

Kansas Homeland Security Region J Hazard Mitigation Plan



Prepared for, and developed with,
the jurisdictions within and including:

Anderson County, Coffey County, Franklin
County, Linn County, Miami County, Osage
County, and Shawnee County

July 2019

Prepared By:



Blue Umbrella Solutions, LLC

Table of Contents

SECTION PAGE

1.0 Introduction, Assurances and Adoption	1-1
1.1 Introduction.....	1-1
1.2 Participating Jurisdictions.....	1-2
1.3 Assurances	1-5
1.4 Authorities.....	1-5
1.5 Adoption Resolutions.....	1-6
2.0 Planning Process	2-1
2.1 Documentation of the Planning Process	2-1
2.2 2019 Plan Changes.....	2-2
2.3 Mitigation Planning Committee.....	2-3
2.4 Local and Regional Stakeholder Participation.....	2-4
2.5 Public Participation.....	2-5
2.6 Planning Meetings	2-13
2.7 Existing Plan Incorporation	2-15
3.0 Planning Area.....	3-1
3.1 Introduction.....	3-1
3.2 Regional Population Data	3-9
3.3 At Risk Population Data	3-12
3.4 Regional Housing Data	3-13
3.5 Regional Property Valuations	3-16
3.6 Critical Facilities	3-17
3.7 Unified School Districts, Colleges and Universities.....	3-17
3.8 Regional Land Use.....	3-19
3.9 Regional Land Cover	3-19
3.10 Regional Agricultural Data	3-26
3.11 Regional Development Trends	3-27
3.12 Regional Economic Activity Patterns.....	3-36
3.13 Climate Change.....	3-37
4.0 Hazard Profiles.....	4-1
4.1 Introduction.....	4-1
4.2 Methodology	4-1
4.3 Declared Federal Disasters	4-1
4.4 Identified Potential Hazards.....	4-2
4.5 Hazard Planning Significance.....	4-3

4.6 Hazard Profiles.....	4-5
4.7 Agricultural Infestation	4-6
4.8 Dam and Levee Failure	4-12
4.9 Drought	4-65
4.10 Earthquake	4-74
4.11 Expansive Soils.....	4-82



*Kansas Region J Hazard Mitigation Plan
July 2019
TOC*



SECTION PAGE

4.12 Extreme Temperatures	4-85
4.13 Flood	4-97
4.14 Hailstorms	4-129
4.15 Land Subsidence	4-140
4.16 Landslide.....	4-144
4.17 Lightning.....	4-147
4.18 Soil Erosion and Dust	4-154
4.19 Tornado	4-157
4.20 Wildfire	4-170
4.21 Windstorms	4-182
4.22 Winter Storms	4-195
4.23 Civil Disorder.....	4-205
4.24 Hazardous Materials	4-209
4.25 Major Disease	4-219
4.26 Radiological Incident	4-222
4.27 Terrorism.....	4-225
4.28 Utility/Infrastructure Failure	4-229
5.0 Capability Assessment	5-1
5.1 Introduction.....	5-1
5.2 Granted Authority	5-1
5.3 Governance	5-3
5.4 Jurisdictional Capabilities.....	5-3
5.5 Opportunities for Capability Improvement.....	5-19
6.0 Mitigation Strategy	6-1
6.1 Introduction.....	6-1
6.2 Emergency Management Accreditation Program Integration	6-1
6.3 Problem Statements	6-2
6.4 Identification of Goals	6-4
6.5 Completed Mitigation Actions.....	6-4
6.6 Review and Addition of Mitigation Actions.....	6-5
6.7 Prioritization Mitigation Actions	6-6

6.8 Jurisdictional Mitigation Actions.....	6-7
6.9 Mitigation Actions No Longer Under Consideration	6-123
6.10 Action Implementation and Monitoring	6-123
6.11 Jurisdictional Compliance with NFIP	6-124
6.12 Primary Mitigation Action Funding Sources	6-125
6.13 Additional Mitigation Action Funding Sources.....	6-126
7.0 Plan Maintenance.....	7-1
7.1 Hazard Mitigation Plan Monitoring and Evaluation.....	7-1



*Kansas Region J Hazard Mitigation Plan
July 2019
TOC*



SECTION PAGE

7.2 Jurisdictional Maintenance Rquirements	7-2
7.3 Plan Maintenance and Update Process	7-2
7.4 Post-Disaster Declaration Procedures.....	7-3
7.5 Incorporation of HMP into Other Planning Mechanisms	7-3
7.6 Continued Public Involvement	7-5

List of Appendices

- A Adoption Resolutions
- B FEMA Approval Documentation
- C Meeting Minutes and Sign-In Sheets
- B Critical Facilities (Restricted)



*Kansas Region J Hazard Mitigation Plan
July 2019
TOC*



List of Commonly Used Acronyms

Acronym	Meaning
CPRI	Calculated Priority Risk Index
CDC	Centers for Disease Control and Prevention
CWD	Chronic Wasting Disease
CFR	Code of Federal Regulations

CRS	Community Rating System
CWPP	Community Wildfire Protection Plans
EAB	Emerald Ash Borer
EAP	Emergency Action Plan
EMAP	Emergency Management Accreditation Program
EPZ	Emergency Planning Zone
EF	Enhanced Fujita
EPA	Environmental Protection Agency
°F	Fahrenheit
FEMA	Federal Emergency Management Agency
HAZUS	FEMA Loss Estimation Software
FIRM	Flood Insurance Rate Map
GIS	Geographic Information System
GDP	Gross Domestic Product
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Planning
HazMat	Hazardous Materials
ISO	Insurance Service Office
KDA	Kansas Department of Agriculture
KDHE	Kansas Department of Health and Environment
KDOT	Kansas Department of Transportation
KDEM	Kansas Division of Emergency Management
KFS	Kansas Fire Service
KGS	Kansas Geological Survey
KSFM	Kansas State Fire Marshall
K.S.A	Kansas Statutes Annotated
KWO	Kansas Water Office
LEPC	Local Emergency Planning Committee
MPC	Mitigation Planning Committee
NCEI	National Centers for Environmental Information
NFIP	National Flood Insurance Program
NLCD	National Land Cover Database
NLD	National Levee Database
NLIR	National Levee Inventory Report
NLSP	National Levee Safety Program
NOAA	National Oceanic and Atmospheric Administration
NRCS	National Resource Conservation Service
NWS	National Weather Service
NSFHA	No Special Flood Hazard Area



*Kansas Region J Hazard Mitigation Plan
July 2019
TOC*



Acronym	Meaning
NGO	Non-Governmental Organization

NRC	Nuclear Regulatory Commission
OHMS	Office of Hazardous Materials Safety
PDSI	Palmer Drought Severity Index
PHMSA	Pipeline and Hazardous Materials Safety Administration
PDM	Pre-Disaster Mitigation
PAL	Provisionally Accredited Levee
RL	Repetitive Loss
Risk MAP	Risk Mapping, Assessment and Planning
REC	Rural Electric Cooperative
SRL	Severe Repetitive Loss
SFHA	Special Flood Hazard Area
USD	Unified School District
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WUI	Wildland Urban Interface



*Kansas Region J Hazard Mitigation Plan
July 2019
TOC*

1.0 Introduction, Assurances and Adoption

1.1 – Introduction

Mitigation is commonly defined as sustained action taken to reduce or eliminate long-term risk to people and their property from hazards and their effects. Hazard mitigation planning provides communities with a roadmap to aid in the creation and revision of policies and procedures, and the use of available resources, to provide long-term, tangible benefits to the community. A well-designed hazard mitigation plan provides communities with realistic actions that can be taken to reduce potential vulnerability and exposure to identified hazards.

This Hazard Mitigation Plan (HMP) was prepared to provide sustained actions to eliminate or reduce risk to people and property from the effects of natural and man-made hazards. This plan documents the State of Kansas Homeland Security Region J (hereafter referred to as Kansas Region J) and its participating jurisdictions planning process and identifies applicable hazards, vulnerabilities, and hazard mitigation strategies. This plan will serve to direct available community and regional resources towards creating policies and actions that provide long-term benefits to the community. Local and regional officials can refer to the plan when making decisions regarding regulations and ordinances, granting permits, and in funding capital improvements and other community initiatives.

Specifically, this hazard mitigation plan was developed to:

- Update the Kansas Region J 2014 Hazard Mitigation Plan
- Build for a safer future for all citizens
- Foster cooperation for planning and resiliency
- Identify, prioritize and mitigate against hazards
- Assist with sensible and effective planning and budgeting

- Educate citizens about hazards, mitigation and preparedness
- Comply with federal requirements

As stipulated in the Disaster Mitigation Act of 2000 (DMA 2000) Section 322, federally approved mitigation plans are a prerequisite for mitigation project grants. Development and Federal Emergency Management Agency (FEMA) approval this plan will ensure future eligibility for federal disaster mitigation funds through the Hazard Mitigation Grant Program (HMPG), Pre-Disaster Mitigation Grant Program (PDM), Repetitive Flood Claims, and a variety of other state and federal programs. This Plan was prepared to meet the requirements of the DMA 2000, as defined in regulations set forth by the Interim Final Rule (44 CFR Part 201.6).

This plan has been designed to be a living document, a document that will evolve to reflect changes, correct any omissions, and constantly strive to ensure the safety of Kansas Region J.



*Kansas Region J Hazard Mitigation Plan
July 2019
1-1*



1.2 – Participating Jurisdictions

44 CFR 201.6(a)(4): Multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

All eligible jurisdictions were invited to participate in the organization, drafting, completion and adoption of this plan. Invited jurisdictions included, but were not limited to, elected officials, relevant State of Kansas agencies, counties, cities, school districts, non-profit agencies, and businesses.

In order to have an approved hazard mitigation plan, DMA 2000 requires that each jurisdiction participate in the planning process. Each jurisdiction choosing to participate in the development of the plan were required to meet detailed participation requirements, which included the following:

- When practical and affordable, participation in planning meetings
- Provision of information to support the plan development
- Identification of relevant mitigation actions
- Review and comment on plan drafts
- Formal adoption of the plan

Based on the above criteria, the following jurisdictions participated in the planning process, and will individually as a jurisdiction adopt the approved hazard mitigation plan:

Table 1.1: Anderson County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Anderson County	x	x
City of Colony	x	x

City of Garnett	X	X
City of Greeley	X	X
City of Kincaid	X	X
City of Westphalia	X	X
USD #365 - Garnett	X	X
USD #479 - Crest	X	X

Table 1.2: Coffey County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Coffey County	X	X
City of Burlington	X	X
City of Gridley	X	X
City of Lebo	X	X
City of LeRoy	X	X
City of New Strawn	X	X
City of Waverly	X	X
USD #243 - Lebo /Waverly	X	X
USD #244 - Burlington	X	X



*Kansas Region J Hazard Mitigation Plan
July 2019
1-2*



Table 1.2: Coffey County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
USD #245 - LeRoy / Gridley	X	X

Table 1.3: Franklin County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Franklin County	X	X
City of Lane	X	X
City of Ottawa	X	X
City of Pomona	X	X
City of Princeton	X	X
City of Rantoul	X	X
City of Richmond	X	X
City of Wellsville	X	X
City of Williamsburg	X	X
USD #287 - West Franklin	X	X
USD #288 - Central Heights	X	X
USD #289 - Wellsville	X	X
USD #290 - Ottawa	X	X
Rural Water District #6	X	X

Table 1.4: Linn County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
--------------	----------------------	----------------------

Linn County	X	X
City of Blue Mound	X	X
City of La Cygne	X	X
City of Linn Valley	X	X
City of Mound City	X	X
City of Parker	X	X
City of Pleasanton	X	X
City of Prescott	X	X
USD #344 - Pleasanton	X	X
USD #346 - Mound City	X	X
USD #362 - Prairie View	X	X
Rural Water District #1	X	X
Rural Water District #2	X	X
Rural Water District #3	X	X
Water Supply District #13	X	X

Table 1.5: Miami County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Miami County	X	X
City of Fontana	X	X
City of Louisburg	X	X
City of Osawatomie	X	X
City of Paola	X	X



Table 1.5: Miami County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
USD #230 – Spring Hill		X
USD #367 - Osawatomie	X	X
USD #368 - Paola	X	X
USD #416 - Louisburg	X	X
Rural Water District #3	X	X

Table 1.6: Osage County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Osage County	X	X
City of Burlingame	X	X
City of Carbondale	X	X
City of Lyndon	X	X
City of Melvern	X	X
City of Osage	X	X
City of Overbrook	X	X
City of Quenemo	X	X

City of Scranton	X	X
Three Lakes Educational Cooperative	X	X
USD #420 - Osage City	X	X
USD #421 - Lyndon	X	X
USD #434 - Santa Fe Trail	X	X
USD #454 - Burlingame	X	X
USD #456 - Marias Des Cygnes Valley	X	X
Fire District #6	X	X
Frontier Extension District		X
Osage Water District #3	X	X
Lyon-Coffey Electric Coop	X	X

Table 1.7: Shawnee County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Shawnee County	X	X
City of Auburn	X	X
Auburn Township		X
City of Rossville	X	X
City of Silver Lake	X	X
City of Topeka	X	X
City of Willard	X	X
Washburn University	X	X
USD #321 - Kaw Valley	X	X
USD #345 - Seaman	X	X
USD #372 - Silver Lake	X	X
USD #437 - Auburn / Washburn	X	X
USD #450 - Shawnee Heights	X	X
USD #501 - Topeka	X	X



Kansas Region J Hazard Mitigation Plan
July 2019
1-4



Table 1.7: Shawnee County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Consolidated Rural Water District #3		X
Consolidated Rural Water District #4		X
Kaw Valley Drainage District		X
North Topeka Drainage District		X
Shawnee County Rural Water District #8		X
Tri-County Drainage District		X

Any Kansas Region J jurisdiction not covered in this HMP is either covered under another plan or declined to participate.

1.3 – Assurances

Kansas Region J and all participating jurisdictions certify that they will comply with all applicable Federal statutes and regulations during the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c), and will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11(d).

This hazard mitigation plan was prepared to comply with all relevant the requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, as amended by the DMA 2000. This plan complies with all the relevant requirements of:

- Code of Federal Regulation (44 CFR) pertaining to hazard mitigation planning
- FEMA planning directives and guidelines
- Interim final, and final rules pertaining to hazard mitigation planning and grant funding
- Relevant presidential directives
- Office of Management and Budget circulars
- Any additional and relevant federal government documents, guidelines, and rules.

1.4 – Authorities

For all jurisdictions within Kansas Region J all authority is subject to prescribed constraints, as all of Kansas political subdivisions must not act without proper delegation from the State. However, cities and counties in Kansas have broad home rule powers. Local governments in Kansas have a wide range of tools available to them for implementing mitigation programs, policies, and actions. A local jurisdiction may utilize any or all of the following broad authorities granted by the State of Kansas:

- Regulation
- Acquisition
- Taxation
- Spending



Kansas Region J Hazard Mitigation Plan

July 2019

1-5



In addition, Kansas local governments have been granted broad regulatory authority in their jurisdictions. Kansas Administrative Regulations bestow the general police power on local governments, allowing them to enact and enforce ordinances which define, prohibit, regulate or abate acts, omissions, or conditions detrimental to the health, safety, and welfare of the people, and to define and abate nuisances. Since hazard mitigation can be included under the police power (as protection of public health, safety, and welfare), towns, cities, and counties may include requirements for hazard mitigation in local ordinances. Local governments may also use their ordinance-making power to abate “nuisances”, which could include, by local definition, any activity or condition making people or property more vulnerable to any hazard.

The Kansas Region J HMP relies on the authorities given to it by the State of Kansas and its citizens as encoded in state law. This plan is intended to be consistent with all policies and procedures that govern activities related to the mitigation programming and planning. In all cases of primacy, State of Kansas laws, statutes, and policies will supersede the provisions of the plan. This HMP attempts to be consistent following:

- Kansas Constitution, Article 12 Section 5: Home rule powers
- Kansas Administrative Regulation 56-2: Standards for local disaster agencies
- 2016 Kansas Statutes, Chapter 12, Article 7: Allows cities and municipalities to designate flood zones and restrict the use of land within these zones
- 2016 Kansas Statutes Chapter 24, Article 12: Establishes watershed districts
- 2016 Kansas Statutes, Chapter 48, Article 9: Promulgating the Kansas Emergency Management Act, requiring counties to establish and maintain a disaster agency responsible for emergency management and to prepare a county emergency response plan
- 2016 Kansas Statutes, Chapter 65, Article 57: Promulgating the Kansas Emergency Planning and Community Right to-Know Act
- The Robert T. Stafford Disaster Relief and Emergency Assistance Act as amended by the Disaster Mitigation Act of 2000 (Public Law 106-390 – October 30, 2000)
- 44 CFR Part 201.6: Local mitigation plans

In addition, this plan will be consistent with all relevant federal authorities as well as Emergency Management Accreditation Program (EMAP) mitigation standards.

1.5 – Adoption Resolutions

44 CFR Requirement 201.6(c)(5): Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

Upon review and approved pending adoption status by FEMA Region VII adoption resolutions will be signed by the participating jurisdictions and tracked by the Regional Mitigation Plan Project Manager with KDEM.

44 CFR Requirement 201.6(c)(5): Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.



While not required, private, non-profit and charitable organizations that independently participated in this planning effort are encouraged to adopt the plan.

Adoption resolutions may be found in Appendix A.



*Kansas Region J Hazard Mitigation Plan
July 2019
1-7*

2.0 Planning Process

2.1 – Documentation of the Planning Process

44 CFR 201.6(c)(1): Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

In September of 2018, Kansas Region J and its participating jurisdictions began the process to update the Kansas Region J 2014 HMP. It was determined that Jeanne Bunting, the State of Kansas Hazard Mitigation Planner would serve as the project manager, directing this plan update, and would act as the primary point-of-contact throughout the project.

The State of Kansas contracted with Blue Umbrella Solutions to assist in updating the 2014 Kansas Region J HMP. Blue Umbrella's roles included:

- Ensure that the hazard mitigation plan meets all regulatory requirements
- Assist with the determination and ranking of hazards
- Assist with the assessment of vulnerabilities to identified hazards
- Assist with capability assessments
- Identify and determine all data needs and solicit the information from relevant sources
- Assist with the revision and development of the mitigation actions
- Development of draft and final planning documents

Kansas Region J and its participating jurisdiction undertook the following steps to update and create a robust HMP:

- Review of the 2014 Kansas Region J HMP
- Review of current related planning documents
- Delivery of organizational and planning meetings
- Solicitation of public input as to plan development
- Assessment of potential risks
- Assessment of vulnerabilities and assets
- Development of the mitigation actions
- Development of a draft multi-hazard mitigation plan
- Implementation, adoption, and maintenance of the plan

The process established for this planning effort is based on DMA 2000 planning and update requirements and the FEMA associated guidance for hazard mitigation plans. The FEMA four step recommended mitigation planning process, as detailed below, was followed:

1. Organize resources
2. Assess risks
3. Develop a mitigation plan
4. Implement plan and monitor progress

44 CFR 201.6(c)(1): Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.



*Kansas Region J Hazard Mitigation Plan
July 2019
2-1*



To accomplish this, the following planning process methodology was followed:

- Inform, invite, and involve other mitigation plan stakeholders throughout the state, including federal agencies, state agencies, regional groups, businesses, non-profits, and local emergency management organizations.
- Conduct a thorough review of all relevant current and historic planning efforts
- Collect data on all related state and local plans and initiatives. Additionally, all related and relevant local plans were reviewed for integration and incorporation.
- Develop the planning and project management process, including methodology, review procedures, details about plan development changes, interagency coordination, planning integration, and the organization and contribution of stakeholders.
- Develop the profile of the county and participating jurisdictions.
- Complete a risk and vulnerability assessment using a Geographic Information System (GIS) driven approach using data from various local, state and federal agency resources.
- Develop a comprehensive mitigation strategy effectively addressing their hazards and mitigation program objectives. This included identifying capabilities, reviewing pre and post disaster policies and programs, identifying objectives and goals, identifying mitigation actions and projects, and assessing mitigation actions and projects.
- Determination and implementation of a plan maintenance cycle, including a timeline for plan upgrades and improvements.
- Submission of the plan to FEMA Region VII for review and approval and the petition all participating jurisdictional governments for a letter of formal plan adoption.

2.2 – 2019 Plan Changes

44 CFR 201.6(d)(3): A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding

The Kansas Region J HMP has undergone significant revision and upgrading since its last edition. Not only has the region made significant efforts to improve the functionality and effectiveness of the plan itself but it has significantly improved its hazard mitigation program. This grants the region's improved and robust hazard mitigation program a better base to further mold and improve its mitigation strategy over the next five years.

As part of this planning effort, each section of the previous mitigation plan was reviewed and completely revised. The sections were reviewed and revised against the following elements:

- Compliance with the current regulatory environment
- Completeness of data
- Correctness of data
- Capability differentials
- Current state environment

44 CFR 201.6(d)(3): A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding



*Kansas Region J Hazard Mitigation Plan
July 2019
2-2*



In addition to data revisions, the format and sequencing of the previous plan was updated for ease of use and plan clarity.

During this process, and after a thorough review and discussion with all participating jurisdictions and stakeholders, it was determined that the priorities of the overall community in relation to hazard mitigation planning have not changed during the five years of the previous planning cycle.

2.3 – Mitigation Planning Committee

Upon project initiation a mitigation planning committee (MPC), generally consisting of participating county emergency managers, was formed. From project inception to completion, the MPC was involved in each major plan development milestone, and fully informed through on-site meetings and electronic communication. Prior to the plan's submission to FEMA, the MPC was invited to review the plan and provide input.

In general, all MPC members were asked to participate in the following ways:

- Provide local engagement with all participating jurisdictions
- Attend and participate in meetings
- Assist with the collection of data and information

- Review planning elements and drafts
- Integrate hazard mitigation planning elements with other planning mechanisms
- Facilitate jurisdictional coordination and cooperation
- Assist with the revision and development of mitigation actions

MPC members who were unable to attend meetings due to budgetary or personnel constraints were contacted via email or phone to discuss hazard mitigation planning, including the process, goals, mitigation actions, local planning concerns and plan review.

Each MPC member was thoroughly interviewed regarding their jurisdiction’s and sub-jurisdiction’s mitigation related activities. These interviews were invaluable in fully integrating the resources necessary to produce this plan, document mitigation activities, and document the mitigation resources available to better increase resiliency.

Additionally, the MPC was used as a conduit to solicit input from all participating jurisdictions under the county. Where appropriate, the MPC solicited the assistance of technical experts from various agencies and groups. When the MPC updated and improved the plan’s mitigation strategy, personnel from strategically selected agencies were interviewed to provide input on their mitigation capabilities.

The following participants were selected for the MPC.



Table 2.1: Kansas Region J Mitigation Planning Committee

Participant	Title	Organization
JD Mersman	Emergency Manager	Anderson County
Mick Brinkmeyer	Assistant Director	Anderson County
Russel Stukey	Emergency Manager	Coffey County
Amber Presley	Assistant Director	Coffey County
Alan Radcliffe	Emergency Manager	Franklin County
Thomas Winter	Assistant Director	Franklin County
Doug Barlet	Emergency Manager	Linn County
Frank Kelly	Emergency Manager	Miami County
Bryce Romine	Emergency Manager	Osage County
Bret Lewis	Assistant Director	Osage County
Dusty Nichols	Emergency Manager	Shawnee County
Nelson Casteel	Assistant Director	Shawnee County
Jeanne Bunting	Mitigation Planner	State of Kansas
Matt Eyer	Plan Author	Blue Umbrella Solutions

2.4 – Local and Regional Stakeholder Participation

44 CFR Requirement 201.6(b)(2): An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process

Within Kansas Region J there are many jurisdictions and organizations who have a vested interest in participating in the creation and adoption of the hazard mitigation plan. An integral part of the planning process included the identification, development, and coordination of these entities. The Kansas Region J MPC provided the opportunity for neighboring communities, counties, and local and regional development agencies to be involved in the planning process. Where applicable, these entities were kept informed of the hazard mitigation process during state, regional and local emergency management meetings, gatherings and conferences, in person by MPC members, or were solicited for planning information.

It is worth noting that all neighboring Kansas counties are undergoing a similar mitigation planning effort, and as part of this statewide process all county and state planners are working together toward common mitigation goals. During the creation and adoption of this plan communication channels were opened to facilitate the cross pollination of ideas, to incorporate neighboring regions concerns, and to ensure the overall preparedness of the State of Kansas.

In addition, relevant federal, regional, state, local governmental, and private and non-profit entities were also invited to provide input and utilized for information and technical expertise, including, but not limited to:

44 CFR Requirement 201.6(b)(2): An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process

- American Red Cross

44 CFR Requirement 201.6(b)(2): An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process



- Center for Disease Control
- FEMA
- Kansas Adjutant General's Office

- Kansas Department of Agriculture, the Kansas Department of Health and Environment
- Kansas Department of Transportation
- Kansas Fire Service, Kansas Water Office
- Kansas Geological Survey
- Kansas State Fire Marshall
- Local and county planning and zoning offices (where available).
- Local business and non-profit entities
- National Oceanic and Atmospheric Administration
- National Weather Service
- Nuclear Regulatory Commission
- Pipeline and Hazardous Materials Safety Administration
- Salvation Army
- United States Army Corp of Engineers, National Resource Conservation Service
- United States Department of Agriculture
- United States Geological Survey

2.5 – Public Participation

44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval

As part of the overall planning process, the public were provided with numerous opportunities to contribute and comment on the creation and adoption of the plan. These opportunities included:

- Advertised meeting invitations on participating jurisdictional websites
- Open meeting opportunities with Kansas Region J MPC members
- Access to an online survey document to provide feedback
- Comment period upon completion of draft plan

Input from the general public provided the MPC with a clearer understanding of local concerns, increased the likelihood of citizen buy-in concerning proposed mitigation actions, and provided elected officials with a guide and tool to set regional ordinances and regulations. This public outreach effort was also an opportunity for adjacent jurisdictions and entities to be involved in the planning process.

Additionally, as citizens were made more aware of potential hazards and the local process to mitigation against their impacts, it was believed that they would take a stronger role in making their homes, neighborhoods, schools, and businesses safer from the potential effects of natural hazards.

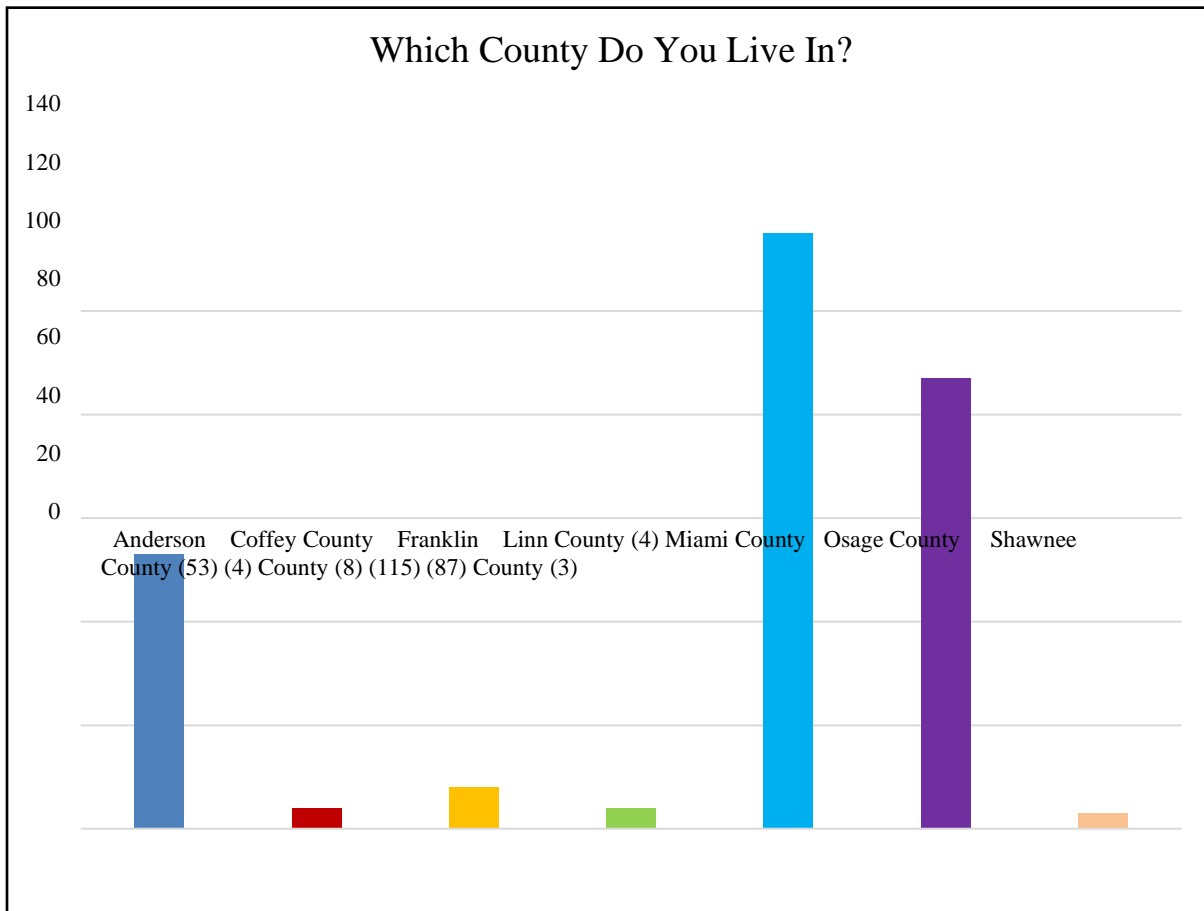
44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval



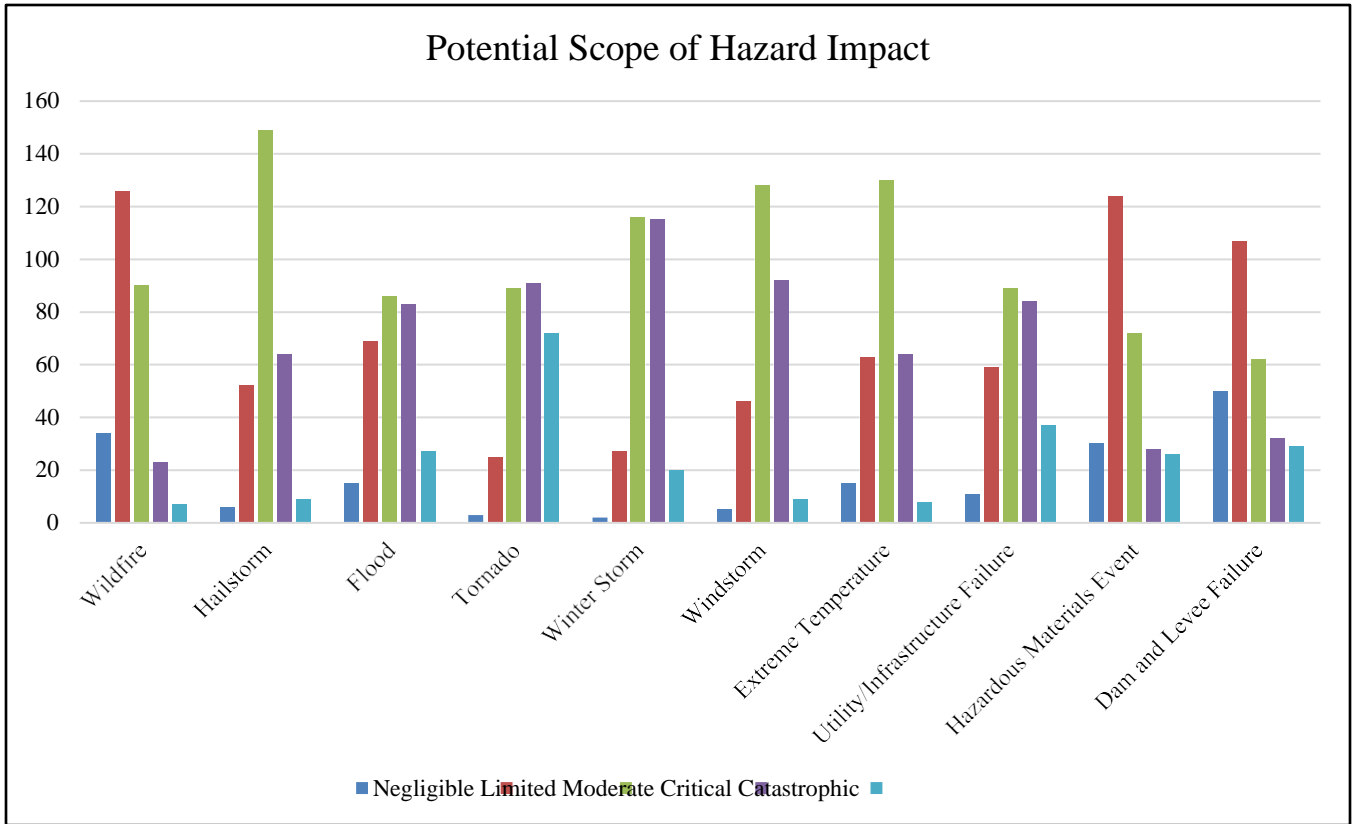


The following graphics represents the feedback received from the public from the online survey document.

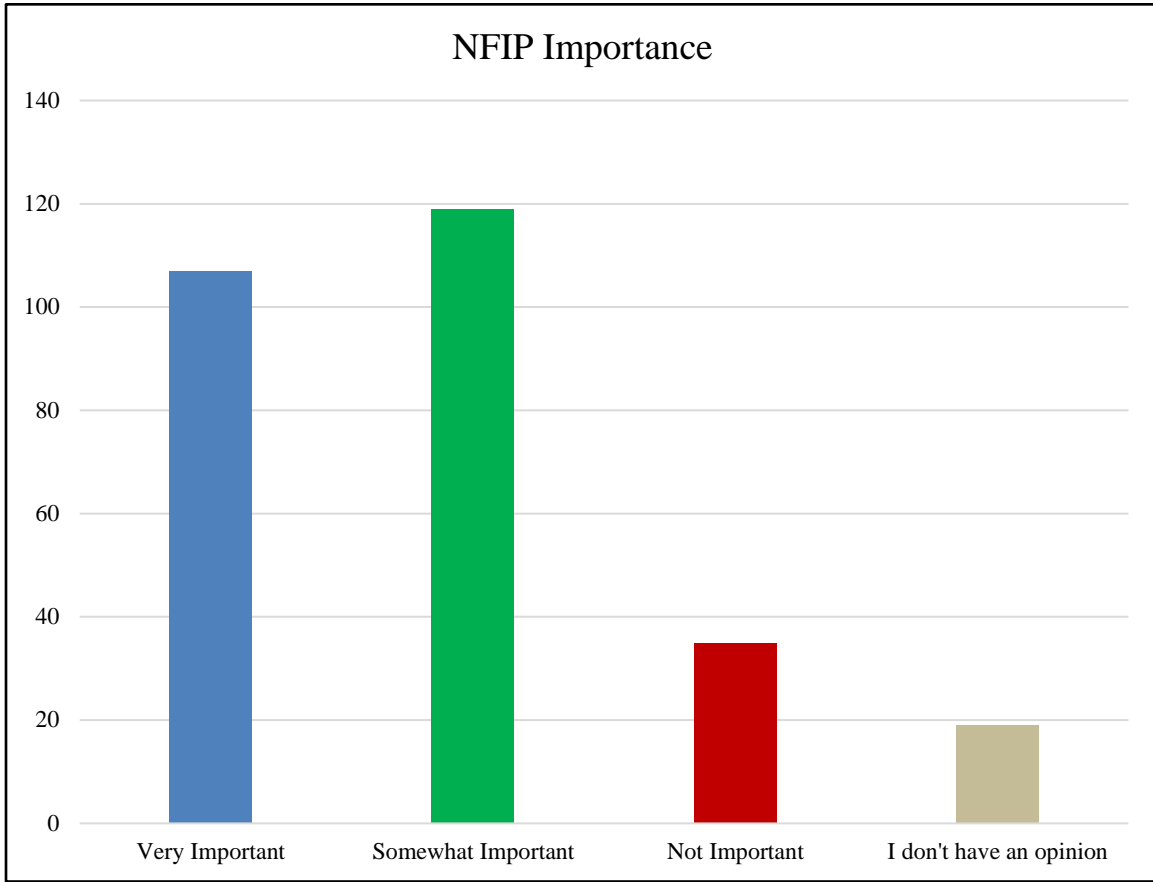
Question 1: In which county or jurisdiction do you live?



Question 2: In 2014, the Region consisting of Anderson, Coffey, Franklin, Linn, Miami, Osage, and Shawnee counties, the planning committee determined that the hazards listed below are important to the area. Indicate the level of risk, or the scope of potential impacts, in the Region, that you perceive for each hazard:



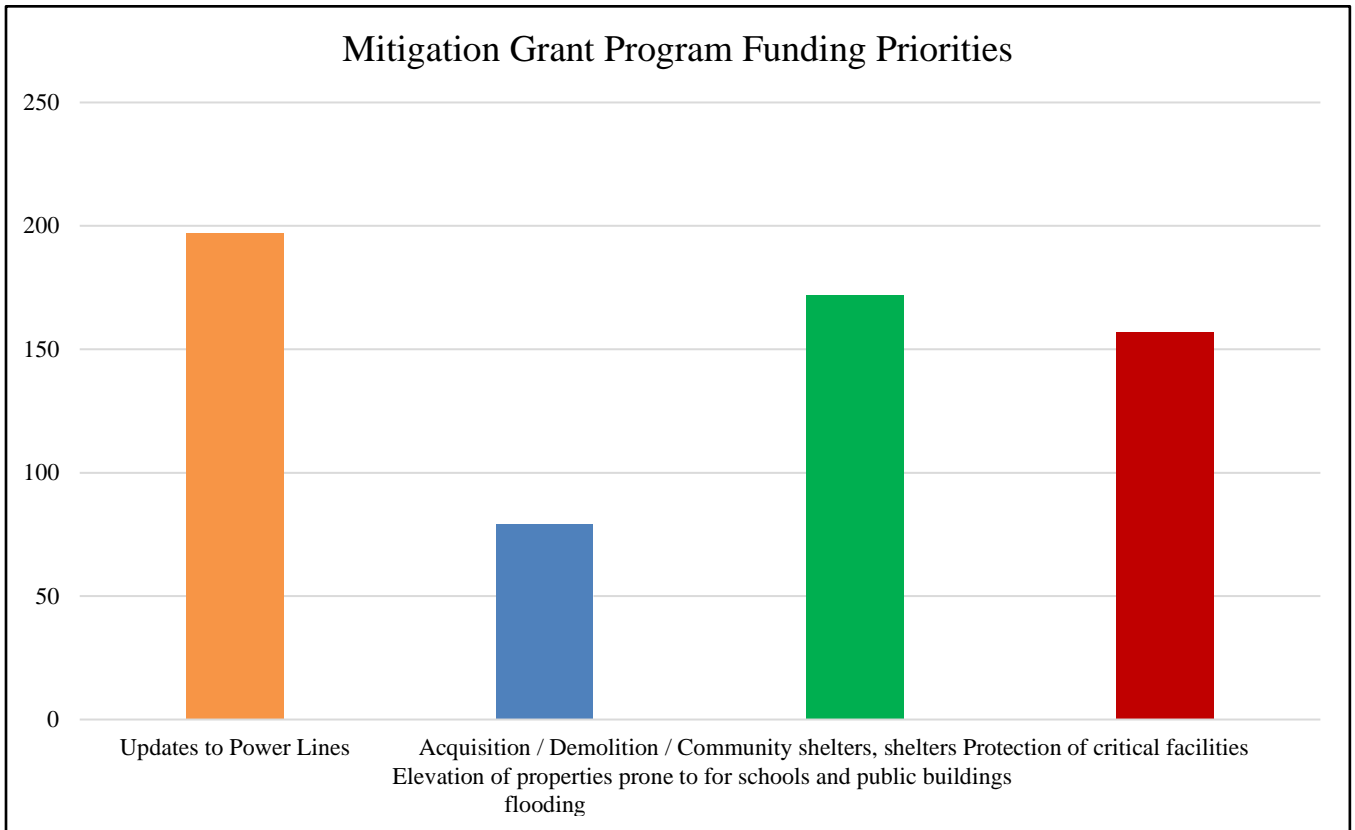
Question 3: In the Region, the planning committee has determined that a flood event is the third most critical hazard. How important is it for you to have your community participate in or continue to participate in the National Flood Insurance Program?



Kansas Region J Hazard Mitigation Plan
 July 2019
 2-8



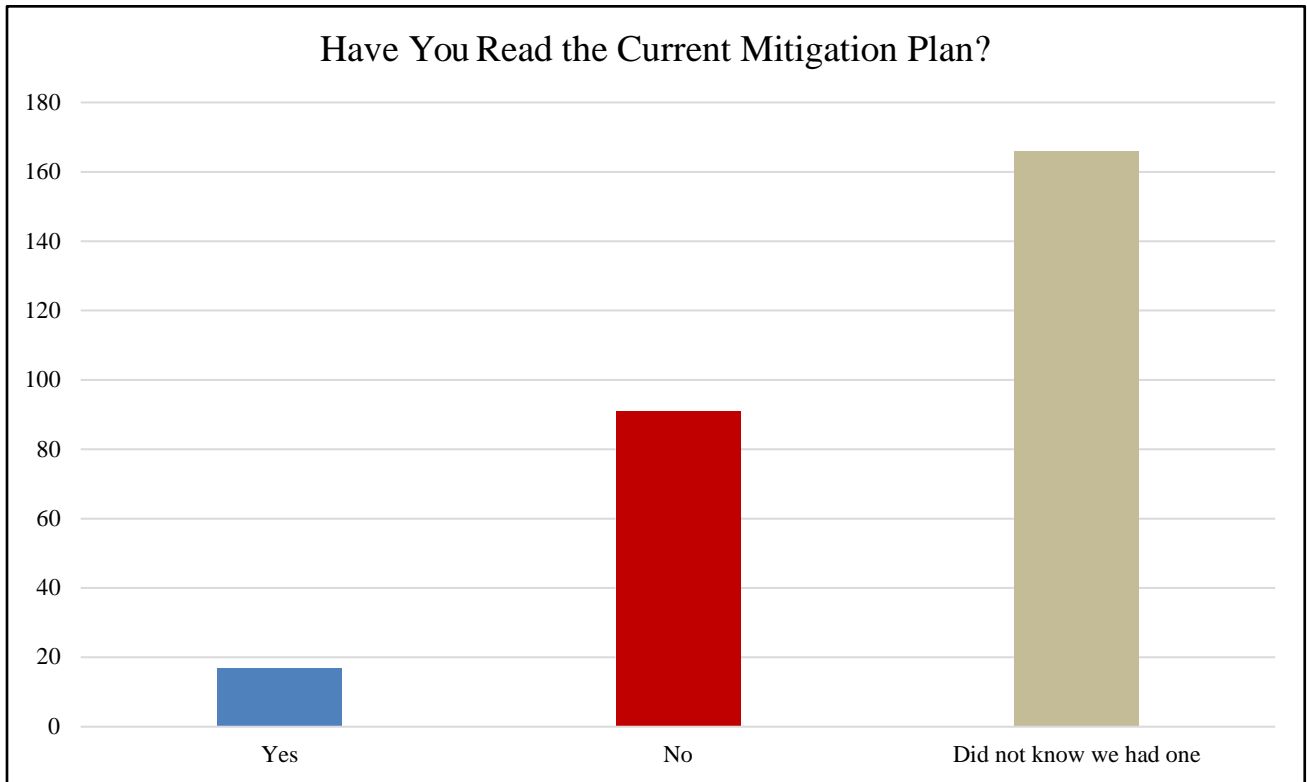
Question 4: The Kansas Division of Emergency Management currently reviews the application for funds for the FEMA Risk Mitigation Grant Program. Your current funding priorities are listed below. Please check those that could benefit your community.



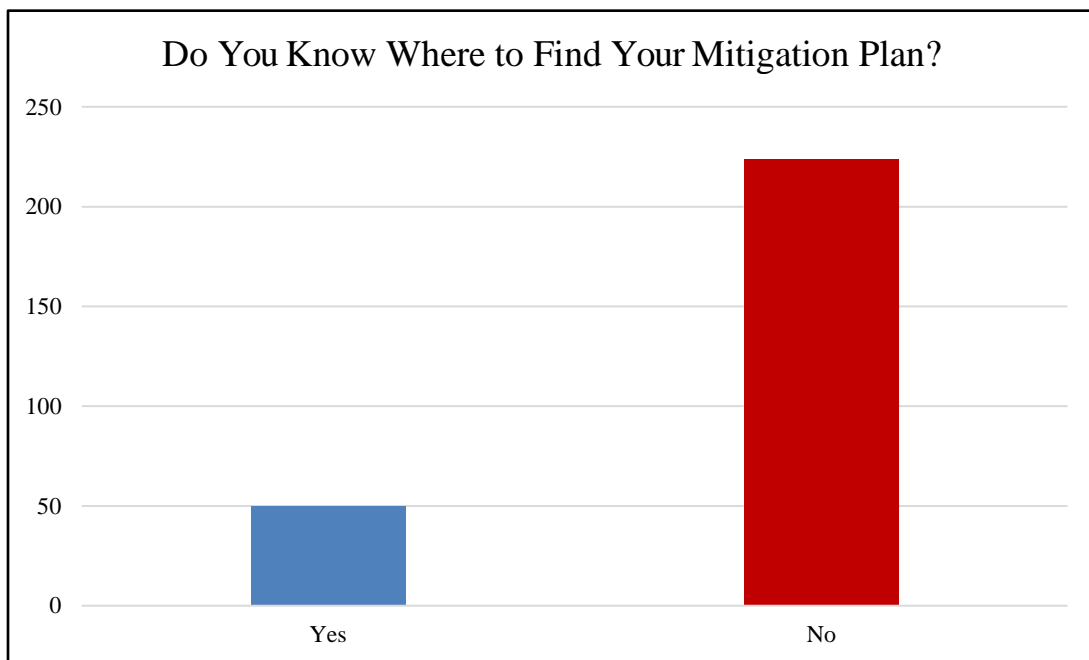
Kansas Region J Hazard Mitigation Plan
 July 2019
 2-9



Question 5: Have you had the opportunity to read your current Risk Mitigation Plan?



Question 6: Do you know where you can find the mitigation plan for your county if you would like to see it?





In addition, respondents were given the opportunity to address any local concerns or issues of concern to them.

Question 7: Your opinion is valuable to this planning process. Discuss any other problems that the planning committee should consider when developing a strategy to reduce future losses caused by natural hazard events.

Table 2.2: Kansas Region J Survey Comments, Areas of Concern

Jurisdiction	Comments
Anderson County	List is good.
Anderson County	Fix drainage system, will help prevent flooding. Sewage and rain water shouldn't drain to same system.
Anderson County	A lot of homes do not have basements, we need more places around Garnett that people can get to quickly and know in advance are open in case of tornadoes.
Anderson County	Keeping electric on is very high priority. Keeping electric lines free from tree limbs.
Anderson County	Severe snow storm
Anderson County	Would Garnett or Welda effected by a failure at Wolf Creek Nuclear Plant
Anderson County	Tornado and windstorms are probably the worst threats in our area.
Anderson County	I don't think Anderson County personnel are capable to mitigate anything.
Anderson County	Better drainage, safety shelter
Anderson County	Our local electrical grid suffers too many black out and/or brown outs.
Miami County	Involve the citizens, do not decide without their input.
Miami County	When quick access to homes are cut off by blocked railroad crossings
Miami County	Get the local government entirely out of the process. A private company could handle it more efficiently. Also, question 4 required an answer, but I feel that none of those are priorities.
Miami County	Utilization of volunteer assistance is a resource that has wide reaching abilities that can be used in nearly all situations from storm cleanup to search and rescue. And these resources are generally free to those that can use them. Integration of these groups can help mitigate normally restricted or shorthanded local and state resources. An example of one of these groups would be Lutheran Early Response Team that could be utilized from many locations from within the state as well as across the country. With less time exposed to the elements, also reduces losses caused by hazard events which these teams can assist with.
Miami County	Power restoration and attention to the teal areas are low on the priority lists.
Miami County	More storm shelters
Miami County	Flooding is a huge issue in our area!!! Low water bridges that are constantly being re-worked. Is it really still safe after that many repairs???
Miami County	Bridge improvements in low areas.
Miami County	More attention to the place's residents can go when they have been affected by a natural disaster. A lot of Miami County residents can't afford to rent a hotel room. They need another option.
Miami County	Side note--National Flood Insurance Program is an unconstitutional overreach. The government should not be in the insurance business. If somebody is dumb enough to build in a location that private real insurance companies won't insure, it



Table 2.2: Kansas Region J Survey Comments, Areas of Concern

Jurisdiction	Comments
	should be on them, not the US taxpayer. NFIP is a scam that congressmen put through to protect their own property built in ridiculous locations.
Miami County	Educating the general public with quarterly and annual meets with the Emergency Management risks, lessons learned, and current/future plans for projects.
Miami County	Unfortunately, the majority of the population doesn't take hazards seriously. More effort should be placed on communications, emphasizing potential impacts.
Miami County	Recovery and backup of critical data to maintain continuity of operations at all levels.
Miami County, Osawatomie	Ensure that Rural Fire in Miami County is adequately funded and equipped.
Miami County, Paola	Better emergency communications for first responders
Osage County	Nuclear plans in case of problems at Wolf Creek.
Osage County	Shelters for extreme temperatures. Have someone assigned to check on people who may be handicapped.
Osage County	Look my family and I moved here after Hurricane Michael took our home, and destroyed our lives... So yeah plan plan plan plan... And FEMA is a joke!
Osage County, Osage City	Roads repair, failing power lines and supply
Osage County, Osage City	Washed up brush in creeks and rivers that cause unnecessary flooding issues. Trees grown into utility lines.
Osage County, Osage City	Simulated training, to see where the break downs occur in the plan, develop a better plan from what is learned. Also communicate with other like sized communities that have been through the disasters to see what could have been better.

Question 8: Do you have any mitigation project that you would like to see implemented and what are they?

Table 2.3: Kansas Region J Survey Comments, Requested Projects

Jurisdiction	Comments
Anderson County	A situation I believe is becoming critical is the condition and usage of 169/59 highway between Garnett and Welda. The road continues to deteriorate and is unsafe for the amount of traffic on it. The heavy truck usage is increasing (Intermodal/Ethanol plant, etc.) and the minimal work being done to maintain the road is creating a hazard for all drivers. Anything the local agencies can do to encourage the rework of the road is appreciated. The state chose to close 169 from Iola to Chanute for the rebuilding of that section. The state could do that for this section of the highway, too.
Anderson County	Upgrade kcal feeder lines
Anderson County	Given the limited amount of TV airway coverage in the county, I would like to see more access to high speed broadband, like Google Fiber or Time Warner Cable in the county.

Franklin County	Making the highway between Ottawa and Pomona could benefit from more flood protection. What that is? I don't know. I just recall clearly having flood waters almost do over that road.
-----------------	--



Kansas Region J Hazard Mitigation Plan
 July 2019
 2-12



Table 2.3: Kansas Region J Survey Comments, Requested Projects

Jurisdiction	Comments
Franklin County	More storm shelters in the small towns
Lyon County (Outside Region)	Rural tornado sirens
Miami County	Rebuild the levees and raise the dykes.
Miami County	Updated water infrastructure
Miami County	No. Stop wasting taxpayer money.
Miami County	Utilizing volunteer organizations that have been trained to assist in times of need. Lutheran Early Response Teams are a great resource.
Miami County	Upgrades to underground power lines
Miami County	Rural road evaluations, and maintenance with flooding and winter storms.
Miami County	landline phone/communication damage/disrepair
Miami County	Another tornado siren west of spring hill off of 223rd st and 169
Miami County	Plan looks good.
Miami County	KCPL placing power lines underground to reduce power outages, notification to individuals that are in an at risk (low/moderate/critical) flood area and place them on a map on the county website. Community groups organized through the county based on township area that can help each other during a catastrophic event. While hail/windstorms haven't been a huge factor in recent years it is still a possibility that they can get worse over time. By continuing to implement/update building codes I feel that the community can benefit from it since technology is advancing. In addition, I've noticed that KCPL has been giving several discount incentives to Missouri residents for going all LED lighting or having solar at their home. Community partnerships with our power provider can help reduce power costs for residents and overall power waste on a large scale. Solar should be a huge push for the county right now since they have technology out there that costs money but saves more on a long term. Should have placed solar on the jail Frank.
Miami County, Osawatomie	Accurate river level gauges
Osage County, Osage City	Clearing brush from creeks and rivers to minimize flooding. Trimming trees near power lines to avoid damage during an ice storm. Public storm shelters
Shawnee County	Auburn TWP experiences flooding in some areas that damages our gravel roads. Need to improve drainage/ditches and/or raise some roadways. Also need back-up generator capability for some facilities.

2.6 – Planning Meetings

Within Kansas Region J there are many jurisdictions and organizations who have a vested interest in participating in the creation and adoption of the hazard mitigation plan. An integral part of the planning process included the identification, development, and coordination of all of these entities. As such, a series of three organizational and planning meetings were scheduled and all past and potential future participants were notified by the State of Kansas as to the dates and locations of the meetings. In addition, communities neighboring the region were invited to participate in the planning process.

It is worth noting that all neighboring Kansas counties are undergoing a similar mitigation planning effort, and as part of this statewide process all county and state planners are working together toward common



*Kansas Region J Hazard Mitigation Plan
July 2019
2-13*



mitigation goals. During the creation and adoption of this plan communication channels were opened to facilitate the cross pollination of ideas, to incorporate neighboring regions concerns, and to ensure the overall preparedness of the State of Kansas.

A series of kick-off meetings were held with MPC members, available representatives from jurisdictions within the planning region, local and regional stakeholders, and the public invited. At the kickoff meeting, the planning process, project coordination, scope, participation requirements, strategies for public involvement, and schedule were discussed in detail. During the meeting, participants were led through a guided discussion concerning hazard data sourced from their previous hazard mitigation plans. Additionally, research was conducted prior to the meeting on recent regional hazard events to further inform the discussion. Participants were encouraged to discuss past hazard events, past impacts, and the future probability for all identified hazards. At the conclusion of the meeting, all participants were provided with a data collection forms to solicit information needed to properly complete the HMP. The forms asked for information concerning data on historic hazard events, at risk populations and properties, and available capabilities. Additionally, participating jurisdictions were provided with their mitigation actions from the previous plans for review and comment and asked to identify any additional mitigation actions.

A mid-term planning meeting was held with MPC members. Based upon the initial research, discussions held during the kickoff meetings, information obtained from the data collection forms, additional research, and subsequent discussion with MPC members, the results of the hazard identification, classification, and delineation were discussed in detail. In addition, sections of the HMP were made available for review and comment. Based on the supplied hazard information, participants were asked to assist in the development and review of mitigation goals and actions.

A final planning meeting was held with MPC members, available representatives from jurisdictions within the planning region, local and regional stakeholders, and the public invited. The completed draft HMP was made available for review and comment.

The following table presents the date and location of each planning meeting.

Meeting Number	Date	Location
1 (Kickoff)	02/11/2019	Miami County
	02/12/2019	Osage County
	02/27/2019	Shawnee County
2 (Mid-Term)	05/21/2019	Shawnee County
3 (Final)	06/25/2019	Coffey County
	06/26/2019	Shawnee County

Table 2.4: Kansas Region J Planning Meetings

Both the minutes and sign-in sheets from all meetings may be found in Appendix C.



*Kansas Region J Hazard Mitigation Plan
July 2019
2-14*



2.7 – Existing Plan Incorporation

44 CFR 201.6(b)(3): Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

The hazard mitigation plan is an overarching document that is both comprised of, and contributes to, various other jurisdictional plans. In creating this plan, all the planning documents identified below were consulted and reviewed, often extensively. In turn, when each of these other plans is updated, they will be measured against the contents of the hazard mitigation plan.

Below is a list of the various planning efforts, sole or jointly administered programs, and documents reviewed and included in this hazard mitigation plan. While each plan can stand alone, their review and functional understanding was pivotal in the development of this plan and further strengthens and improves Kansas Region J’s resilience to disasters.

- All participating jurisdictions Codes and Ordinances
- All participating jurisdictions Comprehensive Plans
- All participating jurisdictions Critical Facilities Plans
- All participating jurisdictions Economic Development Strategic Plans
- All participating jurisdictions Emergency Operations Plans
- All participating jurisdictions Flood Mitigation Assistance Plan
- All participating jurisdiction Land-Use Plans
- Community Wildfire Protection Plans
- Any other newly created or relevant jurisdictional plan

Information from each of these plans and programs is utilized within the applicable hazard sections to provide data and fully inform decision making and prioritization.

State and Federal Level Plan Integration

The following list illustrates local, state and federal programs integrated, where applicable, and referenced in Kansas Region J's mitigation efforts.

- State of Kansas Hazard Mitigation Plan
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program
- National Flood Insurance Program
- Pre-Disaster Mitigation Program
- Repetitive Loss & Severe Repetitive Loss Program
- FireWise Communities Program
- Relevant Dam Emergency Action Plans (if document not secured)
- Community Rating System

44 CFR 201.6(b)(3): Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.



*Kansas Region J Hazard Mitigation Plan
July 2019
2-15*



Integration Challenges

The 2014 plan update successfully integrated approved Kansas Region J local hazard mitigation plans into one regional HMP. This represents a success of our streamlined program of allowing jurisdictions to participate in multi-jurisdictional regional-level plans. This program not only reduces the cost and the burden to local jurisdictions, it also allows for closer collaboration and integration of local communities in all areas of planning and response. However, and as always, challenges exist due to the day to day demands of the working environment, including scheduling conflicts, budget restrictions, and staffing changes and shortages related to both the utilization and incorporation of the HMP and completion of identified hazard mitigation projects.



*Kansas Region J Hazard Mitigation Plan
July 2019
2-16*

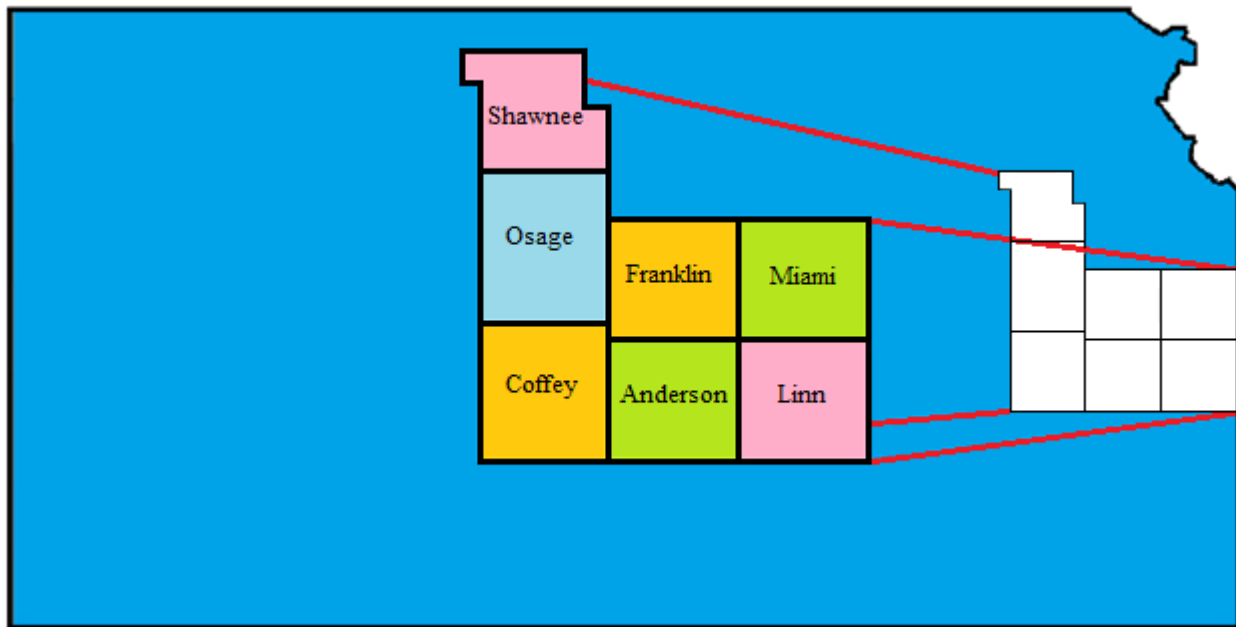
3.0 Planning Area

3.1 – Introduction

Kansas Region J consists of the following seven participating counties and their participating jurisdictions:

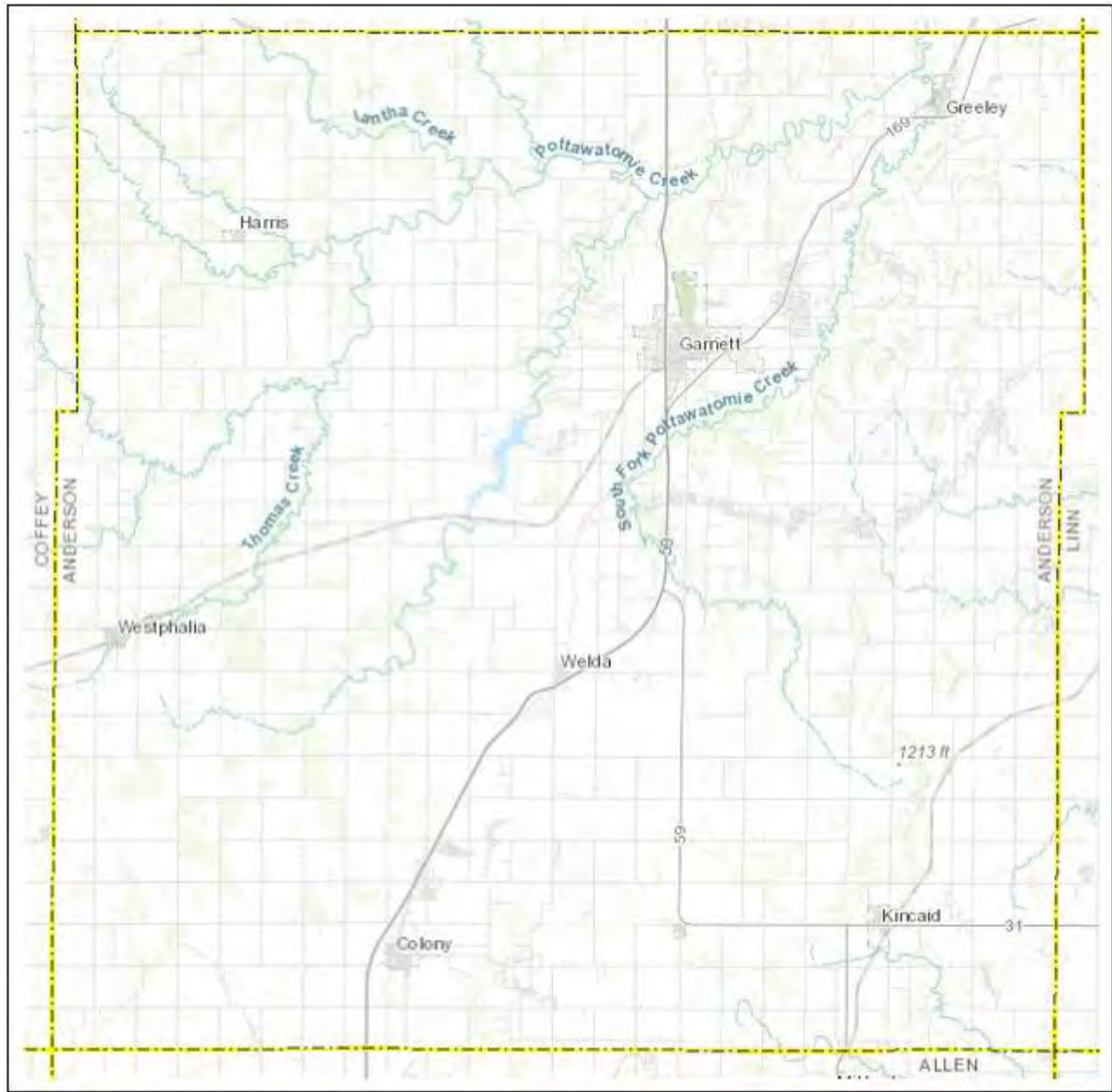
- Anderson County
- Coffey County
- Franklin County
- Linn County
- Miami County
- Osage County
- Shawnee County

The following map details the locations of these counties.



The map following map, provided by the Kansas Department of Transportation (KDOT), details the locations of participating jurisdictions for Anderson County:

Anderson County

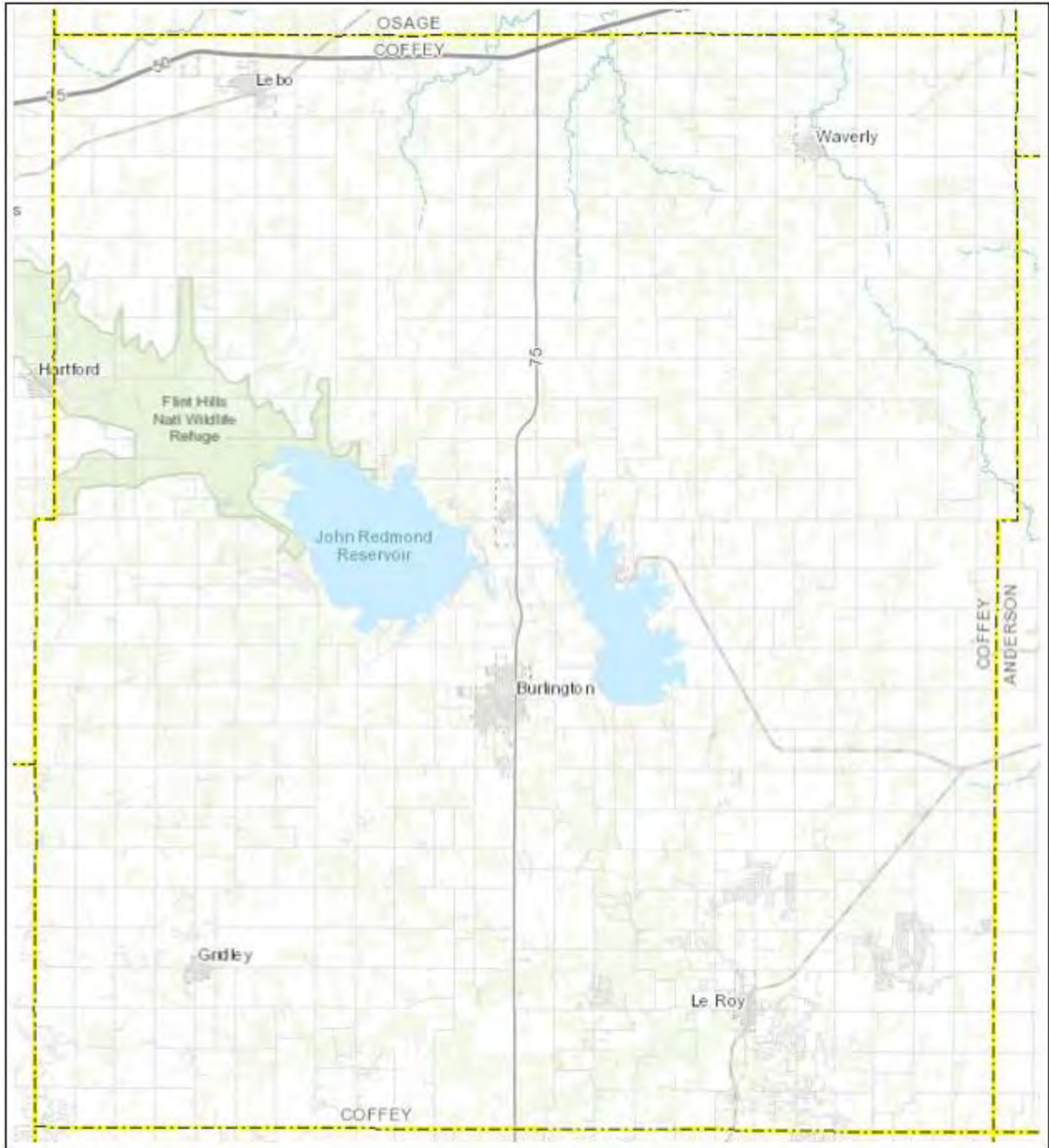


*Kansas Region J Hazard Mitigation Plan
 July 2019
 3-2*



The map following map, provided by KDOT, details the locations of participating jurisdictions for Coffey County:

Coffey County

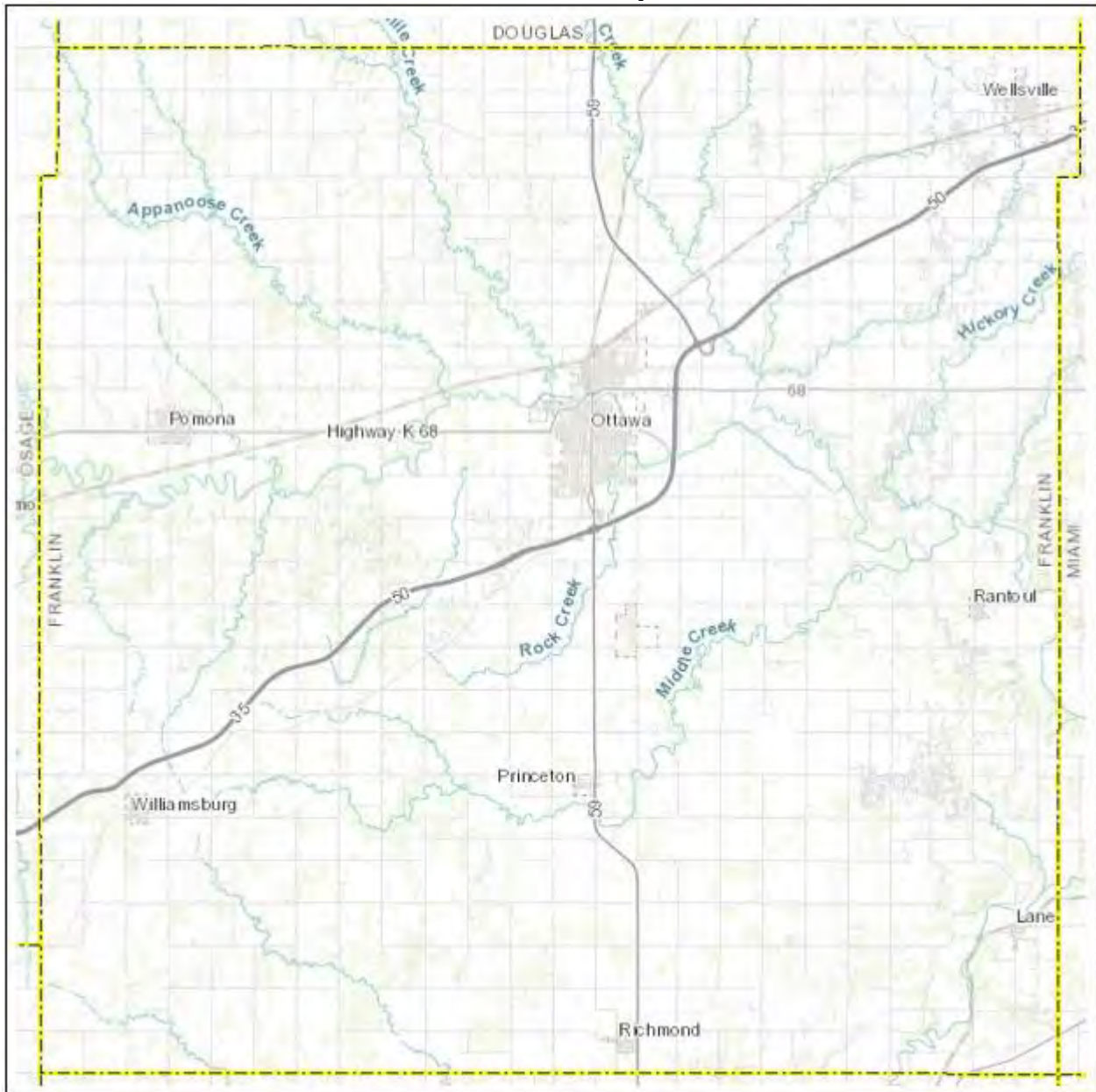


*Kansas Region J Hazard Mitigation Plan
July 2019
3-3*



The map following map, provided by KDOT, details the locations of participating jurisdictions for Franklin County:

Franklin County



Kansas Region J Hazard Mitigation Plan

July 2019

3-4



The map following map, provided by KDOT, details the locations of participating jurisdictions for Linn County:

Linn County



*Kansas Region J Hazard Mitigation Plan
 July 2019
 3-5*



The map following map, provided by KDOT, details the locations of participating jurisdictions for Miami County:

Miami County

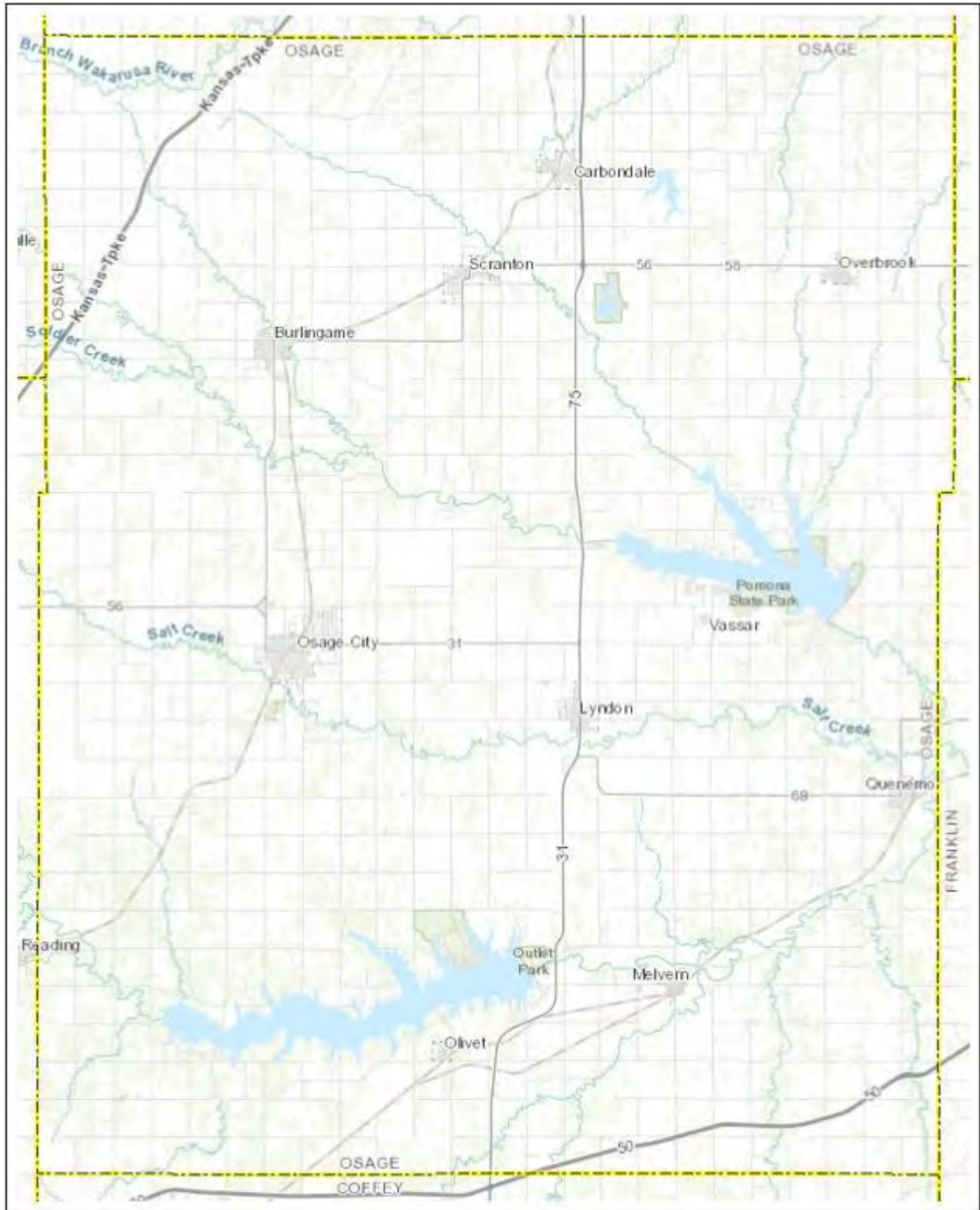


*Kansas Region J Hazard Mitigation Plan
 July 2019
 3-6*



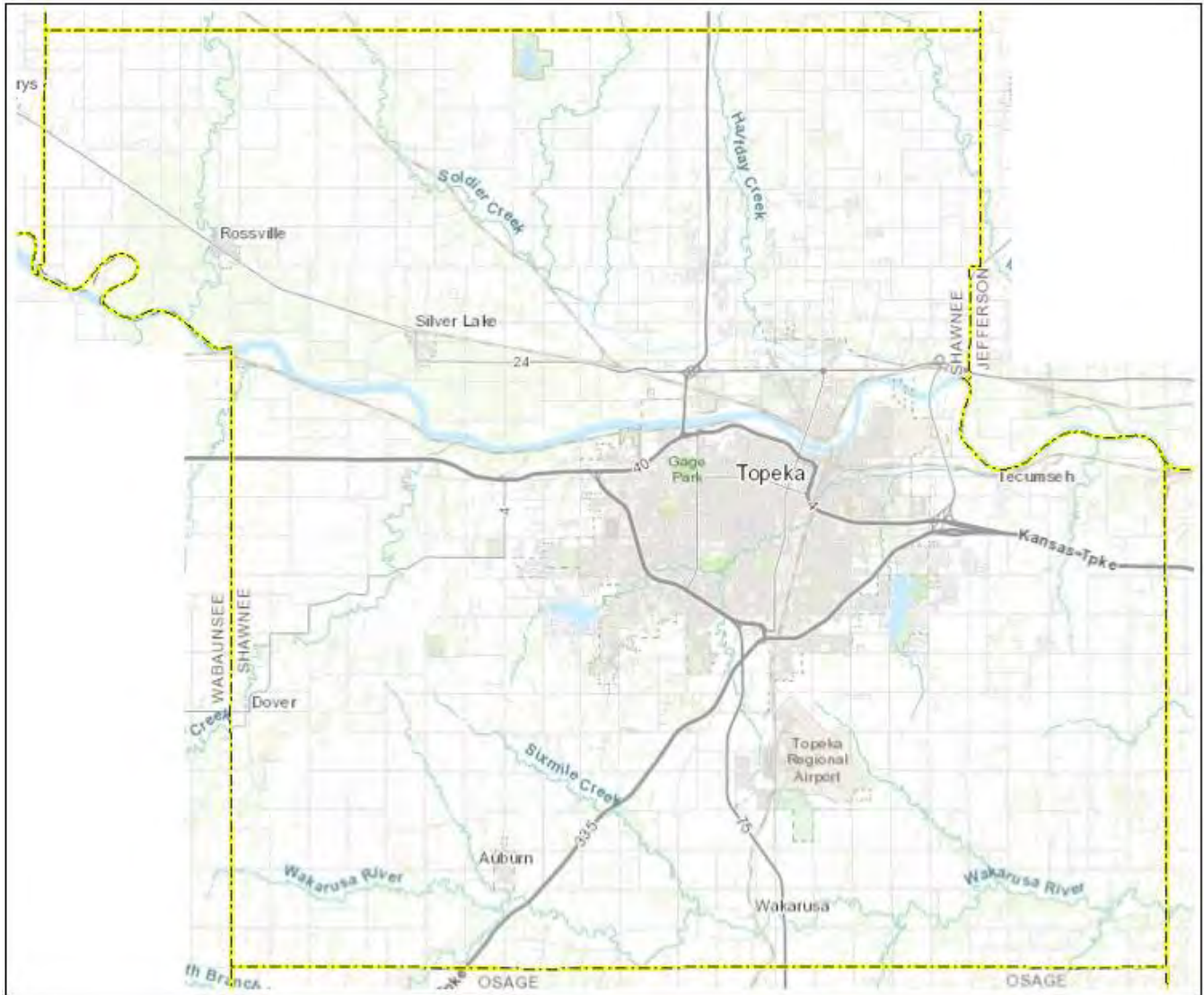
The map following map, provided by KDOT, details the locations of participating jurisdictions for Osage County:

Osage County



The map following map, provided by KDOT, details the locations of participating jurisdictions for Shawnee County:

Shawnee County



*Kansas Region J Hazard Mitigation Plan
July 2019
3-8*



3.2 – Regional Population Data

The following tables present population data for counties and participating city jurisdictions in Kansas Region J. In general, the higher a jurisdiction’s population the greater the potential vulnerability of its citizens to identified hazards.

Table 3.1: Anderson County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Anderson County	8,110	8,102	7,840	-270	-3.3%	13
City of Colony	397	408	438	41	10.3%	842
City of Garnett	3,368	3,415	3,251	-117	-3.5%	1,016
City of Greeley	327	302	296	-31	-9.5%	799
City of Kincaid	178	122	112	-66	-37.1%	224
City of Westphalia	165	163	243	78	47.3%	1,285

Source: US Census Bureau

Of note for Anderson County and its participating jurisdictions for the period 2000 to 2017:

- A slight population decline was noted in Anderson County, -3.3% as a whole
- Population gains were noted in three of the five participating cities

Table 3.2: Coffey County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Coffey County	8,865	8,601	8,328	-537	-6.1%	13
City of Burlington	2,790	2,674	2,590	-200	-7.2%	1,177
City of Gridley	372	341	317	-55	-14.8%	674
City of Lebo	961	940	821	-140	-14.6%	746
City of LeRoy	592	561	634	42	7.1%	764
City of New Strawn	425	394	385	-40	-9.4%	469
City of Waverly	589	592	655	66	11.2%	898

Source: US Census Bureau

Of note for Coffey County and its participating jurisdictions for the period 2000 to 2017:

- A population decline was noted in Coffey County, -6.1% as a whole
- Population declines were noted in four of six participating cities



Table 3.3: Franklin County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
--------------	-----------------	-----------------	-----------------	---------------------------------------	--	--

Franklin County	24,784	25,992	25,599	815	3.3%	44
City of Lane	256	225	244	-12	-4.7%	1,014
City of Ottawa	11,921	12,649	12,321	400	3.4%	1,311
City of Pomona	923	832	1,035	112	12.1%	1,380
City of Princeton	317	277	303	-14	-4.4%	923
City of Rantoul	241	184	171	-70	-29.0%	1,140
City of Richmond	510	464	593	83	16.3%	1,966
City of Wellsville	1,606	1,857	1,958	352	21.9%	1,399
City of Williamsburg	351	397	380	29	8.3%	575

Source: US Census Bureau

Of note for Franklin County and its participating jurisdictions for the period 2000 to 2017:

- A slight population increase was noted in Franklin County, 3.3% as a whole
- Population increases were noted five of seven participating cities

Table 3.4: Linn County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Linn County	9,570	9,656	9,602	32	0.3%	16
City of Blue Mound	277	275	317	40	14.4%	503
City of La Cygne	1,115	1,149	1,083	-32	-2.9%	722
City of Linn Valley	562	804	692	130	23.1%	231
City of Mound City	821	694	925	104	12.7%	712
City of Parker	281	277	585	304	108.2%	2,164
City of Pleasanton	1,387	1,216	1,260	-127	-9.2%	600
City of Prescott	280	264	280	0	0.0%	1,001

Source: US Census Bureau

Of note for Linn County and its participating jurisdictions for the period 2000 to 2017:

- A generally static population was noted in Linn County, with a 0.3% increase as a whole
- Population gains were noted in four out of seven participating cities
- The city of park saw triple digit percentage population growth (108.2%)



Kansas Region J Hazard Mitigation Plan

July 2019

3-10



Table 3.5: Miami County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Miami County	28,351	32,787	32,976	4,625	16.3%	56

City of Fontana	149	224	248	99	66.4%	294
City of Louisburg	2,576	4,315	4,347	1,771	68.8%	713
City of Osawatomie	6,645	4,447	4,325	-2,320	-34.9%	848
City of Paola	5,011	5,602	5,583	572	11.4%	1,053

Source: US Census Bureau

Of note for Miami County and its participating jurisdictions for the period 2000 to 2017:

- A population increase was noted in Miami County, 16.3% as a whole
- Population increases were noted in every participating city except Osawatomie

Table 3.6: Osage County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Osage County	16,712	16,295	15,894	-818	-4.9%	22
City of Burlingame	1,017	934	885	-132	-13.0%	994
City of Carbondale	1,478	1,437	1,423	-55	-3.7%	1,847
City of Lyndon	1,038	1,052	975	-63	-6.1%	1,175
City of Melvern	429	385	500	71	16.6%	1,422
City of Osage	3,034	2,943	2,841	-193	-6.4%	861
City of Overbrook	947	1,058	998	51	5.4%	1,815
City of Quenemo	468	388	363	-105	-22.4%	824
City of Scranton	724	710	605	-119	-16.4%	550

Source: US Census Bureau

Of note for Osage County and its participating jurisdictions for the period 2000 to 2017:

- A population decrease was noted in Osage County, -4.9% as a whole
- Population decreases were noted six out of eight participating cities

Table 3.7: Shawnee County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Shawnee County	169,871	177,934	178,392	8,521	5.0%	321
City of Auburn	1,121	1,227	1,175	54	4.8%	1,834
City of Rossville	1,014	1,151	1,211	197	19.4%	1,987
City of Silver Lake	1,358	1,439	1,537	179	13.2%	2,568
City of Topeka	122,377	127,473	127,139	4,762	3.9%	2,067



Kansas Region J Hazard Mitigation Plan

July 2019

3-11



Table 3.7: Shawnee County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
City of Willard	86	92	90	4	4.7%	818

Source: US Census Bureau

Of note for Shawnee County and its participating jurisdictions for the period 2000 to 2017:

- A population increase was noted in Shawnee County, 5.0% as a whole
- Population increases were noted all participating cities

3.3 – At-Risk Population Data

The National Response Framework defines at-risk populations as "populations whose members may have additional needs before, during, and after an incident in functional areas, including but not limited to: maintaining independence, communication, transportation, supervision, and medical care."

In general, at risk populations may have difficulty with medical issues, poverty, extremes in age, and communications due to language barriers. Several principles may be considered when discussing potentially at-risk populations, including:

- Not all people who are considered at risk are at risk
- Outward appearance does not necessarily mark a person as at risk
- The hazard event will, in many cases, affect at risk population in differing ways

The following tables present information on select potential at risk populations within each participating Region J jurisdiction, by county. This information, from the U.S. Census Bureau QuickFacts, was available for cities and towns with a population greater than 5,000 persons only. In general, the higher a jurisdiction's at-risk population the greater the potential vulnerability to identified hazards.

Table 3.8: Kansas Region J Potentially Vulnerable Population Data, Jurisdictions Over 5,000 Persons

Jurisdiction	Percentage of Population 5 and Under (2017)	Percentage of Population 65+ (2017)	Percentage of Population Speaking Language Other Than English (2017)	Percentage of Population Living Below Poverty Level (2017)	Persons with a Disability, Under the Age of 65 (2017)
--------------	---	-------------------------------------	--	--	---

Anderson County	6.1%	21.6%	1.9%	13.3%	10.0%
Coffey County	5.3%	20.9%	1.1%	10.2%	10.0%
Franklin County	6.3%	16.4%	1.9%	10.5%	9.0%
City of Ottawa	6.0%	13.2%	2.3%	15.8%	10.3%
Linn County	5.5%	22.1%	0.6%	14.1%	13.9%
Miami County	5.9%	16.5%	1.6%	7.3%	7.6%
City of Paola	7.2%	22.8%	3.1%	12.2%	8.9%



Kansas Region J Hazard Mitigation Plan
July 2019
3-12



Table 3.8: Kansas Region J Potentially Vulnerable Population Data, Jurisdictions Over 5,000 Persons

Jurisdiction	Percentage of Population 5 and Under (2017)	Percentage of Population 65+ (2017)	Percentage of Population Speaking Language Other Than English (2017)	Percentage of Population Living Below Poverty Level (2017)	Persons with a Disability, Under the Age of 65 (2017)
Osage County	5.6%	19.4%	1.6%	11.7%	11.8%
Shawnee County	6.4%	17.6%	8.2%	11.7%	9.9%
City of Topeka	7.2%	16.3%	10.5%	16.7%	11.4%

Source: US Census Bureau

Of note for Kansas Region J and its participating jurisdictions:

- Regionally, 5.9% of the total population is under the age of 5, below the State of Kansas average of 6.6%.
- Regionally, 19.2% of the total population is over the age of 65, above the State of Kansas average of 15.4%.
- Regionally, 2.4% of the total population speak a language other than English at home, below the State of Kansas average of 11.5%.
- Regionally, 11.3% of the total population live below the poverty line, above the State of Kansas average of 8.8%.
- Regionally, 10.3% of persons under the age of 65 have an identified disability, below the State of Kansas average of 11.9%.

3.4 – Regional Housing Data

Closely tracking population data, but tending to lag population changes, housing data is a good indicator of changing demographics and growth. Over the period 2000 to 2017 the majority of Kansas Region J has been experiencing a yearly increase in housing stock. In general, the higher a jurisdiction's housing stock, the higher the hazard vulnerability.

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Anderson County	3,596	3,720	3,743	4.1%	6	10.3%
City of Colony	186	192	200	7.5%	384	28.0%
City of Garnett	1,597	1,591	1,700	6.4%	531	6.2%
City of Greeley	144	152	147	2.1%	397	16.3%
City of Kincaid	92	95	77	-16.3%	154	2.6%
City of Westphalia	75	77	103	37.3%	545	15.5%

Table 3.9: Anderson County Housing Data

Source: US Census Bureau

Of note for Anderson County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Anderson County, 4.1% as a whole
- Housing gains were noted in four of the five participating cities



*Kansas Region J Hazard Mitigation Plan
July 2019
3-13*



Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Coffey County	3,876	3,946	4,056	4.6%	6	10.4%
City of Burlington	1,277	1,296	1,305	2.2%	593	8.4%
City of Gridley	168	174	174	3.6%	370	6.9%
City of Lebo	387	422	408	5.4%	371	10.5%
City of LeRoy	-	269	296	10.0%	357	15.9%
City of New Strawn	164	173	170	3.7%	207	3.5%
City of Waverly	262	274	304	16.0%	417	8.2%

Table 3.10: Coffey County Housing Data

Source: US Census Bureau
-: No Data

Of note for Coffey County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Coffey County, 4.6% as a whole
- Housing gains were noted in all participating cities

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Franklin County	10,229	11,147	11,213	9.6%	19	9.9%
City of Lane	105	112	143	36.2%	594	17.5%
City of Ottawa	5,080	5,518	5,645	11.1%	601	6.7%
City of Pomona	380	383	447	17.6%	596	30.4%
City of Princeton	118	121	127	7.6%	387	25.2%
City of Rantoul	91	82	78	-14.3%	520	32.1%
City of Richmond	187	189	205	9.6%	680	17.6%
City of Wellsville	666	780	765	14.9%	546	2.5%
City of Williamsburg	161	159	187	16.1%	283	16.0%

Table 3.11: Franklin County Housing Data

Source: US Census Bureau

Of note for Franklin County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Franklin County, 9.6% as a whole
- Housing gains were noted in seven of the eight participating cities



*Kansas Region J Hazard Mitigation Plan
July 2019
3-14*



Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Linn County	4,720	5,446	5,558	17.8%	9	16.1%
City of Blue Mound	136	125	209	53.7%	332	10.0%
City of La Cygne	507	517	535	5.5%	357	19.1%
City of Linn Valley	415	697	494	19.0%	165	22.5%
City of Mound City	354	351	473	33.6%	364	7.8%
City of Parker	109	115	223	104.6%	825	22.9%
City of Pleasanton	617	607	797	29.2%	380	15.9%
City of Prescott	124	125	144	16.1%	515	11.8%

Table 3.12: Linn County Housing Data

Source: US Census Bureau

Of note for Linn County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Linn County, 17.8% as a whole
- Housing gains were noted in all participating cities

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Miami County	10,984	13,190	13,473	22.7%	23	4.4%
City of Fontana	67	84	105	56.7%	125	22.9%
City of Louisburg	1,026	1,718	1,781	73.6%	292	1.6%
City of Osawatomie	1,947	1,891	1,769	-9.1%	347	3.4%
City of Paola	2,009	2,344	2,378	18.4%	449	0.0%

Table 3.13: Miami County Housing Data

Source: US Census Bureau

Of note for Miami County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Miami County, 22.7% as a whole
- Housing gains were noted in three of the four participating cities

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Osage County	7,018	7,503	7,553	7.6%	10	10.9%
City of Burlingame	481	501	452	-6.0%	508	11.5%
City of Carbondale	617	637	642	4.1%	833	4.5%
City of Lyndon	453	464	408	-9.9%	492	4.2%
City of Melvern	202	184	217	7.4%	617	14.7%
City of Osage	1,303	1,359	1,429	9.7%	433	6.0%
City of Overbrook	387	448	462	19.4%	840	3.5%
City of Quenemo	192	178	181	-5.7%	411	37.6%
City of Scranton	289	297	267	-7.6%	243	12.4%

Table 3.14: Osage County Housing Data

Source: US Census Bureau



Of note for Osage County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Osage County, 7.6% as a whole
- Housing declines were noted in three participating cities
- Housing gains were noted in four participating cities

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Shawnee County	73,768	79,140	79,858	8.3%	144	2.6%
City of Auburn	400	492	526	31.5%	821	1.5%
City of Rossville	411	448	422	2.7%	693	2.1%
City of Silver Lake	568	601	582	2.5%	973	0.0%
City of Topeka	56,435	59,582	60,255	6.8%	980	2.9%
City of Willard	50	48	32	-36.0%	291	21.9%

Table 3.15: Shawnee County Housing Data

Source: US Census Bureau

Of note for Shawnee County and its participating jurisdictions for the period 2000 to 2017:

- A small housing gain was noted in Shawnee County, 8.3% as a whole
- Housing gains were noted in four of the five participating cities

3.5 – Regional Property Valuations

This section quantifies the built environment exposed to potential hazards in Kansas Region J. The following tables provide monetary value of structures, by category and where available, for each county in Kansas Region J. This information was derived from inventory data associated with FEMA’s loss estimation software HAZUS-4.0. HAZUS classifies building stock types into multiple categories including residential, commercial, industrial, agriculture, government, and education. Values associated with each of these categories reflect 2010 valuations, the latest available HAZUS data.

In addition to the population information presented above, this information forms the basis of the vulnerability and risk assessment presented in this plan. This information was derived from inventory data associated with FEMA’s loss estimation software HAZUS.

Table 3.16: Kansas Region J Property Valuations, Residential, Commercial and Industrial

County	Residential	Commercial	Industrial
Anderson	\$658,316,000	\$124,150,000	\$40,269,000
Coffey	\$761,724,000	\$140,804,000	\$23,877,000
Franklin	\$2,225,978,000	\$343,011,000	\$141,541,000
Linn	\$948,957,000	\$130,801,000	\$34,312,000
Miami	\$3,028,856,000	\$359,699,000	\$129,281,000
Osage	\$1,425,639,000	\$152,698,000	\$17,331,000
Shawnee	\$15,966,710,000	\$2,920,933,000	\$566,856,000



Table 3.17: Kansas Region J Property Valuations, Agriculture, Government and Education

County	Agriculture	Government	Education
Anderson	\$20,567,000	\$8,700,000	\$14,749,000
Coffey	\$23,491,000	\$10,733,000	\$76,067,000
Franklin	\$31,327,000	\$19,070,000	\$37,196,000
Linn	\$14,359,000	\$11,982,000	\$14,101,000
Miami	\$30,922,000	\$12,256,000	\$87,882,000
Osage	\$23,767,000	\$13,191,000	\$28,181,000
Shawnee	\$54,315,000	\$315,624,000	\$261,391,000

Table 3.18: Kansas Region J Total Property Valuations

County	Total
Anderson	\$879,410,000
Coffey	\$1,053,574,000
Franklin	\$2,853,762,000
Linn	\$1,172,469,000
Miami	\$3,706,416,000
Osage	\$1,695,650,000
Shawnee	\$20,465,546,000

3.6 – Critical Facility Data

A critical facility is essential in providing utility or direction either during the response to an emergency or during the recovery operation, with facilities determined from jurisdictional feedback. The following are examples of critical facilities and assets:

- Communications facilities
- Emergency operations centers
- Fire stations
- Government buildings
- Hospitals and other medical facilities
- Police stations

Details concerning critical facilities have been deemed as sensitive information, and as such their specific information is not contained in the body of this HMP, but is included in the restricted from public view Appendix D.

3.7 – Unified School Districts, Colleges and Universities

Each participating county is served by multiple Unified School Districts (USDs), with these USDs providing educational coverage for each participating jurisdiction. The following table presents participating USD enrollment information, the number of school structures, and the insured valuation of these structures and contents within (if information is available).





Table 3.19: Participating USD Information

School District	Estimated Enrollment (2018)	Number of Offices and Schools (2018)	Total Insured Valuation of Structures (2018)
Anderson County			
USD #365 - Garnett	1,028	7	\$65,000,000
USD #479 - Crest	215	2	\$2,000,000
Coffey County			
USD #243 - Lebo /Waverly	428	5	\$19,000,000
USD #244 - Burlington	220	5	\$60,000,000
USD #245 - LeRoy / Gridley	221	4	\$13,930,000
Franklin County			
USD #287 - West Franklin	618	-	-
USD #288 - Central Heights	555	-	-
USD #289 - Wellsville	785	-	-
USD #290 - Ottawa	2,422	-	-
Linn County			
USD #344 - Pleasanton	369	7	-
USD #346 - Mound City	595	9	-
USD #362 - Prairie View	891	9	-
Miami County			
USD #230 – Spring Hill	3,988	-	-
USD #367 - Osawatomie	1,149	13	-
USD #368 - Paola	2,057	10	-
USD #416 - Louisburg	1,730	10	-
Osage County			
Three Lakes Educational Cooperative	-	2	\$957,927
USD #420 - Osage City	726	3	\$38,163,200
USD #421 - Lyndon	455	-	-
USD #434 - Santa Fe Trail	1,041	-	-
USD #454 - Burlingame	296	-	-
USD #456 - Marias Des Cygnes Valley	215	2	\$12,400,000
Shawnee County			
USD #321 - Kaw Valley	1,136	7	-
USD #345 - Seaman	3,980	10	-
USD #372 - Silver Lake	725	17	-
USD #437 - Auburn / Washburn	6,327	6	-
USD #450 - Shawnee Heights	3,524	18	-
USD #501 - Topeka	13,388	12	-

Source: Kansas State Department of Education and Participating USD

-: Information unavailable

The following table presents participating college and university enrollment information, the number of school structures, and the insured valuation of these structures and contents within (if information is available).

-



Table 3.20: Participating College and University Information

School District	Estimated Enrollment (2018)	Number of Offices and Schools (2018)	Total Insured Valuation of Structures (2018)
Shawnee County			
Washburn University	6,636	32	-

Source: Participating College or University

-: Information unavailable

3.8 – Regional Land Use

In general, land use is determined by three major types of regulation, zoning ordinances, floodplain ordinances and building code requirements.

- 2017 Kansas Statutes, KS Stat § 12-741 (2017): This act is enabling legislation for the enactment of planning and zoning laws and regulations by cities and counties for the protection of the public health, safety and welfare, and is not intended to prevent the enactment or enforcement of additional laws and regulations on the same subject which are not in conflict with the provisions of this act.
- 2012 Kansas Statutes, Chapter 19 Counties and County Officers, Article 33 Flood Control: Allows cities and counties to develop stormwater management and flood control projects and programs, provide local funding, and enter into agreements with other agencies to develop and use flood control works.
- The Kansas State Legislature has not implemented a statewide building code, nor does it require comprehensive planning by local governments.

These three types of regulations can assist in preventing the following:

- Unrestricted residential growth which can increase a population’s exposure to identified hazard prone areas
- Rapid, unchecked development that can put a strain on a community’s vulnerable resources such as its energy infrastructure
- Residential development constructed quickly and inexpensively to meet consumer demand that often lacks long term mitigation measures and resiliency
- Rapid development under pressure to meet consumer demand can alter the landscape in ways affecting urban runoff, drainage, or other environmental considerations which have drastic effects on floodplains

Information on relevant codes and ordinances may be found in Section 5 of this HMP.

3.9 – Regional Land Cover

The 2016 USGS land cover map illustrates land usage. As indicated by the following maps, large areas

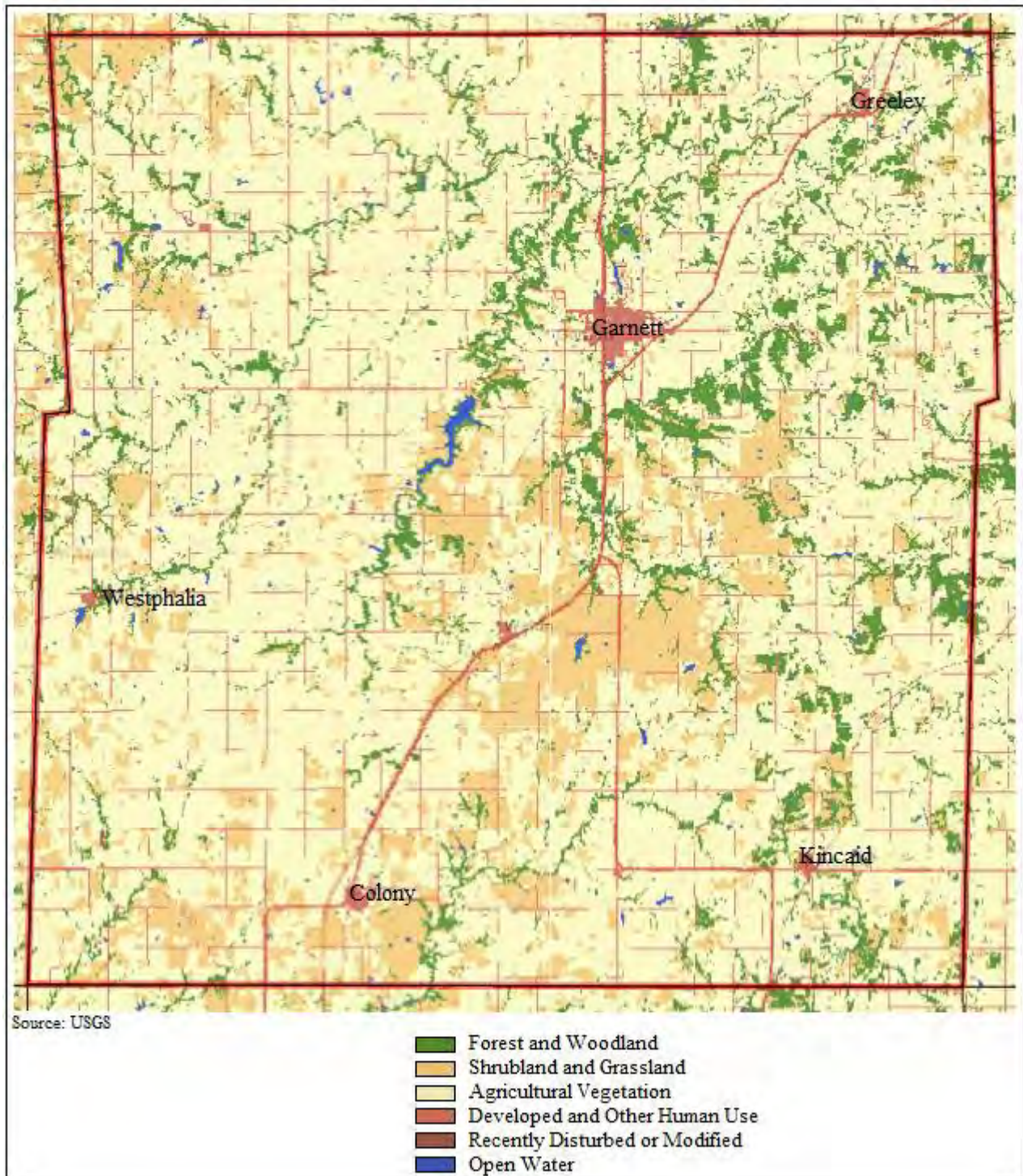
of the region are grasslands and cultivated crops. Additionally, each county has at least one area of low to high intensity development corresponding with larger cities.



Kansas Region J Hazard Mitigation Plan
July 2019
3-19



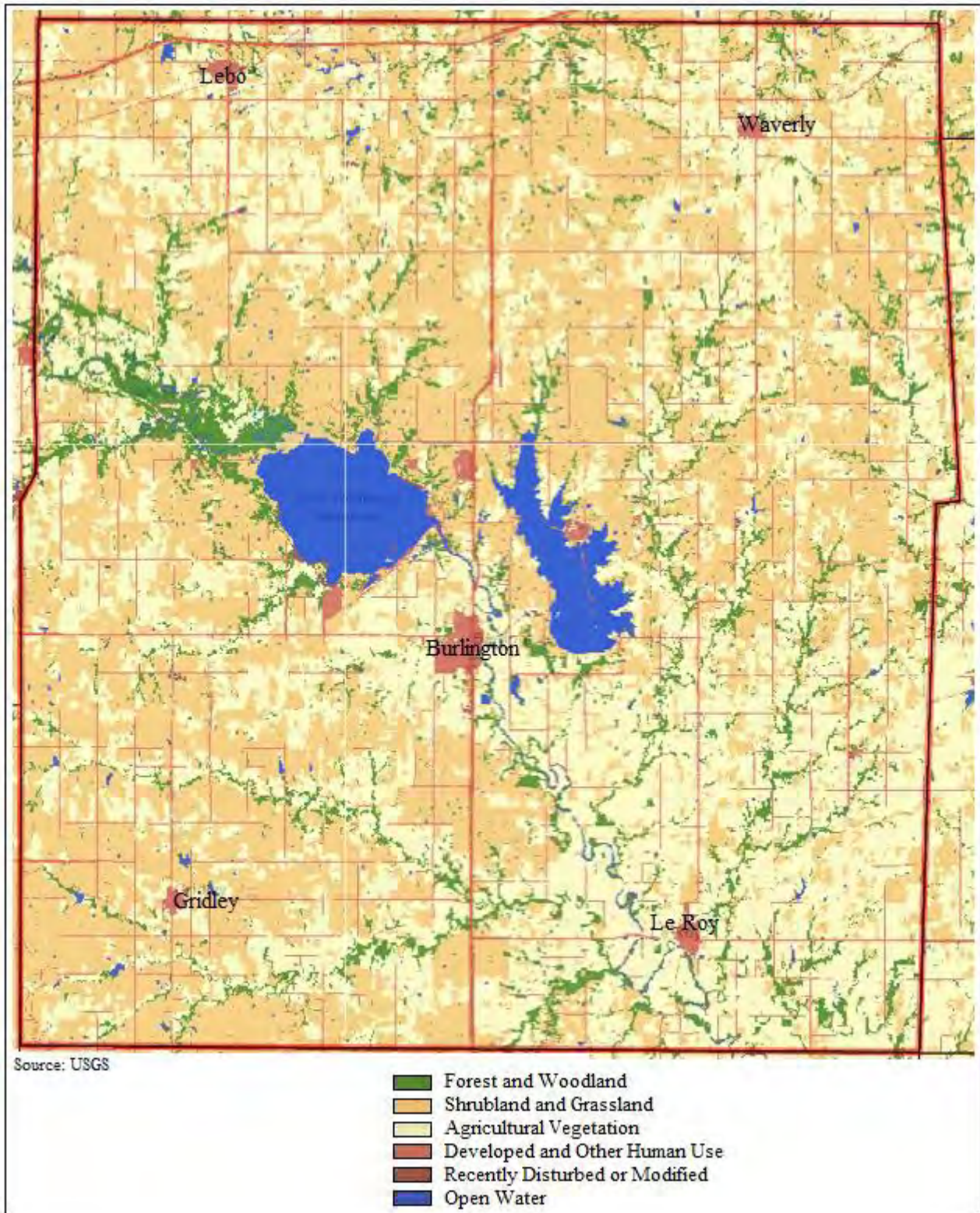
Anderson County Land Cover Map



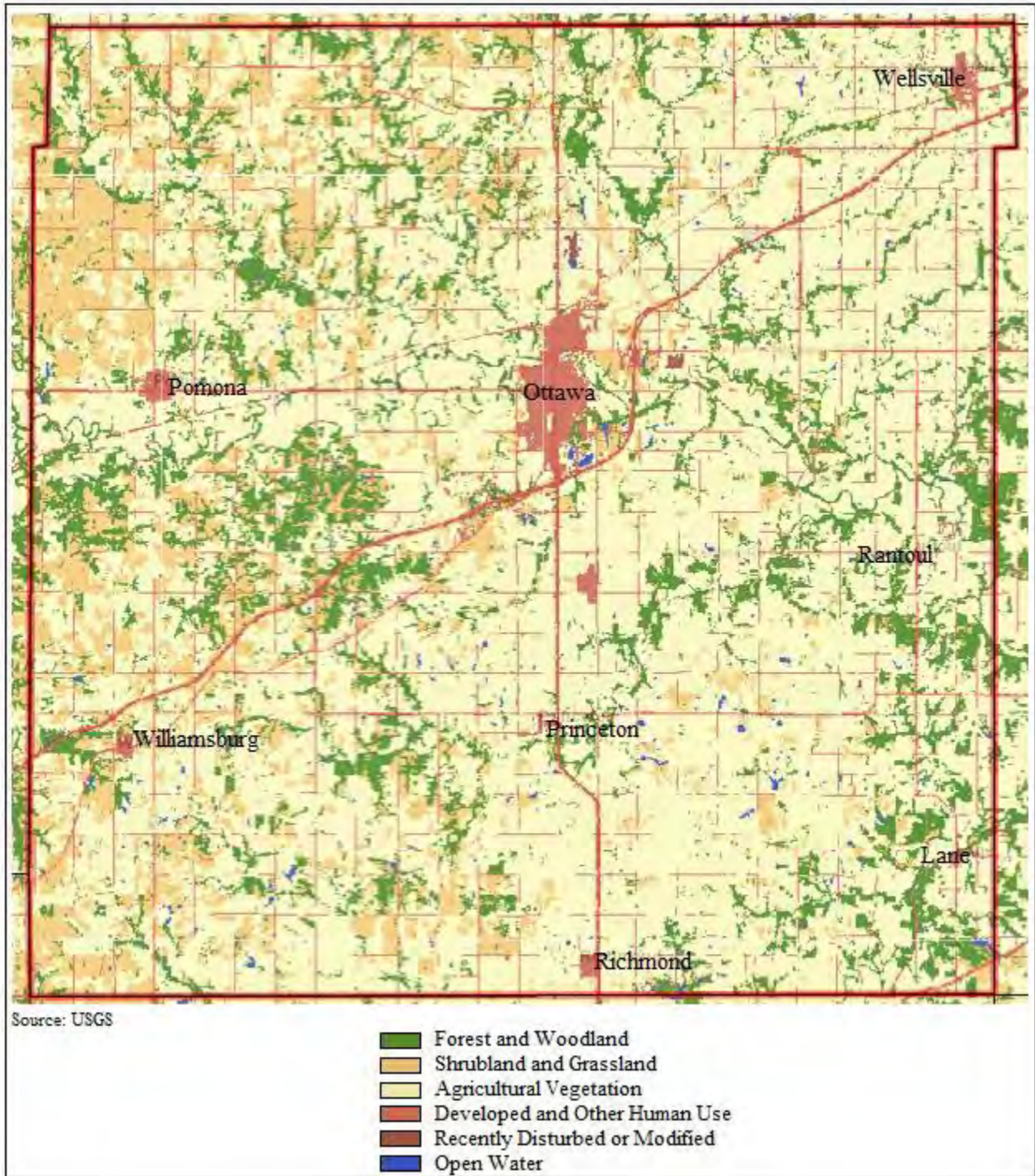
Kansas Region J Hazard Mitigation Plan
 July 2019
 3-20



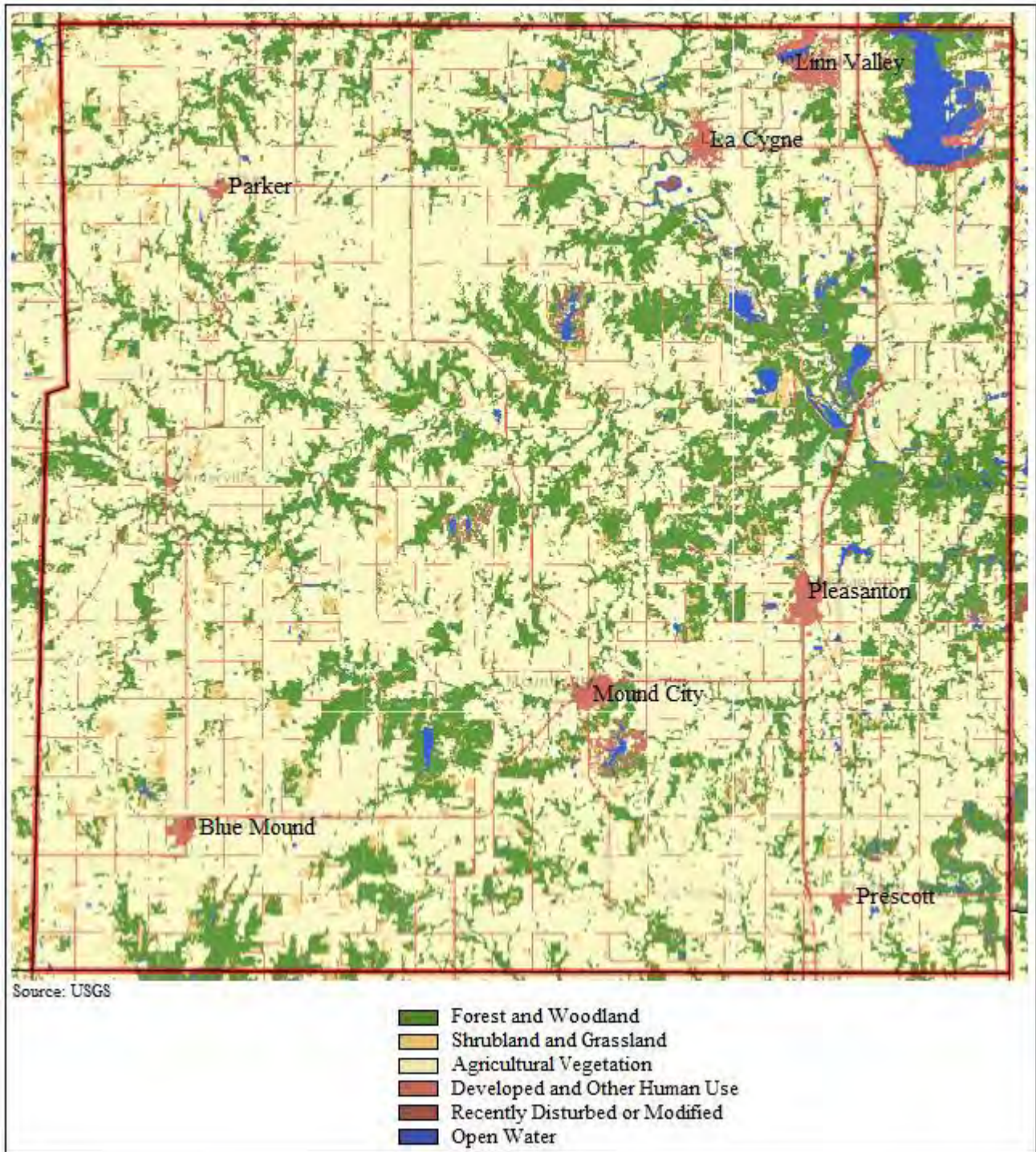
Coffey County Land Cover Map



Franklin County Land Cover Map



Linn County Land Cover Map



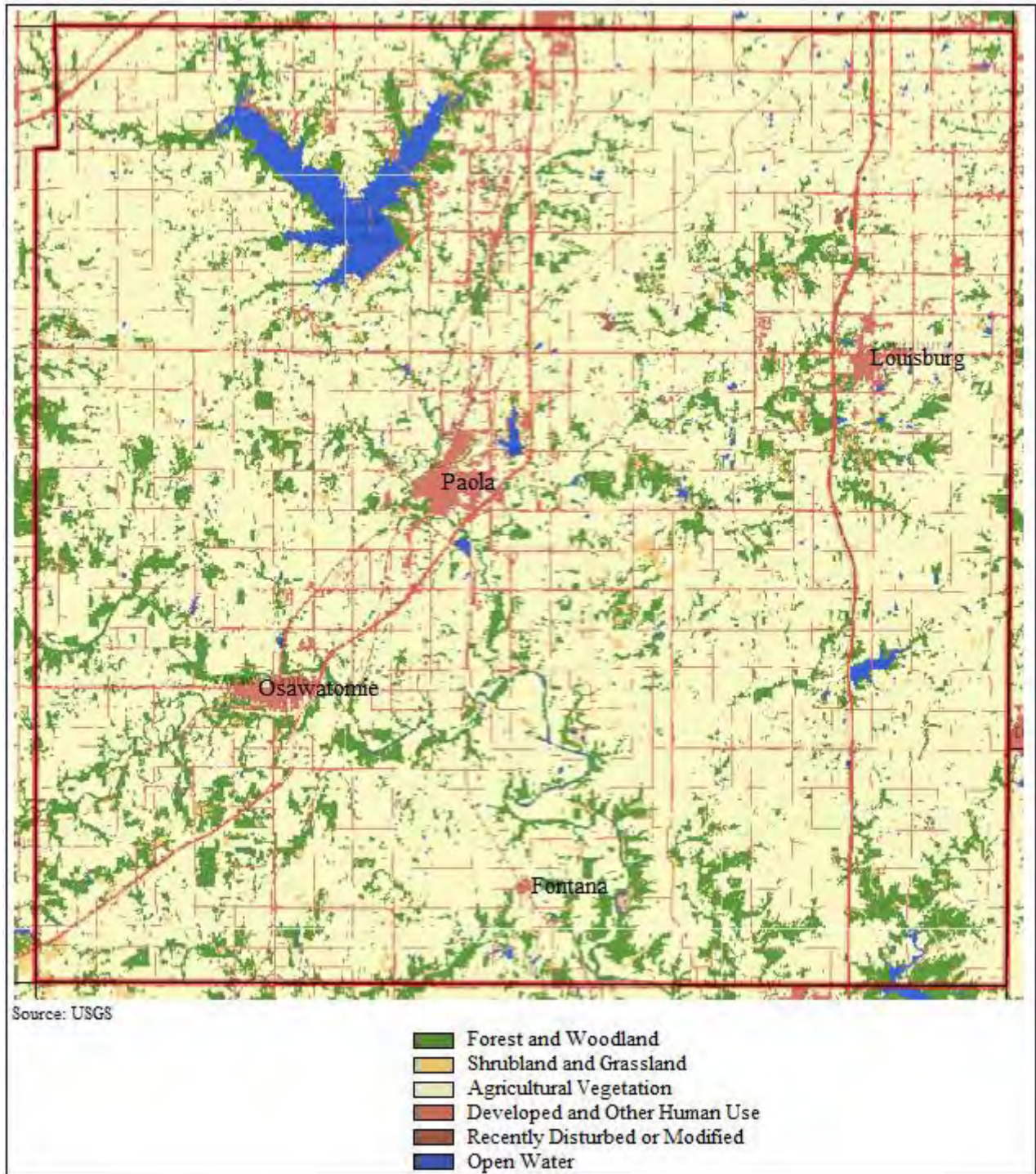
Kansas Region J Hazard Mitigation Plan

July 2019

3-23



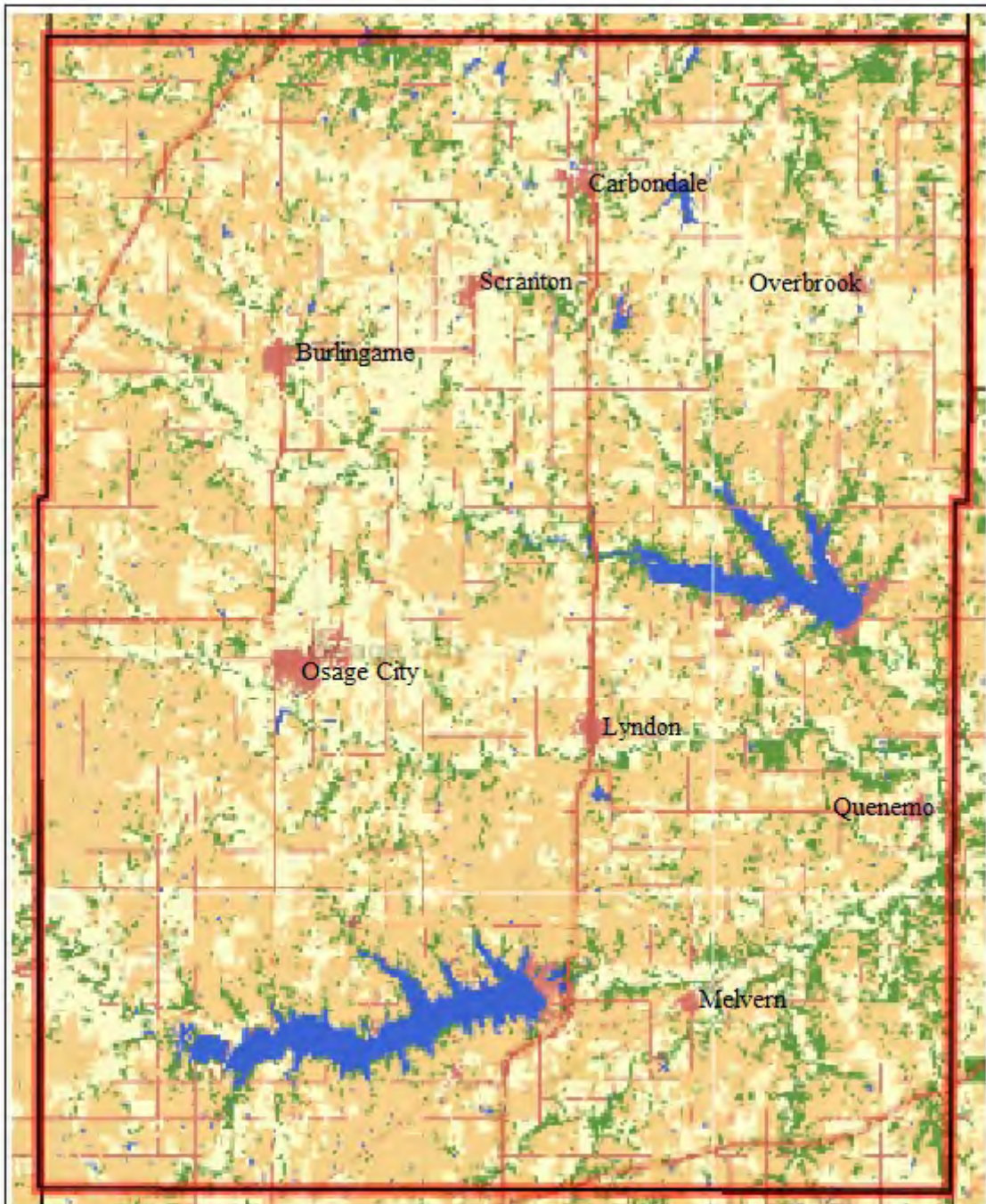
Miami County Land Cover Map



Kansas Region J Hazard Mitigation Plan
 July 2019
 3-24



Osage County Land Cover Map



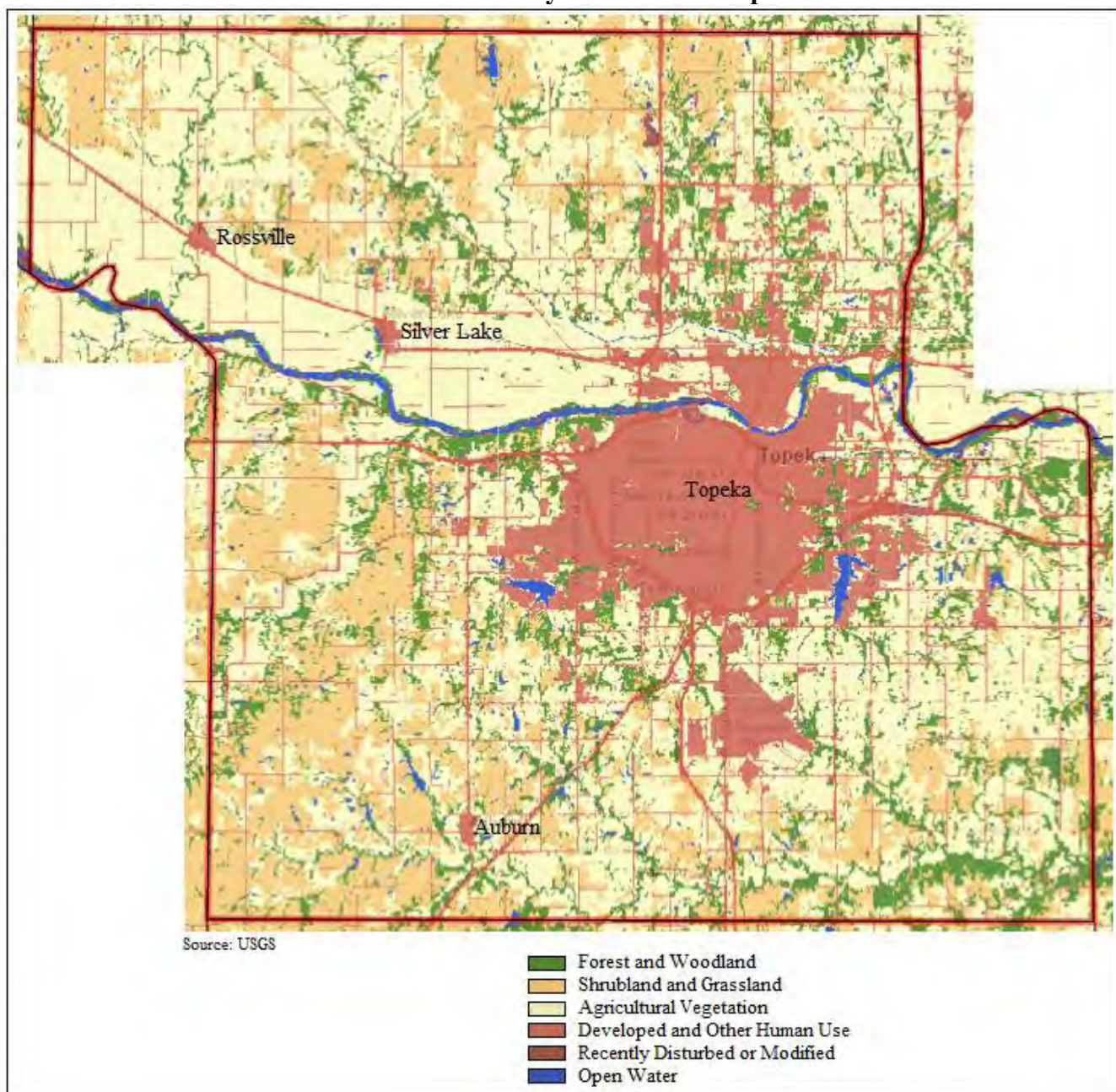
Source: USGS

- Forest and Woodland
- Shrubland and Grassland
- Agricultural Vegetation
- Developed and Other Human Use
- Recently Disturbed or Modified
- Open Water





Shawnee County Land Cover Map



3.10 – Regional Agricultural Data

Agriculture is a major component of the economy of Kansas. According to the Kansas Department of Agriculture, Agriculture is the largest economic driver in Kansas, valued at nearly \$67.5 billion and accounting for 44.5 percent of the state's total economy. In Kansas, there are 46,137,295 acres of farmland, which accounts for 88 percent of all Kansas land.





The following tables present information from the USDA National Agricultural Statistics Service 2017 Census of Agriculture (the latest available data) relating to farm totals and agricultural acreage, livestock (cattle, hogs and pigs), and agricultural market value for Kansas Region J.

Table 3.21: Kansas Region J Farm Data, 2017 Census of Agriculture

Jurisdiction	Number of Farms	Farm Acreage	Cropland Acreage	Pasture and Other Usage Acreage
Anderson	611	364,522	242,149	122,373
Coffey	699	386,279	218,978	167,301
Franklin	1,020	355,436	222,549	132,887
Linn	864	302,064	156,904	145,160
Miami	1,400	295,774	181,564	114,210
Osage	1,042	439,560	252,612	186,948
Shawnee	847	201,662	126,486	75,176

Source: United States Department of Agriculture National Agricultural Statistics Service

Table 3.22: Kansas Region J Farm Data, 2017 Census of Agriculture

Jurisdiction	Cattle	Beef Cattle	Milk Cattle	Hogs	Sheep	Chicken Layers
Anderson	39,110	18,214	721	(D)	1,243	1,526
Coffey	36,472	14,382	230	78	618	666
Franklin	55,763	18,004	1,125	10,956	435	2,328
Linn	37,443	20,800	384	132	720	2,551
Miami	40,025	22,694	7	584	447	3,770
Osage	37,088	19,635	170	185	243	1,110
Shawnee	15,239	(D)	(D)	112	132	1,769

Source: United States Department of Agriculture National Agricultural Statistics Service

(D): Data not reported due to privacy concerns

Table 3.23: Kansas Region J Farm Data, 2017 Census of Agriculture

Jurisdiction	Total Agricultural Commodity Sales	Crop Sales	Animal Sales
Anderson	\$108,777,000	\$80,868,000	\$27,909,000
Coffey	\$71,692,000	\$46,874,000	\$24,818,000
Franklin	\$140,884,000	\$75,773,000	\$65,112,000
Linn	\$60,276,000	\$41,143,000	\$19,133,000
Miami	\$71,799,000	\$53,030,000	\$18,769,000
Osage	\$92,401,000	\$66,913,000	\$25,488,000
Shawnee	\$49,156,000	\$39,209,000	\$9,947,000

Source: United States Department of Agriculture National Agricultural Statistics Service

3.11 – Regional Development Trends

44 CFR 201.6 (c)(2)(ii)(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas

Future development speaks to the potential impacts of land use and demographic changes in hazard prone areas. Data in this section is based on the best available data but is speculative as future conditions are

44 CFR 201.6 (c)(2)(ii)(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas



Kansas Region J Hazard Mitigation Plan
 July 2019
 3-27



subject to numerous unpredictable factors. While past trends are used to inform the discussion, previous historical trends are no guarantee of future conditions.

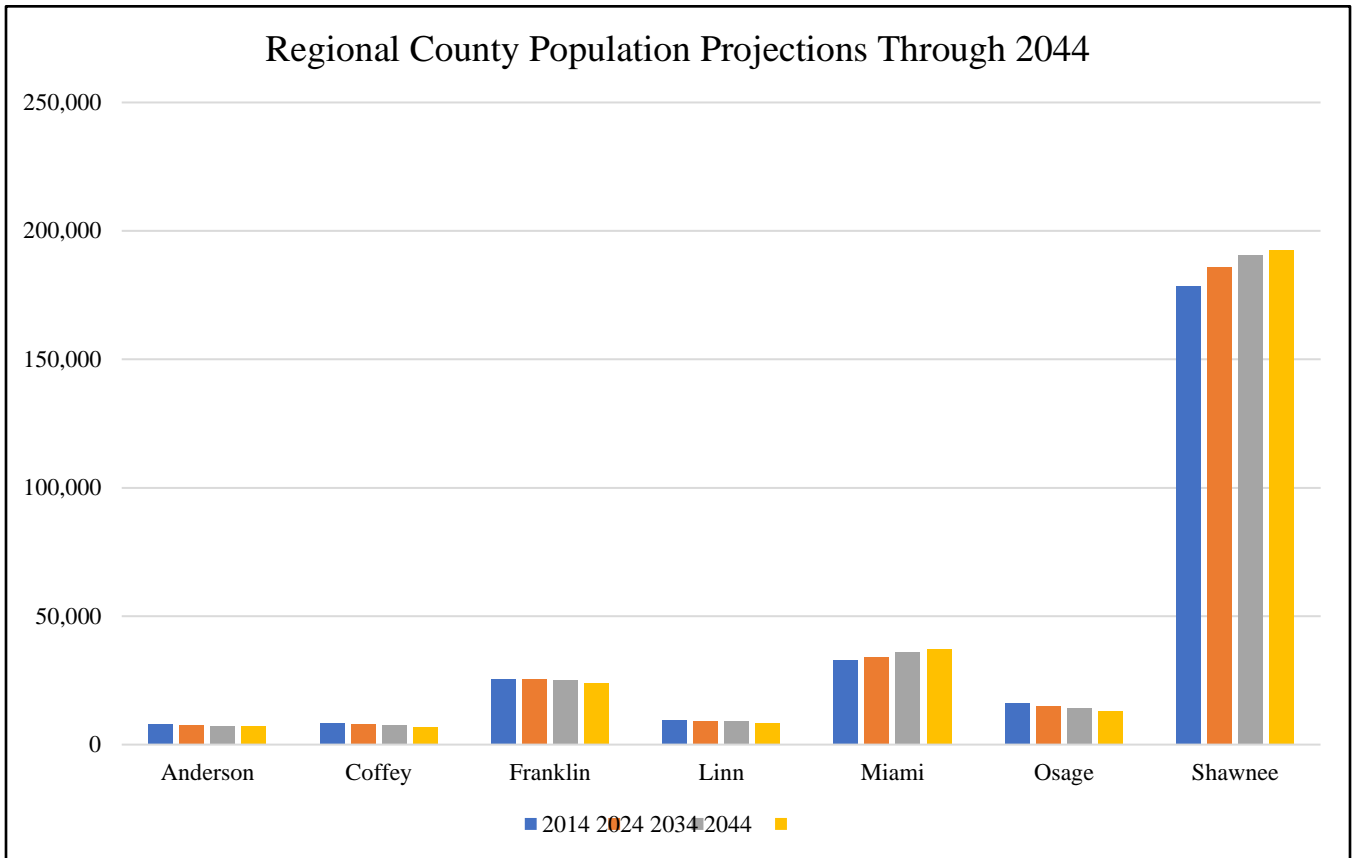
The University of Kansas Institute for Policy and Social Research developed population projections for the region using historical and trend data. Indications are the region will experience a steady decrease in the population through the year 2044.

Table 3.24: Kansas Region J Population Projections Through 2044

County	2014	2024	2034	2044	Projected Growth Percentage Through 2044
Anderson	7,883	7,647	7,433	7,153	-9.30%
Coffey	8,433	8,015	7,586	6,935	-17.80%
Franklin	25,611	25,658	25,171	24,055	-6.10%
Linn	9,502	9,205	8,953	8,552	-10.00%
Miami	32,822	34,216	35,907	36,978	12.70%
Osage	15,936	15,165	14,270	13,144	-17.50%
Shawnee	178,406	185,833	190,714	192,718	8.00%

Source: University of Kansas Institute for Policy and Social Research

The following chart illustrates the above data.



Kansas Region J Hazard Mitigation Plan
July 2019
3-28



US Census Bureau data was used to develop housing projections for the region using historical and trend data. Indications are the region will experience steady to static growth in housing through the year 2051.

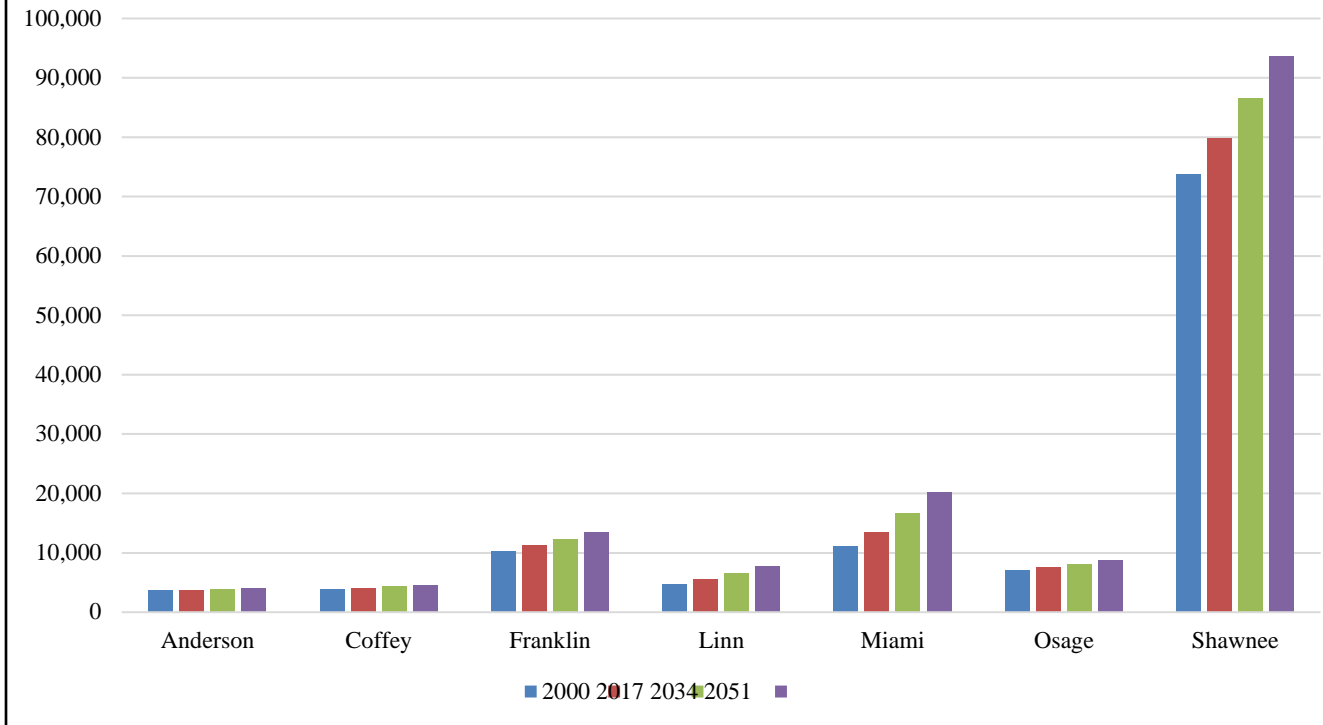
Table 3.25: Kansas Region J Housing Projections Through 2051

County	2000	2017	2034	2051	Projected Growth Percentage Through 2051
Anderson	3,596	3,743	3,896	4,056	4.1%
Coffey	3,876	4,056	4,243	4,438	4.6%
Franklin	10,229	11,213	12,289	13,469	9.6%
Linn	4,720	5,558	6,547	7,713	17.8%
Miami	10,984	13,473	16,531	20,284	22.7%
Osage	7,018	7,553	8,127	8,745	7.6%
Shawnee	73,768	79,858	86,486	93,665	8.3%

Source: US Census Bureau

The following chart illustrates the above data.

Regional County Projected Housing Growth Through 2051



FEMA’s loss estimation software HAZUS data was used to developed property valuation projections for the region using historical and trend data. Indications are the region will experience steady growth in the property valuation through the year 2030.



Kansas Region J Hazard Mitigation Plan
July 2019
3-29



County	2006	2012	2018	2024	2030	Projected Growth Percentage Through 2030
Anderson	\$724,879,000	\$879,410,000	\$1,066,884,195	\$1,294,324,473	\$1,570,250,876	21.3%
Coffey	\$917,660,000	\$1,053,574,000	\$1,209,618,130	\$1,388,773,851	\$1,594,464,204	14.8%
Franklin	\$2,242,302,000	\$2,853,762,000	\$3,631,962,846	\$4,622,373,594	\$5,882,862,394	27.3%
Linn	\$926,558,000	\$1,172,469,000	\$1,483,645,445	\$1,877,408,960	\$2,375,678,377	26.5%
Miami	\$2,967,974,000	\$3,706,416,000	\$4,628,584,875	\$5,780,192,494	\$7,218,323,996	24.9%
Osage	\$1,375,800,000	\$1,695,650,000	\$2,089,859,662	\$2,575,716,336	\$3,174,526,389	23.2%
Shawnee	\$16,434,512,000	\$20,465,546,000	\$25,485,306,353	\$31,736,306,468	\$39,520,543,104	24.5%
Leno	\$724,879,000	\$879,410,000	\$1,066,884,195	\$1,294,324,473	\$1,570,250,876	21.3%
Rice	\$917,660,000	\$1,053,574,000	\$1,209,618,130	\$1,388,773,851	\$1,594,464,204	14.8%
Gowick	\$2,242,302,000	\$2,853,762,000	\$3,631,962,846	\$4,622,373,594	\$5,882,862,394	27.3%
Minor	\$926,558,000	\$1,172,469,000	\$1,483,645,445	\$1,877,408,960	\$2,375,678,377	26.5%

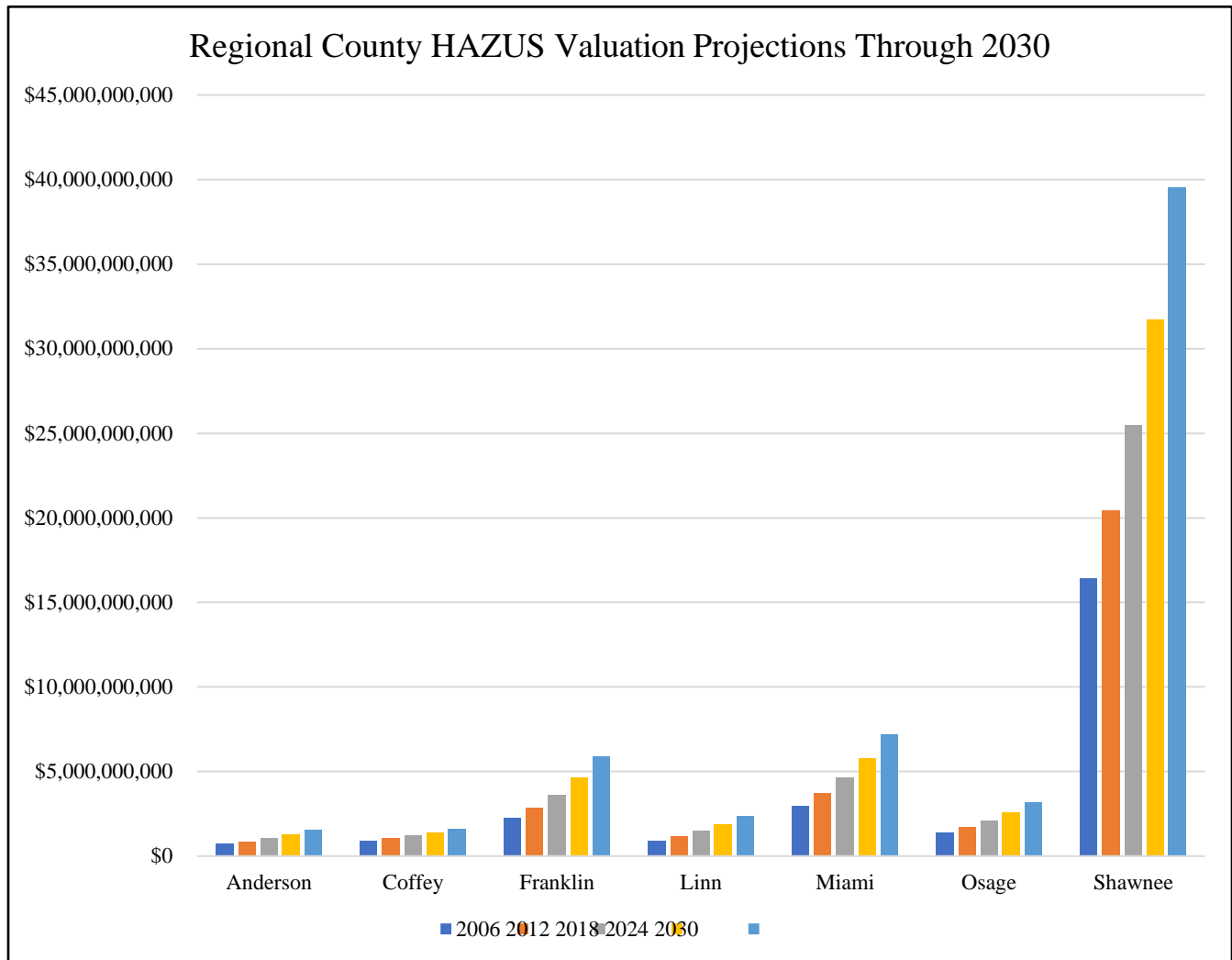
Table 3.26: Kansas Region J Property Valuation Projections Through 2030

Source: HAZUS

The following chart illustrates the above data.



*Kansas Region J Hazard Mitigation Plan
July 2019
3-30*



The United States Department of Agriculture (USDA) National Agricultural Statistics Service data was used to develop agricultural projections for the region using historical and trend data. Indications are the region will experience a steady increase in the number of farms through the year 2037.



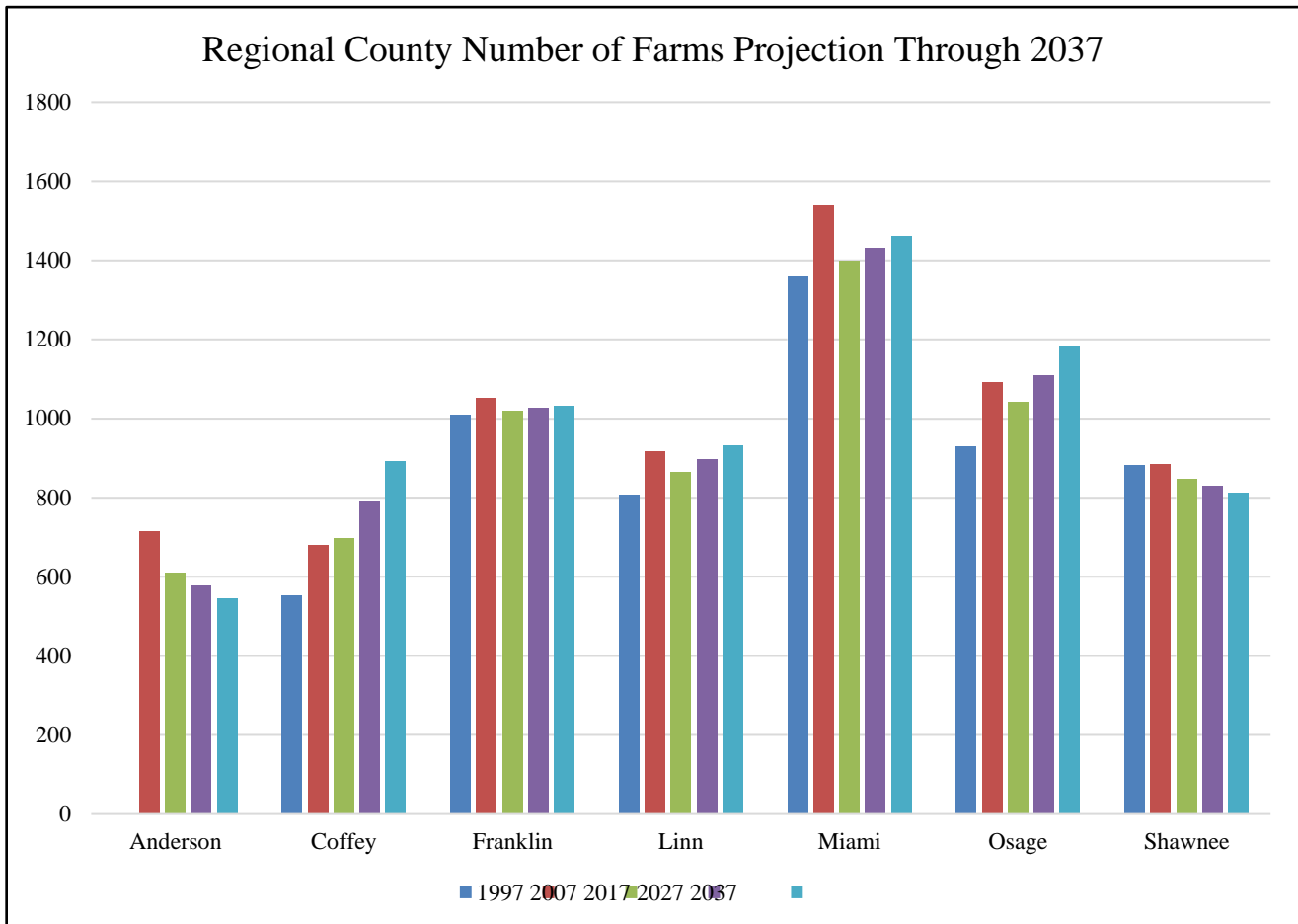
Kansas Region J Hazard Mitigation Plan



Table 3.27: Kansas Region J Number of Farms Data Projections Through 2037

County	Number of Farms, 1997	Number of Farms, 2007	Number of Farms, 2017	Number of Farms, 2027	Number of Farms, 2037	Projected Growth Percentage Through 2037
Anderson	690	715	611	578	546	-5.5%
Coffey	553	681	699	789	891	12.9%
Franklin	1,009	1,051	1,020	1,026	1,032	0.6%
Linn	808	918	864	897	932	3.9%
Miami	1,358	1,538	1,400	1,430	1,461	2.1%
Osage	929	1,092	1,042	1,110	1,181	6.5%
Shawnee	883	885	847	830	813	-2.0%

Source: United States Department of Agriculture National Agricultural Statistics Service



The following chart illustrates the above data.





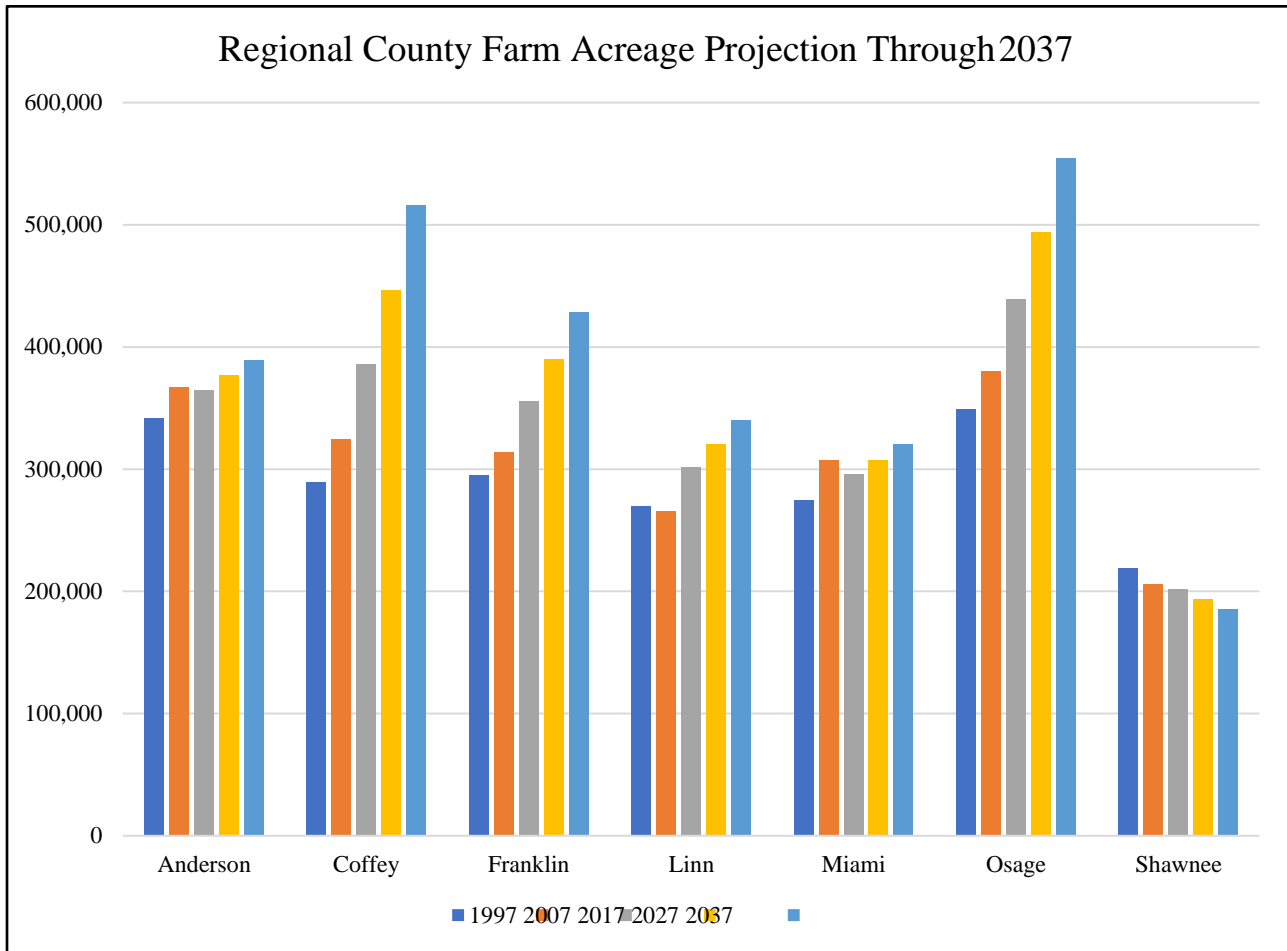
USDA National Agricultural Statistics Service data indicates the region will experience steady increase in farm acreage through the year 2037.

Table 3.28: Kansas Region J Farm Acreage Data Projections Through 2037

County	Farm Acreage, 1997	Farm Acreage, 2007	Farm Acreage, 2017	Farm Acreage, 2027	Farm Acreage, 2037	Projected Growth Percentage Through 2037
Anderson	342,015	367,192	364,522	376,614	389,106	3.3%
Coffey	289,436	324,827	386,279	446,434	515,957	15.6%
Franklin	295,065	313,546	355,436	390,310	428,607	9.8%
Linn	270,106	265,319	302,064	320,304	339,646	6.0%
Miami	274,617	307,083	295,774	307,811	320,339	4.1%
Osage	348,848	380,156	439,560	493,628	554,346	12.3%
Shawnee	219,019	206,243	201,662	193,541	185,746	-4.0%

Source: United States Department of Agriculture National Agricultural Statistics Service

The following chart illustrates the above data.



USDA National Agricultural Statistics Service data indicates the region will experience steady increase in the number of cattle through the year 2037.

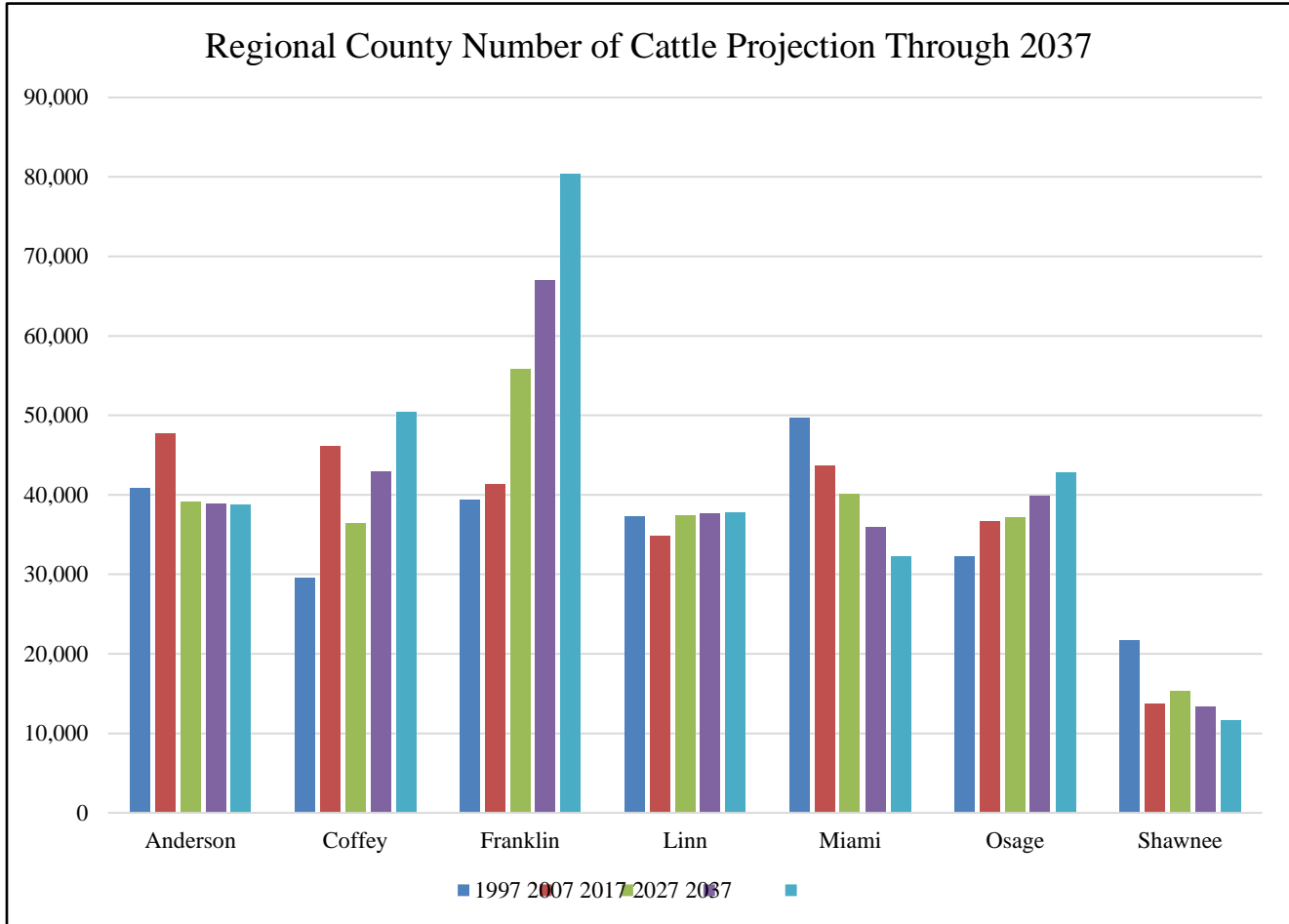
Table 3.29: Kansas Region J Total Cattle Data Projections Through 2037

County	Cattle, 1997	Cattle, 2007	Cattle, 2017	Cattle, 2027	Cattle, 2037	Projected Growth Percentage Through 2037
Anderson	40,799	47,714	39,110	38,898	38,687	-0.5%
Coffey	29,568	46,132	36,472	42,869	50,388	17.5%
Franklin	39,311	41,293	55,763	66,939	80,355	20.0%
Linn	37,322	34,826	37,443	37,598	37,753	0.4%
Miami	49,660	43,635	40,025	35,941	32,274	-10.2%
Osage	32,264	36,693	37,088	39,833	42,782	7.4%

Shawnee	21,665	13,692	15,239	13,296	11,600	-12.8%
---------	--------	--------	--------	--------	--------	--------

Source: United States Department of Agriculture National Agricultural Statistics Service

The following chart illustrates the above data.



USDA National Agricultural Statistics Service data indicates the region will experience a continued increase in the market value of agricultural products through the year 2037.

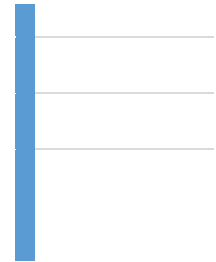
Table 3.30: Kansas Region J Agricultural Market Value Data Projections Through 2037

County	Market Value, 1997	Market Value, 2007	Market Value, 2017	Market Value, 2027	Market Value, 2037	Projected Growth Percentage Through 2037
Anderson	\$50,674,000	\$61,105,000	\$108,777,000	\$162,404,632	\$242,470,968	49.3%

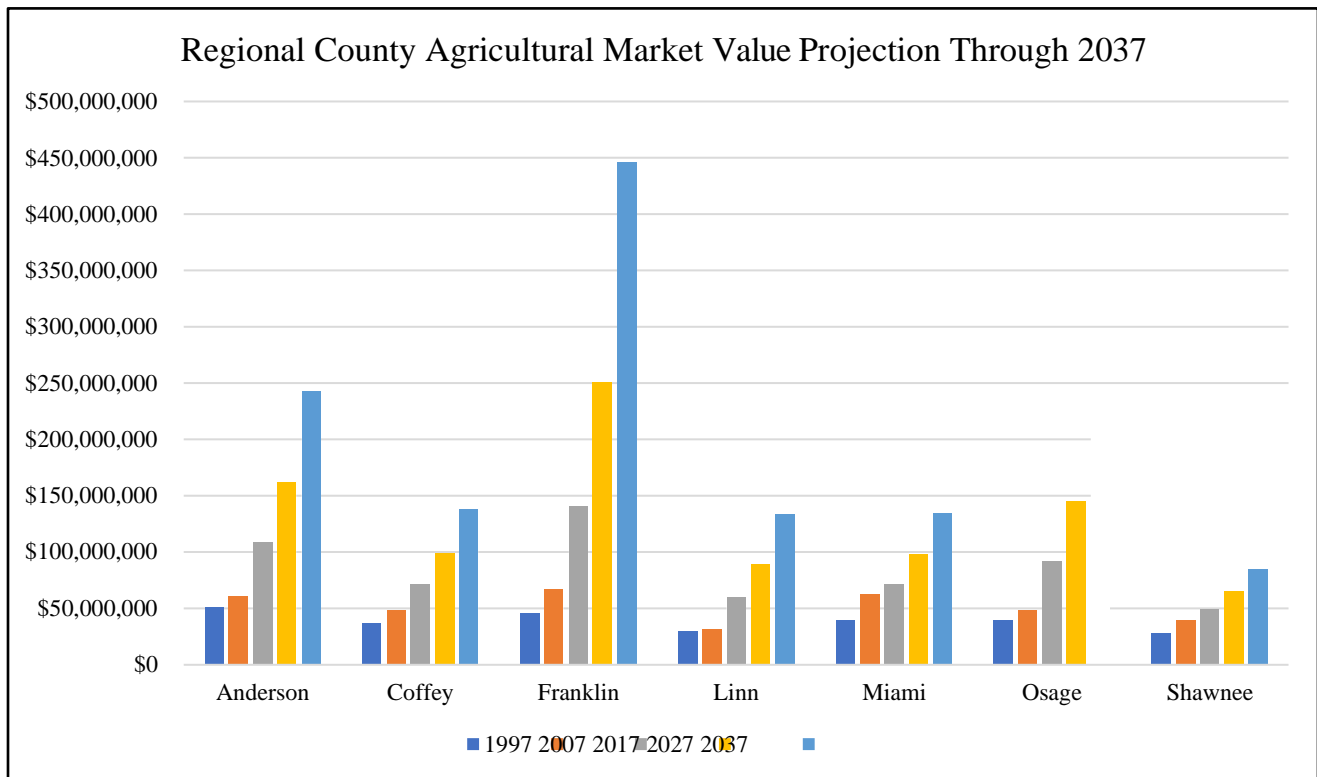
Coffey	\$37,264,000	\$48,494,000	\$71,692,000	\$99,642,263	\$138,489,378	39.0%
Franklin	\$45,994,000	\$67,209,000	\$140,884,000	\$250,594,821	\$445,740,922	77.9%
Linn	\$29,265,000	\$32,009,000	\$60,276,000	\$89,716,584	\$133,536,823	48.8%
Miami	\$39,388,000	\$62,672,000	\$71,799,000	\$98,248,880	\$134,442,576	36.8%
Osage	\$39,279,000	\$48,449,000	\$92,401,000	\$145,099,084	\$227,851,909	57.0%
Shawnee	\$28,396,000	\$39,673,000	\$49,156,000	\$64,791,601	\$85,400,593	31.8%

Source: United States Department of Agriculture National Agricultural Statistics Service

The following chart illustrates the above data.



Future development speaks to the potential impacts of land use and demographic changes in hazard prone areas. Future development data is speculative as future conditions are subject to numerous unpredictable factors. While past trends are used to inform the discussion, these historical trends are no guarantee of future conditions.





For hazards that affect the entire planning area, the predicted decrease to relatively static state in population will tend to decrease potential vulnerability. It is difficult to quantify the exact change in vulnerability, but it can be depicted as generally directly proportional to the population change itself.

For hazards that affect the entire planning area, the predicted increase in structures will tend to increase potential vulnerability. It is difficult to quantify the exact change in vulnerability, but it can be depicted as generally directly proportional to the change in the number of structures.

As indicated in the data above, the majority of Kansas Region J participating jurisdiction have seen a slight increase or steady hold in farm acreage and an increase in the market value of produced agricultural goods. These continuing agricultural gains could result in increased exposure to both natural and man-made hazards.

3.12 – Regional Economic Activity Patterns

Kansas Region J’s continued economic growth can impact future vulnerability in two ways, by location-based growth in identified hazard prone areas or by the industry type itself, as is the case with chemical manufacturing.

Gross domestic product (GDP) is a measure of the entire output of a defined economy, and roughly equals the total dollar amount of all goods and services produced within a defined area. GDP is the most comprehensive measure of economic activity and business growth. The following table, using data from the Bureau of Economic Analysis, details GDP for all Kansas Region J counties for the period 2012 to 2015 (the latest available data).

County	2012	2013	2014	2015	State Rank in 2015 (out of 105)
Anderson	\$184,893,000	\$189,806,000	\$178,815,000	\$177,944,000	71
Coffey	\$781,872,000	\$750,042,000	\$746,161,000	\$728,911,000	26
Franklin	\$804,667,000	\$820,492,000	\$808,588,000	\$803,033,000	24
Linn	\$582,393,000	\$521,158,000	\$508,209,000	\$474,549,000	34
Miami	\$659,740,000	\$676,987,000	\$670,763,000	\$691,636,000	27
Osage	\$213,512,000	\$229,521,000	\$214,409,000	\$206,819,000	64
Shawnee	\$8,879,036,000	\$8,591,934,000	\$8,447,919,000	\$8,344,022,000	4

Table 3.31: Kansas Region J Gross Domestic Product, 2012 to 2015

Source: Bureau of Economic Analysis

The following table, using data from the Bureau of Economic Analysis, details the percentage GDP change from the preceding period for 2012 to 2015 (the latest available data).

County	2013	2014	2015	State Rank in 2015 (out of 105)
Anderson	2.7%	-5.8%	-0.5%	45
Coffey	-4.1%	-0.5%	-2.3%	65
Franklin	2.0%	-1.5%	-0.7%	49
Linn	-10.5%	-2.5%	-6.6%	95

Table 3.32: Kansas Region J GDP Percentage Change from Preceding Period, 2012 to 2015



Miami	2.6%	-0.9%	3.1%	16
Osage	7.5%	-6.6%	-3.5%	74
Shawnee	-3.2%	-1.7%	-1.2%	54

Source: Bureau of Economic Analysis

The average Kansas Region J unemployment rate for March 2019 of 4.9% is higher than the average State of Kansas unemployment rate of 3.5%. The following chart details the regional unemployment rates, using data from the Kansas Department of Labor, for the months of March 2014 and March 2019.

Table 3.33: Kansas Region J Unemployment Rate, March 2014 and March 2015

County	March 2014	March 2019
Anderson	5.7%	4.1%
Coffey	4.2%	5.0%
Franklin	6.0%	4.1%
Linn	7.0%	8.2%
Miami	5.7%	4.3%
Osage	6.5%	4.6%
Shawnee	5.5%	3.9%

Source: Kansas Department of Labor

3.13 – Climate Change

For hazards related to weather patterns, climate change should be considered as it may cause significant changes in patterns and event frequency. There is a scientific consensus that climate change is occurring, and recent climate modeling results indicate that extreme weather events may become more common. Rising average temperatures produce a more variable climate system which may result in an increase in the frequency and severity of some extreme weather events, including:

- Longer and hotter heat waves
- An increased risk of wildfires
- Higher wind speeds
- Greater rainfall intensity
- Increased tornado activity.

As climate modeling improves, future plan updates should include climate change as a factor in the ranking of natural hazards as these are expected to have a significant impact on Kansas Region J communities. Where applicable, and with proper scientific evidence, potential climate change factors will be addressed in subsequent sections for relevant identified hazards.

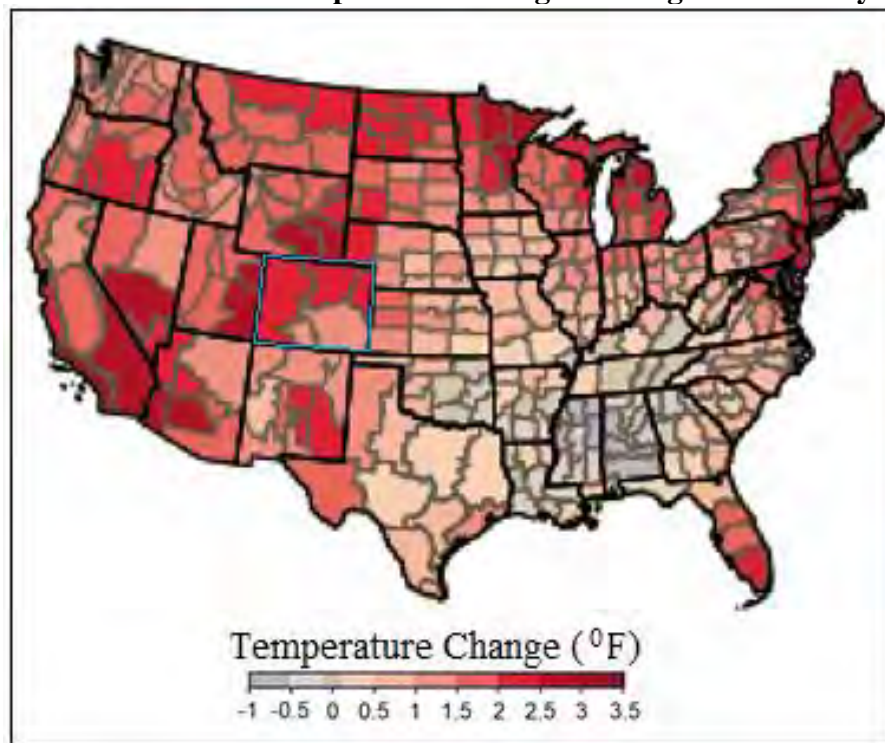
According to the United State Environmental Protection Agency (USEPA) “What Climate Change Means for Kansas” (August 2016), “In the past century, most of the state has warmed by at least half a degree

(F). The soil is becoming drier. Rainstorms are becoming more intense, and floods are becoming more severe. Warming winters and changes in the timing and size of rainfall events have altered crop yields. In the coming decades, summers are likely to become increasingly hot and dry, creating problems for agriculture and possibly human health.”



The following map, from the USEPA Climate Change Indicators in the United States, illustrates modeled temperature changes during the last century.

USEPA Modeled Temperature Changes During Last Century



Concerning potential impacts on agriculture, the report states “Rising temperatures, drier soils, and decreasing water availability are likely to present challenges for Kansas’s farms. Yields would decline by about 50 percent in fields that can no longer be irrigated. Even where ample water is available, higher temperatures would reduce yields of corn. Increased concentrations of carbon dioxide, however, may increase yields of wheat and soybean enough to offset the impact of higher temperature. Although warmer and shorter winters may allow for a longer growing season, they may also promote the growth of weeds and pests, and shorten the dormancy for many winter crops, which could increase crop losses during spring freezes. The early flowering of winter wheat could have negative repercussions on livestock farmers who depend on it for feed. Livestock themselves may also be affected by more intense heat waves and lack of water. Hot weather causes cows to eat less, grow more slowly, and produce less milk, and it can threaten their health.”

Concerning potential impacts on rainfall, flooding, and drought, the report states “Although summer droughts are likely to become more severe, floods may also intensify. During the last 50 years, the amount of rain falling during the wettest four days of the year has increased about 15 percent in the Great Plains.



Kansas Region J Hazard Mitigation Plan
July 2019
3-38



River levels associated with flooding have increased in eastern Kansas. Over the next several decades, the amount of rainfall during the wettest days of the year is likely to continue to increase, which would increase flooding.”

Concerning potential impacts on tornados, the report states “Scientists do not know how the frequency and severity of tornados will change. Rising concentrations of greenhouse gases tend to increase humidity, and thus atmospheric instability, which would encourage tornados. But wind shear is likely to decrease, which would discourage tornados. Research is ongoing to learn whether tornados will be more or less frequent in the future. Because Kansas experiences about 100 tornados a year, such research is closely followed by meteorologists in the state.”

Concerning potential impacts on human health, the report states “By 2050, Kansas is likely to have four times as many days above 100°F. Certain people are especially vulnerable, including children, the elderly, the sick, and the poor. The elderly may be particularly prone to heat stress and other heat-related health problems, including dehydration, cardiovascular strain, and respiratory problems. Those with low incomes may be particularly vulnerable due to a lack of air conditioning. Power failures due to severe weather can also present risks, especially in lightly populated areas where access to the necessary support services may be limited.”



Kansas Region J Hazard Mitigation Plan
July 2019
3-39