools

The Technical, Steering, and Policy Committees met on a regular basis throughout the JLUS planning process to evaluate a full range of available compatibility tools. The JLUS team also conducted a series of Public Information sessions and met with community stakeholders to gather feedback on possible compatibility strategies.

Representatives of local jurisdictions, the Army, and the public voiced a wide variety of issues, concerns, and ideas during the study. The resulting set of tools seeks a balance among these diverse interests by stressing:

- the feasibility of implementation;
- the effectiveness of the approach;
- the ability to sustain the economic health of the region and to protect individual property rights;
- the protection of the critical military missions performed by Fort Riley; and
- the protection of the health, safety, welfare, and overall quality of life of those who live and work in the Flint Hills region.

This section organizes tools into five sections:

- an overview of basic approaches to enhancing post/community compatibility;
- tools appropriate for the Flint Hills region;
- tools appropriate for individual jurisdictions;
- tools appropriate for the Army; and
- tools to promote land use compatibility within the JLUS study area boundary.

5.2 Overview of Compatibility Approaches

Coordination/Organizational

One of the most critical outcomes of the JLUS study is the process itself. Stakeholders from the community and military have the opportunity to build collaborative relationships, identify mutual interests, and work toward reasonable solutions that protect both civilian and Army goals. Coordination and organizational tools create the institutional capacity to support on-going implementation.

Communications/Information

These tools establish clear mechanisms for information exchange among residents, local governments, and the military. Communication options raise overall awareness of Army activities and their associated impacts, as well as identify possible approaches to reduce the effects on surrounding communities.

Sound/Vibration Attenuation

Impulsive noise and the resulting vibration of structures near the post can disturb everyday activities and diminish quality of life for affected residents. This strategy seeks to reduce the intrusiveness of post noise by protecting vulnerable land uses, particularly houses and schools.

Attenuation refers to special design and construction practices intended to lower the amount of noise and vibration that penetrates the windows, doors, and walls of a building. (see Appendix 4 for Sample Noise Reduction Standards for Residential Construction) While local governments may require attenuation as part of new construction in affected areas, jurisdictions could also explore funding opportunities with the Federal government to assist current homeowners in retrofitting their homes with sound- and vibration-proofing features.

Real Estate Disclosure

Prospective developers, buyers, and renters, particularly those new to an area, may be unaware of the special conditions that are part of living near active military installations. This tool would require the release of information on possible noise, vibration, air safety, and other operational impacts due to proximity to Fort Riley. Having a real estate disclosure ordinance/resolution in place educates individuals about the potential hazards and nuisances of nearby Army operations and it allows them to make well-informed decisions about property investment around military uses. (see Appendix 1 for a Sample Real Estate Disclosure Form)

Typically, the strongest disclosures take place at the earliest possible point of interaction between the realtor/real estate agent and the interested buyer/renter, such as the initial advertisement or listing of the affected property. To ensure the full and effective release of information, jurisdictions requiring disclosure would work with the local real estate community to develop standard language on noise and other possible operational impacts.

Planning and Public Policy

Planning and public policy tools are intended to guide overall growth patterns within local jurisdictions in ways that support future military/civilian compatibility. In general, these options promote new growth within already developed areas and the conservation of rural/agricultural lands around military installations as a means of reducing future land use conflicts.

Land Use Regulation

These tools control the densities and placement of land use activities within established noise and safety zones around the post to protect the health, safety, and welfare of the public and to maintain compatibility with military operations. These options are intended to accommodate future growth, while minimizing the

concentrations of people and activities that may trigger conflicts with noise and other operational impacts. Since local jurisdictions exercise land use control through zoning, any of the regulatory actions described below would be implemented through the established local government legislative process.

Regulations may include limitations on the density and type of development or the use of innovative tools, such as cluster zoning. Clustering can be an effective tool in promoting land use compatibility around a military installation, particularly on larger parcels that straddle an ICUZ noise or safety boundary.

Conventional zoning typically spreads housing units evenly across a parcel regardless of landscape context. As part of a cluster zone, in contrast, developers must separate the buildable areas of the parcel from environmentally sensitive areas. The district allows more compact lots in the developable portion of the site in exchange for the permanent protection of site land with conservation value.

Cluster subdivisions are usually intended to protect landscape features, such as water bodies, wetlands, wildlife habitat, scenic views, and historic sites. To ensure that this land use tool can effectively reduce future development impacts around Fort Riley, local governments would implement a special provision of cluster zoning that recognizes those portions of a parcel within a noise/safety zone as prime candidates for the application of clustering. The site design would thus set aside areas subject to noise and safety constraints and allow denser, but compatible, development in areas outside of noise and hazard zones. This approach is density-neutral, meaning that it allows the developer to build as many housing units as would otherwise be permitted under conventional zoning.

In addition to density and site location, local governments may use land use controls to regulate the impacts of tall structures, such as cell towers or wind farm structures, on navigable airspace in existing or foreseeable flight corridors used by the military. Regulation would ensure that such structures are properly marked and sited so as not to interfere with safe aircraft operation.

Coordination with the military on the placement and marking of tall structures will be especially critical as the likelihood of joint training activities and the use of additional rotary and fixed wing aircraft on the post increases. The Army should assist local governments in identifying appropriate siting areas for tall structures by mapping general flight corridors around the post.

Conservation

Conservation refers to a series of tools designed to eliminate land use incompatibilities through voluntary transactions in the real estate market and local development process. Conservation strategies are particularly effective because they advance the complementary goals of shifting future growth away from the installation and airports, while protecting the environment, maintaining agriculture, and conserving open spaces and rural character.

A critical first step in implementing conservation tools is to identify areas of protection interest. Laying out preservation priorities around the post is of value in exploring possible partnerships with the Army, the State of Kansas, non-profit conservation groups, and local governments and in requesting future funds.

Noise Easements

Under this tool, local governments would make the platting of land for residential or other noise sensitive purposes in a high noise zone contingent on the signing of a noise easement by the developer. The easement ensures that the developer is aware that military training may produce noise, smoke, vibration and other impacts affecting the property. The party thus effectively grants an easement for the continuance of noise generating activities. (see Appendix 2 for Sample Noise Easement Form)

Military Operations

Just as the spread of growth from nearby jurisdictions can threaten Fort Riley operations, changes in planned military missions, personnel, weaponry, and land use activities at the post can affect the livability of surrounding communities. The purpose of operational modifications is to minimize the noise and safety impacts experienced by communities around Fort Riley, while protecting the viability of the military mission.

The sections that follow identify the specific compatibility tools that would be available to: the overall Flint Hills region; each participating local jurisdiction; and the Army.

It should be noted that this JLUS report is intended as a menu of options for minimizing land use conflicts between Fort Riley and the surrounding communities. The tools identified are the result of a thorough, good-faith effort to assess the existing and foreseeable effects of the post on adjacent land and to draw from the best examples of compatibility actions taken by communities and installations around the country.

All of the entities participating in the JLUS, including the Army and each local government, retain the prerogative of adopting any of the tools based upon the interests of that given jurisdiction,

5.3 Regional Compatibility Tools

The JLUS identifies the following conservation, communication and coordination strategies as options for all of the participating jurisdictions within the region.

Conservation

1. *Seek out conservation partnerships with the Army, the State of Kansas, and non-profit conservation organizations to purchase development rights on environmentally sensitive lands adjacent to the post.*

As part of this strategy, local governments in the Flint Hills region would explore partnerships with the Army, the State of Kansas, and non-profit conservation entities, such as The Nature Conservancy, to purchase development rights from willing sellers of land in proximity to the post. The state is an especially critical partner in this conservation strategy. Non-profit groups require matching funds to purchase the development rights on property. The use of state funds is an excellent mechanism that can leverage the contributions of local governments. As an example, the State of Florida designates areas around military installations as "Areas of Critical Concern," making the purchase of development rights on these properties eligible for special state funds. The local governments of the Flint Hills region should lobby the State of Kansas to determine if similar funding may be available to protect the viability of a major economic engine for the state economy.

With the purchase of development rights, land ownership remains private and land owners are compensated at a percentage of market value for continuing to use land for those activities, such as agriculture or recreation that require minimal development and maintain consistency with post operations. On a national basis, the purchase of development rights equals between 50 percent and 80 percent of the market value of the land based upon local market conditions and site characteristics. The local government or a partnering non-profit agency then holds the conservation easement, which restricts development on the land in perpetuity.

As discussed later in this section, the conservation tool is particularly appropriate for the most affected areas, such as land within Noise Zone II north of the installation.

Communication

2. *Develop new ways to share information on Army operations, the economic impacts of Fort Riley, the effects of encroachment, and ways to promote compatibility.*

Under this communications option, each participating jurisdiction would develop appropriate mechanisms to ensure that residents, developers, businesses, and local decision-makers have adequate information about Army operations, the ICUZ

program, procedures to submit comments, and any additional local measures to promote land use compatibility around the installation.

Examples of such communication tools could include:

- continuance of a JLUS link from existing county or city web sites or creation of such a link when new web sites come on-line;
- creation of a web site where people can search individual parcels for information on noise or air safety issues/conditions and any easements or special development requirements attached to the property;
- joint creation and distribution with the military of a poster/brochure explaining post activities and compatibility issues;
- marking all noise and conservation easements on subdivision plats to ensure enforcement during local development approval processes; and
- joining with business organizations, such as the Chamber of Commerce, to publicize information on the economic link between the military and the region.

Coordination

3. *Participate in a Flint Hills Regional Coordinating Committee to formalize communication among local governments, community stakeholders, and Fort Riley.*

To continue the momentum created by this effort, the local jurisdictions, in collaboration with the Army, would establish a Flint Hills JLUS Regional Coordinating Committee. The committee would consist of select members of the Technical, Steering, and Policy Committees, representing all participating local governments, Fort Riley, and community, environmental, and development interests.

The Regional Coordinating Committee would serve as a forum for public input, the review of major land use proposals both within the military and civilian sectors, and on-going consensus-building to support sound, regionally-based, and cooperative community planning decisions. The local governments would appoint a civilian co-chair to the Committee to maintain focus on community interests and monitor implementation progress.

As part of regional coordination, local governments would notify the Army of specific major proposals requiring local legislative action, such as rezonings and subdivisions, within Noise Zone II, the Land Use Planning Zone or within a 1 mile buffer of the post perimeter. The Army would then have the opportunity to submit written comments for consideration. Community officials, however, would retain the full authority to enact land use decisions based upon locally determined interests

and needs. As described later in this section, the Army would also participate in regional coordination by informing local communities of actions planned on-post and considering local comments.

Other regional issues that could be coordinated through participation in a Regional Committee include the extension of infrastructure and the siting of public facilities, such as schools. New infrastructure, including roads, water, and centralized wastewater treatment can often induce growth in previously undeveloped areas and support higher density development patterns. To ensure that infrastructure systems do not heighten land use conflicts around the post, local governments would review the land use impacts of service extension and infrastructure improvements into those areas that fall within designated noise and safety zones, particularly NZ II, the LUPZ, and a one mile buffer of the post boundary.

To ensure coordination on school sitings, all jurisdictions within the Flint Hills region would consult with Army representatives on the proposed placement of new educational facilities near Fort Riley, particularly if school property is within the Land Use Planning Zone or closer to the post. While the Army cannot supersede the land use planning authority of local government entities, early coordination on siting options allows decision-makers to understand the likely noise exposure and safety risks associated with placement of a school near a post.

4. Sign a Memorandum of Agreement to establish communication procedures.

Efforts to promote regional coordination can be effectively documented with a general Memorandum of Understanding (MOU). The MOU is a "good faith" document that lays out procedures for communicating among affected parties and formalizes collaboration among multiple stakeholders. All participating local governments and Fort Riley would sign a general MOU to be executed at the beginning stages of implementation. Specific MOUs can then be signed between individual jurisdictions and Fort Riley as specific tools are adopted. (see Appendix 3 for a Sample General Memorandum of Understanding)

5.4 Local Government Compatibility Tools

One of the challenges of a JLUS study affecting multiple government jurisdictions is to identify impact reduction strategies adapted to the specific issues and needs of each local community setting. The specific tools below are identified solely for local jurisdiction consideration. Any implementation is at the discretion of the jurisdiction.

Riley County (rural area)

1. *Adopt building codes to implement any appropriate sound and vibration reduction measures.*

Building codes are the most effective mechanisms for enforcing any noise/vibration reduction measures that the county may want to promote as part of new construction for residential and other sensitive uses in noise affected areas.

2. *Include specific language on JLUS coordination as part of the Comprehensive Plan update.*

The Comprehensive Plan is particularly useful because it ensures a firm legal basis for the implementation of compatibility actions that may be taken by the county. Language should emphasize the following elements:

- recognition of the relationship between Riley County and Fort Riley;
- the desire to promote cooperation among the county, Fort Riley, community stakeholders, and neighboring jurisdictions in land use planning decisions;
- identification of those specific areas that are vulnerable to encroachment and clear guidelines about appropriate future land use in those areas; and
- discussion of other complementary land use goals in addition to post/community compatibility, such as agricultural conservation and environmental protection.

City of Riley

1. *Adopt building codes in conjunction with Riley County to implement any desired sound and vibration reduction measures.*
2. *Develop a Future Land Use Map in coordination with Riley County to lay out long-term land use and growth policies for the city.*

With a Future Land Use map, the City of Riley can clearly lay out its priorities for growth, while also coordinating land planning issues with Riley County and Fort Riley.

Clay County

1. *Develop a Future Land Use to lay out long-term land use and growth policies for the county.*

City of Milford

2. *Develop a Future Land Use to lay out long-term land use and growth policies for the city.*

City of Junction City/Geary County

1. *Include language on JLUS coordination as part of any planned Comprehensive Plan update.*

City of Ogden

1. *Include language on JLUS coordination as part of any planned Comprehensive Plan update.*

5.5 Army Compatibility Tools*Conservation*

1. *Pursue conservation initiatives, such as the Army Compatible Use Buffer.*

In 2002, Congressional legislation (Agreements to Limit Encroachments and Other Constraints on Military Training, Testing, and Operations) granted authority to the Department of Defense (DoD) to partner with local governments and conservation organizations. The DoD may use this authority to assist in acquiring land near military installations from a willing seller when the acquisition can protect both the environment and the military mission.

The Army can capitalize on this tool by pursuing available funding opportunities within the DoD. Establishing partnerships among the military and local, state, and non-profit entities would enable a quick and effective response when priority real estate acquisition opportunities emerge and can leverage the Army's existing encroachment prevention efforts, such as the Tallgrass Prairie Partnership. It should be noted that any purchase of development rights as part of this strategy would be strictly voluntary.

2. *Pursue Development/Agricultural Exchange opportunities with neighboring farmers.*

The Conservation Division of Fort Riley is also pursuing Development/Agricultural Exchange opportunities with willing adjacent landowners. As part of this initiative property owners agree to restrict development on their land in exchange for access to installation land for production agriculture.

As an example of such an agreement, a landowner assumes a deed restriction that prohibits future homebuilding (other than a personal residence) on the property. If the market values the lost development right at \$25,000, Fort Riley would effectively purchase that deed restriction by creating a lease arrangement for hay or crop production rights equal to that value. The exchange thus reimburses the landowner for the full amount of land value lost over a certain number of years.

Farmers participating in the arrangement must still comply with the Army's land use regulations, which outline procedures for when and where hay can be cut and also set guidelines for row crop production.

Noise Monitoring

3. Add a noise monitor to the Keats area.

Fort Riley has a series of noise monitoring devices in place (see Figure 11) west of Manhattan, north of Manhattan Regional Airport, in the City of Riley, in the Bala area at the northwest corner of the installation, and on-post at the MPRC. As noted earlier, monitoring data cannot be used to generate a noise contour and by policy the Army does not typically rely on on-site monitoring except where needed to address a complaint or verify noise levels that have produced a major public controversy. On-site monitoring of noise, however, is useful in particular circumstances, such as:

- checking the accuracy of a noise contour at selected points;
- defining the day-night average contour when the model is known to be inaccurate;
- defining the day-night average contour when no operational data are available; and
- defining the baseline day-night noise average.

Methods for depicting the noise environment surrounding military installations are always evolving. To better understand noise impacts generated by post operations, Fort Riley should continue with plans to add a noise monitoring device in the Keats community and explore opportunities to add other monitoring devices in noise affected areas west of the post.

4. Explore new noise mapping technologies such as peak noise contours.

The Army should also explore the emerging use of peak noise data mapping to supplement the current day-night average noise modeling.

Operational Changes

- #### *5. Explore feasible short-term strategies that can reduce the psychological annoyance of noise, such as seeking to limit firing during weather conditions that propagate noise and increasing opportunities to coordinate firing times and/or to reduce the number of rounds fired at critical times, such as at night.*

The Technical, Steering and Policy Committees reviewed a series of possible operational measures to reduce noise generated from post activities. This type of noise mitigation generally falls into three categories:

- Source mitigation, which reduces the amount of noise produced by a piece of equipment or an activity; an example of this technique would be the muffling of a weapon.
- Mitigation along the sound path that reduces the amount of noise getting through to the receiver, such as a house on off-post lands; an example of this technique would be construction of a berm to block noise before it travels off-post; and
- Mitigation at the receiver (such as a house) which may involve architectural or site design controls to lower the amount of noise that is heard; this technique may also include means of reducing the psychological annoyance associated with noise.

An essential element of this compatibility strategy is to identify those methods that will bring nearby residents measurable relief from noise exposure, while protecting the ability of Fort Riley to perform its critical training mission. To achieve this goal, Committee members consulted with acoustical engineering experts at the Army's Center for Health Promotion and Preventive Medicine, and the Army Construction Engineering Research Laboratory.

A variety of mitigation strategies seem like intuitive solutions for blocking noise, such as moving noisy operations farther into the post and away from the shared boundaries of adjacent communities; relying more on simulated training, rather than the actual firing of weapon systems; limiting night-time training activities; or constructing a berm around post facilities. Unfortunately, these techniques would either degrade the post mission or they are not technically sound engineering practices and thus fail to limit noise propagation.

Fort Riley's mission accommodates heavy, technologically-complex, long-range weapons systems. Artillery units train with the 155 mm Howitzer and the Multiple-Launch Rocket System, both of which require placing firing points closer to post boundaries. In addition to the long-range and power of American weapons systems, the U.S. military enjoys a significant advantage in fighting at night, which requires training with night vision goggles.

Fort Riley has a long history of working with the National Simulation Center to test new simulation training products. The post is home to a Battle Simulation Center (BSC) in the Exercise Simulation Division (ESD). The BSC contains state-of-the-art equipment to conduct Brigade/Battalion Battle Simulation exercises. While this technology can supplement traditional training methods, there is no substitute for soldiers learning to fire weapons and to operate effectively under the physically confining, noisy conditions associated with actual armored vehicle movements.

Given the impulsive nature of the heavy artillery noise generated at the post, physical barriers such as a berm or vegetated buffer are impractical mitigation options. Such structures would have to be very close to the source of the noise, interfering with the use of maneuver areas on the post, and would also have to be exceptionally high. Even with these structural features in place, the sound waves would tend to bounce off relatively intact from the barrier and continue traveling off-post.

Though there are currently engineering limitations to the noise reduction that can be achieved, the Army continues to research mitigation methods. Fort Riley should also continue to explore other more feasible short-term strategies that can at least reduce the psychological annoyance associated with noise. For example, to the extent feasible, the post should seek to limit firing during weather conditions that propagate noise and explore opportunities to coordinate firing times and/or to reduce the number of rounds fired at critical times, such as at night. Table 10 identifies weather conditions, which are more or less conducive to noise propagation during the firing of large weapons.

Table 10. Meteorological Conditions and Effects on Noise

Good Conditions with Less Noise Propagation	<ul style="list-style-type: none"> ▪ Clear skies with billowy cloud formations, especially during warm periods of the year ▪ A rising barometer immediately following a storm
Bad Conditions with More Noise Propagation	<ul style="list-style-type: none"> ▪ Days of steady winds of 5-10 mph with gusts greater than 20 mph in the direction of nearby residences ▪ Clear days on which “layering” of smoke or fog are observed ▪ Cold, hazy, or foggy mornings ▪ Days following extremes temperature change (20^oC or more) ▪ Generally high barometer readings with low temperatures

Communication

6. *Develop additional methods for sharing information with surrounding communities.*

One of the most effective means for strengthening the relationship between the Army and its civilian neighbors is to help people understand how the military operates and why it generates certain impacts on surrounding areas. Both community and military stakeholders have expressed a strong interest in maintaining open communication and local residents in affected communities greatly value opportunities to participate in noise mitigation and other environmental management initiatives.

Fort Riley currently maintains a web site that includes various installation plans and environmental documents. To support communications and information approaches to land use conflict reduction, the Army would continue to improve public communication through an updated and expanded web site that, to the extent feasible, includes information on planned training schedules, and operational guidelines for night training.

The Army should also increase the visibility of a Point of Contact for noise issues, publicize a staffed 24-hour “noise information line,” and create a brochure/poster on post mission and activities, operational impacts and mapped noise contours, and compatibility issues.

Coordination

7. Participate in the Flint Hills JLUS Regional Coordinating Committee.

To support regional coordination, Fort Riley would appoint a co-chair to participate in the Flint Hills Joint Land Use Regional Coordinating Committee. As with local governments, the Army would use this forum to notify all local governments of major actions that may affect the noise environment or produce other operational impacts on the surrounding communities. The military should also explore further opportunities to publicize and seek local public involvement during development of environmental assessment documents, noise management plans and other studies.

8. Sign a Memorandum of Agreement to establish communication procedures.

As with the local governments, Fort Riley would sign an MOU that lays out procedures for communicating among affected parties and formalizes collaboration among multiple stakeholders.

5.6 Land Use Compatibility Map

Sections 5.4 and 5.5 mainly identify coordination and communication tools that are appropriate for local governments and the Army. This section now focuses on options intended to address the specific operational impacts of the post on surrounding land.

Communities of the Flint Hills region, like all local governments, use zoning and other policies to protect the health, safety, and welfare of residents and to advance a compelling public interest. The JLUS recognizes that land use regulations are especially challenging for local governments to implement because they take place in the context of individual private property rights. Indeed, many residents and property owners participating in the JLUS process have expressed concern that compatibility tools, such as required disclosure and density limitations, will diminish property values.

To ensure that tools are well tailored to reduce foreseeable land use conflicts and to make certain that all such actions are thoroughly grounded in an understanding of the noise and safety environment around the post, this section identifies regulatory options based on a Land Use Compatibility analysis.

The Land Use Compatibility analysis follows a three-step inquiry:

What are the environmental and operational constraints that could affect future growth opportunities in the Flint Hills region?

Where can communities grow, while minimizing foreseeable land use conflicts with identified constraints?

What compatibility tools are appropriate for addressing specific areas with identified constraints and where would they be best used in the study area?

The goal of the compatibility exercise is to strike a balance between community growth and the protection of the military mission, which requires an adequate buffer to conduct essential training activities.

Development Constraints

First, to understand what environmental and operational characteristics could affect regional growth, the analysis prepared a constraints matrix that prioritizes features or impacts inventoried in the study area by the relative importance of protection (see Table 11).

Level 1 contained severe constraints, or areas in which immediate, critical protection is warranted and where most growth is not compatible. For example, the analysis assigned Noise Zones 2 and 3 (62 and 70 CDNL) and critical habitats a Level 1 constraint value.

Level 2 contained moderate constraints that indicated where short to medium term protection was important and where certain types of growth were incompatible. The analysis assigned a Level 2 value to the Land Use Planning Zone (57 CDNL) because noise exposure in this area is less severe than NZ II, but could still raise compatibility issues with some land uses.

Level 3 represented low constraints where most types of land uses were compatible although limited protection may be promoted in certain areas. This level contained areas of general conservation interest, such as prime agricultural soils or areas with intact prairie vegetation.

Table 11. Development Constraint Criteria

LEVEL 1 (Severe Constraints; immediate, critical protection needed; most growth not compatible)	
FEATURE	DATA SOURCE
Floodplains (100 year)	Federal Emergency Management Agency
Developed Areas	Existing Land Use Maps
Public Lands (state parks, military installation, etc.)	Federal, State, County, The Nature Conservancy
Noise Zones 2 and 3 (62 and 70 CDNL)	Fort Riley
Airport Approach and Transition Zones	FAA
Wetlands	Nat Wetlands Inventory
Environmentally Sensitive Areas	Manhattan Comprehensive Plan
Critical Habitat (threatened and endangered species not including Milford Lake buffer)	KS Dept. of Wildlife/Parks
LEVEL 2 (Moderate Constraints; short to medium term protection important; some growth incompatible)	
FEATURE	DATA SOURCE
Floodplains (500 year)	FEMA
Airport Part 77 Airspace	FAA
Noise Zone 1 (57 CDNL)	Fort Riley
Parcels less than 3 acres	Where parcel data is available
Slopes above 20%	US Geological Survey
LEVEL 3 (Low Constraints; limited protection needed; most growth compatible)	
FEATURE	DATA SOURCE
Areas of Conservation Interest	The Nature Conservancy
Parcels between 3 and 10 acres	Parcel data if available
Prime Agricultural Soils	National Resources Conservation Service
Bald Eagle Critical Habitat (Milford Lake)	KS Dept. of Wildlife/Parks

As shown on Figure 20 – Growth and Constraint Analysis Map, areas in darker green have Level 1 environmental assets and may warrant more immediate protection. Areas of lighter green show moderate environmental constraints and areas in white feature almost no natural constraints. Areas with dark hatching indicate off-post lands with more severe operational impacts from the post, primarily high noise exposure. Areas of lighter hatching have lesser restrictions associated with air safety issues and noise exposure. The map thus reveals the least constrained land, which represents key opportunity areas for achieving the JLUS planning objectives of balanced growth and post protection.

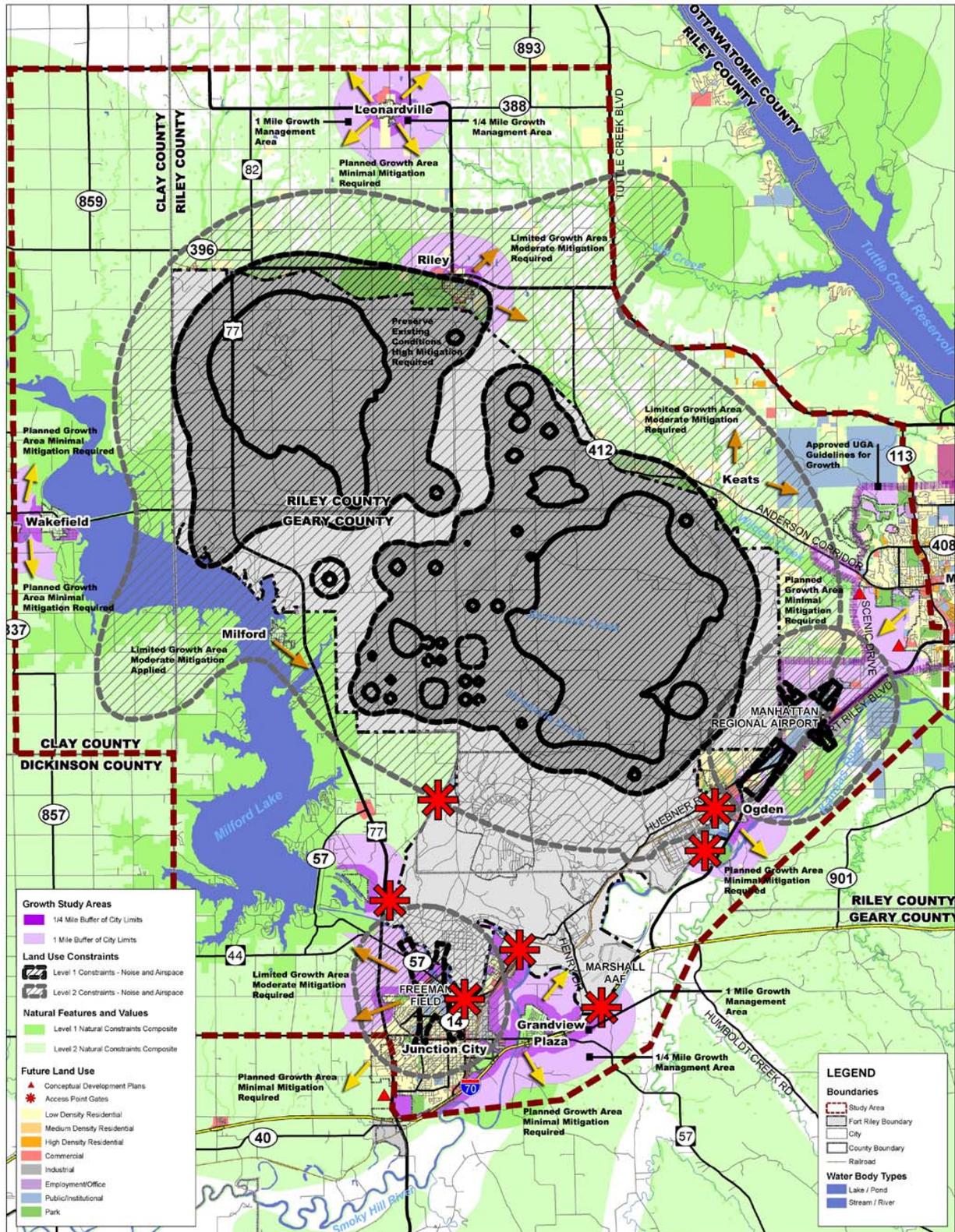
Growth Opportunity Areas

As a second step, the analysis identified development opportunities (or factors that stimulated growth) within the unconstrained areas to understand where and why growth might follow. Development opportunities included:

- Proximity to new or proposed infrastructure improvements, especially transportation
- Adopted Growth Areas
- Existing City Limits
- Existing Zoning
- Proximity to developed areas
- Areas with contiguous parcels over 10 acres
- Trails and Parks

The analysis then combined these opportunities with population projections (see Table 7) that estimated land demand/absorption for each municipality. This approach modeled land areas necessary to accommodate projected growth in each county or city to create possible growth opportunity areas. The analysis sought to place growth opportunity areas on less constrained land that could accommodate expected population increase and resulting development with minimal conflicts (see Figure 20 - Growth and Constraints Analysis Map). Each community as shown on the map received two growth management areas, representing a more compact pattern in darker purple and a more dispersed land use pattern in lighter purple. The map generally indicates that the region can accommodate expected population increases even in more dispersed development patterns without converting extensive lands around the post to developed uses.

Figure 20 Growth and Constraints Analysis Map



The Land Use Compatibility Map and Appropriate Tools

To answer the third and last question about where compatibility tools might be appropriately used within the study area, Technical, Steering, and Policy Committee members refined the Growth and Constraints Analysis Map based on their understanding of growth in the region and stakeholder feedback on likely development patterns and issues in the local communities.

The resulting Land Use Compatibility Map (see Figure 21) should serve as a guide for assisting the development of communities in relationship to Fort Riley and does not in itself control growth in any area. Instead, it organizes the study area into a series of land use categories that reflect operational and environmental issues, current growth patterns, and existing community boundaries. The Land Use Compatibility Map is intended as a framework to minimize foreseeable conflicts, recognize those established communities that experience impacts from the post, and highlight those areas around the post that may warrant conservation due to noise or safety effects. Table 12 takes the additional step of identifying those compatibility tools that are most effective for addressing specific operational impacts within each of the land use categories that comprise the study area.

Figure 21 Land Use Compatibility Map

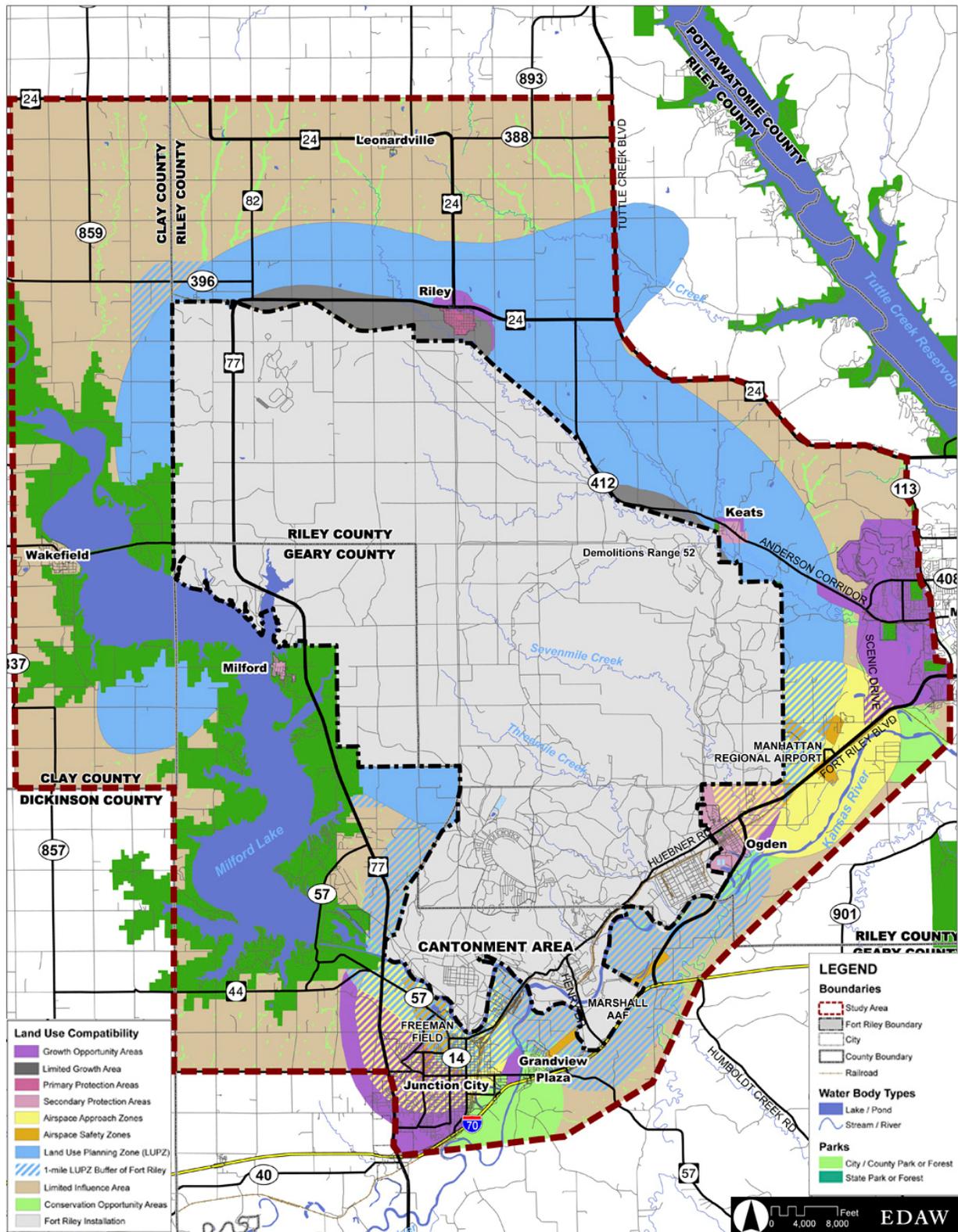
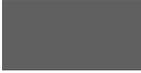
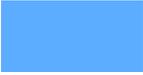


Table 12. Land Use Compatibility Categories and Tools

Category	Purpose	Map Color	Possible Tools
Growth Opportunity Area	To accommodate future development in the community		<ul style="list-style-type: none"> ▪ Comply with existing zoning, comprehensive plan policy, and development standards of the controlling jurisdiction ▪ If property falls inside the LUPZ, encourage real estate disclosure of possible impacts
Limited Growth Area	Corresponds to the Noise Zone II areas off-post and recognizes operational impacts that may be severe enough to affect certain uses		<ul style="list-style-type: none"> ▪ Discourage new development of noise sensitive uses, such as housing, churches, schools, places of assembly or medical facilities ▪ If permitted, encourage construction of noise sensitive uses to incorporate adequate indoor sound and vibration attenuation ▪ Encourage real estate disclosure of possible impacts ▪ Encourage platting of land for residential and other sensitive uses to be contingent upon the signing of a noise easement

			<ul style="list-style-type: none"> ▪ Encourage compatible uses, such as recreational, conservation, agricultural activities ▪ Discourage centralized infrastructure to support residential development within the area ▪ Target area for conservation strategies, such as the purchase of development rights
Primary Protection Area	Corresponds to developed areas that fall inside Noise Zone II		<ul style="list-style-type: none"> ▪ Continue infill residential development of platted land ▪ Encourage the construction of noise sensitive uses to incorporate adequate indoor sound and vibration attenuation ▪ Encourage real estate disclosure of possible impacts ▪ Encourage platting for residential and other noise sensitive uses to be contingent upon the signing of a noise easement
Secondary Protection Area	Corresponds to developed areas that fall inside the LUPZ		<ul style="list-style-type: none"> ▪ Continue infill residential development of platted land

			<ul style="list-style-type: none"> ▪ Encourage real estate disclosure of possible impacts
<p>Air Safety and Air Approach Zones</p>	<p>approach and transitional zones around Marshall Army Airfield, Freeman Field and Manhattan Regional Airport</p>		<ul style="list-style-type: none"> ▪ Comply with FAA regulations for building height and markings in both safety and approach zones to maintain compatibility with nearby air operations ▪ Discourage high density land use activities (i.e. apartment buildings) inside the safety zone (orange) ▪ Encourage real estate disclosure of possible impacts inside the safety zone (orange)
<p>Land Use Planning Zone</p>	<p>Corresponds to the LUPZ and recognizes areas that can be affected by post operations during periods of higher activity</p>		<ul style="list-style-type: none"> ▪ Encourage compatible new growth, including agriculture, industrial, retail, manufacturing and recreational uses ▪ Encourage new residential development not to exceed 1 DU/10 acres ▪ Encourage real estate disclosure of possible impacts ▪ Discourage expansion of

			centralized water and sewer
Installation Influence Area	Corresponds to a one-mile buffer around the installation boundary for those areas that are not already within the LUPZ or Noise Zone II; takes into account areas where close physical proximity to the post boundary can create security and access issues		<ul style="list-style-type: none"> ▪ Encourage compatible new growth, including agriculture, industrial, retail, manufacturing, lower density housing, and recreational uses ▪ Discourage high density land use activities (i.e. apartment buildings) ▪ Encourage real estate disclosure of possible impacts
Limited Influence Area	Includes all of the areas within the original JLUS boundary that do not have identified air safety, noise, or other operational issues due to proximity to post		<ul style="list-style-type: none"> ▪ Comply with local zoning and comprehensive plan
Conservation Opportunity Area	Areas of environmental interest that do not have specific compatibility issues with the post or airfields		<ul style="list-style-type: none"> ▪ Target as secondary conservation opportunities

Note: DU = dwelling unit