CITY COMMISSION
WEDNESDAY, JANUARY 21, 2026 AT 11:00 AM
CITY COMMISSION CHAMBER

ORDER OF BUSINESS

CALL MEETING TO ORDER Mayor Becky Smith

MEMBERS PRESENT

Vice-Mayor Tammi Ogle
Commissioner Monica Duncan
Commissioner Erren Harter
Commissioner Kurt Steinkuhler

PROCLAMATIONS

Proclamation Recognizing Catholic Schools Week as January 25th-January 31st

Accepted by: Curtis Simons, Principal, and Machelle Nuessen, 5th Grade Teacher, for Sacred Heart School and SHS 5th Grade Students

PUBLIC FORUM

The public is invited to make comments at this time. Please limit comments to two (2) minutes each. Please state your name and address prior to making comments.

NEW BUSINESS

1) **Resolution No. 3786 Adopting the 2025 KS Region I Local Hazard Mitigation Plan**

Presented by: Mark Detter, Deputy City Manager

Recommended Action: Approve Resolution No. 3786 adopting Kansas Region I Local Hazard Mitigation Plan

2) **N.R.Hamm Quarry, Inc. Contract**

Presented by: Mark Detter, Deputy City Manager

Recommended Action: Approve N.R. Hamm Quarry, Inc's. request to allow Allied Waste System, Inc, a subsidiary of Republic Services, to fulfill the contact commitment for solid waste/recycling hauling services to expire at the end of 2026

COMMUNICATIONS

Presented by Trey Cocking, City Manager.

1) Financials & Permits

CONSENT AGENDA

Presented by Trey Cocking, City Manager.

1) Commission Meeting Minutes for January 7, 2026

INFORMATIONAL ITEMS

Presented by Trey Cocking, City Manager.

1) Informational Items

GOVERNING BODY COMMENTS

Mayor Becky Smith
Vice-Mayor Tammi Ogle
Commissioner Monica Dunca
Commissioner Erren Harter
Commissioner Kurt Steinkuhler

EXECUTIVE SESSION

1) Recess into executive session for 30 minutes, inviting pertinent city staff to discuss confidential data of a third party relating to economic development. The justification for the executive session is provided by K.S.A. 75-4319(b)(4) to protect financial affairs and trade secrets of third parties. The open meeting will resume in this room at approximately __:_____ a.m./p.m.

RECESS

Evora Wheeler Conference Room for Study Session

STUDY SESSION AGENDA ITEMS

1) Discuss Lift Station No.1
2) 2026 Street Rehab Discussion
3) Proposed Mobile Food Vendor/Unit Regulation Changes
4) Appoint FHTC Interviewing Commissioners
5) Appoint Commissioner to Rec Steering Committee
6) Discuss Visit Emporia Funding

ADJOURNMENT

PROCLAMATION

WHEREAS, each year the Archdiocese of Kansas City in Kansas designates one week during the year to highlight Catholic Schools and in 2025, the week of January 25th through January 31st: and

WHEREAS, since 1881, Emporia has had a Catholic School and today Sacred Heart Catholic School is an example that religion-based school can withstand the test of time and change; and

WHEREAS, a Catholic school education is highly valued and has played a significant role in the lives of many families; and

WHEREAS, the presence of a Catholic school in our community has proven to be an additional amenity and incentive in the education of the youth of the City of Emporia; and

WHEREAS, Sacred Heart Catholic School is proud to be where students consistently work to their full potential; and

WHEREAS, the school has open enrollment and welcomes students from other communities and other religions; and the intimate environment at Sacred Heart School affords each child personal attention and promotes individual success, self-esteem, and growth; and

WHEREAS, the legacy of Sacred Heart School will live on for many years thanks to dedicated administrators, teachers, and students as well as a very supportive community.

NOW THEREFORE, I, Becky Smith, Mayor for the City of Emporia, do hereby proclaim January 25th through January 31st, as

Celebrate Catholic Schools Week

In Emporia, Kansas.

On this 21st Day of January 2026

ATTEST:

_____
Becky Smith, Mayor

_____
Kerry Sull, City Clerk

Title:	Resolution No. 3786 for the Adoption of Kansas Region I Local Hazard Mitigation Plan Adoption
Agenda Date:	January 21, 2026
Presented By:	Mark Detter, Deputy City Manager Jarrod Fell, Lyon County Emergency Manager

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Background:

The Kansas Region 1 Local Hazard Mitigation Plan was developed with input from Region 1 Counties (including Cities within such Counties), which include Chase, Geary, Lyon, Morris, Pottawatomie, Riley, and Wabaunsee Counties. The plan was reviewed by FEMA and the Kansas Department of Emergency Management and included coordination with the Lyon County Department of Emergency Management.

Discussion:

The primary purpose of the Hazard Mitigation Plan is to make the City of Emporia eligible for federal funding for future mitigation projects. The Hazard Mitigation Plan is a thorough review of hazard risks related to severe weather, fire, floods, earthquakes and other potential hazards. The Mitigation Plan dedicates an entire section to Emporia on the risks of various hazard issues throughout the community and outlying area. The following items have been identified as specific hazard mitigation needs for the City of Emporia:

The following potential mitigation projects listed on Appendix C-30-31 of the Mitigation Plan would be considered for grant funding request:

1-Purchase Generator for various City Facilities
2-Map all infrastructure and facilities within potential failure inundation areas to assess risk
3-Upgrade/Repair existing water supply infrastructure
4-Heat/Cold Shelter
5-Continued participation in NFIP
6-Flood control projects
7-Meet requirements and join CRS program.
8-Engineering Study for Flood Mitigation at critical infrastructure and facilities.
9-Install High Wind, Hail, and fire-resistant roofing on jurisdictional facilities.
10-Construct community saferooms in select jurisdictional buildings.
11-Purchase protective window film for all jurisdictional facilities.
12-Educate residents about driving in winter storms and handling winter-related health effects
13-Create defensible space buffers at all critical facilities
14=Become Firewise Community.

Financial considerations:

The costs to adopt the plan is zero. The grant funding from FEMA could potentially fund several million dollars in projects.

Recommended action:

Approve Resolution No. 3786 adopting Kansas Region 1 Local Hazard Mitigation Plan.

Attachments:

Hazard Mitigation Plan
Resolution Adopting Hazard Mitigation Plan.

RESOLUTION NO. 3786

A RESOLUTION OF THE GOVERNING BODY OF THE CITY OF EMPORIA, KANSAS, APPROVING THE ADOPTION OF THE 2025 KANSAS REGION I LOCAL HAZARD MMITIGATION PLAN

WHEREAS, the Governing Body of the City of Emporia, Kansas, recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

WHEREAS, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and post-disaster mitigation grant programs; and

WHEREAS, the City of Emporia, Kansas, fully participated in the FEMA prescribed mitigation planning process to prepare this Multi-Hazard Mitigation Plan; and

WHEREAS, the Kansas Division of Emergency Management and FEMA Region VII officials have reviewed the 2025 Kansas Region I Local Hazard Mitigation Plan, and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, the City of Emporia, Kansas, desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the 2025 Kansas Region I Local Hazard Mitigation Plan; and

WHEREAS adoption by the City of Emporia, Kansas, demonstrates the jurisdictions' commitment to fulfilling the mitigation goals and objectives outlined in this plan, and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan.

NOW, THEREFORE, BE IT RESOLVED, the Governing Body of the City of Emporia, Kansas, adopts the 2025 Kansas Region I Local Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, the City of Emporia, Kansas, will submit this Adoption Resolution to the Kansas Division of Emergency Management and FEMA Region VII officials to enable the plan's final approval.

This Resolution shall become effective up its adoption by the City of Emporia, Kansas.

APPROVED AND ADOPTED BY THE CITY OF EMPORIA, KANSAS, this 21st day of January 2026.

ATTEST:

_____
Becky Smith, Mayor

_____
Kerry Sull, City Clerk

December 2025

Kansas Region I
Local Hazard Mitigation Plan

Encompassing:

- **Chase County**
- **Geary County**
- **Lyon County**
- **Morris County**
- **Pottawatomie County**
- **Riley County**
- **Wabaunsee County**



Prepared By:
Blue Umbrella Solutions

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List of Commonly Used Acronyms

Acronym	Meaning
EAL	Expected Annual Loss
CRS	Community Rating System
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance
GIS	Geographic Information System
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
KDEM	Kansas Division of Emergency Management
LHMP	Local Hazard Mitigation Plan
MPC	Mitigation Planning Committee
NCEI	National Centers for Environmental Information
NFIP	National Flood Insurance Program
NID	National Inventory of Dams
NOAA	National Oceanic and Atmospheric Administration
NRI	National Risk Index
NWS	National Weather Service
RAPT	Resilience Analysis and Planning Tool
RWD	Rural Water District
USDA	United States Department of Agriculture
USGS	United States Geologic Survey
WUI	Wildland/Urban Interface

Section 1 – Introduction, Assurances, Incorporation, and Adoption

1.1 Introduction

Hazard 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 Local Hazard Mitigation Plan (LHMP) 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 Kansas Region I 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 2021 LHMP
- Build for a safer future for all citizens
- Foster cooperation for planning and resiliency
- Identify, prioritize, and mitigate hazards
- Assist with sensible and effective planning and budgeting
- Educate citizens about hazards, mitigation, and preparedness
- Comply with relevant federal requirements

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 all citizens.

1.2 Assurances

In an effort to reduce natural disaster losses, the United States Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) in order to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act). DMA 2000 amended the Stafford Act by repealing the previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322). Section 322 of the DMA makes the development of a hazard mitigation plan a specific eligibility requirement for any local government applying for Federal mitigation grant funds. This LHMP was prepared to meet the requirements of the DMA 2000, as defined in regulations set forth by the Interim Final Rule (44 Code of Federal Regulations (CFR) Part 201.6).

All adopting jurisdictions certify that they will comply with all applicable Federal statutes and regulations during the periods for which they receive grant funding, in compliance with 44 CFR 13.11(c), and will amend this 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 requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, as amended by the Disaster Mitigation Act of 2000. This plan complies with all the relevant requirements of:

- Code of Federal Regulations (44 CFR) pertaining to hazard mitigation planning
- Federal Emergency Management Agency (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.

Additionally, this LHMP has been completed to address all State of Kansas recommendations and requirements concerning hazard mitigation planning and the requirements of FEMA's Local Mitigation Planning Policy Guide, including all revisions that went into effect April 11, 2025.

1.3 Authorities

The LHMP relies on the authorities given to participating jurisdictions by its citizens and encoded in local and state law. This plan is intended to be consistent with all policies and procedures that govern activities related to the mitigation programing and planning. In all cases of primacy, State of Kansas and local laws, statutes, and policies will supersede the provisions of the plan.

1.4 Participating Jurisdictions

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 was required to meet detailed participation requirements, which included the following:

- Participation in planning meetings
- Provision of information to support the plan development
- Identification of relevant mitigation actions
- Review and comment on plan drafts
- Fostering the public input process
- Formal adoption of the plan

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

Table 1: Kansas Region I Adopting Jurisdictions

Jurisdiction	Planning Engagement	Name	Title
Chase County	**x**	**Scott Wiltse**	**Emergency Manager**
Cedar Point	x	Dow Wilson	City
Cottonwood Falls	x	Scott Gumpforty	City Manager
Elmdale	x	Theresa Simmons	Mayor
Matfield Green	x	Teresa Talkington	City Council Member
Strong City	x	Yvonne Kirk	Office Manager
USD #284 – Chase County	x	Aaron Doty	Superintendent
Public Wholesale Water Supply District #26	x	Matt Markley	Operator
Rural Water District (RWD)	x	Matt Markley	Operator
Flint Hills Rural Electric Cooperative	x	Travis Griffin	Member Service Manager
4 Rivers Electric	x	Curtis Peterson	Manager of Operations
Geary County	**x**	**Garry Berges**	**Emergency Management Director**
Grandview Plaza	x	Janet Young	City Clerk
Junction City	x	Kim Zimmerman	City Manager
Milford	x	Tim Himelick	City Clerk
Cloud County Community College	x	Jennifer Zabokrtsky	Director- Geary Co Campus
USD #475 – Geary County	x	Karl DeArmond	Chief Operating Officer
RWD #1	x	Cliff White	Operator
RWD #4	x	Jeremie Myers	P.W. Director
RWD #4 – Dwight	x	John Niehues	Superintendent
Bluestem Electrical Cooperative	x	Trice Watts	Manager of Operations

Table 1: Kansas Region I Adopting Jurisdictions

Jurisdiction	Planning Engagement	Name	Title
DS&O Electric Cooperative	x	Craig Augustine	Ops Project Manager
Flint Hills Rural Electric Cooperative	x	Travis Griffin	Service Manager
4 Rivers Electric Cooperative	x	Curtis Peterson	Manager of Operations
Lyon County	**x**	**Jarrod Fell**	**Emergency Manager**
Admire	x	Wendy Linsey	City Clerk
Allen	x	Tammy Hopper	City Clerk
Americus	x	Janis Smart	City Clerk
Bushong	x	Renee Penn	City Clerk
Emporia	x	Trey Cocking	City Manager
Hartford	x	Chris Botterill	City Clerk
Neosho Rapids	x	Haley Rhoads	City Clerk
Olpe	x	Joyce Wilson	City Clerk
Reading	x	Carol Ann Higgins	City Clerk
Emporia State University	x	Jennifer Millburn	Emergency Manager
Flint Hills Technical College	x	Caron Daugherty	President
USD #251 – North Lyon County	x	Robert Blair	Superintendent
USD #252 – Southern Lyon County	x	Ryan Muhlig	Superintendent
USD #253 - Emporia	x	Dr. Allison Harder	Superintendent
Coffey County RWD 2	x	Mike Riley	Operations Manager
RWD 1	x	Jonathan Seimears	Operations Manager
RWD 2	x	Jonathan Seimears	Operations Manager
RWD 3	x	Matt Brinkman	Operations Manager
RWD 4	x	Jaime Seimears	Operations Manager
RWD 5	x	Jonathan Seimears	Operations Manager
Flint Hills Rural Electric Cooperative	x	Travis Griffin	Member Service Manager
4 Rivers Electric Cooperative	x	Zach Peak	Supervisor
Morris County	**x**	**Brett Samuels**	**Emergency Manager**
Council Grove	x	Nick Jones	City Administrator
Dwight	x	Pam Goss	Mayor
White City	x	Ryan Young	Mayor
Wilsey	x	Jeff Falter	Mayor
USD #417 – Morris County	x	Tyson Eslinger	Superintendent
USD #481 – Rural Vista	x	Darlene Griffiths	Superintendent
Diamond Creek Watershed Joint District #61	x	Ben Barr	Director
Lyon Creek Watershed	x	George Poland	Director
Rock Creek Watershed Joint District #84	x	George Shellenberger	Director
RWD	x	Steve Euler	Director
DS&O Electric Cooperative	x	Craig Augustine	Ops Project Manager
Flint Hills Rural Electric Cooperative	x	Travis Griffin	Member Service Manager
4 Rivers Electric	x	Curtis Peterson	Manager of Operations
Pottawatomie County	**x**	**Jennifer Merrow**	**Emergency Manager**
Belvue	x	James Horack	Mayor
Emmett	x	Michelle Newman	City Clerk
Havensville	x	Stacy Rempe	City Clerk
Louisville	x	Bobby Benton	Mayor
Olsburg	x	Jeannie Johnson	City Clerk
Onaga	x	Sarah McKinsey	City Clerk
St. George	x	Elizabeth Wagoner	City Clerk
St Mary’s	x	Maurice Cordell	City Manager
Wamego	x	Stacey Eichem	City Manager
Westmoreland	x	Waide Purvis	Mayor
Wheaton	x	Terry Force	Mayor

Table 1: Kansas Region I Adopting Jurisdictions

Jurisdiction	Planning Engagement	Name	Title
USD #320 – Wamego	x	Scott Meitler	Asst Superintendent
USD #321 – Kaw Valley	x	Kerry Lacock	Superintendent
USD #322 – Onaga / Havensville / Wheaton	x	Cathi Wilson	Superintendent
USD #323 – Rock Creek	x	Joan Simoneau	Superintendent
USD #384 – Blue Valley	x	Caitlin Combest	Principal
RWD #2	x	Marcelino Albuerne	Manager
RWD #3	x	Stacy Rempe	Manager
RWD #4	x	Keith Murphy	Manager
Bluestem Electric COOP	x	Trice Watts	Manager of Operations
Nemaha-Marshall Electric Cooperative	x	Kathleen O'Brien	General Manager
Riley County	**x**	**Laurie Harrison**	**Emergency Manager**
Leonardville	x	Deandra Anderson	City Clerk
Manhattan	x	Scott French	Fire Chief
Ogden	x	Angela Schnee	City Clerk
Randolph	x	Patricia Booth	City Clerk
Riley	x	Josie Bulk	City Clerk
Kansas State University	x	Rickie Blume	Emergency Manager
USD #378 – Riley County	x	Erin Flair	Superintendent
USD #383 – Manhattan / Ogden	x	Michele Jones	Director of Health and Safety
USD #384 – Blue Valley	x	Rex Boley	Superintendent
Bluestem Electric COOP	x	Mike Morton	Operations Manager
Flint Hills Rural Electric Cooperative	x	Travis Griffin	Member Service Manager
Sunflower Electric	x	Tyler Norris	Operations Manager
Wabaunsee County	**x**	**Amy Terrapin**	**Emergency Manager**
Alma	x	Ken Smith	Mayor
Alta Vista	x	Ryan Armbrust	Mayor
Eskridge	x	Terry Cook	Mayor
Harveyville	x	Dustin Kuntz	Mayor
Maple Hill	x	Casey Cain	Mayor
McFarland	x	Ron Nehring	Mayor
Paxico	x	Lisa McCue	Mayor
USD #329 – Wabaunsee Schools	x	Dr. Troy Pitsch	Superintendent
USD #330 – Mission Valley	x	Bill Clark	Superintendent
RWD #1	x	Philip Todd	Manager
RWD #2	x	Greg Dekat	Assistant Manager
Tri-County Drainage District	x	Doyle Pearl	Board Member
Bluestem Electric COOP	x	Jerod Chaffee	Manager of Operations
Flint Hills Rural Electric Cooperative	x	Travis Griffin	Member Service Manager
4 Rivers Electric Cooperative	x	Curtis Peterson	Manager of Operations

1.5 Hazard Mitigation Plan Incorporation and Integration

This hazard mitigation plan is an overarching document that is both comprised of, and contributes to, various county and local codes, plans, reports, and studies. The integration of these can provide the following community benefits:

- Align community goals, objectives, and prime concerns
- Avoid lost opportunities
- Eliminate duplication of effort

Kansas Region I and participating jurisdictions will continue to actively work on incorporating elements of this hazard mitigation plan into any relevant plan, code or ordinance revision or creation. Whenever possible, participating

jurisdiction will use existing plans, policies, procedures, and programs to aid in the implementation of identified hazard mitigation actions.

On a local level, hazard mitigation plans can be integrated into various planning documents and initiatives to ensure a comprehensive and coordinated approach to reducing the impact of hazards. Local level plans where hazard mitigation strategies will be integrated, as and when appropriate, include:

- **General Plans:** Helps guide long term community development to ensure future resilience against identified hazards.
- **Threat and Hazard Identification and Risk Assessment:** Utilizes information from the LHMP to understand the specific threats and hazards that may impact the community. This informs the development of strategies and resource allocation for emergency management capabilities, ensuring that the community is well-prepared to respond effectively.
- **Comprehensive Land-Use Plans:** Helps guide the development and zoning decisions in a way that minimizes vulnerability to hazards. This includes avoiding construction in high-risk areas and encouraging resilient building practices.
- **Emergency Operations Plans:** Contributes to detailing specific actions to be taken before, during, and after disasters to reduce vulnerability and enhance community resilience.
- **Transportation Plans:** Helps ensure the resilience of transportation infrastructure to hazards such as floods, and earthquakes. This may involve designing infrastructure to withstand extreme weather events.
- **Infrastructure Master Plans:** Contributes to the design, construction, and maintenance of critical infrastructure, such as water supply systems, roads, bridges, and utility networks.
- **Community Development Plans:** Helps ensure that new development projects align with hazard resilience goals. This may involve establishing building codes that prioritize hazard-resistant construction.
- **Open Space and Recreation Plans:** Provides for the consideration of green infrastructure and open spaces for flood control, wildfire buffers, and other hazard mitigation purposes.
- **School Emergency Plans:** Enhances the safety and resilience of educational facilities. This may involve retrofitting buildings, establishing evacuation routes, and conducting regular drills.
- **Public Health Preparedness Plans:** Addresses potential health risks associated with hazards. This includes planning for medical surge capacity, disease prevention, and healthcare facility resilience.

Specifically, the following detail where previous Kansas Region I LHMPs were utilized for the following jurisdictional plans:

- **Chase County:** County Emergency Operations Plan
- **Geary County:** County Emergency Operations Plan
- **Lyon County:** County Emergency Operations Plan
- **Morris County:** County Emergency Operations Plan
- **Pottawatomie County:** County Emergency Operations Plan
- **Riley County:** County Emergency Operations Plan
- **Wabaunsee County:** County Emergency Operations Plan

Integrating hazard mitigation with FEMA programs and initiatives provides many benefits to Kansas Region I participating jurisdictions. These benefits include a streamlined planning and funding process for hazard mitigation projects, enhanced community resilience from the leveraging of federal programs to create a holistic approach to resilience, broad based data sharing allowing for an improved understating of community risk, and enhanced funding opportunities where jurisdictions can leverage multiple sources of federal funding to implement hazard mitigation actions. Programs currently being integrated into the LHMP include:

National Flood Insurance Program (NFIP):

- NFIP: The NFIP is a federal program, managed by FEMA, which exists to provide flood insurance for property owners in participating communities, to improve floodplain management practices, and to develop maps of flood hazard areas.
- Community Rating System (CRS): NFIP's CRS incentivizes communities to go beyond minimum floodplain management standards to reduce flood risk. Communities earn CRS points for implementing flood hazard mitigation activities, which can result in lower flood insurance premiums for residents. Hazard mitigation planning can guide communities in adopting flood-specific measures that qualify for CRS points.
- Building Standards: NFIP policies encourage communities to adopt and enforce building standards to minimize flood damage. By integrating hazard mitigation planning, communities can identify and prioritize infrastructure improvements that meet or exceed NFIP standards, especially in areas vulnerable to flooding.
- Floodplain Management Plans: Developing comprehensive floodplain management plans as part of hazard mitigation planning can support NFIP compliance while addressing risks specific to community needs.

Hazard Mitigation Assistance (HMA) Grants

- Planning Support: FEMA's HMA grant programs provide funding for hazard mitigation plans. These plans can help identify, prioritize, and implement mitigation projects that reduce risk and align with FEMA's overall resilience goals.
- Eligible Project Types: HMA grants fund a variety of projects (e.g., retrofitting infrastructure, elevating buildings, property acquisitions) that can align with community-specific hazard mitigation goals. By aligning local hazard mitigation strategies with HMA-eligible project types, communities can maximize available funding to address critical risks.
- Funding Integration with Local Mitigation Projects: Communities can leverage HMA grants to implement local mitigation projects that align with broader hazard mitigation goals. For example, using FMA funds to reduce flood risk in NFIP-insured properties or leveraging funds for innovative infrastructure resilience projects.

Threat and Hazard Identification and Risk Assessment (THIRA)

- Comprehensive Risk Identification: THIRA provides a structured approach for communities to identify and prioritize their risks based on a full spectrum of hazards, including natural and human-caused events. Integrating hazard mitigation planning with THIRA enables communities to address multi-hazard risks with targeted mitigation strategies.
- Capability Targets Alignment: THIRA also helps communities identify capability gaps and set targets for resilience. Hazard mitigation plans can use these targets to outline mitigation actions that align with capability-building priorities, such as improving emergency response infrastructure or fortifying lifeline systems.
- Unified Risk and Capability Assessments: By integrating hazard mitigation planning with the THIRA process, communities can develop a more cohesive picture of their risk and capability needs, allowing for more focused and impactful use of FEMA resources across initiatives.

Integration of hazard mitigation into these various plans ensures that resilience efforts are embedded in the broader fabric of community development. Coordination and collaboration among different sectors and stakeholders are essential for the successful implementation of hazard mitigation strategies on the local level. Plan incorporation and integration is crucial for creating a cohesive and coordinated approach to address various aspects of hazard mitigation. All participating jurisdictions utilize similar internal procedures for plan incorporation and integration. The following represent commonly utilized methods:

- **Cross-Referencing:** Identify and cross-reference relevant sections of different plans and policies. This involves explicitly noting connections between the goals, strategies, and actions outlined in one plan with those in others.
- **Consistency Checks:** Conduct consistency checks to ensure that the language, objectives, and strategies in different plans and policies align with each other.

- **Joint Planning Committees:** Establish joint planning committees or task forces that involve representatives from different departments or agencies responsible for various plans (for example, the MPC). These committees facilitate communication, collaboration, and the coordination of planning efforts across sectors.
- **Collaborative Workshops and Meetings:** Organize collaborative workshops and meetings to bring together stakeholders involved in different planning processes (as seen in the planning meetings for the LHMP). These forums provide an opportunity for stakeholders to share information and discuss common goals.
- **Alignment with State and Regional Plans:** Ensure that local plans align with broader regional and state plans. This involves considering regional and state priorities and incorporating them into local planning efforts to create a harmonized approach to development.
- **Data Sharing and Analysis:** Share relevant data among planning efforts and conduct joint data analysis. This helps in creating a common understanding of the challenges and opportunities, facilitating evidence-based decision-making across different plans.
- **Unified Implementation Strategies:** This involves identifying common actions and initiatives that contribute to the achievement of multiple goals outlined in various plans.

1.6 Plan Adoption

This plan was submitted to the Kansas Division of Emergency Management (KDEM) and FEMA Region VII prior to adoption (approval pending adoption protocol). This methodology allows for a single plan adoption by participating jurisdictions in the event of plan revisions during the review and approval process. Upon review and approved pending adoption status by FEMA Region VII, adoption resolutions will be signed by the participating jurisdictions. FEMA approval documentation and jurisdictional adoption resolutions may be found in Appendix A.

Administration and oversight of the hazard mitigation program is the responsibility of KDEM and Kansas Region I Emergency Managers. The plan will be reviewed annually and will be updated every five years, or as required by changing hazard mitigation regulations or guidelines.

Section 2 – Documentation of the Planning Process

2.1 Guiding Principle

The guiding principle for the creation and utilization of this LHMP is as follows:

- Through partnerships among all local jurisdictions, identify and reduce the vulnerability to natural hazards to protect the health, safety, quality of life, environment, and economy of the diverse communities within Kansas Region I.

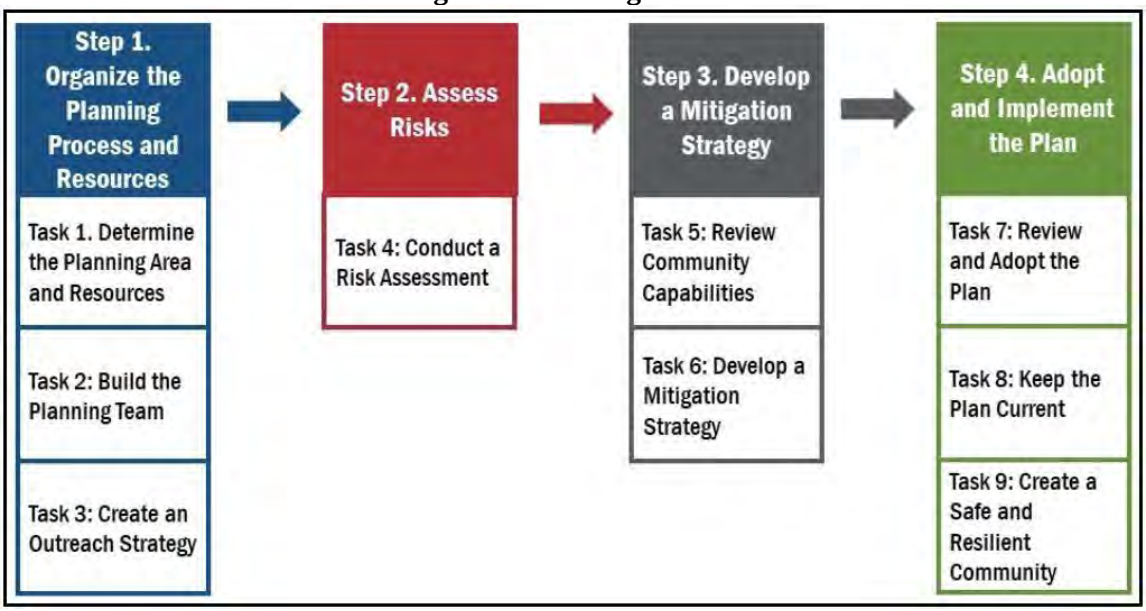
2.2 Planning Process

The process established for this planning effort is based on the Disaster Mitigation Act of 2000 planning and update requirements and the FEMA associated guidance for local hazard mitigation plans (Local Mitigation Planning Policy Guide (FP 206-21-0002), effective April 11, 2025). 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, underserved communities, and local emergency management organizations.
- Creation of a Mitigation Planning Committee (MPC) to codify and guide the planning process.
- 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.
- Creation of a multi-pronged outreach strategy to engage stakeholders.
- Conduct a thorough review of all relevant current and historic planning efforts.
- Conduct a review of all related and relevant state and local plans for integration and incorporation.
- Collect data on all related state plans and initiatives, local plans' hazard risk, local plans' mitigation strategies and actions, critical facilities and community lifelines, flood plains, Repetitive Loss/Severe Repetitive Loss properties, hazard events, on-going and completed mitigation actions, and mitigation program changes since the development of the previous plan.
- Complete a risk and vulnerability assessment using data from the FEMA and other federal and state agency resources. Analyses were conducted at the state level, county by county, of state-owned facilities, and county by county drawing on local assessments.
- Develop and update the capability assessment of Kansas Region I and all participating jurisdictions.
- Develop a comprehensive mitigation strategy effectively addressing Kansas Region I's hazards and mitigation program objectives. This included 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.

The following figure summarizes these steps:

Figure 1: Planning Process



Source: FEMA

2.3 Project Timeline

The Kansas Region I LHMP review and revision process began in December 2024, with the first public meeting held in January 2025. The following figure indicates the planning stages completed as part of this process:

Figure 2: Project Planning Stages



2.4 Plan Organization

This LHMP is both a reference document and an action plan. It has information and resources to educate readers and decision-makers about hazard events and related issues and a comprehensive strategy that participating jurisdictions, stakeholders, and community members can follow to improve resilience. This LHMP is composed of the following sections:

- **Section 1 - Introduction, Assurances, Incorporation, and Adoption:** Details the regulatory framework for plan development, participating jurisdictions, how the plan will be incorporated into other planning mechanisms, and adoption requirements.
- **Section 2 – Planning Process:** Outlines the steps taken to complete this LHMP, the people involved in its creation, strategies to invite public participation, and technical and planning resources utilized in completing this plan.

- **Section 3 - Regional Profile and Development Trends:** Details demographic information, vulnerable populations, critical facility and community lifeline information, and agricultural data.
- **Section 4 – Capability Assessment:** Provides a comprehensive evaluation of existing abilities to effectively mitigate hazards and manage disaster risks. This assessment involves analyzing the community's current resources, policies, programs, and systems to determine how well it can implement mitigation strategies.
- **Section 5 - Hazard Identification and Risk Assessment:** Describes the hazards that can impact the planning area, including extent, previous occurrences, changing conditions, and vulnerabilities.
- **Section 6 - Mitigation Strategy:** Outlines the specific actions, policies, and projects designed to reduce or eliminate the risks and impacts of hazards on a community. These strategies are developed based on the findings from the hazard identification and risk assessment phases and are tailored to address the unique vulnerabilities and capabilities of the community.
- **Section 7 - Plan Maintenance:** Summarizes plan maintenance responsibilities, monitoring and update requirements, and opportunities for continued public involvement.
- **Appendices:** Provides supplementary detailed information and supporting documents. The appendices serve to enhance the main content by offering further clarification, data, and documentation that support the planning process and implementation.

2.5 2025 Plan Update

In undertaking this planning effort, Kansas Region I determined that wide variances in planning format and data do not allow for effective continuous planning. To provide planning continuity every effort was made during this plan update to adhere as closely as possible to elements of the previous LHMP. As such, the level of analysis and detail included in this risk assessment is cumulative, allowing participating jurisdictions to have a robust base to further mold and improve their mitigation strategies over the next five years.

As part of this planning effort, each section of the previous mitigation plan was reviewed based on current and available data. The plan was reviewed against the following elements:

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

Based on the above criteria, each section of the previous LHMP was revised as required. In addition to data revisions, the format and sequencing of the previous plan was updated for ease of use and plan clarity. Key updated elements from the previous LHMP include:

- Expanded definition and discussion of underserved communities and vulnerable populations.
- Updated goals and objectives, including a new goal and objectives.
- Updated critical facilities and community lifelines list.
- Expanded detailing of historic hazard occurrences.
- Updated mapping using newly available data.
- Updated county and jurisdictional capabilities assessment.
- Integration of relevant revised plans.
- Updated mitigation actions, including progress on previous actions.

2.6 Mitigation Planning Committee

Project initiation began with the selection of a Mitigation Planning Committee (MPC), consisting of the Kansas Region I emergency manager and representative staff from each participating jurisdiction. From project inception to completion,

the MPC was notified at each major plan development milestone through a combination of meetings and electronic communication. In general, all MPC members were asked to participate in the following ways:

- Attend and participate in meetings
- Assist with the collection of data
- Assure the accuracy and completeness of data
- Assist with the revision and development of mitigation actions
- Review planning elements and drafts
- Integrate hazard mitigation planning elements with other planning mechanisms

As an additional responsibility, MPC members helped establish project operating procedures and timelines, and assisted with the establishment of project milestones.

The following table represents members of the MPC:

Table 2: MPC Members

Jurisdiction	Name	Title
Chase County	Scott Wiltse	Emergency Manager
Geary County	Garry Berges	Emergency Manager
Lyon County	Jarrod Fell	Emergency Manager
Morris County	Brett Samuels	Emergency Manager
Pottawatomie County	Jennifer Merrow	Emergency Manager
Riley County	Russel Stukey	Emergency Manager
Wabaunsee County	Amy Terrapin	Emergency Manager
KDEM	Stephanie Goodman	State Hazard Mitigation Officer
KDEM	Mike Ahlf	Mitigation Planner
KDEM	Dirk Christian	Planning and Mitigation Bureau Director
KDEM	JD Mersman	Regional Coordinator

2.7 LHMP Stakeholders

Kansas Region I acknowledges that effective hazard mitigation planning should involve a diverse group of stakeholders, including government agencies, private sector entities, private non-profit organizations, quasi-governmental authorities, and special districts. The coordination and cooperation of these stakeholders assists with all aspects of plan development, including:

- Data collection
- Hazard and risk analysis
- Capability assessment
- Mitigation action review, revision, and development
- Plan implementation

Local and regional stakeholders were contacted directly by MPC members via phone and email during the entirety of the planning process concerning plan progress and meeting information (including remote meeting login information and in person meeting address and time when applicable), and included:

- Local and regional agencies involved in hazard mitigation activities.
- Agencies that have the authority to regulate development.
- National Flood Insurance Program coordinators.
- Neighboring communities.
- Representatives of business, academia, and other private organizations.

- Non-profit and community-based organizations who work to provide support to socially vulnerable and underserved communities.

Emphasis was placed on inviting local building departments, who played a critical role in creating and reviewing this LHMP. Their expertise was used to help identify local vulnerabilities and develop building-related mitigation measures. Additionally, jurisdictional NFIP coordinators played a key role in mitigation planning at the community level. These coordinators were actively engaged and for their expertise on flood risk, mitigation strategies, and NFIP compliance. Information concerning building codes, NFIP participation, and building and NFIP representatives may be found in Section 4.

Emphasis was placed on inviting local building departments, who played a critical role in creating and reviewing this LHMP. Their expertise was used to help identify local vulnerabilities and develop building-related mitigation measures. Additionally, jurisdictional NFIP coordinators played a key role in mitigation planning at the community level. These coordinators were actively engaged and for their expertise on flood risk, mitigation strategies, and NFIP compliance. Information concerning building codes, NFIP participation, and building and NFIP representatives may be found in Section 4. While not all of these organizations attended meetings, each was actively courted to provide information, data, and feedback as necessary and as related to their areas of expertise.

Additionally, the Kansas Region I MPC provided the opportunity for a wide variety of coordinating stakeholders to assist in the preparation of this. Coordinating stakeholders have information and resources that are important to the planning process, but do not participate fully in the planning process. While not all of these organizations attended meetings, each was actively courted to provide information, data, and feedback as necessary and as related to their areas of expertise. The following provides a list of all coordinating stakeholders involved in the development of this LHMP:

- Kansas Department of Agriculture
- Kansas Department of Aging and Disability Services
- Kansas Department of Health and Environment
- Kansas Department of Transportation
- Kansas Department of Wildlife and Parks
- Kansas Division of Emergency Management
- Kansas Fire Marshal
- Kansas Historical Society
- National Oceanic and Atmospheric Administration
- National Weather Service (NWS)
- United States Army Corps of Engineers
- United States Census Bureau
- United States Department of Agriculture (USDA)
- United States Geological Survey (USGS)
- University of Wisconsin SILVIS Labs

2.8 Community Outreach

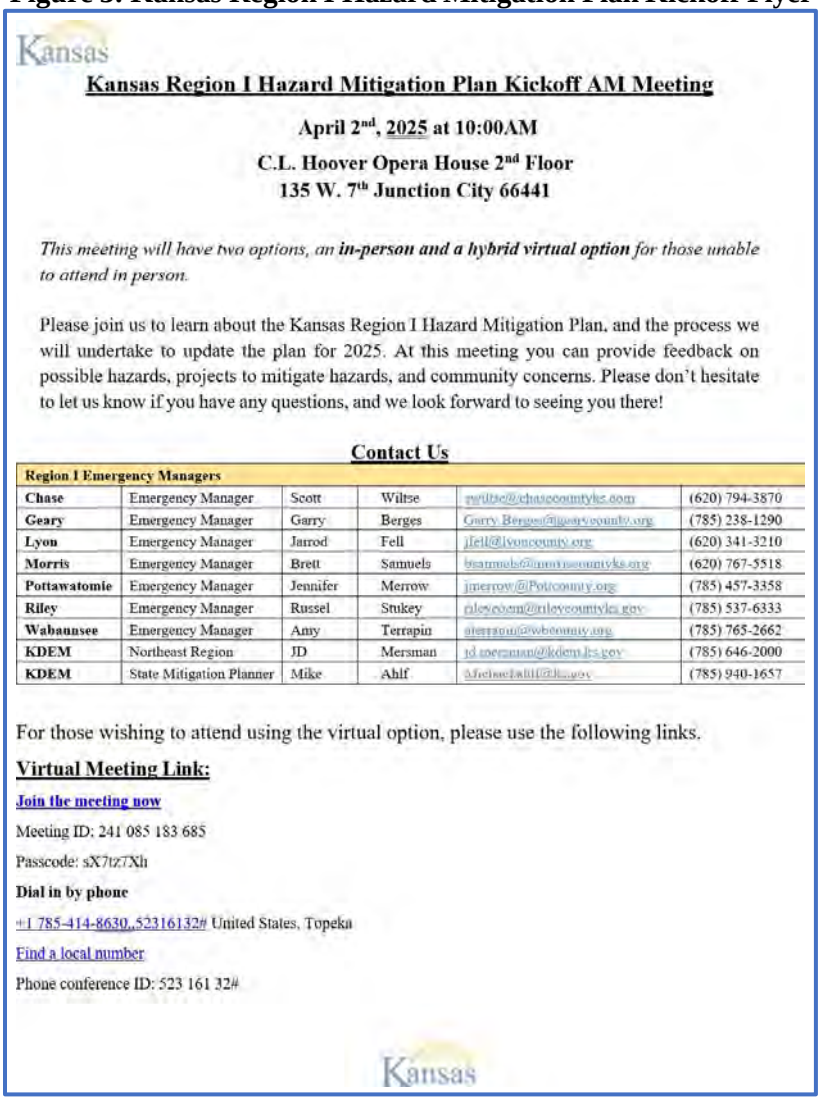
As part of the overall planning process, members of the community (the public) were provided with numerous opportunities to contribute and comment on the creation and adoption of the plan. For participating jurisdictions, the public was defined as any person with an interest in the resilience and welfare of Kansas Region I. These opportunities included:

- Kansas Region I Emergency Management Facebook and webpage updates concerning all hazard mitigation activities, survey links, and meeting information.
- Flyers to post to advertised meeting locations and details.
- Online and paper surveys.

- Comment period, along with an online survey, upon completion of draft plan.

All open public meetings were held at easily accessible community locations. As many participating jurisdictions and citizens have limited communications capabilities, meeting notices were placed in high visibility locations, and our MPC was asked to conduct a word-of-mouth campaign concerning the planning process to include as many participants as possible. The following shows the flyer for the kickoff meeting:

Figure 3: Kansas Region I Hazard Mitigation Plan Kickoff Flyer



Kansas

Kansas Region I Hazard Mitigation Plan Kickoff AM Meeting

April 2nd, 2025 at 10:00AM

C.L. Hoover Opera House 2nd Floor
135 W. 7th Junction City 66441

*This meeting will have two options, an **in-person and a hybrid virtual option** for those unable to attend in person.*

Please join us to learn about the Kansas Region I Hazard Mitigation Plan, and the process we will undertake to update the plan for 2025. At this meeting you can provide feedback on possible hazards, projects to mitigate hazards, and community concerns. Please don't hesitate to let us know if you have any questions, and we look forward to seeing you there!

Contact Us

Region I Emergency Managers					
Chase	Emergency Manager	Scott	Wiltse	swiltse@chasecountyks.com	(620) 794-3870
Geary	Emergency Manager	Garry	Berges	Garry.Berges@gearycounty.org	(785) 238-1290
Lyon	Emergency Manager	Jarrod	Fell	jfell@lyoncounty.org	(620) 341-3210
Morris	Emergency Manager	Brett	Samuels	bsamuels@morriscountyks.org	(620) 767-5518
Pottawatomie	Emergency Manager	Jennifer	Merrow	jmerrow@Pottcounty.org	(785) 457-3358
Riley	Emergency Manager	Russel	Stukey	rileyco.em@rileycountyks.gov	(785) 537-6333
Wabaunsee	Emergency Manager	Amy	Terrapin	aterrapin@wbcounty.org	(785) 765-2662
KDEM	Northeast Region	JD	Mersman	jd.mersman@kdem.ks.gov	(785) 646-2000
KDEM	State Mitigation Planner	Mike	Ahlf	Michael.ahlf@ks.gov	(785) 940-1657

For those wishing to attend using the virtual option, please use the following links.

Virtual Meeting Link:

Join the meeting now

Meeting ID: 241 085 183 685

Passcode: sX7tz7Xh

Dial in by phone

+1 785-414-8630,,52316132# United States, Topeka

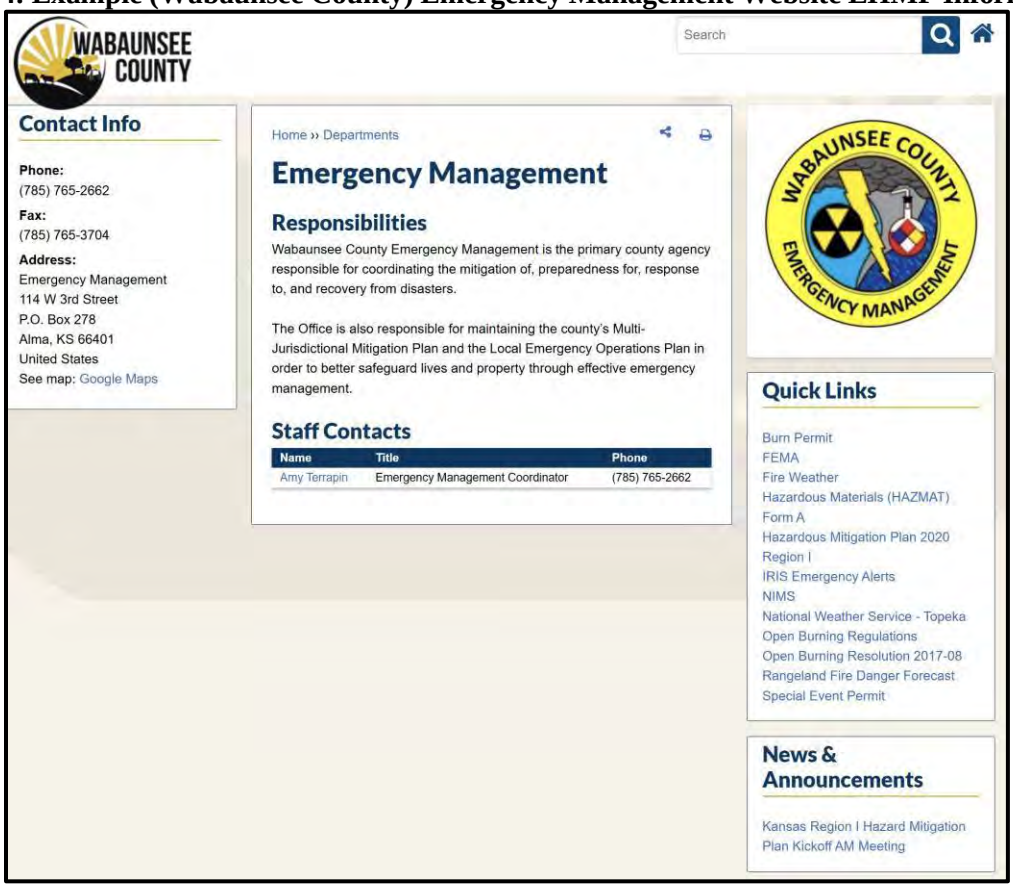
Find a local number

Phone conference ID: 523 161 32#

Kansas

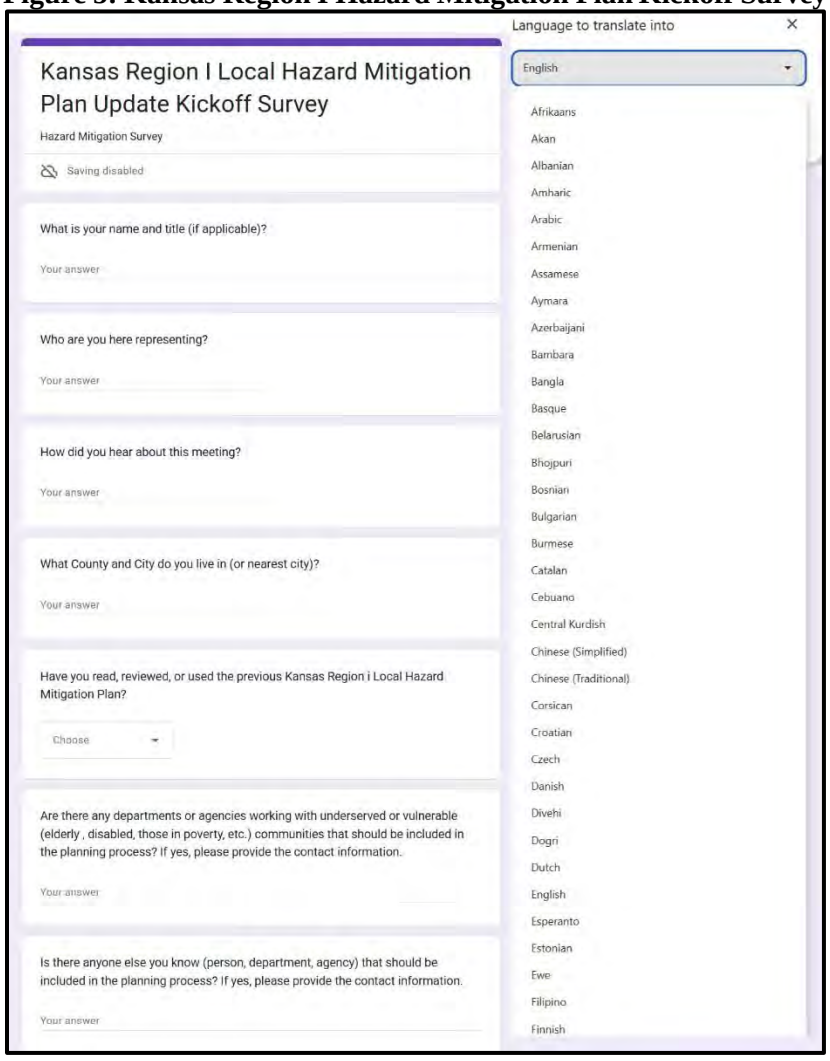
Along with public meetings, and to help generate community interest and participation, a parallel online outreach strategy was undertaken. Because Kansas Region I encompasses many rural communities, an online strategy was enacted. This allowed remote and underserved communities to participate fully in the process without having to travel long distances. Information concerning the hazard mitigation planning process, along with links to public surveys were provided through county emergency management websites and Facebook pages:

Figure 4: Example (Wabaunsee County) Emergency Management Website LHMP Information



Additionally, throughout the planning process numerous public surveys were released to allow community members to provide feedback and input on the LHMP update using a series of guided questions and open comment fields. The surveys used Google's auto translate feature to provide a host of languages to complete the forms.

Figure 5: Kansas Region I Hazard Mitigation Plan Kickoff Survey



Input from the general public provided the MPC with a clearer understanding of local concerns, helped confirm identified hazards, helped shape proposed mitigation actions, and provided elected officials with a guide and tool to set local, regional, and 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 mitigate 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. Comments and feedback from the surveys are both incorporated in this LHMP and are included in Appendix B.

Public Comment: *We appreciated being included in the process.*

2.9 Planning Meetings

Numerous in-person meetings were conducted for the 2025 LHMP update, all held in a publicly accessible locations and advertised as open to the public. These meeting were conducted to discuss the mitigation planning process as well as gain public support and input for the plan update. The following is a brief synopsis of those meetings.

- **LHMP Update Kick-Off and Public Information Meeting – April 2, 2025:** Kansas Region I hosted two in person (with a virtual option) kick-off meetings for the MPC, stakeholders, and the public. These meetings presented the general structure and timeline for the LHMP process, discussed jurisdictional participation requirements, presented data concerning changing demographics, reviewed and discussed identified hazards, and presented next steps. Attendees were invited to voice any concerns, ask questions, and provide input on the

planning process. Additionally, MPC members were tasked with collecting champion contact information from participating jurisdictions, informed of their planning roles and responsibilities, and advised of future data collection requirements and participation requirements.

- **LHMP Capability Review, and Mitigation Strategy Review Meeting – June 18, 2025:** Kansas Region I held two in person (with a virtual option) meetings for the MPC. Attendees reviewed and revised the hazards list and vulnerability assessment. MPC members also reviewed the mitigation strategy and previously identified and current mitigation actions to ensure they were in-line with the current planning environment.
- **LHMP Update Final Review Meeting – August 12, 2025:** Kansas Region I hosted a public final plan review meeting (with a virtual option) for the MPC, stakeholders, and the public. At the meeting attendees were invited to voice any final concerns, ask questions, and provide input on the mitigation plan update. Additionally, members of the public were invited to review a draft copy of the LHMP update posted to jurisdictional and county websites for two weeks prior to the final meeting, and prior to its submission to FEMA Region VII.

Formal meetings were supplemented with planning calls and frequent email communications

2.10 Planning Document Resources

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 a jurisdiction's resilience to disasters.

- **2020 Kansas Region I Hazard Mitigation Plan:** The previous LHMP has been reviewed and is incorporated throughout this plan per FEMA requirements.
- **2023 Kansas State Hazard Mitigation Plan:** Completed by the KDEM, this plan was utilized to provide the framework for hazard mitigation. This plan set a baseline for standards and practices for hazard mitigation planning and was used as a resource for information and data.
- **Jurisdictional Comprehensive Plans:** These plans, as available, set policies that help the jurisdiction address critical issues facing the community, achieve goals based on priority, and coordinate public and private efforts for mutual success. They also provide the historical context, background, and current data necessary to understand issues and choose solutions as well as seek various forms of funding.
- **Jurisdictional Emergency Operations Plans:** These plans are used by jurisdictions to develop procedures for the protection of personnel, equipment, and critical records to help determine existing established policies that ensure the continuity of government and essential services during and after disasters.
- **Community Wildfire Protection Plans:** Created in collaboration with local governments, fire departments, and stakeholders to address the risk of wildfire. The primary goals are to enhance wildfire preparedness, reduce the risk of wildfire to life, property, and critical infrastructure, and improve community resilience.
- **Participating Jurisdiction Planning and Zoning Documents and Ordinances:** These documents were reviewed, assessed, and cataloged to compile each participating jurisdiction's capabilities.

2.11 Technical Resources

The MPC employed a variety of technical resources during plan development. These technical resources were instrumental in completing an accurate vulnerability and risk assessment, and include:

- **FEMA Digital Flood Insurance Rate Maps**: FEMA's National Flood Hazard Layer data was instrumental in mapping floodplain locations and estimating potential flood impacts and loss estimates.

- **FEMA National Risk Index (NRI):** An online mapping application that identifies communities most at risk to natural hazards. The mapping service visualizes natural hazard risk metrics and includes data about expected annual losses from natural hazards, social vulnerability, and community resilience. The NRI's interactive web maps are at the county and Census tract level and made available via GIS services for custom analyses.
- **FEMA Resilience Analysis and Planning Tool (RAPT):** FEMA and Argonne National Laboratory created RAPT to support state, local, tribal, territorial analysis in identifying focus areas for building resilience, response, and recovery capabilities. RAPT is a geographic information system web map tool with clickable layers of community resilience indicators, infrastructure locations, and hazard data.
- **Homeland Infrastructure Foundation-Level Data (HIFLD):** A program managed by the U.S. Department of Homeland Security that provides authoritative geospatial data for use by government agencies, emergency responders, and other authorized users involved in homeland security, emergency management, and critical infrastructure protection. The primary goal of HIFLD is to support homeland defense, security, and emergency preparedness missions by offering high-quality, reliable geospatial information.
- **National Oceanic and Atmospheric Administration (NOAA)/National Centers for Environmental Information (NCEI):** Provided weather data and historical events occurrence data.
- **U.S. Army Corps of Engineers (USACE):** Provided dam and flood control data.
- **U.S. Department of Agriculture (USDA):** Provided drought and agricultural data.
- **U.S. Geological Survey:** Provided geologic hazard occurrence and probability data.
- **National Weather Service (NWS):** Provided meteorological and storm event occurrence and probability data.
- **U.S. Drought Monitor:** Provided drought occurrence and intensity data.
- **Kansas Office of State Geologist:** Provided data about Kansas Region I’s geology and seismology.
- **FEMA Map Service Center:** The official public source for flood hazard information produced in support of the National Flood Insurance Program (NFIP).
- **United States Census Bureau:** Data concerning populations, socially vulnerable populations, and housing.
- **KDEM:** LHMP planning guidance and technical support.

Section 3 – Regional Profile and Development Trends

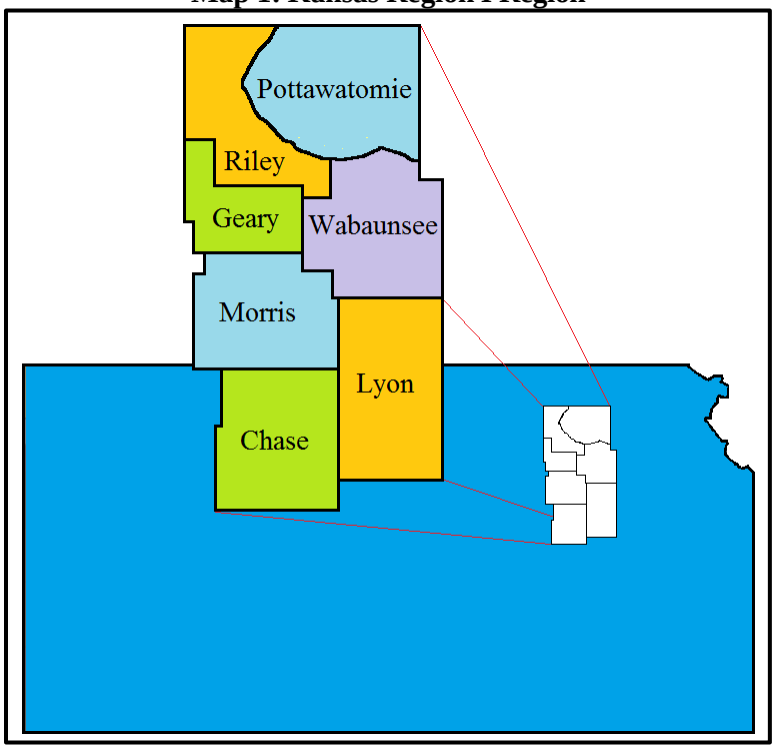
3.1 Introduction

Data concerning development trends and conditions is of great importance in determining regional and local risk and vulnerability to identified hazards, especially in locations which are susceptible to identified hazards. In general, any increase in population or development in hazard susceptible areas tends to increase both the risk and the vulnerability to that hazard. As such, the information presented in this chapter details relevant population and building statistics for each participating jurisdiction in Kansas Region I. This data will then be used to determine and refine potential hazard vulnerability in succeeding sections.

3.2 Jurisdictional Maps

The following map details the location of Kansas Region I and participating counties:

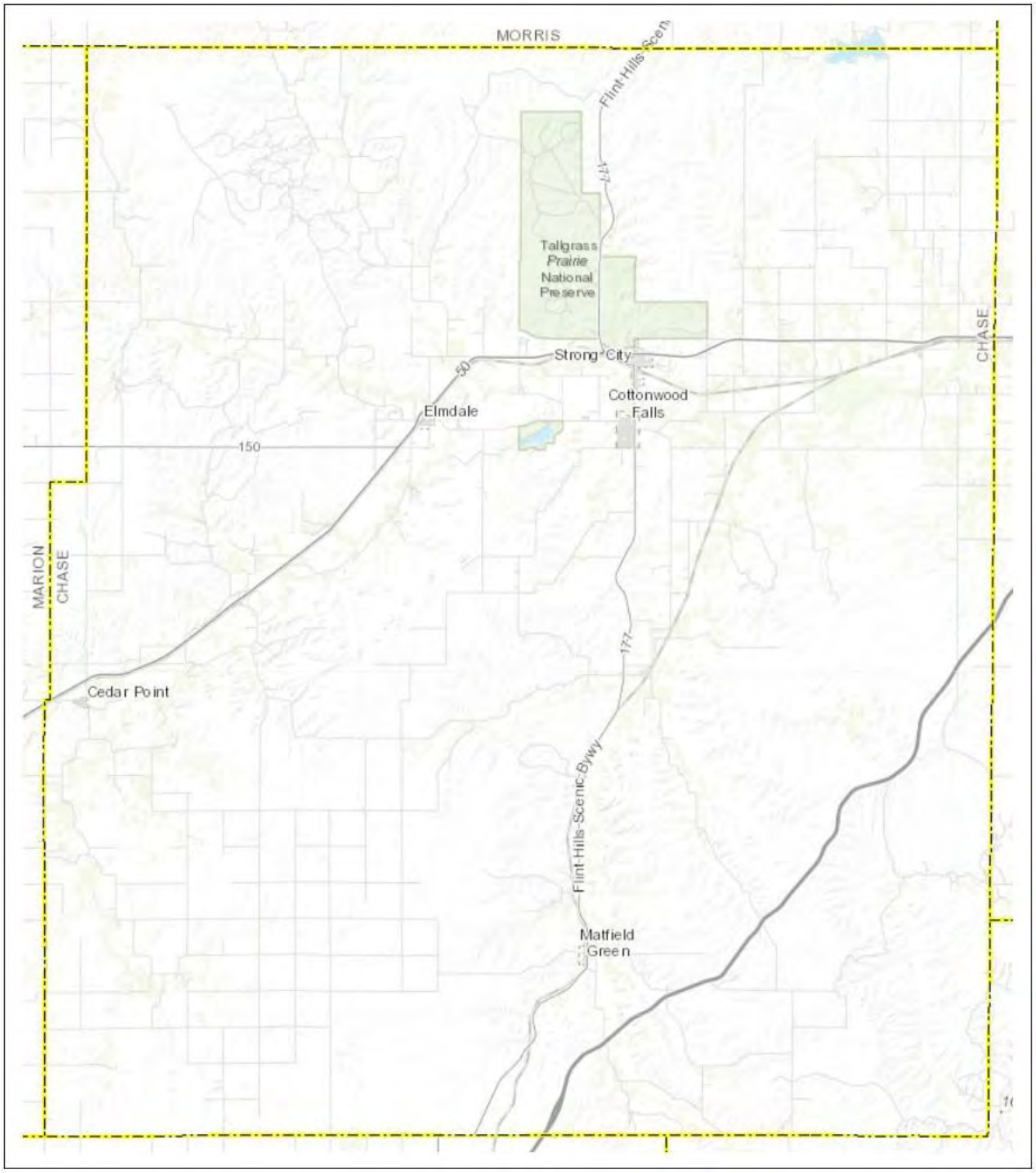
Map 1: Kansas Region I Region



Source: State of Kansas

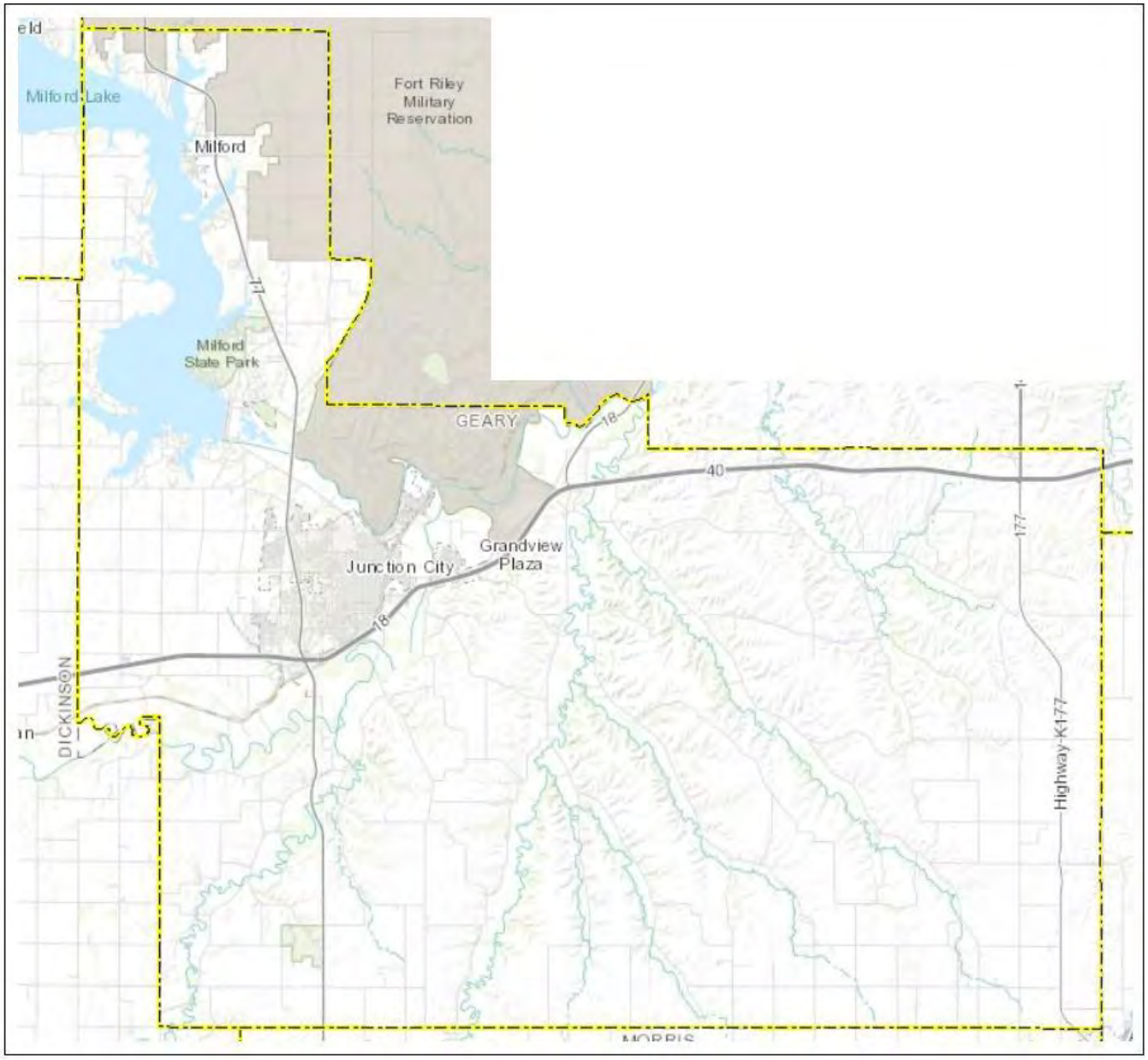
The following maps from the Kansas Department of Transportation detail each participating Kansas Region I County along with participating jurisdictions:

Map 2: Chase County



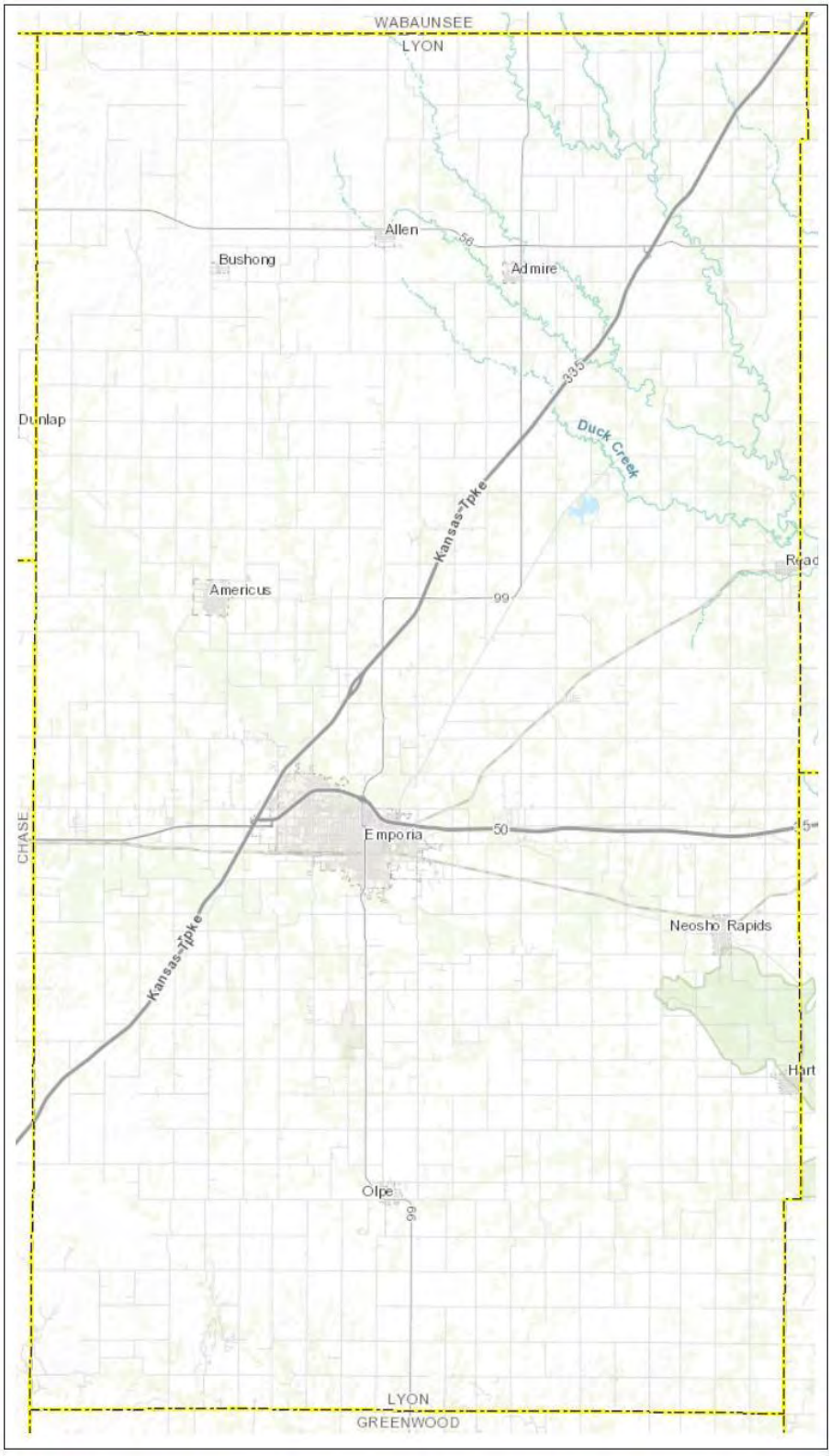
Source: Kansas Department of Transportation

Map 3: Geary County



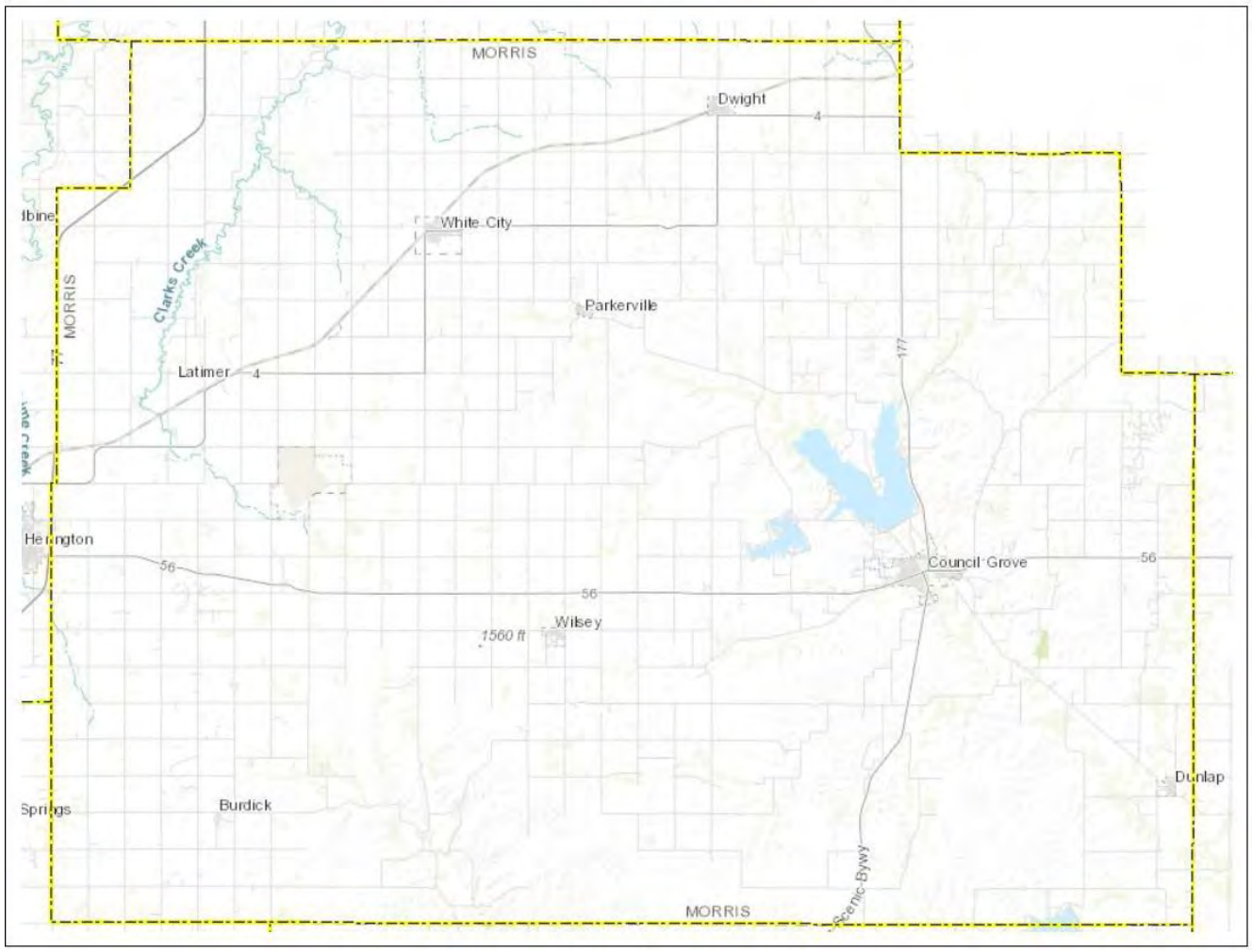
Source: Kansas Department of Transportation

Map 4: Lyon County



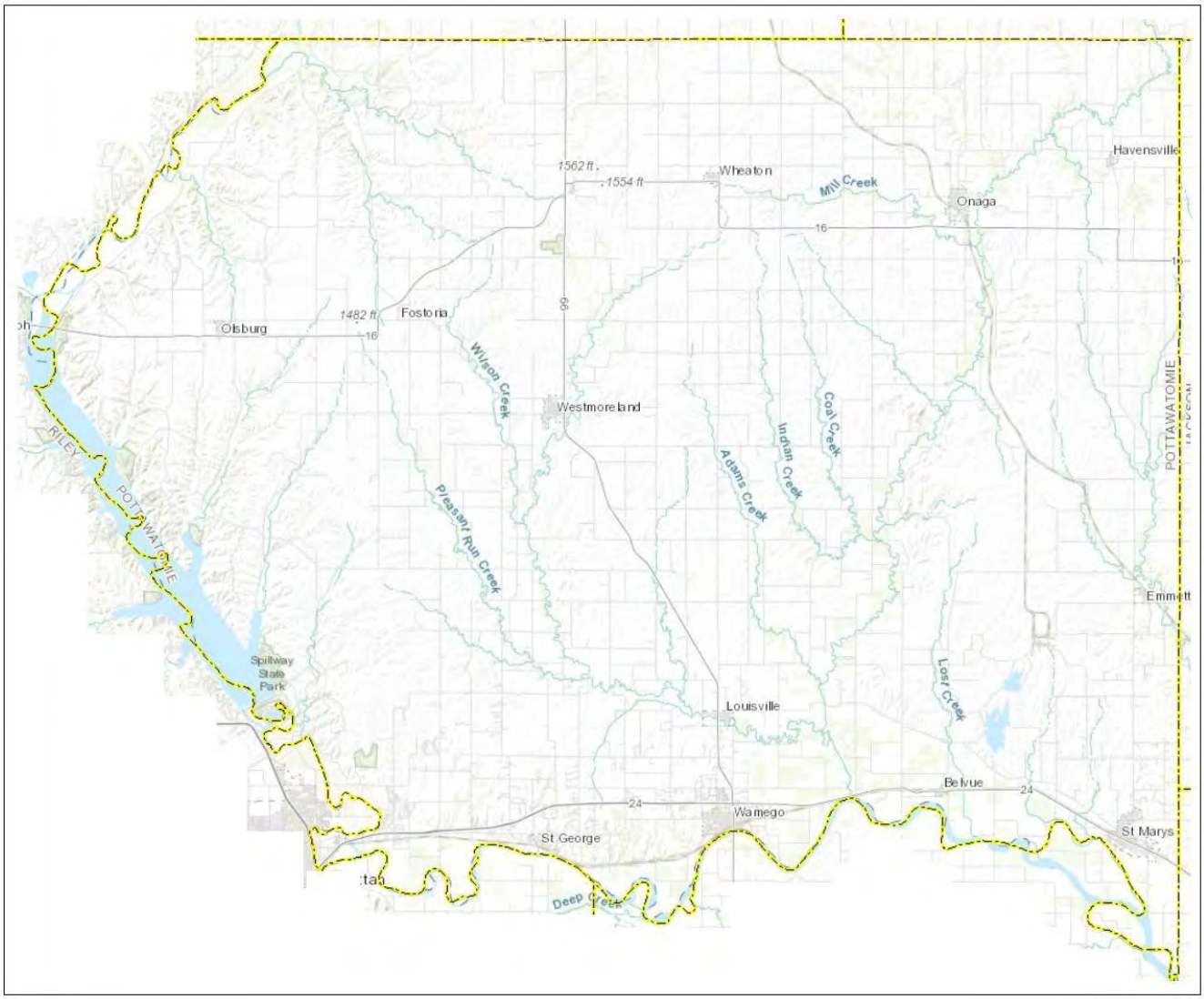
Source: Kansas Department of Transportation

Map 5: Morris County



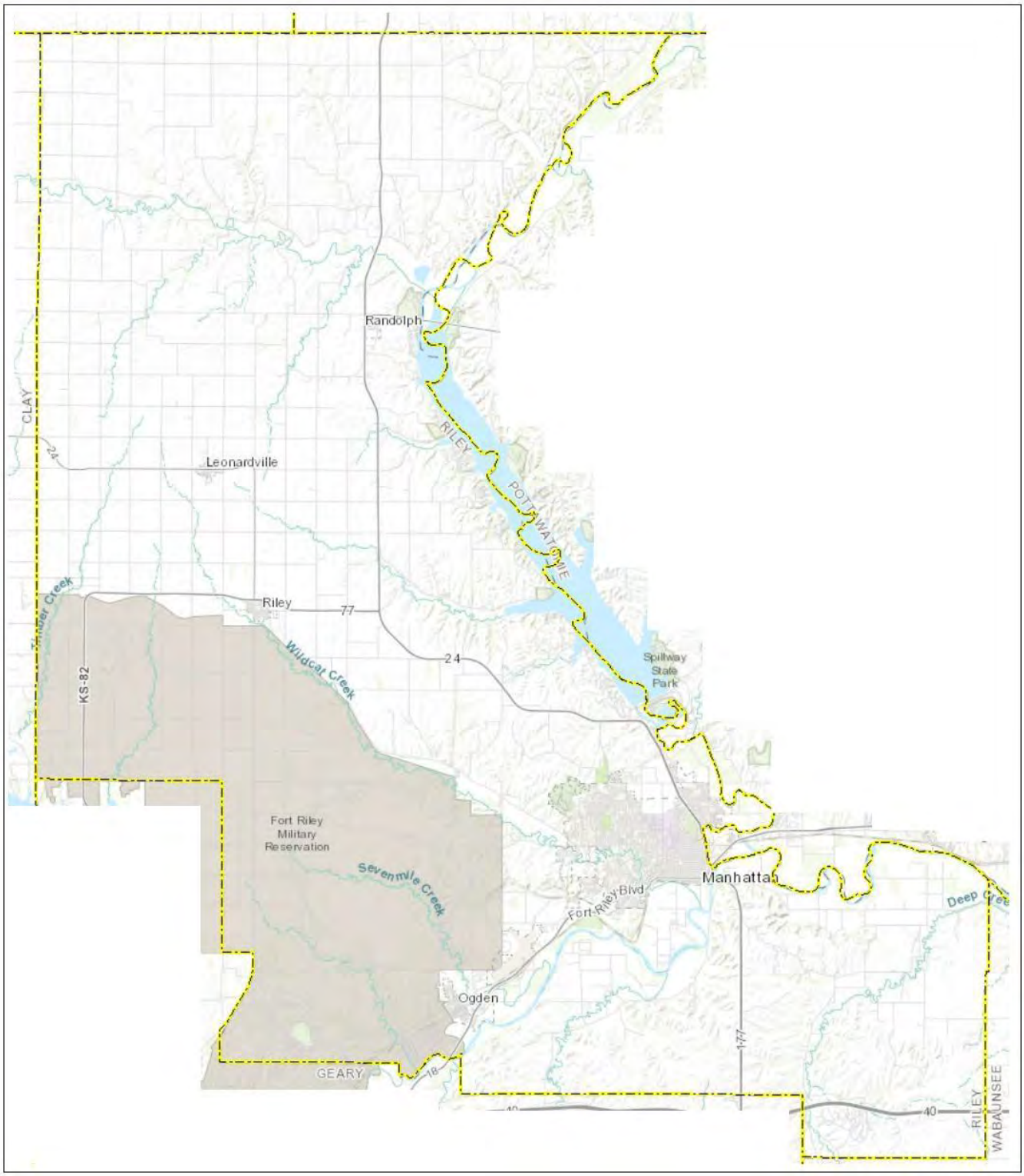
Source: Kansas Department of Transportation

Map 6: Pottawatomie County



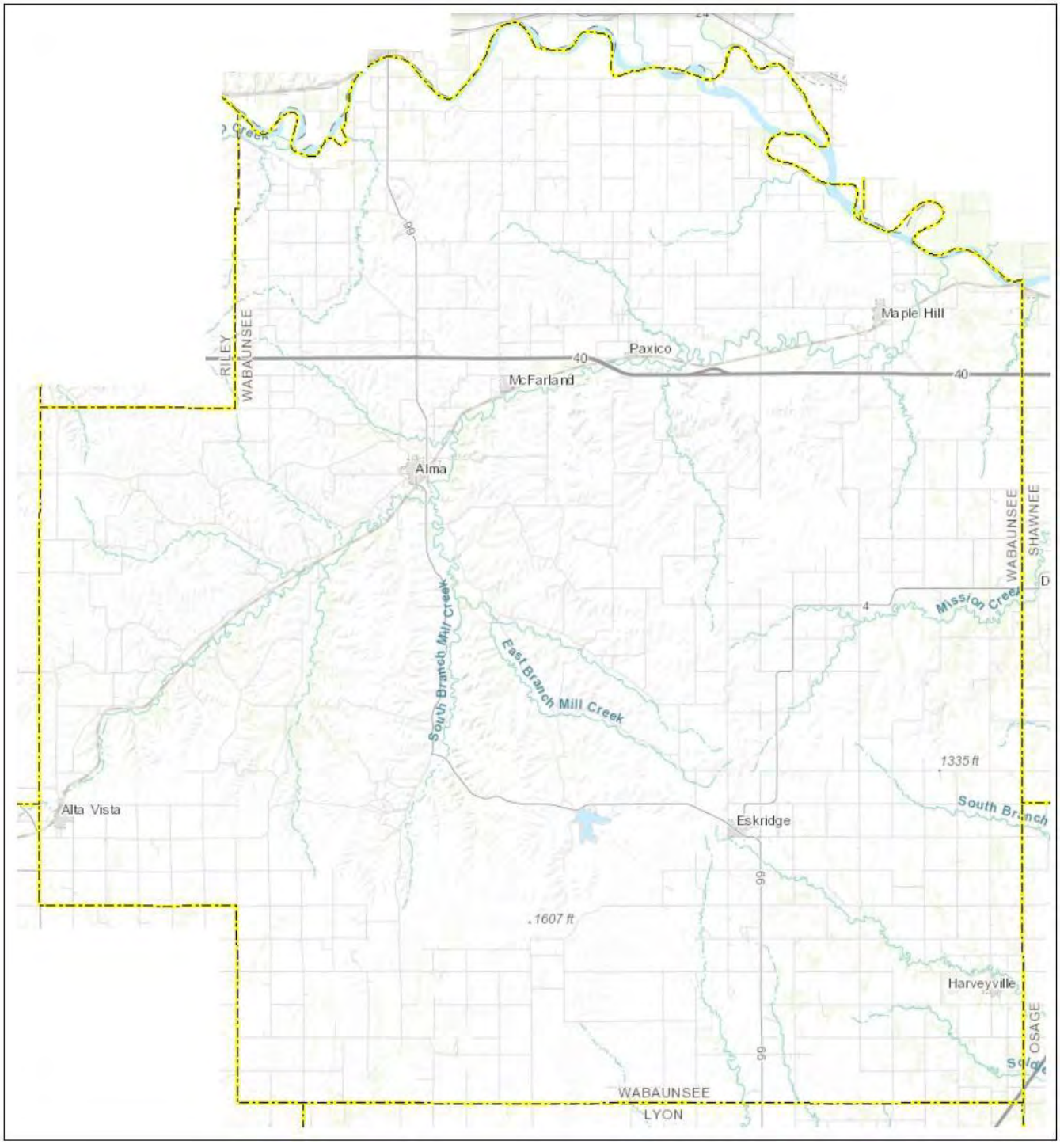
Source: Kansas Department of Transportation

Map 7: Riley County



Source: Kansas Department of Transportation

Map 8: Wabaunsee County



Source: Kansas Department of Transportation

3.3 Population Data

Kansas Region I has seen population growth within the over the 20-year period from 2000 to 2020, as indicated by data collected from the United State Census Bureau. The following table, and associated graph, presents population data for Kansas Region I:

Table 3: Kansas Region I Population Data

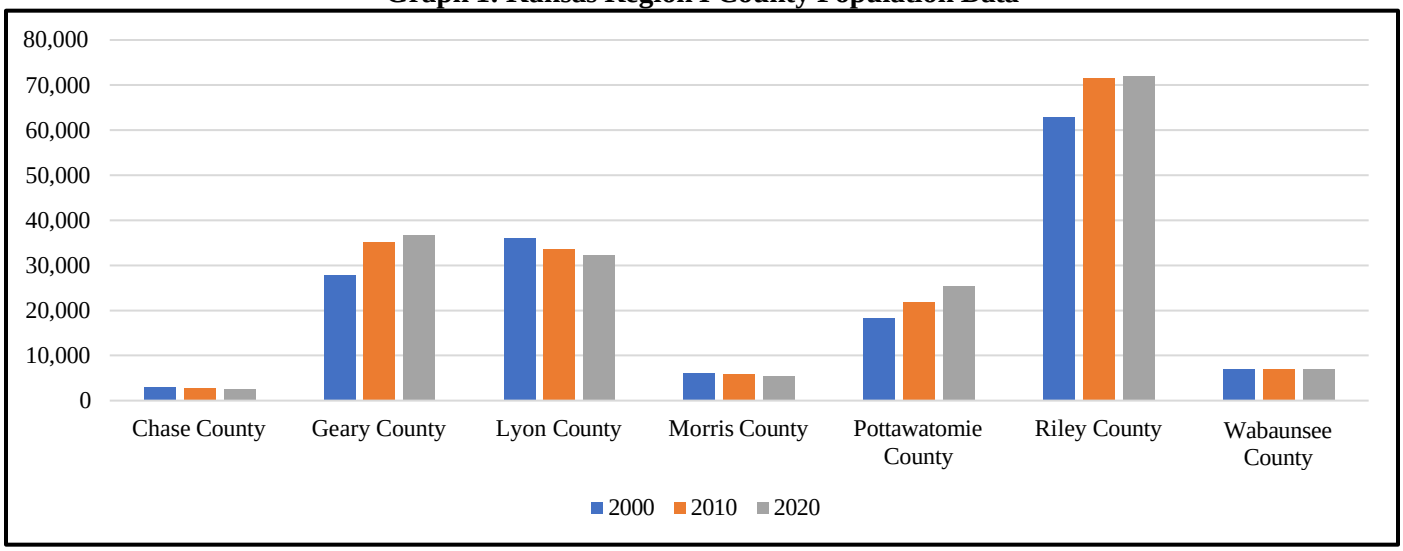
Jurisdiction	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Chase County	**3,030**	**2,783**	**2,572**	**-15.1%**	**778.0**	**3**
Cedar Point	53	28	22	-58.5%	0.1	275
Cottonwood Falls	966	903	851	-11.9%	0.6	1,418
Elmdale	50	55	40	-20.0%	0.2	235
Matfield Green	60	47	49	-18.3%	0.1	350
Strong City	584	485	386	-33.9%	0.6	702
Geary County	**27,947**	**35,240**	**36,739**	**31.5%**	**404.0**	**91**
Grandview Plaza	1,184	1,560	1,697	43.3%	0.8	2,020
Junction City	18,886	23,353	22,932	21.4%	11.1	2,059
Milford	502	530	408	-18.7%	25.1	16
Lyon County	**35,935**	**33,649**	**32,179**	**-10.5%**	**855.0**	**38**
Admire	177	156	130	-26.6%	0.3	394
Allen	211	177	160	-24.2%	26.5	6
Americus	938	894	776	-17.3%	11.5	67
Bushong	55	34	27	-50.9%	0.2	180
Emporia	26,760	24,916	24,139	-9.8%	7.0	3,468
Hartford	500	371	355	-29.0%	17.3	21
Neosho Rapids	274	265	229	-16.4%	0.5	449
Olpe	504	546	519	3.0%	0.7	775
Reading	247	231	181	-26.7%	10.1	18
Morris County	**6,104**	**5,918**	**5,386**	**-11.8%**	**703.0**	**8**
Council Grove	2,321	2,182	2,140	-7.8%	2.0	1,065
Dunlap	81	30	27	-66.7%	10.8	3
Dwight	330	272	217	-34.2%	0.2	1,085
Latimer	21	20	31	47.6%	2.4	13
Parkerville	73	59	46	-37.0%	0.1	383
White City	518	618	447	-13.7%	1.9	239
Wilsey	191	153	139	-27.2%	0.3	496
Pottawatomie County	**18,209**	**21,728**	**25,348**	**39.2%**	**862.0**	**29**
Belvue	228	205	177	-22.4%	33.7	5
Emmett	277	191	170	-38.6%	2.8	60
Havensville	146	133	119	-18.5%	0.2	793
Louisville	209	188	131	-37.3%	0.2	873
Olsburg	192	219	218	13.5%	0.2	1,147
Onaga	704	702	679	-3.6%	0.6	1,061
St. George	461	639	1,054	128.6%	0.7	1,528
St Mary’s	2,198	2,627	2,759	25.5%	1.2	2,338
Wamego	4,246	4,372	4,841	14.0%	2.3	2,152
Westmoreland	631	778	740	17.3%	0.5	1,423
Wheaton	92	95	98	6.5%	0.2	653
Riley County	**62,843**	**71,553**	**71,959**	**14.5%**	**622.0**	**116**
Leonardville	398	449	432	8.5%	0.3	1,543
Manhattan	44,831	52,281	54,100	20.7%	18.8	2,879
Ogden	1,762	2,087	1,661	-5.7%	1.7	1,001
Randolph	175	163	159	-9.1%	0.3	636
Riley	886	939	938	5.9%	0.5	1,954

Table 3: Kansas Region I Population Data

Jurisdiction	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Wabaunsee County	**6,885**	**7,049**	**6,877**	**-0.1%**	**800.0**	**9**
Alma	805	832	802	-0.4%	0.6	1,407
Alta Vista	442	444	409	-7.5%	0.4	1,136
Eskridge	589	534	439	-25.5%	0.5	844
Harveyville	267	236	178	-33.3%	0.1	1,369
Maple Hill	469	620	631	34.5%	0.3	2,524
McFarland	271	256	272	0.4%	0.2	1,511
Paxico	211	221	210	-0.5%	0.1	1,500

Source: US Census Bureau

Graph 1: Kansas Region I County Population Data



Source: US Census Bureau

3.4 Socially Vulnerable and At-Risk Populations

As a subset of the population data, Kansas Region I has socially vulnerable and at-risk populations, populations that 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 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."

Public Comment: *Kansas has a pretty big number of older folks.*

Identifying socially vulnerable populations is a cornerstone of effective hazard mitigation planning because it helps ensure that all community members are protected. Socially vulnerable groups often face heightened challenges in preparing for, responding to, and recovering from disasters. By recognizing these populations, future mitigation efforts can design targeted interventions, such as accessible evacuation routes, culturally appropriate communication strategies, and prioritized resource distribution, to reduce risks and improve outcomes.

The following tables presents information on potential at risk populations within Kansas Region I and participating jurisdictions using 2020 census data:

Table 4: Kansas Region I Vulnerable Population Data

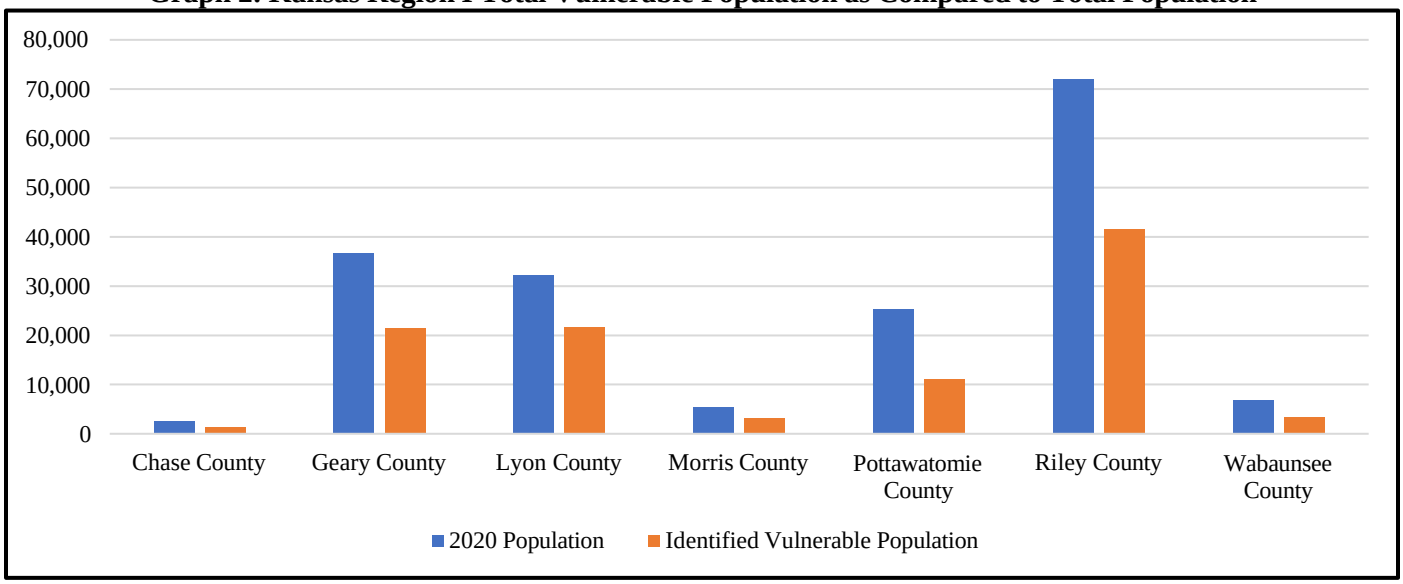
Jurisdiction	Population Under 5	Population 65+	Language Other Than English	Living Below Poverty Level	Disability, Under the Age of 65
Chase County	132	632	109	174	303
Cedar Point	0	2	0	0	0
Cottonwood Falls	51	221	20	47	91
Elmdale	12	2	7	13	16
Matfield Green	0	12	1	27	3
Strong City	32	91	30	45	50
Geary County	3,982	2,817	4,575	4,935	5,217
Grandview Plaza	118	100	328	252	209
Junction City	2,358	2,128	3,241	3,258	3,761
Milford	34	115	13	31	99
Lyon County	1,978	5,043	5,158	5,122	4,312
Admire	0	20	0	18	15
Allen	6	31	2	33	19
Americus	65	124	12	91	79
Bushong	0	6	0	2	3
Emporia	1,499	3,475	4,881	4,572	3,404
Hartford	22	45	1	66	40
Neosho Rapids	40	45	3	28	18
Olpe	14	88	0	21	58
Reading	1	39	6	33	31
Morris County	284	1,362	190	487	867
Council Grove	93	475	102	227	289
Dunlap	0	11	0	0	0
Dwight	0	46	14	24	49
Latimer	0	2	0	1	6
Parkerville	0	11	0	36	7
White City	50	103	29	106	133
Wilsey	11	57	8	11	20
Pottawatomie County	1,860	3,449	804	1,908	2,991
Belvue	13	11	24	14	21
Emmett	23	6	0	27	33
Havensville	11	21	0	19	37
Louisville	1	49	4	90	41
Olsburg	5	36	0	14	18
Onaga	25	312	13	73	70
St. George	127	43	47	132	84
St Mary’s	268	427	125	94	323
Wamego	196	548	218	755	353
Westmoreland	34	157	3	41	132
Wheaton	9	5	2	0	8
Riley County	4,249	6,846	6,841	14,616	8,995
Leonardville	57	179	10	50	53
Manhattan	2,762	4,870	5,490	13,164	6,870
Ogden	103	187	73	214	317
Randolph	7	32	4	4	319

Table 4: Kansas Region I Vulnerable Population Data

Jurisdiction	Population Under 5	Population 65+	Language Other Than English	Living Below Poverty Level	Disability, Under the Age of 65
Riley	122	153	26	43	127
Wabaunsee County	386	1,377	104	386	1,162
Alma	38	145	6	47	126
Alta Vista	10	94	39	110	119
Eskridge	13	98	30	71	153
Harveyville	1	37	0	19	27
Maple Hill	16	81	3	24	61
McFarland	10	60	6	12	34
Paxico	14	57	2	17	35

Source: US Census Bureau

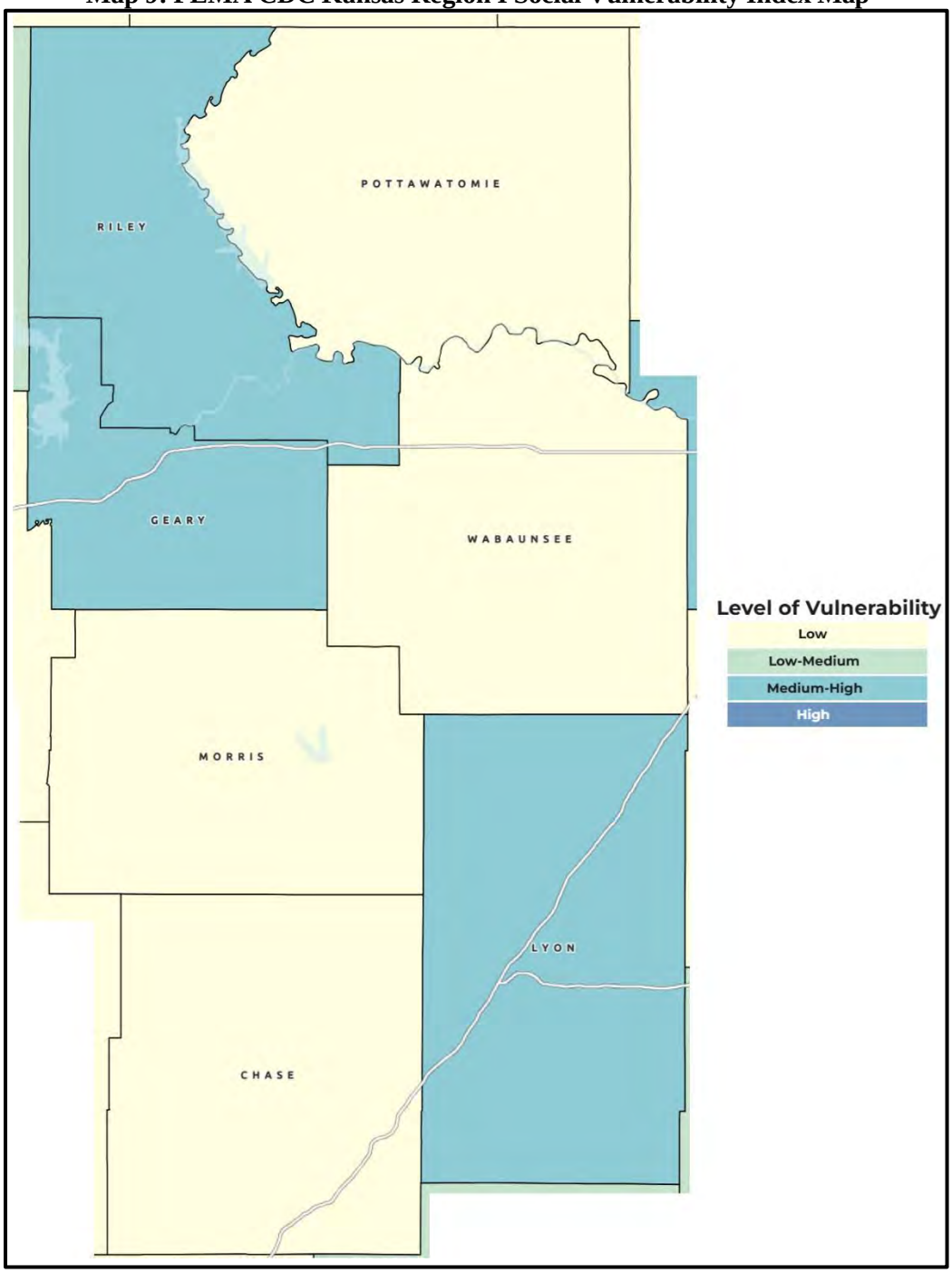
Graph 2: Kansas Region I Total Vulnerable Population as Compared to Total Population



Source: US Census Bureau

The Centers for Disease Control's Social Vulnerability Index Map shows the relative social vulnerability of communities based on factors such as socioeconomic status, household composition, disability, minority status, language, housing type, and transportation access. This map highlights areas where populations may have increased difficulty preparing for, responding to, and recovering from the impacts of hazard events. The following map helps identify vulnerable populations that may require additional resources and targeted support during mitigation planning and response efforts. By integrating this data, participating jurisdictions can prioritize investments, tailor outreach strategies, and ensure equitable distribution of resources to reduce disaster impacts on those most at risk. Social Vulnerability Index values range from 0 (least vulnerable) to 1 (most vulnerable). The Social Vulnerability Index can also be categorized as follows: Very Low (0.0-0.19), Low (0.20-0.39); Moderate (0.40-0.59); High (0.60-0.79); Very High (0.80-1.0):

Map 9: FEMA CDC Kansas Region I Social Vulnerability Index Map



Source: CDC

A Community Disaster Resilience Zone is a designated area that has been identified as particularly vulnerable to natural disasters and other hazards. The goal of establishing such zones is to focus resources, planning efforts, and mitigation strategies on areas that need the most support to improve their resilience to disasters. These zones are typically selected based on factors such as the frequency and severity of past disasters, the level of community vulnerability, and the potential impact of future events. Communities designated as Community Disaster Resilience Zone can receive increased financial and technical assistance to plan and implement resilience projects. For example, they are eligible for Building Resilient Infrastructure and Communities grant funds at an increased federal cost share of up to 90%, relative to the baseline of up to 75%. As of this plan, no communities within Kansas Region I have received this designation.

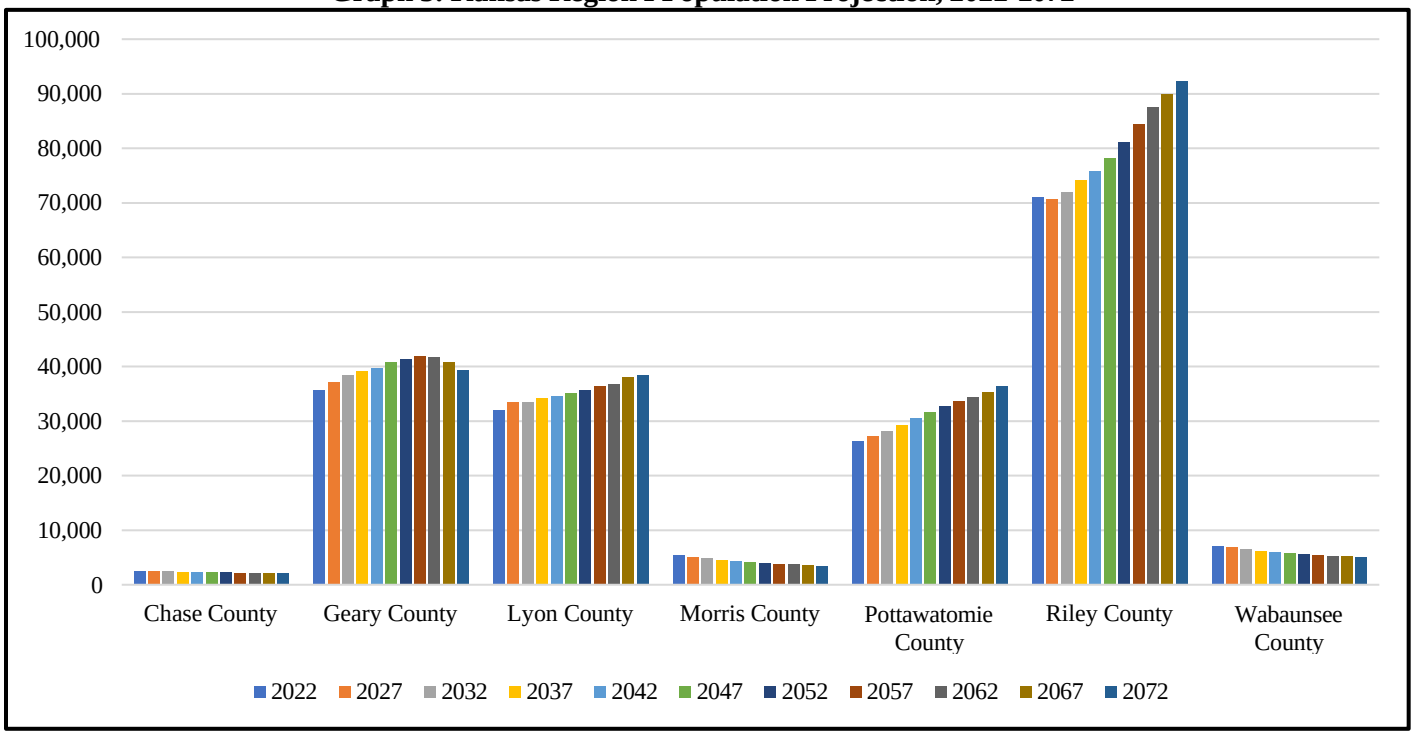
3.5 Regional Population Migration

Kansas Region I is experiencing consistent population decline as people increasingly migrate from rural areas to urban centers. This transformation reflects broader demographic trends witnessed across the United States. Demographic research indicates that this migration is occurring due to the following factors:

- **Economic Opportunity:** A primary driver of the population movement from rural to urban areas is the quest for better economic prospects. Large, regional urban centers offer a diverse range of employment opportunities in sectors like manufacturing, healthcare, finance, and technology. These opportunities often come with higher wages and better access to educational and healthcare facilities compared to rural areas.
- **Access to Education and Training:** Urban centers are often home to educational institutions, including colleges, universities, and vocational schools. Young people from rural areas often migrate to these urban settings to pursue higher education and vocational training. This educational mobility is a key factor in the rural-to-urban population shift.

The following graph, using data from the Wichita State University Center for Economic Development and Business Research Kansas Population Forecast, indicates population projections (potentially due to rural-to-urban migration) for Kansas Region I.:

Graph 3: Kansas Region I Population Projection, 2022-2072



Source: Wichita State University Center for Economic Development and Business Research Kansas Population Forecast

3.6 Housing Data

Closely tracking population data, but tending to lag population changes, housing data is a good indicator of changing demographics and growth. The following table and associated graphs, using data from the U.S. Census, present total and occupied housing unit information for Kansas Region I and all participating jurisdictions:

Table 5: Kansas Region I Housing Data

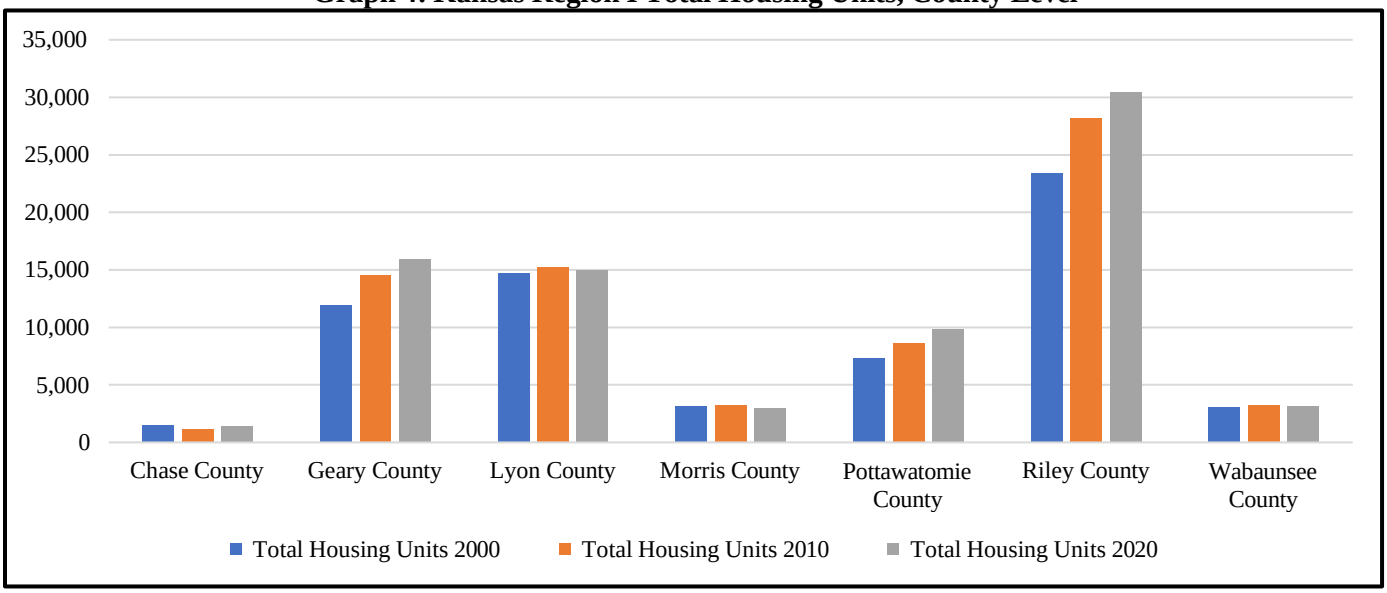
Jurisdiction	2000		2010		2020		2000 - 2020	
	Total	Occupied	Total	Occupied	Total	Occupied	Numeric Change (Total Units)	Percent Change (Total Units)
Chase County	1,529	1,246	1,175	1,175	1,397	1,056	-132	-8.6%
Cedar Point	33	24	25	13	20	6	-13	-39.4%
Cottonwood Falls	426	374	463	463	395	318	-31	-7.3%
Elmdale	32	25	27	23	18	11	-14	-43.8%
Matfield Green	29	29	36	24	37	28	8	27.6%
Strong City	283	250	256	217	233	193	-50	-17.7%
Geary County	11,959	10,458	14,517	11,379	15,928	13,488	3,969	33.2%
Grandview Plaza	531	464	788	651	987	789	456	85.9%
Junction City	8,740	7,482	10,480	9,134	10,920	9,104	2,180	24.9%
Milford	235	182	254	254	261	168	26	11.1%
Lyon County	14,757	13,691	15,237	13,303	14,957	13,183	200	1.4%
Admire	77	71	70	60	59	48	-18	-23.4%
Allen	94	81	91	77	90	77	-4	-4.3%
Americus	385	354	386	354	357	324	-28	-7.3%
Bushong	17	15	16	12	18	16	1	5.9%
Emporia	11,002	10,247	11,352	9,812	11,232	9,876	230	2.1%
Hartford	219	202	193	160	185	155	-34	-15.5%
Neosho Rapids	126	107	119	105	115	91	-11	-8.7%
Olpe	214	200	239	220	230	205	16	7.5%
Reading	110	94	105	105	80	80	-30	-27.3%
Morris County	3,160	2,539	3,206	2,554	2,996	2,294	-164	-5.2%
Council Grove	1,094	1,003	1,107	991	1,050	912	-44	-4.0%
Dunlap	29	26	17	17	21	15	-8	-27.6%
Dwight	154	136	136	117	113	90	-41	-26.6%
Latimer	11	6	11	9	9	9	-2	-18.2%
Parkerville	29	19	32	25	21	11	-8	-27.6%
White City	255	220	279	238	250	199	-5	-2.0%
Wilsey	93	83	88	66	73	61	-20	-21.5%
Pottawatomie County	7,311	6,771	8,626	7,878	9,866	9,050	2,555	34.9%
Belvue	91	79	80	68	69	61	-22	-24.2%
Emmett	114	97	87	71	72	65	-42	-36.8%
Havensville	78	60	73	39	59	51	-19	-24.4%
Louisville	76	76	96	78	78	57	2	2.6%
Olsburg	84	84	98	85	98	85	14	16.7%
Onaga	342	289	359	289	324	267	-18	-5.3%
St. George	194	173	194	194	436	368	242	124.7%
St Mary's	811	766	900	836	928	839	117	14.4%
Wamego	1,708	1,614	1,882	1,758	2,051	1,932	343	20.1%
Westmoreland	295	270	337	280	313	278	18	6.1%
Wheaton	39	36	51	34	46	34	7	17.9%
Riley County	23,397	22,137	28,212	25,522	30,477	26,711	7,080	30.3%
Leonardville	190	162	195	169	188	161	-2	-1.1%
Manhattan	17,707	16,981	21,619	20,008	24,342	21,414	6,635	37.5%
Ogden	855	696	992	823	923	699	68	8.0%
Randolph	87	81	82	73	78	64	-9	-10.3%
Riley	364	332	487	487	434	389	70	19.2%
Wabaunsee County	3,033	2,633	3,227	2,737	3,110	2,659	77	2.5%

Table 5: Kansas Region I Housing Data

Jurisdiction	2000		2010		2020		2000 - 2020	
	Total	Occupied	Total	Occupied	Total	Occupied	Numeric Change (Total Units)	Percent Change (Total Units)
Alma	355	320	381	342	357	324	2	0.6%
Alta Vista	214	187	211	189	202	182	-12	-5.6%
Eskridge	233	214	233	187	214	179	-19	-8.2%
Harveyville	110	102	106	93	94	82	-16	-14.5%
Maple Hill	185	179	217	210	219	207	34	18.4%
McFarland	115	106	123	93	121	100	6	5.2%
Paxico	84	78	93	85	89	81	5	6.0%

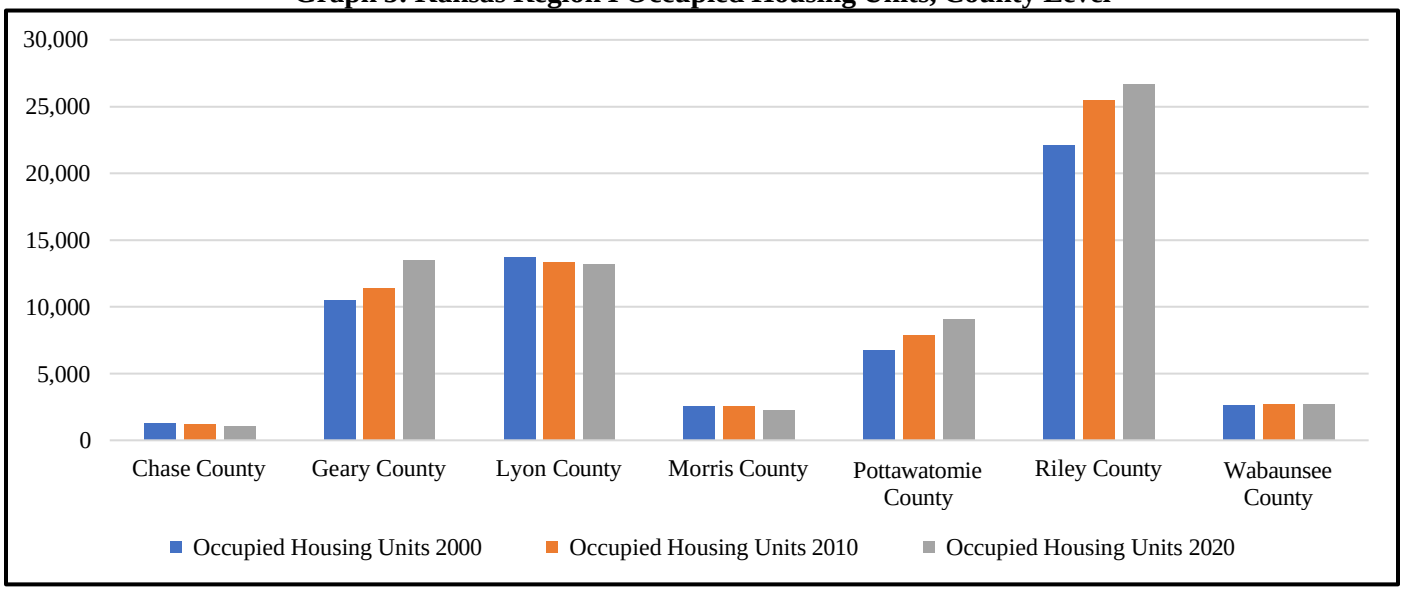
Source: US Census Bureau

Graph 4: Kansas Region I Total Housing Units, County Level



Source: US Census Bureau

Graph 5: Kansas Region I Occupied Housing Units, County Level



Source: US Census Bureau

Of particular concern when considering housing data is mobile home residences. Data from the NOAA National Severe Storms Laboratory reports that people living in mobile homes are especially at risk for injury and death as even anchored mobile homes can be seriously damaged when winds gust over 80 miles per hour. Additionally, study data from Michigan State University reported that the two biggest factors related to wind event fatalities were housing quality (measured by mobile homes as a proportion of housing units) and income level. When a tornadic wind strikes, a county with double the number of mobile homes as a proportion of all homes will experience 62% more fatalities than a county with fewer mobile homes, according to the study data. The following indicates the percentage of mobile homes for each Kansas Region I:

Table 6: Kansas Region I Mobile Home Data

Jurisdiction	2000		2010		2020		2000 - 2020
	Total	Percentage of Total Housing Units	Total	Percentage of Total Housing Units	Total	Percentage of Total Housing Units	Numeric Change (Total Units)
Chase County	**140**	**9.2%**	**137**	**11.7%**	**85**	**6.1%**	-55
Cedar Point	5	15.2%	0	0.0%	0	0.0%	-5
Cottonwood Falls	45	10.6%	30	6.5%	34	8.6%	-11
Elmdale	0	0.0%	1	3.7%	9	50.0%	9
Matfield Green	4	13.8%	4	11.1%	5	13.5%	1
Strong City	40	14.1%	51	19.9%	25	10.7%	-15
Geary County	**1,503**	**12.6%**	**1,481**	**10.2%**	**765**	**4.8%**	-738
Grandview Plaza	344	64.8%	429	54.4%	249	25.2%	-95
Junction City	943	10.8%	985	9.4%	349	3.2%	-594
Milford	55	23.4%	81	31.9%	12	4.6%	-43
Lyon County	**1,175**	**8.0%**	**1,402**	**9.2%**	**568**	**3.8%**	-607
Admire	12	15.6%	8	11.4%	27	45.8%	15
Allen	4	4.3%	20	22.0%	11	12.2%	7
Americus	93	24.2%	43	11.1%	40	11.2%	-53
Bushong	6	35.3%	0	0.0%	0	0.0%	-6
Emporia	664	6.0%	783	6.9%	258	2.3%	-406
Hartford	45	20.5%	48	24.9%	42	22.7%	-3
Neosho Rapids	29	23.0%	38	31.9%	33	28.7%	4
Olpe	27	12.6%	29	12.1%	19	8.3%	-8
Reading	16	14.5%	24	22.9%	5	6.3%	-11
Morris County	**281**	**8.9%**	**298**	**9.3%**	**306**	**10.2%**	25
Council Grove	120	11.0%	131	11.8%	145	13.8%	25
Dunlap	7	24.1%	9	52.9%	0	0.0%	-7
Dwight	34	22.1%	11	8.1%	3	2.7%	-31
Latimer	0	0.0%	0	0.0%	0	0.0%	0
Parkerville	5	17.2%	6	18.8%	1	4.8%	-4
White City	19	7.5%	12	4.3%	31	12.4%	12
Wilsey	11	11.8%	9	10.2%	5	6.8%	-6
Pottawatomie County	**914**	**12.5%**	**1,035**	**12.0%**	**898**	**9.1%**	-16
Belvue	14	15.4%	16	20.0%	3	4.3%	-11
Emmett	51	44.7%	14	16.1%	40	55.6%	-11
Havensville	8	10.3%	11	15.1%	0	0.0%	-8
Louisville	16	21.1%	34	35.4%	23	29.5%	7
Olsburg	4	4.8%	9	9.2%	11	11.2%	7
Onaga	16	4.7%	9	2.5%	6	1.9%	-10

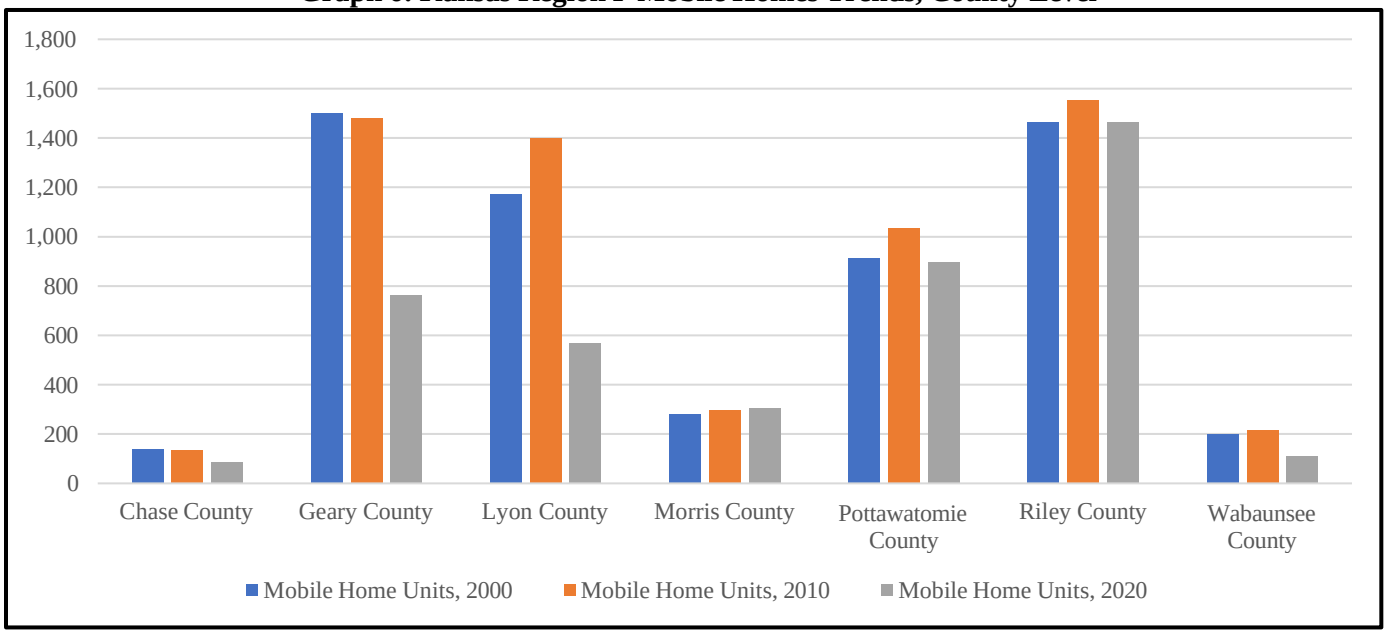
Table 6: Kansas Region I Mobile Home Data

Jurisdiction	2000		2010		2020		2000 - 2020
	Total	Percentage of Total Housing Units	Total	Percentage of Total Housing Units	Total	Percentage of Total Housing Units	Numeric Change (Total Units)
St. George	66	34.0%	43	22.2%	41	9.4%	-25
St Mary's	44	5.4%	23	2.6%	16	1.7%	-28
Wamego	109	6.4%	179	9.5%	158	7.7%	49
Westmoreland	26	8.8%	28	8.3%	17	5.4%	-9
Wheaton	6	15.4%	2	3.9%	9	19.6%	3
Riley County	**1,466**	**6.3%**	**1,552**	**5.5%**	**1,463**	**4.8%**	-3
Leonardville	5	2.6%	9	4.6%	3	1.6%	-2
Manhattan	683	3.9%	1,751	8.1%	1,193	4.9%	510
Ogden	180	21.1%	200	20.2%	110	11.9%	-70
Randolph	21	24.1%	19	23.2%	7	9.0%	-14
Riley	6	1.6%	12	2.5%	8	1.8%	2
Wabaunsee County	**202**	**6.7%**	**216**	**6.7%**	**112**	**3.6%**	-90
Alma	10	2.8%	21	5.5%	6	1.7%	-4
Alta Vista	17	7.9%	2	0.9%	15	7.4%	-2
Eskridge	11	3.0%	23	9.9%	8	3.7%	-3
Harveyville	7	10.0%	9	8.5%	4	4.3%	-3
Maple Hill	4	2.2%	6	2.8%	0	0.0%	-4
McFarland	17	14.8%	19	15.4%	13	10.7%	-4
Paxico	15	17.9%	10	10.8%	2	2.2%	-13

Source: US Census Bureau

The following graph provides trend data for mobile home stock for each participating county:

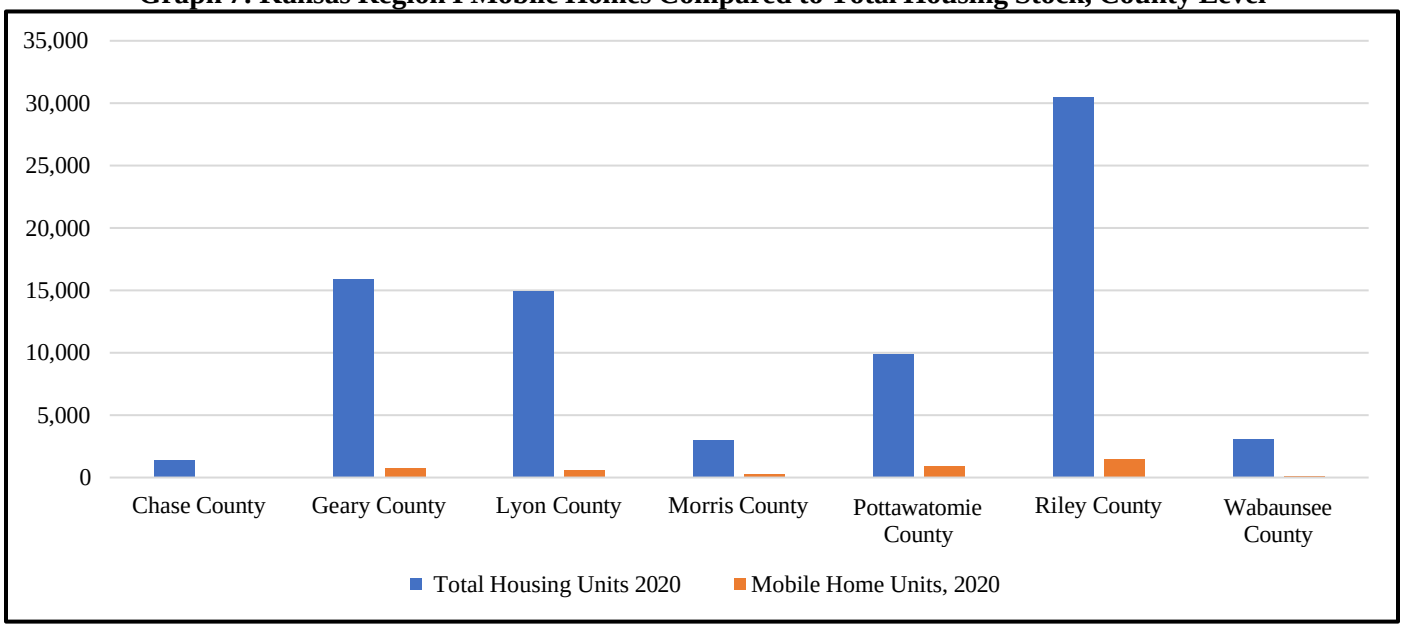
Graph 6: Kansas Region I Mobile Homes Trends, County Level



Source: U.S. Census Bureau

The following graph provides a comparison of mobile home stock to the total housing stock for each participating county:

Graph 7: Kansas Region I Mobile Homes Compared to Total Housing Stock, County Level



Source: U.S. Census Bureau

3.7 Valuation Data

Participating county Assessor Offices were contacted to determine if a valuation of properties was available for participating jurisdictions. It was determined that, due to the reporting format of available data, determining valuations for each jurisdiction was not feasible. As such, data on building valuation for participating jurisdictions was sourced from the FEMA NRI by Census tract, presented in the following table:

Table 7: FEMA Hazus Kansas Region I Building Valuation

Jurisdiction	Census Tract	Building Valuation
Chase County	**All**	**$899,059,401**
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	$899,059,401
Geary County	**All**	**$7,138,939,698**
Junction City	20061000100	$823,425,029
Junction City	20061000200	$348,156,357
Junction City	20061000300	$635,758,570
Junction City	20061000401	$666,013,325
Junction City	20061000402	$199,481,652
Junction City	20061000500	$669,065,623
Junction City	20061000601	$291,651,202
Grandview Plaza	20061000700	$618,529,913
Junction City	20061000801	$564,595,431
Milford	20061000802	$1,164,595,726
Lyon County	**All**	**$7,342,340,855**
Emporia	20111000101	$369,010,908
Emporia	20111000102	$549,274,218
Emporia	20111000103	$167,002,826
Emporia	20111000201	$566,822,387
Emporia	20111000202	$763,467,620
Emporia	20111000203	$200,867,288
Emporia	20111000300	$1,136,532,914
Emporia	20111000400	$418,099,809
Emporia	20111000500	$882,716,450

Table 7: FEMA Hazus Kansas Region I Building Valuation

Jurisdiction	Census Tract	Building Valuation
Allen, Admire, Bushong, Reading	20111000600	$601,667,677
Americus	20111000700	$563,685,876
Hartford, Olpe, Neosho Rapids	20111000800	$1,123,192,882
Morris County	**All**	**$1,391,355,959**
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	$809,263,155
Council Grove	20127963700	$582,092,804
Pottawatomie County	**All**	**$6,517,168,322**
Louisville	20149000101	$565,593,000
St. George	20149000102	$1,938,447,168
Wamego	20149000200	$1,228,985,624
Belvue, Emmett, St. Marys	20149000300	$1,091,112,184
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	$1,693,030,346
Riley County	**All**	**$14,342,059,926**
Manhattan	20161000201	$354,380,297
Manhattan	20161000202	$857,925,878
Manhattan	20161000303	$122,837,074
Manhattan	20161000304	$840,670,880
Manhattan	20161000500	$532,749,458
Manhattan	20161000601	$654,218,798
Manhattan	20161000602	$932,642,744
Manhattan	20161000700	$1,021,614,235
Manhattan	20161000801	$674,989,943
Manhattan	20161000802	$696,463,410
Ogden	20161000900	$1,310,684,560
Manhattan	20161001101	$2,052,129,353
Manhattan	20161001102	$407,982,323
Manhattan	20161001301	$727,159,160
Leonardville, Randloph, Riley	20161001302	$1,521,173,744
Wabaunsee County	**All**	**$1,955,675,969**
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	$1,127,897,651
Eskridge, Harveyville,	20197483200	$827,778,318

3.8 School District Data

Children are among the most vulnerable populations during disasters, requiring special consideration in preparedness and response efforts. A community with high school enrollment typically has a significant portion of its population dependent on schools for safety, education, and emergency support during crises. Additionally, disruptions to education during disasters can have long-term impacts on children's well-being and development. Communities with higher school enrollment may face increased challenges in ensuring the safety and continuity of education during hazard events, making it essential to prioritize schools in mitigation planning and resource allocation.

The following table presents school enrollment information from the Kansas Department of Education for school years 2014, 2019, and 2024:

Table 8: Kansas Region I School Enrollment Information

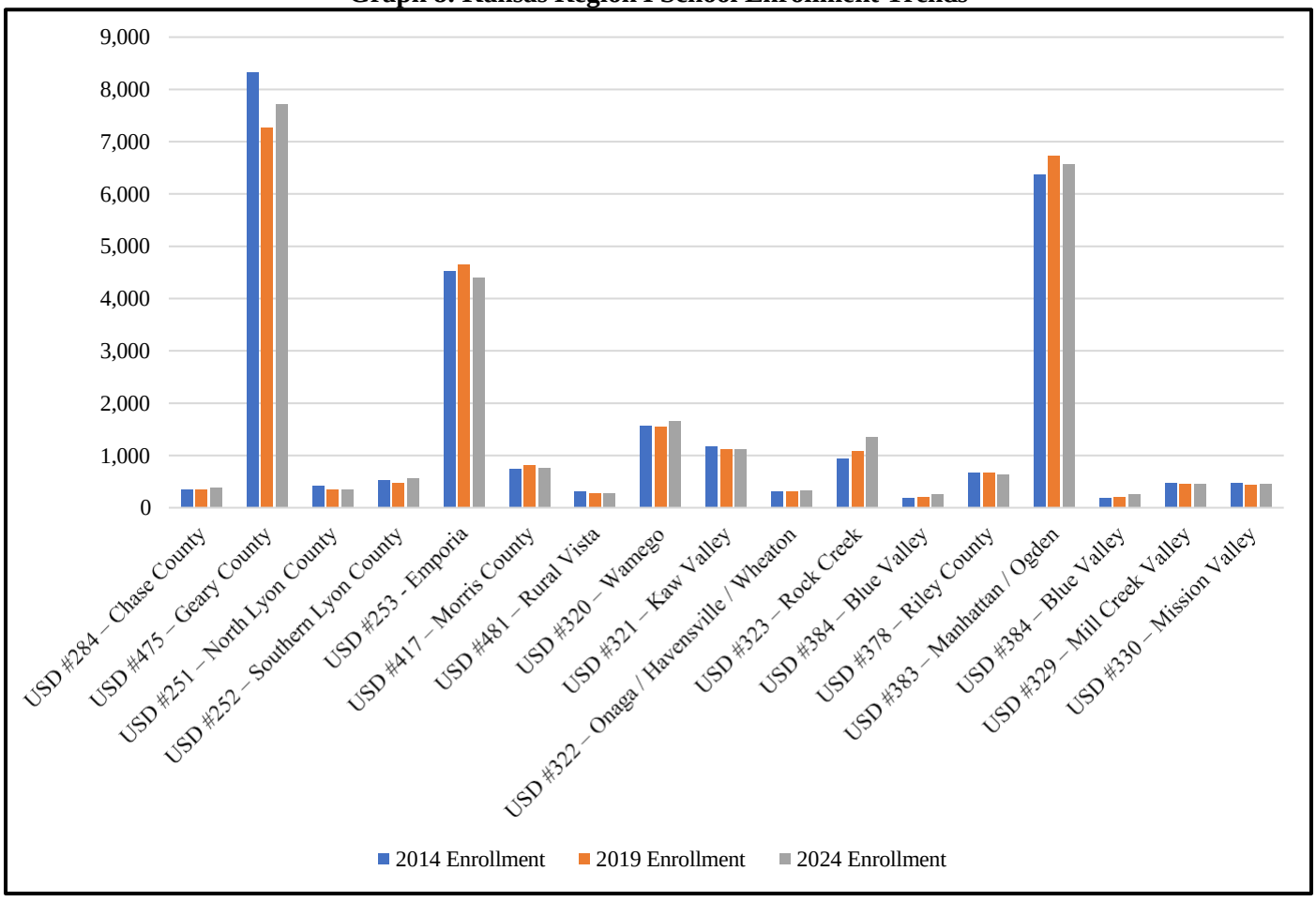
District	2014 Enrollment	2019 Enrollment	2024 Enrollment	Enrollment Change (2014-2024)
USD #284 – Chase County	356	350	390	34
USD #475 – Geary County	8,332	7,279	7,723	-609
USD #251 – North Lyon County	422	347	343	-79

Table 8: Kansas Region I School Enrollment Information

District	2014 Enrollment	2019 Enrollment	2024 Enrollment	Enrollment Change (2014-2024)
USD #252 – Southern Lyon County	521	485	572	51
USD #253 - Emporia	4,535	4,658	4,399	-136
USD #417 – Morris County	745	812	772	27
USD #481 – Rural Vista	303	271	285	-18
USD #320 – Wamego	1,561	1,551	1,655	94
USD #321 – Kaw Valley	1,181	1,117	1,119	-62
USD #322 – Onaga/ Havensville/ Wheaton	316	317	330	14
USD #323 – Rock Creek	948	1,087	1,358	410
USD #384 – Blue Valley	194	215	255	61
USD #378 – Riley County	681	669	633	-48
USD #383 – Manhattan / Ogden	6,371	6,723	6,567	196
USD #329 – Mill Creek Valley	475	453	451	-24
USD #330 – Mission Valley	474	439	447	-27

Source: Kansas Public Education Department

Graph 8: Kansas Region I School Enrollment Trends



Source: Kansas Department Education

3.9 Critical Infrastructure

Certain critical infrastructure has a net positive value on the community as they contribute to the public good by facilitating the basic functions of society. These locations help maintain order, public health, education, and help the

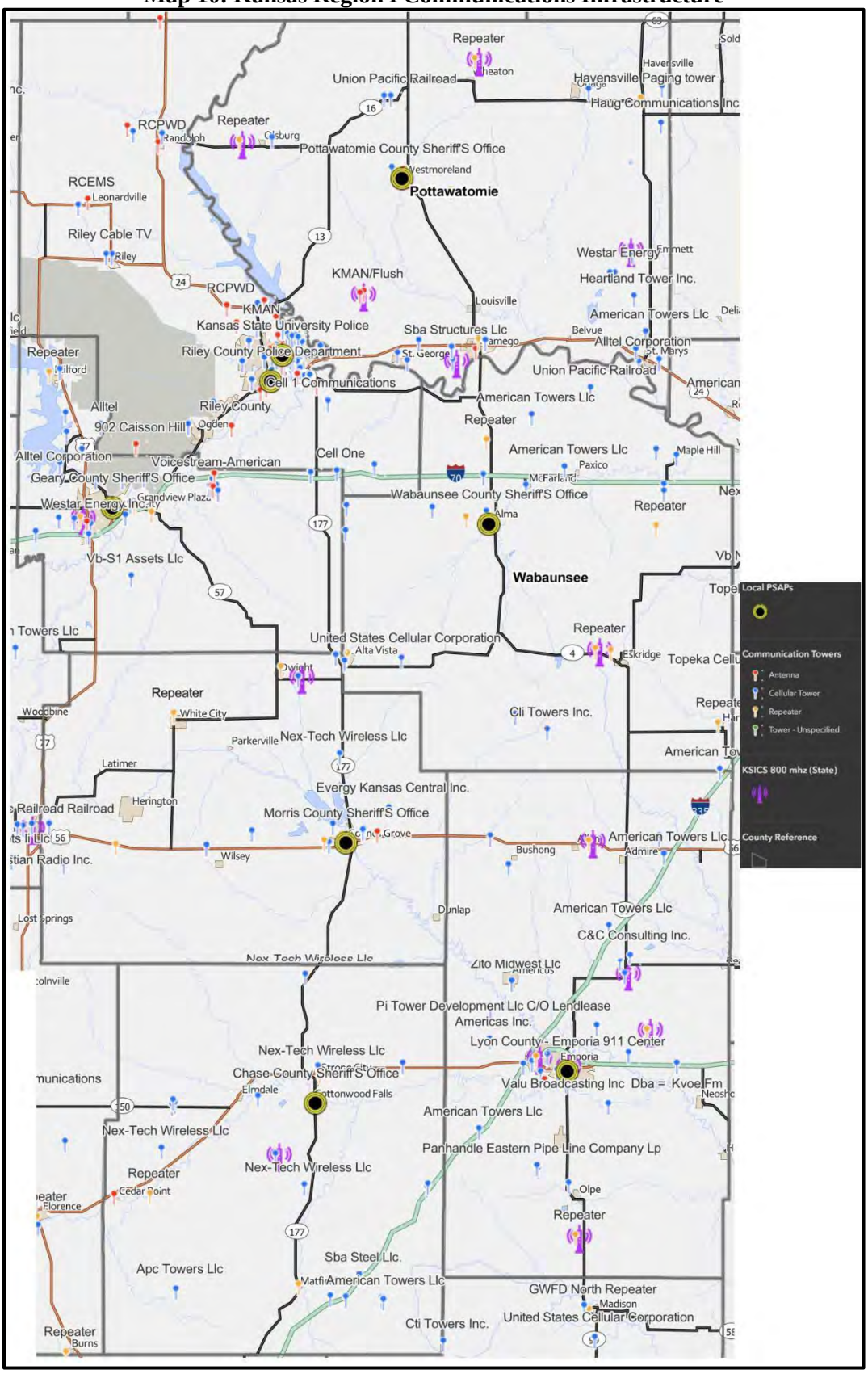
economy function. Additionally, components are integral to disaster response and recovery operations. The following is a list of considered critical infrastructure:

- Communications
- Response and health care
- Transportation
- Education
- Electrical

The following maps break down critical infrastructure locations:

Communications infrastructure is essential in hazard mitigation planning because it enables the timely sharing of warnings, emergency instructions, and coordination among response agencies. Reliable systems—such as radio networks, cell towers, internet services, and public alert systems—ensure that critical information reaches residents, first responders, and government officials during emergencies. When communications fail, confusion, delayed responses, and increased risk to life and property can result.

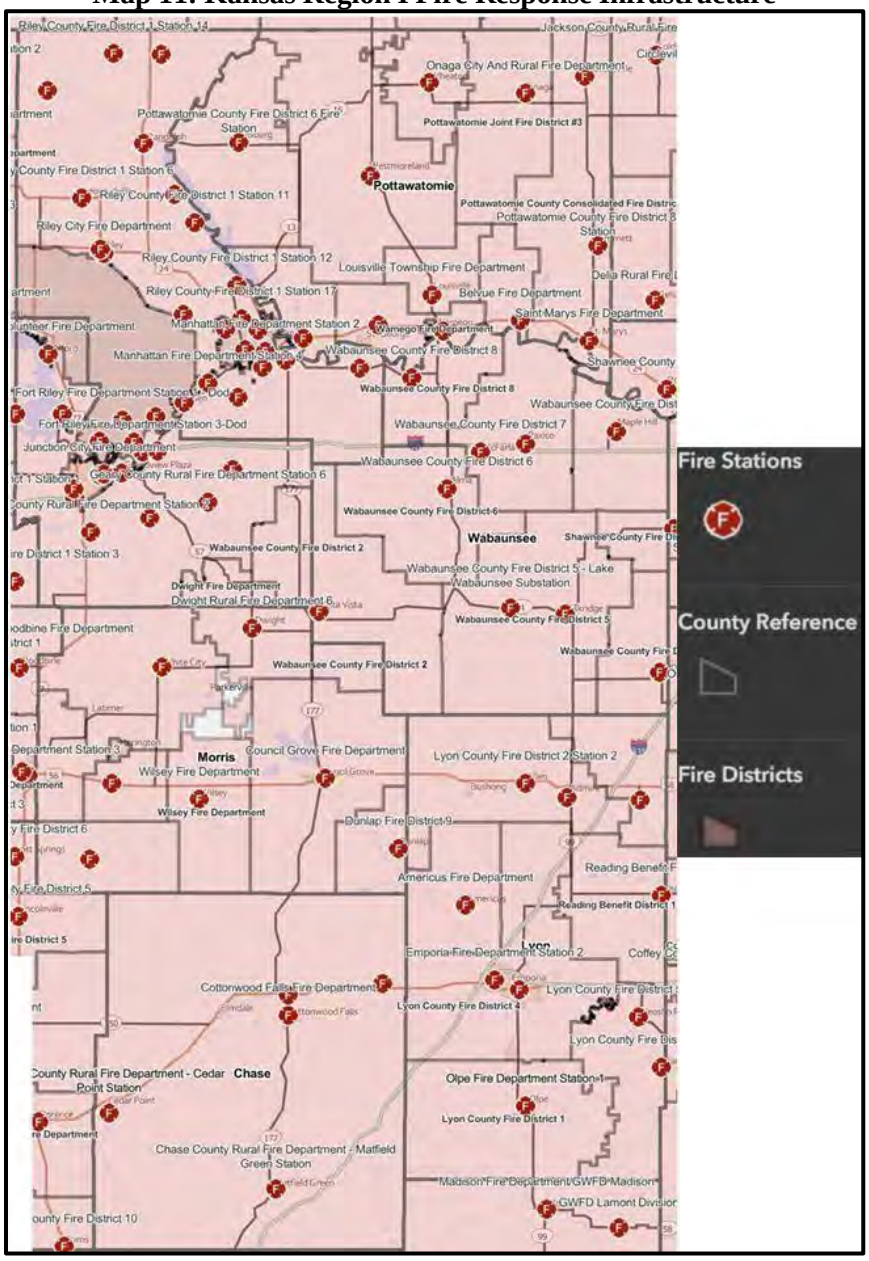
Map 10: Kansas Region I Communications Infrastructure



Source: Kansas EOPmapper

Fire infrastructure is a key component of hazard mitigation planning because fire stations, personnel, and equipment provide critical first response to a wide range of emergencies, including wildfires, hazardous material incidents, and structural fires. Well-placed and well-maintained fire facilities ensure rapid response times, which can prevent small incidents from escalating into major disasters.

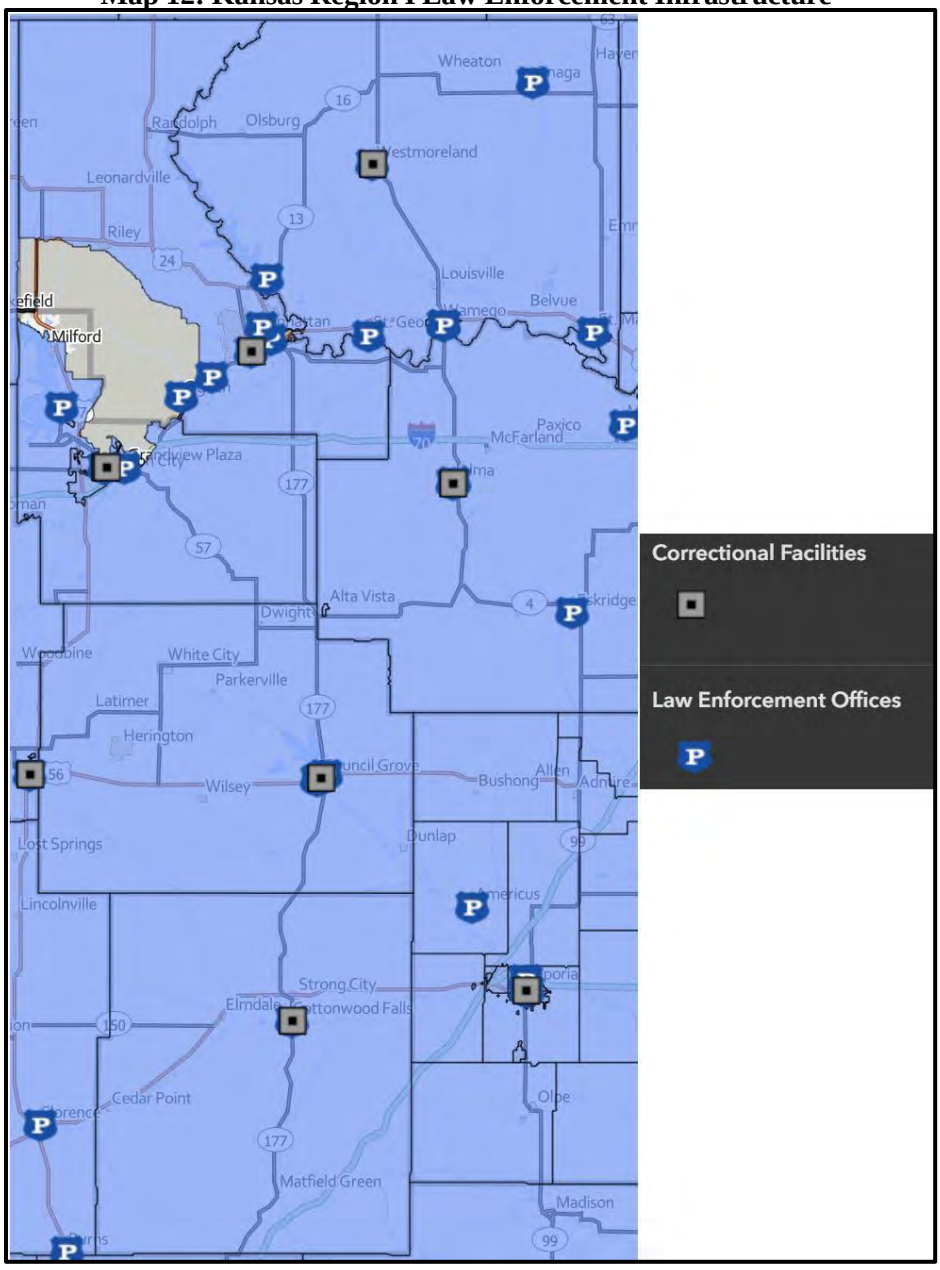
Map 11: Kansas Region I Fire Response Infrastructure



Source: Kansas EOPmapper

Law enforcement infrastructure is essential in hazard mitigation because it plays a key role in maintaining public safety, coordinating emergency response, and supporting evacuation and sheltering operations. Police stations serve as command centers during disasters, and their continued operation depends on resilient facilities and secure communication systems. Damage to law enforcement infrastructure can delay response times, reduce coordination with other agencies, and leave communities more vulnerable to chaos or crime during emergencies.

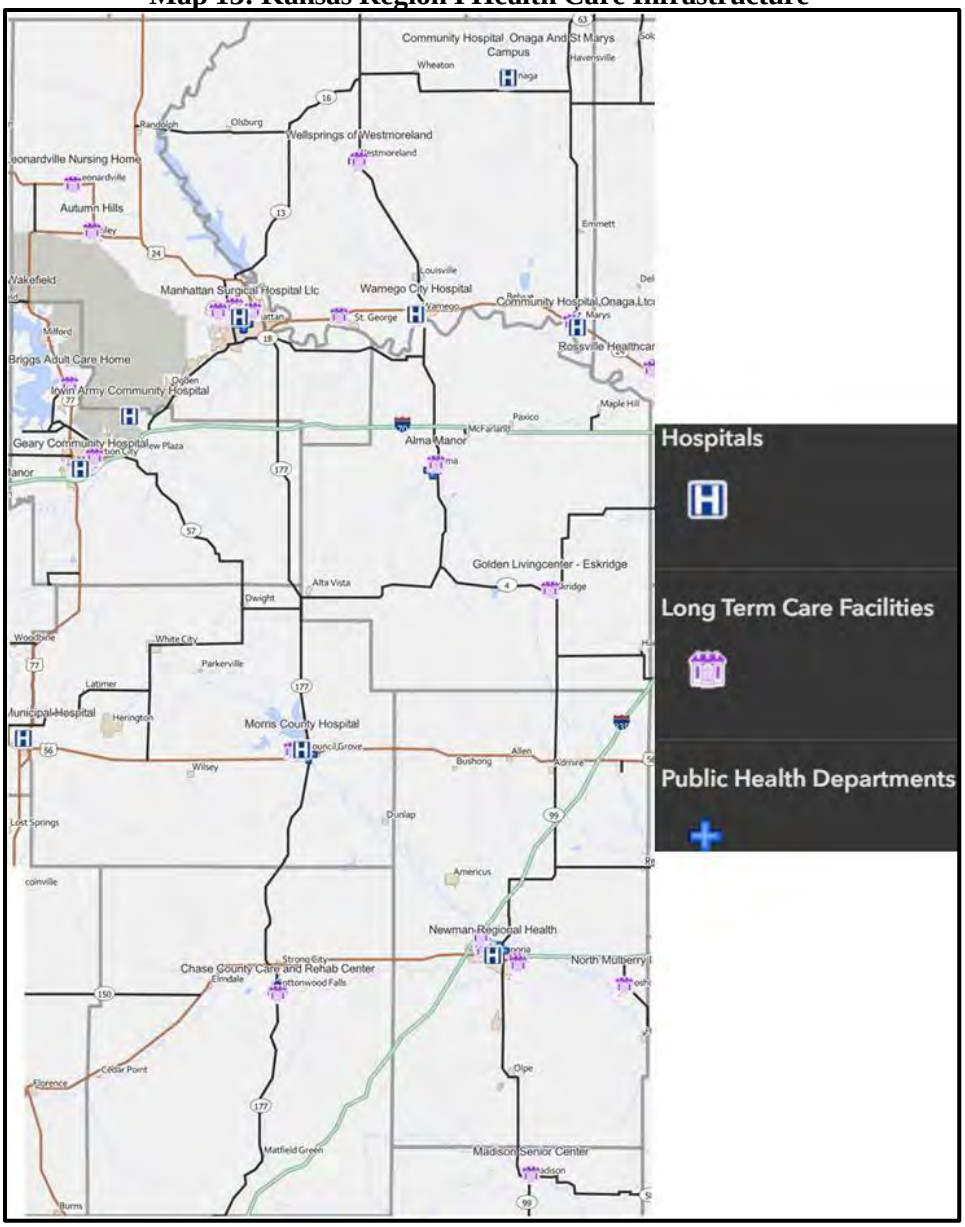
Map 12: Kansas Region I Law Enforcement Infrastructure



Source: Kansas EOPmapper

Health care infrastructure is vital in hazard mitigation planning because hospitals, clinics, and emergency care facilities must remain operational to treat injuries, manage chronic conditions, and support public health during disasters. Damage or disruption to these facilities can overwhelm emergency services and increase mortality, especially among vulnerable populations.

Map 13: Kansas Region I Health Care Infrastructure



Source: Kansas EOPmapper

Transportation infrastructure is crucial in hazard mitigation planning because it enables evacuation, emergency response, and delivery of critical supplies during and after disasters. Road, bridges, and airports form the backbone of a community's ability to move people and resources efficiently. If transportation routes are damaged or blocked response efforts can be delayed and communities may become isolated.

Table 9: Kansas Region I Road Mileage

County	Budget	Asphalt	Concrete	Gravel	Earth	Total Miles
Chase County	$2,006,005	20	1	462	42	525
Geary County	$4,662,869	117	0	240	4	361
Lyon County	$8,166,000	127	5	1,158	138	1,428
Morris County	$3,891,000	99	0	820	201	1,120
Pottawatomie County	$11,129,393	192	24	813	167	1,196
Riley County	$7,806,393	130	8	111	0	249
Wabaunsee County	$2,880,000	67	0	162	0	229

Source: KDOT, 2022 data

Map 14: Kansas Region I Highway Infrastructure



Source: Kansas EOPmapper

Map 15: Kansas Region I Airports



Source: Kansas EOPmapper

Bridges are critical considerations in hazard mitigation because they represent both vital infrastructure and potential points of failure during emergencies. Their structural integrity directly affects a community's resilience, emergency response capability, and long-term recovery prospects. Bridges often form key parts of evacuation corridors. If they fail or are impassable during a hazard event, evacuation efforts can be delayed or rerouted. Additionally, first responders, utility crews, and disaster relief teams depend on bridge access to reach affected areas. Poor bridge conditions can impede response time or prevent access entirely.

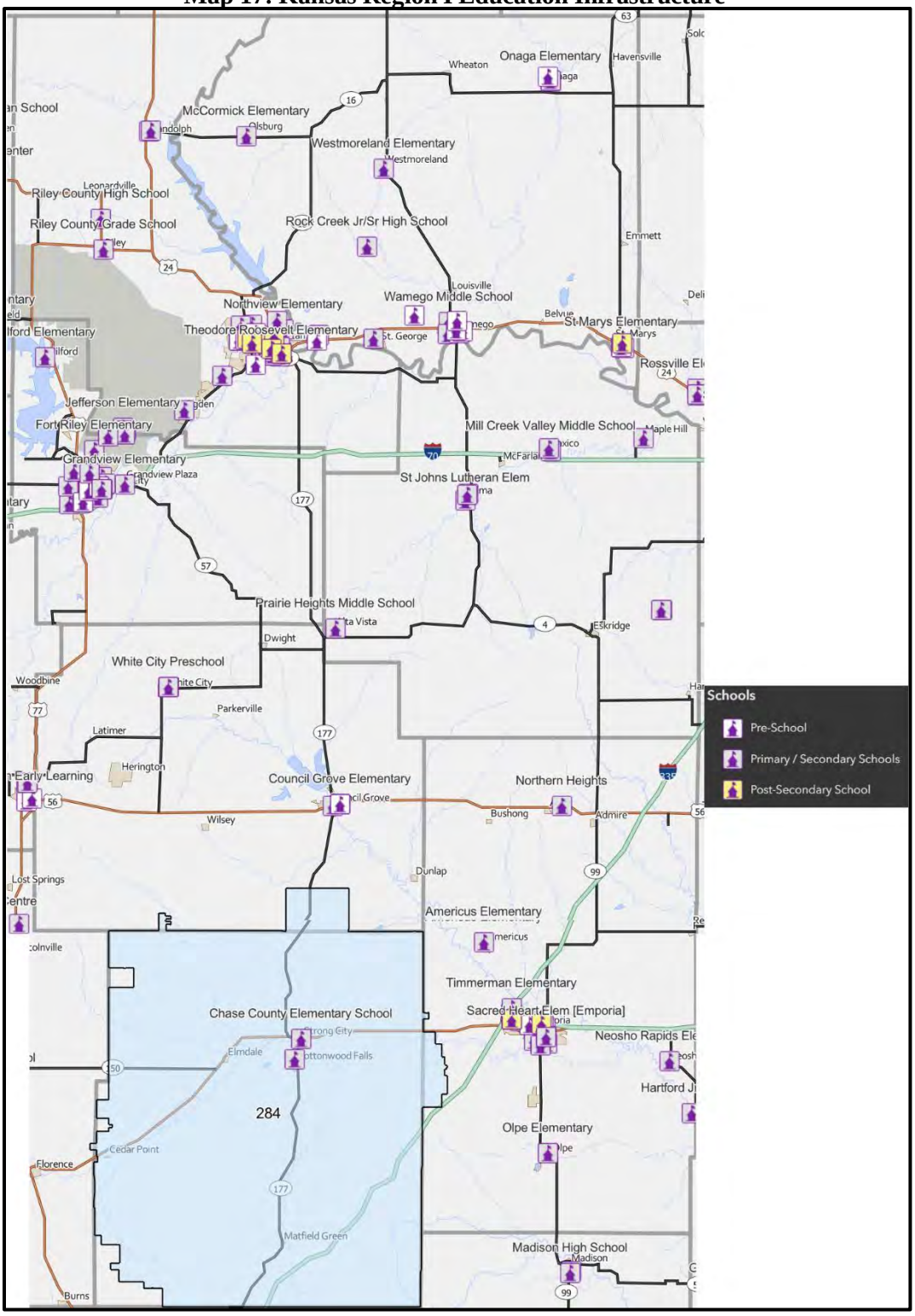
Map 16: Kansas Region I Bridge Infrastructure



Source: Kansas EOPmapper

Regional education facilities are central to community stability, and the rapid recovery of educational services after a disaster supports long-term resilience for families.

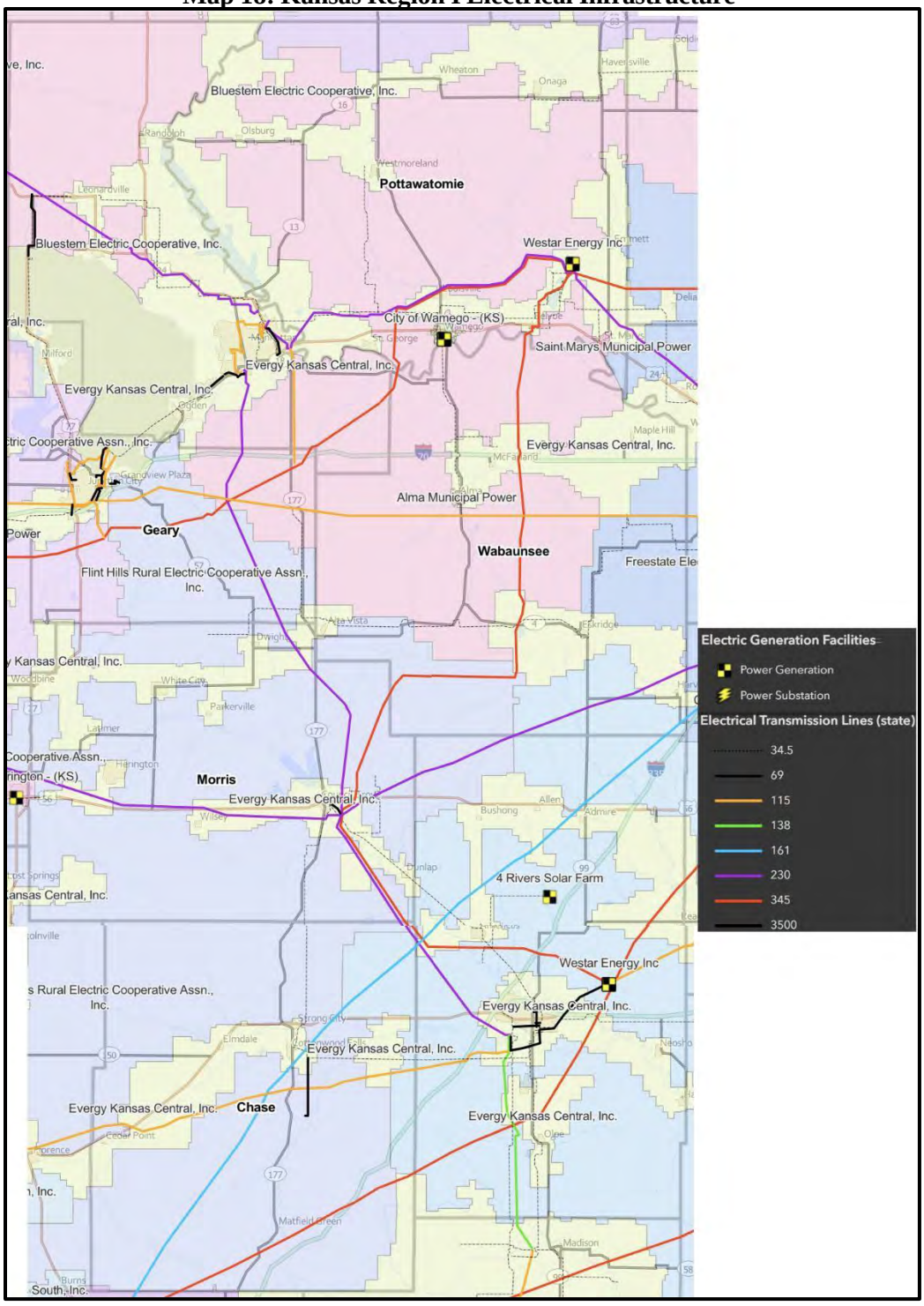
Map 17: Kansas Region I Education Infrastructure



Source: Kansas EOPmapper

Electrical infrastructure is vital in hazard mitigation because it supports nearly every critical function during and after a disaster. Reliable power ensures that emergency services, hospitals, water treatment facilities, and communication systems remain operational when they are needed most. Disruptions to the electrical grid can delay response efforts, hinder evacuations, and endanger vulnerable populations reliant on powered medical equipment.

Map 18: Kansas Region I Electrical Infrastructure



Source: Kansas EOPmapper

3.10 Historic Places

Historic buildings are generally more vulnerable to natural hazards due to their age, materials, and construction methods. These structures were often built before modern building codes and may lack the structural reinforcements required to withstand hazards. Additionally, the materials used in historic buildings, like old brick, wood, or mortar, may have deteriorated over time, further reducing their resilience.

Preserving historic buildings poses unique challenges in hazard mitigation because retrofitting or upgrading them to meet modern safety standards must balance maintaining their historical integrity. This vulnerability underscores the importance of integrating historic preservation with hazard mitigation planning, ensuring that these culturally significant structures are protected while minimizing risks to public safety. For cultural and historic locations within Kansas Region I the following resources were consulted:

- **National Register of Historic Places**: The official list of the United States' historic properties deemed worthy of preservation for their significance in American history, architecture, archaeology, engineering, or culture. Administered by the National Park Service under the Department of the Interior, it includes districts, sites, buildings, structures, and objects. Established by the National Historic Preservation Act of 1966, the register seeks to recognize and protect cultural heritage. While listing does not impose restrictions on private property, it provides eligibility for preservation incentives.
- **Kansas Register of Historic Places:** An official listing of properties, sites, structures, buildings, landscapes areas and objects significant in the history, architecture, and culture of the state of Kansas and its communities. Administered by the Kansas Historic Preservation Program, the register aims to recognize and protect the state's rich heritage. Properties listed in the register are evaluated based on their historical importance, architectural merit, and cultural contributions. Inclusion in the register not only acknowledges a property's significance but also provides opportunities for preservation grants, technical assistance, and tax incentives. It also ensures that state-funded projects consider the impact on these cultural assets, promoting stewardship and sustainable preservation efforts.

The following table details properties and locations in Kansas Region I and participating jurisdictions listed on these registers.

Table 10: Kansas Region I Historic Places

Location	County	Jurisdiction	Historic Register
Cartter Building	Chase	Cottonwood Falls	x
Cedar Point Mill	Chase	Cedar Point	x
Chase County Courthouse	Chase	Cottonwood Falls	x
Chase County National Bank	Chase	Cottonwood Falls	x
Clements Stone Arch Bridge	Chase	Clements	x
Clover Cliff Ranch House	Chase	Elmdale	x
Cottonwood Falls Grade School	Chase	Cottonwood Falls	x
Cottonwood River Bridge	Chase	Cottonwood Falls	x
Cottonwood River Pratt Truss Bridge	Chase	Cedar Point	x
Crocker Ranch	Chase	Matfield Green	x
Fox Creek Stone Arch Bridge	Chase	Strong City	x
Lower Fox Creek School	Chase	Strong City	x
Matfield Green High School Gymnasium	Chase	Matfield Green	x
McNee Barns	Chase	Elmdale	x
Pioneer Bluffs Ranch Historic District	Chase	Matfield Green	x
Shaft, William C. & Jane, House	Chase	Cedar Point	x
Spring Hill Farm and Stock Ranch House	Chase	Strong City	x
Spring Hill Ranch	Chase	Strong City	x
Strong City Atchison, Topeka, & Santa Fe Depot	Chase	Strong City	x
Whitney Ranch Historic District	Chase	Hymer	x
Wood House	Chase	Cottonwood Falls	x
Bartell House	Geary	Junction City	x
Bogan Archeological Site	Geary	Junction City	x
Brown, George T, House	Geary	Junction City	x
Conroe Bridge	Geary	Junction City	x
Dixon, James, House	Geary	Milford	x

Table 10: Kansas Region I Historic Places

Location	County	Jurisdiction	Historic Register
Elliott Village Site	Geary	Junction City	x
First Presbyterian Church of Junction City	Geary	Junction City	x
First Territorial Capitol	Geary	Junction City	x
Grand Army of the Republic (GAR) Memorial Arch	Geary	Junction City	x
Jackson-McConnell House	Geary	Junction City	x
Junction City Downtown Historic District	Geary	Junction City	x
Leithoff-Powers Ranch Historic District	Geary	Junction City	x
Lyon Creek Rainbow Arch	Geary	Wreford	x
Main Post Area, Fort Riley	Geary	Junction City	x
Old Junction City High School	Geary	Junction City	x
Old Katy Bridge	Geary	Wreford	x
Wetzel, Christian, Cabin	Geary	Junction City	x
Anderson Carnegie Memorial Library	Lyon	Emporia	x
Cross, Col. H.C. and Susan, House	Lyon	Emporia	x
Emporia Downtown Historic District	Lyon	Emporia	x
Finney, Warren Wesley, House	Lyon	Emporia	x
Granada Theater	Lyon	Emporia	x
Harris Bridge	Lyon	Americus	x
Harris-Borman House	Lyon	Emporia	x
Hartford Collegiate Institute	Lyon	Hartford	x
Howe, Richard, House	Lyon	Emporia	x
Keebler-Stone House	Lyon	Emporia	x
Kress Building	Lyon	Emporia	x
Mason, Walt, House	Lyon	Emporia	x
Mouse, Snowden S., Service Station and Home	Lyon	Emporia	x
Old Emporia Public Library	Lyon	Emporia	x
Plumb, Mrs. Preston B., House	Lyon	Emporia	x
Rocky Ford Bridge	Lyon	Emporia	x
Soden, Hallie B., House	Lyon	Emporia	x
Soden's Grove Bridge	Lyon	Emporia	x
White, William Allen, House	Lyon	Emporia	x
Big John Farm Limestone Bank Barn	Morris	Council Grove	x
Carlson, Oscar, House	Morris	Burdick	x
Cottage House Hotel	Morris	Council Grove	x
Council Grove Carnegie Library	Morris	Council Grove	x
Council Grove Downtown Historic District	Morris	Council Grove	x
Council Grove Historic District	Morris	Council Grove	x
Council Grove Missouri, Kansas and Texas Depot	Morris	Council Grove	x
Council Grove National Bank	Morris	Council Grove	x
Diamond Spring	Morris	Wilsey	x
Dunlap Colored Cemetery	Morris	Dunlap	x
Farmers and Drovers Bank	Morris	Council Grove	x
Farmers and Drovers Bank and Indicator Building	Morris	Council Grove	x
First Baptist Church	Morris	Council Grove	x
Four Mile Creek Lattice	Morris	Wilsey	x
Furney Farm	Morris	Council Grove	x
Greenwood Cemetery	Morris	Council Grove	x
Hays, Seth, House	Morris	Council Grove	x
Herington Army Airfield Chapel	Morris	Latimer	x
Hermit's Cave on Belfry Hill	Morris	Council Grove	x

Table 10: Kansas Region I Historic Places

Location	County	Jurisdiction	Historic Register
Jenkins Building	Morris	White City	x
Last Chance Store	Morris	Council Grove	x
Little John Creek Reserve	Morris	Council Grove	x
Madonna of the Trail	Morris	Council Grove	x
Old Kaw Mission	Morris	Council Grove	x
Simcock House	Morris	Council Grove	x
Six Mile Creek Stage Station Historic District	Morris	Burdick	x
US Post Office-Council Grove	Morris	Council Grove	x
Young, William, Archeological Site	Morris	Council Grove	x
Baker, Cassius and Adelia, House	Pottawatomie	Wamego	x
Coffey Site	Pottawatomie	Olsburg	x
Dennis Quarry	Pottawatomie	Onaga	x
German Evangelical Church	Pottawatomie	Westmoreland	x
Heptig, Joseph, Barn	Pottawatomie	Flush	x
McKimmons, John, Barn	Pottawatomie	Westmoreland	x
Old Dutch Mill	Pottawatomie	Wamego	x
Pottawatomie County Courthouse	Pottawatomie	Westmoreland	x
Pottawatomie County Fair Pavilion	Pottawatomie	Onaga	x
Pottawatomie Indian Pay Station	Pottawatomie	St. Mary's	x
Scott Spring	Pottawatomie	Westmoreland	x
Teske Farmstead	Pottawatomie	Onaga	x
Trout, George and Virginia, House	Pottawatomie	Wamego	x
Vermillion Creek Archeological District	Pottawatomie	Onaga	x
Vermillion Creek Crossing, Oregon Trail	Pottawatomie	Belvue	x
Vermillion Creek Tributary Stone Arch Bridge	Pottawatomie	Onaga	x
Anderson Hall	Riley	Manhattan	x
Avalon, The	Riley	Manhattan	x
Bethel A.M.E. Church	Riley	Manhattan	x
Bluemont Youth Cabin	Riley	Manhattan	x
Community House	Riley	Manhattan	x
Dawson’s Conoco Service Station	Riley	Manhattan	x
Downtown Manhattan Historic District	Riley	Manhattan	x
Elliot, Mattie M., House	Riley	Manhattan	x
First Christian Church	Riley	Manhattan	x
First Congregational Church	Riley	Manhattan	x
Fitz, Leslie A., House	Riley	Manhattan	x
Forrester, F. B., House	Riley	Manhattan	x
Goodnow House	Riley	Manhattan	x
Grimes House	Riley	Manhattan	x
Hartford House	Riley	Manhattan	x
Houston and Pierre Streets Historic District	Riley	Manhattan	x
Houston, Samuel D., House	Riley	Manhattan	x
Hulse-Daughters House	Riley	Manhattan	x
Ingraham, Jesse, House	Riley	Manhattan	x
Kimble, Francis Byron (Barney), House	Riley	Manhattan	x
KSAC Radio Towers	Riley	Manhattan	x
Landmark Water Tower	Riley	Manhattan	x
Lyda-Jean Apartments	Riley	Manhattan	x
Manhattan Carnegie Library Building	Riley	Manhattan	x
McFarlane-Wareham House	Riley	Manhattan	x
Persons Barn and Granary	Riley	Manhattan	x

Table 10: Kansas Region I Historic Places

Location	County	Jurisdiction	Historic Register
Pioneer Log Cabin	Riley	Manhattan	x
Platt, Jeremiah, House	Riley	Manhattan	x
Riley County Courthouse	Riley	Manhattan	x
Rocky Ford School	Riley	Manhattan	x
Runyon, Damon House	Riley	Manhattan	x
Second Baptist Church	Riley	Manhattan	x
Seven Dolors Catholic Church	Riley	Manhattan	x
Strasser House	Riley	Manhattan	x
Ulrich, Robert, House	Riley	Manhattan	x
Viking Manufacturing Company Building	Riley	Manhattan	x
Walters, Daniel and Maude, House	Riley	Manhattan	x
Wharton, E. A. and Ura, House	Riley	Manhattan	x
Wolf House Historic District	Riley	Manhattan	x
Woman's Club House	Riley	Manhattan	x
Young Buck Site	Riley	Manhattan	x
Yuma Street Historic District	Riley	Manhattan	x
Alma Downtown Historic District	Wabaunsee	Alma	x
Beecher Bible and Rifle Church	Wabaunsee	Wabaunsee	x
Brandt Hotel	Wabaunsee	Alma	x
East Stone Arch Bridge - Lake Wabaunsee	Wabaunsee	Eskridge	x
Eskridge Bandstand	Wabaunsee	Eskridge	x
Fix Farmstead	Wabaunsee	Alma	x
Grimm-Schultz Farmstead	Wabaunsee	Alma	x
Mount Mitchell Heritage Prairie Historic District	Wabaunsee	Wamego	x
Paxico Historic District	Wabaunsee	Paxico	x
Paxico Rural High School	Wabaunsee	Paxico	x
Pratt-Mertz Barn	Wabaunsee	Manhattan	x
Security State Bank	Wabaunsee	Eskridge	x
Snokomo School	Wabaunsee	Paxico	x
Southeast Stone Arch Bridge - Lake Wabaunsee	Wabaunsee	Eskridge	x
Stuewe House	Wabaunsee	Alma	x
Sump Barn	Wabaunsee	Alma	x
Thoes, Peter, Barn	Wabaunsee	Alma	x
Wabaunsee County Courthouse	Wabaunsee	Alma	x
Wabaunsee District #1 Grammar School	Wabaunsee	Wabaunsee	x

Source: National Register of Historic Places, Kansas Register of Historical Places

3.11 Economic Conditions

U.S. Census data provides key insights into the working-age population actively participating in the economy. This data helps measure the labor force participation rate, a critical economic indicator reflecting the proportion of the eligible population contributing to the workforce. It excludes certain groups, such as retirees, students, or those not seeking employment, giving a clearer picture of economic engagement and workforce trends.

Table 11: Population in Labor Force

Jurisdiction	Population over 16	In Labor Force	Employed	Unemployed
Chase County	2,114	1,208	1,199	9
Geary County	25,282	18,268	12,582	799
Lyon County	25,780	17,618	17,081	437
Morris County	4,396	2,835	2,760	56
Pottawatomie County	19,167	12,826	12,456	242
Riley County	60,967	43,571	34,410	1476

Table 11: Population in Labor Force

Jurisdiction	Population over 16	In Labor Force	Employed	Unemployed
Wabaunsee County	5,538	3,446	3,299	137

Source: U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates

3.12 Physical Setting and Land Cover

Kansas Region I is defined by the Flint Hills, one of the last remaining expanses of tallgrass prairie in North America. The physical geography consists of rolling limestone and shale uplands, dissected hills, and broad river valleys, creating a landscape that is more rugged compared to the flatter High Plains to the west. Elevations generally range from 1,000 to 1,600 feet, with local relief shaped by erosion-resistant flint-bearing rock layers.

Land cover is dominated by a mix of native tallgrass prairie, rangeland, agricultural cropland, riparian corridors, and scattered forested areas, especially along river bottoms and tributary streams. Much of the terrain remains in grassland because the rocky soils limit tillage, making the region one of the most intact tallgrass ecosystems in the country. Agricultural activity includes cattle grazing, hay production, and row crops such as corn, soybeans, and wheat in suitable valley soils.

The region is part of a humid continental climate zone, experiencing hot summers, cold winters, and significant seasonal temperature swings. Average annual precipitation ranges from 32 to 38 inches, supporting prairie vegetation and streamflow but also contributing to flood risk, severe storms, drought cycles, and extreme temperature events.

Surface water features are more abundant here than in western Kansas. The Kansas River system is the dominant hydrologic feature. Key rivers include the Kansas River (forming along the Riley/Pottawatomie line and flowing east), Big Blue River (running through Riley and Pottawatomie Counties into Tuttle Creek Lake), Neosho River (flowing south through Morris and Lyon Counties), Cottonwood River (crossing Chase and Lyon Counties), and the Republican River headwaters contributing to Milford Lake (Geary County). These rivers support municipal water supplies, agriculture, and recreation while influencing flood hazards. Major federal reservoirs, including Milford Lake (Geary), Tuttle Creek Lake (Riley/Pottawatomie), and Council Grove Lake (Morris), provide flood control, water storage, hydropower, and habitat but also create dam-related risks downstream.

Groundwater resources are present but vary across the region, with alluvial aquifers along major river valleys serving as primary municipal and agricultural sources. Unlike western Kansas, this region does not rely on the Ogallala Aquifer system.

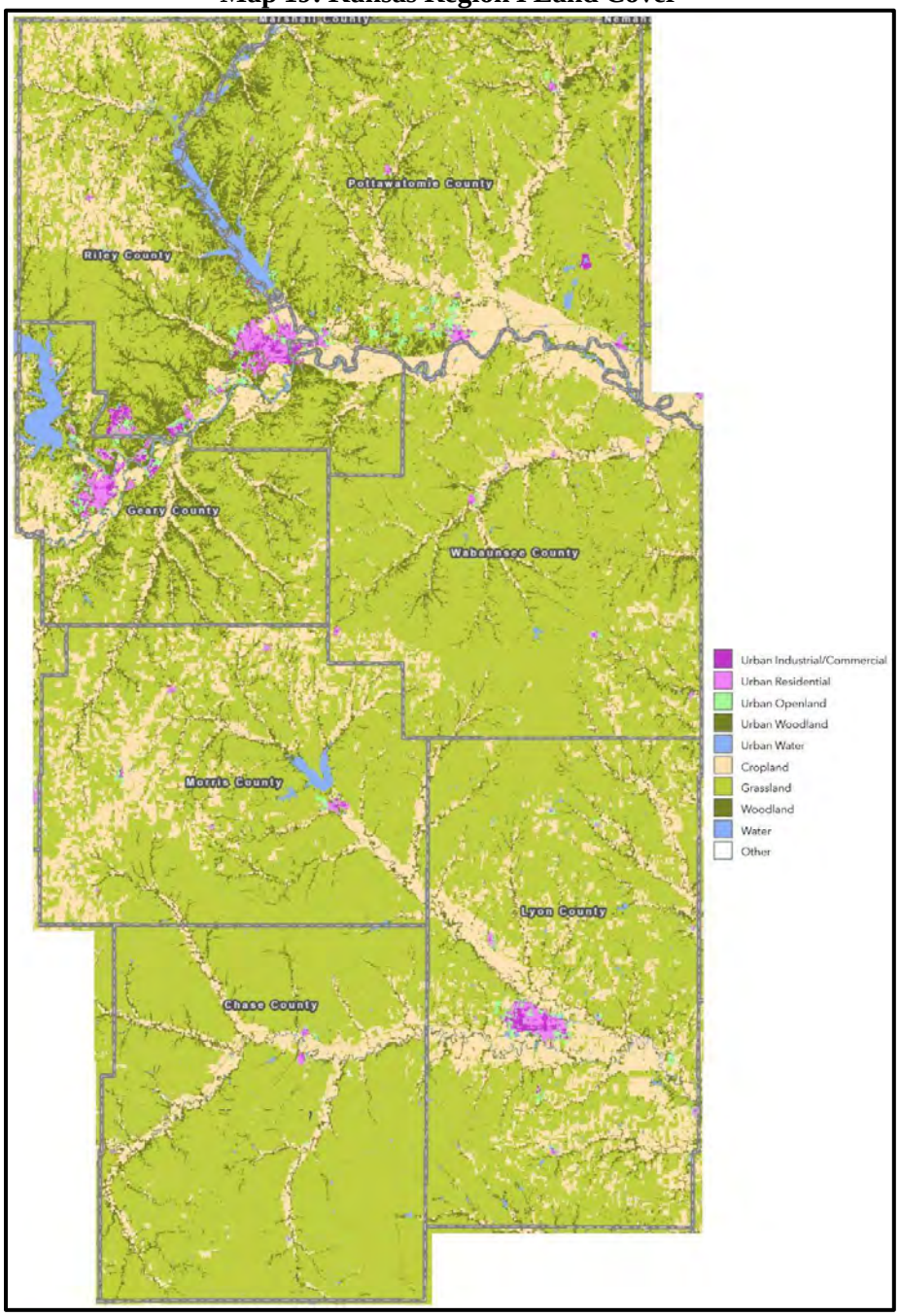
Land use in a region has a profound and lasting impact on future development. The way land is allocated and utilized can shape the economic, social, and environmental aspects of a region for decades. Land use affects that can impact future development include:

- **Economic Development:** Land use decisions influence the location and type of economic activities in a region. Zoning regulations that encourage the development of industrial zones can attract manufacturing businesses, while zoning for commercial and residential areas can promote retail and housing development. These decisions can have long-term implications for job creation, revenue generation, and overall economic health.
- **Transportation and Infrastructure:** Land use planning is closely tied to transportation infrastructure. The location of roads and other transportation facilities is determined in part by land use decisions. Well-planned land use can lead to efficient transportation networks, reducing congestion, and improving mobility. Poorly planned land use, on the other hand, can result in traffic congestion and increased infrastructure costs.
- **Housing and Urbanization:** Land use policies influence the availability and affordability of housing in a region. Zoning regulations, for example, can determine the density of residential areas and the types of housing permitted. Inadequate or restrictive land use policies can lead to housing shortages and higher costs, while well-planned policies can support diverse housing options and affordability.

- **Long-Term Costs:** Land use decisions can affect the long-term costs of development. Efficient land use planning can reduce the need for costly infrastructure extensions and maintenance, while inefficient or sprawling development can strain municipal budgets.

As indicated by the following map from the USGS National Land Cover Database, land cover in Kansas Region I consists largely of agricultural land:

Map 19: Kansas Region I Land Cover



Source: Kansas EOPmapper and USGS

Rural areas tend to retain their rural nature over time, but there are several factors that can influence the evolution of these areas, including:

- **Economic Conditions:** The economic viability of agriculture can vary significantly over time due to factors like crop prices, weather patterns, and changes in agricultural technology. Economic challenges may lead some farmers to sell their land for non-agricultural uses or to consolidate their operations, potentially affecting the rural landscape.
- **Urbanization and Development:** In some cases, rural areas may experience suburbanization or the expansion of nearby urban centers. This can result in residential and commercial development encroaching on agricultural land. However, the extent of this development depends on local zoning and land use regulations.
- **Infrastructure Development:** The construction of new transportation infrastructure, such as highways or railroads, can influence land use patterns. Improved infrastructure may make it easier to transport agricultural products to markets or to access rural areas for development.
- **Government Policies:** Government policies, including agricultural subsidies, land use regulations, and conservation programs, can impact the way rural and agricultural land is used. For example, conservation programs may encourage farmers to preserve land for wildlife habitat rather than development.
- **Local Planning and Zoning:** Local governments play a key role in land use planning and zoning regulations. These policies can determine whether agricultural land can be converted to non-agricultural uses, such as residential or commercial development. Some areas may have strict zoning that preserves agricultural character, while others may allow more flexibility.
- **Population Trends:** Demographic trends, including population growth or decline, can influence the demand for land in rural areas. If there is an influx of new residents seeking a rural lifestyle, it can drive demand for residential development in formerly agricultural areas.

Based on the available data, it is likely that Kansas Region I will retain its mostly rural character during the life of this plan, with the exception of larger regional cities like Emporia, Manhattan, and Junction City, which will likely see continued growth and expansion.

3.13 Infrastructure Development

Infrastructure repair can have a significant impact on regional development, both positive and negative. The specific effects depend on the scale of the repair projects, the quality of the infrastructure, and the overall economic and social context of the region, and may include:

- **Improved Connectivity:** Repairing and upgrading infrastructure, such as roads, bridges, and ports, can enhance connectivity within and between regions. This improved connectivity can reduce transportation costs, facilitate the movement of goods and people, and attract businesses and investments to the region.
- **Economic Growth:** Functional infrastructure supports economic activities. When infrastructure is repaired, it can create jobs directly in the construction and maintenance sectors. Additionally, it can indirectly stimulate economic growth by providing a reliable foundation for businesses to operate and expand, leading to increased production and trade.
- **Enhanced Productivity:** Well-maintained infrastructure can increase productivity by reducing downtime and transportation delays. This, in turn, can make regional industries more competitive and efficient.
- **Attracting Investment:** Regions with modern and well-maintained infrastructure are often more attractive to investors. Businesses are more likely to invest in regions with reliable transportation, utilities, and communication networks, as it reduces operational risks and costs.
- **Quality of Life:** Infrastructure repair can enhance the quality of life for residents by providing access to essential services such as clean water, sanitation, healthcare, and education. This can contribute to improved human development indicators and overall well-being.
- **Resilience and Disaster Mitigation:** Infrastructure repair can include upgrades to make infrastructure more resilient to natural disasters. This can help protect communities and assets and reduce the long-term costs of recovery and reconstruction.

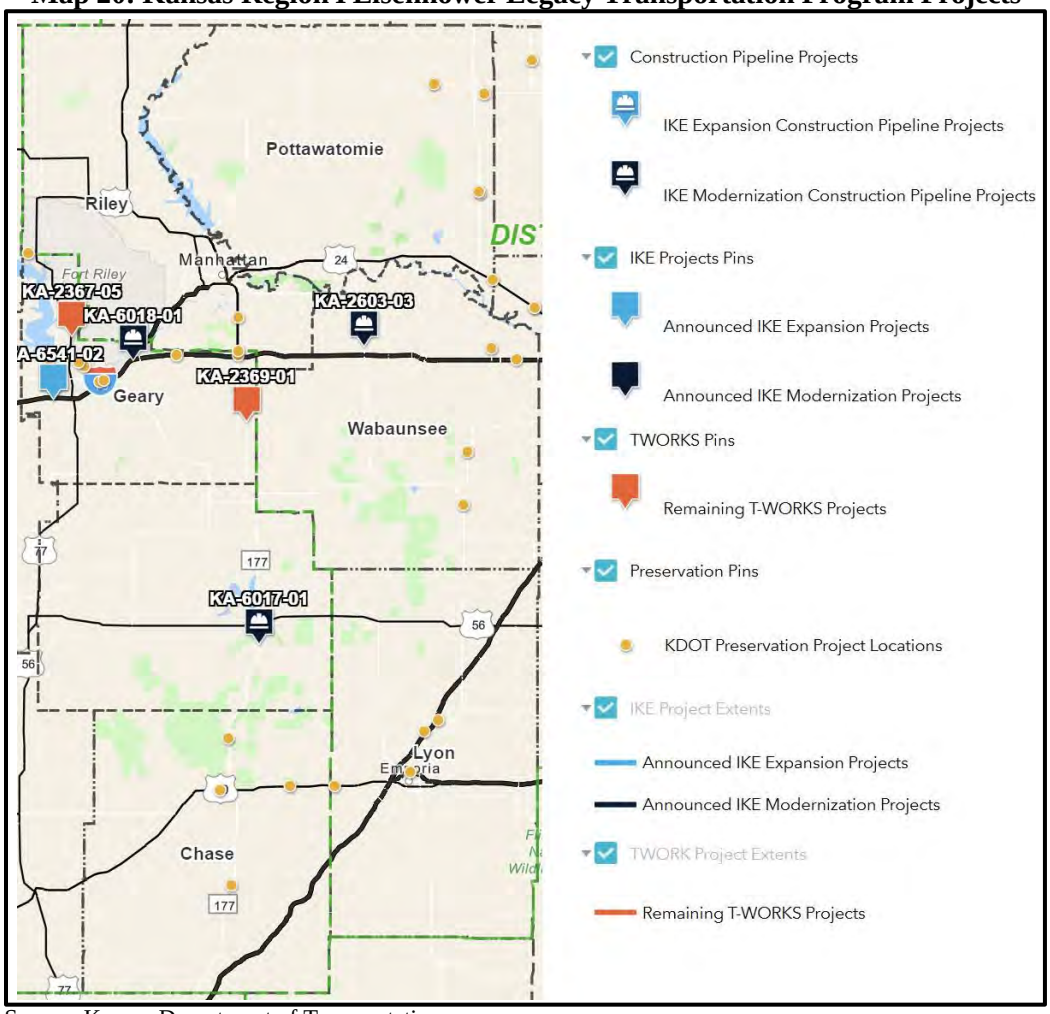
However, it is important to note that there can be negative impacts as well, including:

- **Disruption During Construction:** Repair projects can disrupt communities and businesses during the construction phase, leading to short-term challenges.
- **Costs and Budget Constraints:** Large-scale infrastructure repair projects can be costly, and they may strain regional budgets or lead to increased taxes or debt.
- Environmental Concerns: If not done carefully, infrastructure repair projects can have adverse environmental impacts, such as habitat disruption or water pollution.

The Eisenhower Legacy Transportation Program is a 10-year program that addresses highways, bridges, public transit, aviation, short-line rail and bike/pedestrian needs across Kansas. The program and associated projects are focused on making roads safer, supporting economic growth and creating more options and resources for Kansans and their communities.

The following map represents Eisenhower Legacy Transportation Program project in Kansas Region I:

Map 20: Kansas Region I Eisenhower Legacy Transportation Program Projects



Source: Kansas Department of Transportation

MPC members have indicated that there are no large-scale development projects that would result in an influx of populations or an increase in residential or commercial building, with the exception of Emporia, Junction City, and Manhattan who are seeing moderate scale residential development to accommodate increasing populations. Any future development is potentially vulnerable to the hazards identified in this plan. However, many of the participating jurisdictions of Kansas Region I have taken steps to reduce the potential impacts through the utilization of building codes and comprehensive plans. A comprehensive plan outlines the long-term vision and goals for the development of

a city or municipality. It serves as a strategic guide for future growth, land use, infrastructure, and community development. Comprehensive plans are typically created through a collaborative process involving local government officials, city planners, residents, and various stakeholders. A key component of a comprehensive plan is land use planning, which defines how land will be used, including residential, commercial/industrial, and green spaces.

Over the life of the previous LHMP, and in the first year of this LHMP, the following jurisdictional facilities have been constructed/remodeled or are in the process of being remodeled. It is expected that these facilities will be hazard resilient due to the application of current building standards (and codes, where applicable):

- Riley County EMS HQ, 1115 Charles Little Road , Manhattan, KS
- Riley County EMS Station, 6275 Tuttle Creek Boulevard, Manhattan, KS
- Riley County EMS Station, 503 E. Barton Street, Leonardville, KS
- Riley County Emergency Management and Fire District #1 HQ, 1130 Charles Little Road, Manhattan, KS
- Riley County FD Station 102, 4928 McDowell Creek Road, Manhattan, KS
- Riley County FD Station 103, 500 E. Riley Avenue, Ogden, KS
- Riley County FD Station 106, 108 W. Barton, Leonardville, KS
- Riley County FD Station 110, 10987 Lakeview Drive, Manhattan, KS
- Riley County FD Station 112, 4120 Hwy 13, Manhattan, KS
- Riley County Fire Station 116, 1314 Collins Lane, Manhattan, KS
- Manhattan Fire Department Station, 3900 Vanesta Drive, Manhattan, KS
- Riley County Family & Child Resource Center (part of Health Department), 2102 Claflin Road, Manhattan, KS

Additionally, a review of jurisdictional budgets, as possible, does not indicate any future projects related to increasing the resilience of any existing facilities or of construction facilities. As such, it is expected that the vulnerability of jurisdictional facilities is generally the same as during the life of the previous plan and will remain generally the same during the life of this plan.

Based on available information, and on ground observations, the majority the region has remained undeveloped since the completion of the previous LHMP and will likely remain so over the life of life of this LHMP.

3.14 Agricultural Data

Agriculture forms a large part of both the economic and social fabric of Kansas Region I. USDA National Agricultural Statistics Service data from 2007, 2012, 2017, and 2022 (the latest available data) was used to develop an understanding of the agricultural footprint within the county, as detailed in the following table:

Table 12: Kansas Region I Regional Agricultural Data Summary

Year	2007	2012	2017	2022
Number of Farms	3,923	3,664	1,973	3,526
Total Farm Acreage	2,486,658	2,486,244	2,446,534	2,575,508
Market Value of Products Sold	$476,446,000	$605,998,000	$790,729,859	$1,401,206,000
Value of Lands and Buildings*	$5,154,756	$6,959,550	$11,030,978	$15,895,619
Value of Machinery and Equipment*	$620,404	$773,004	$1,059,395	$1,229,380

Source: USDA National Agricultural Statistics Service
*: Average per farm

The following tables and graphs detail county specific agricultural data:

Table 13: Kansas Region I Number of Farms, 2007-2022

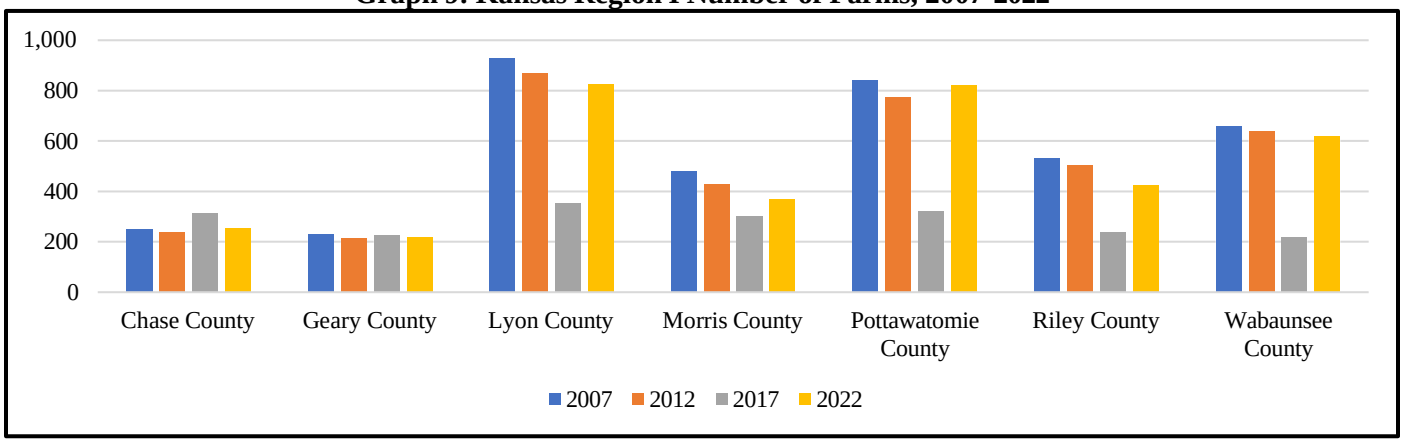
County	2007	2012	2017	2022
Chase County	250	238	315	252
Geary County	229	213	227	217
Lyon County	930	867	353	826

Table 13: Kansas Region I Number of Farms, 2007-2022

County	2007	2012	2017	2022
Morris County	479	430	299	369
Pottawatomie County	843	774	323	820
Riley County	532	504	236	424
Wabaunsee County	660	638	220	618

Source: USDA National Agricultural Statistics Service

Graph 9: Kansas Region I Number of Farms, 2007-2022



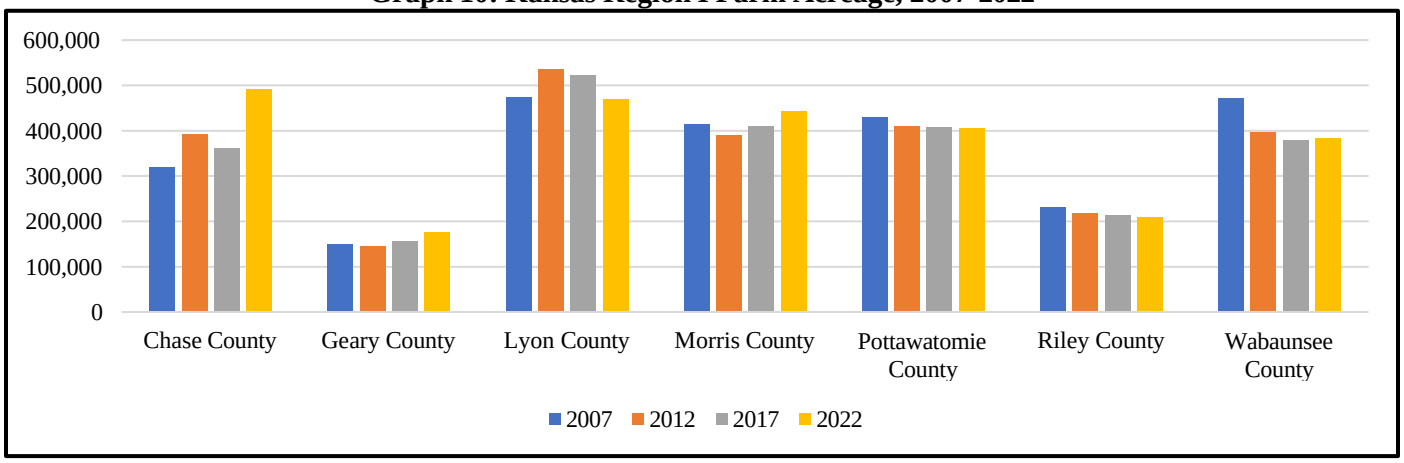
Source: USDA National Agricultural Statistics Service

Table 14: Kansas Region I Farm Acreage, 2007-2022

County	2007	2012	2017	2022
Chase County	319,921	392,577	360,077	491,365
Geary County	148,465	145,694	155,153	176,034
Lyon County	473,679	534,673	522,934	469,248
Morris County	413,558	389,152	409,269	441,414
Pottawatomie County	428,601	409,659	406,031	404,286
Riley County	231,960	218,180	214,311	209,517
Wabaunsee County	470,474	396,309	378,759	383,644

Source: USDA National Agricultural Statistics Service

Graph 10: Kansas Region I Farm Acreage, 2007-2022



Source: USDA National Agricultural Statistics Service

Table 15: Kansas Region I Market Value of Products Sold, 2007-2022

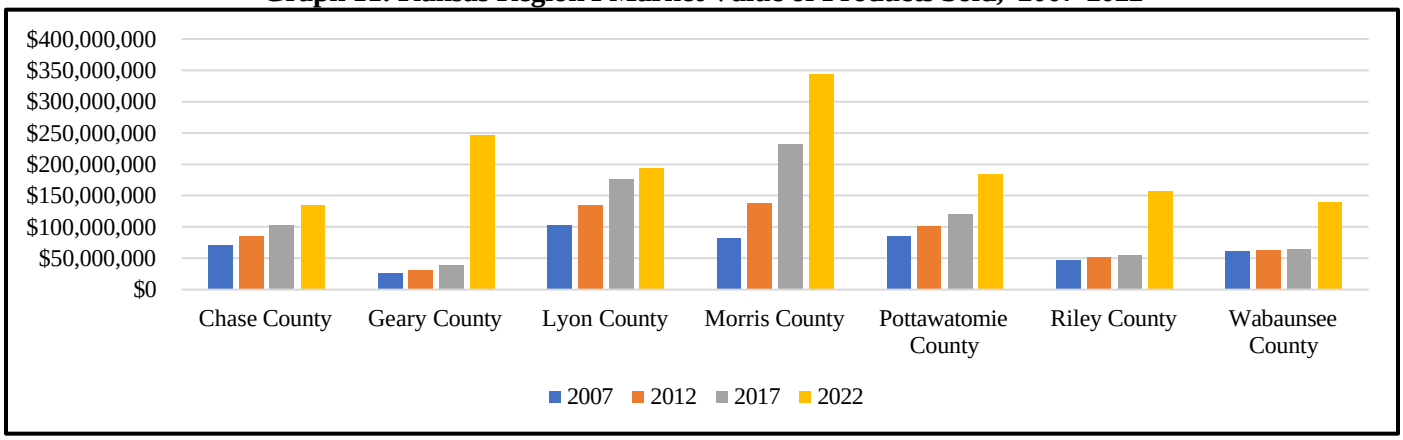
County	2007	2012	2017	2022
Chase County	$71,438,000	$85,430,000	$102,162,503	$135,076,000

Table 15: Kansas Region I Market Value of Products Sold, 2007-2022

County	2007	2012	2017	2022
Geary County	$25,594,000	$31,833,000	$39,592,869	$247,186,000
Lyon County	$102,707,000	$134,440,000	$175,977,427	$193,169,000
Morris County	$82,841,000	$138,615,000	$231,939,719	$343,834,000
Pottawatomie County	$85,028,000	$101,363,000	$120,836,169	$184,695,000
Riley County	$46,818,000	$51,171,000	$55,928,729	$158,063,000
Wabaunsee County	$62,020,000	$63,146,000	$64,292,443	$139,183,000

Source: USDA National Agricultural Statistics Service

Graph 11: Kansas Region I Market Value of Products Sold, 2007-2022



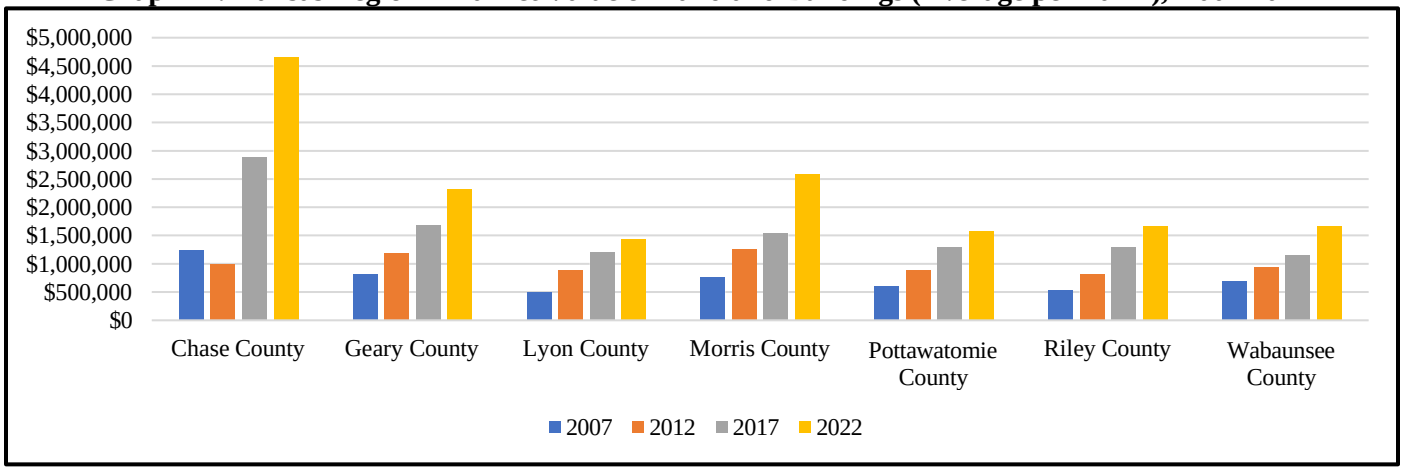
Source: USDA National Agricultural Statistics Service

Table 16: Kansas Region I Market Value of Land and Buildings (Average per Farm), 2007-2022

County	2007	2012	2017	2022
Chase County	$1,240,483	$999,409	$2,891,131	$4,650,025
Geary County	$813,657	$1,187,119	$1,676,183	$2,321,782
Lyon County	$497,850	$881,912	$1,199,352	$1,428,744
Morris County	$758,291	$1,259,155	$1,543,925	$2,585,580
Pottawatomie County	$606,340	$878,335	$1,290,997	$1,571,752
Riley County	$542,879	$809,620	$1,285,194	$1,665,617
Wabaunsee County	$695,256	$944,000	$1,144,196	$1,672,119

Source: USDA National Agricultural Statistics Service

Graph 12: Kansas Region I Market Value of Land and Buildings (Average per Farm), 2007-2022



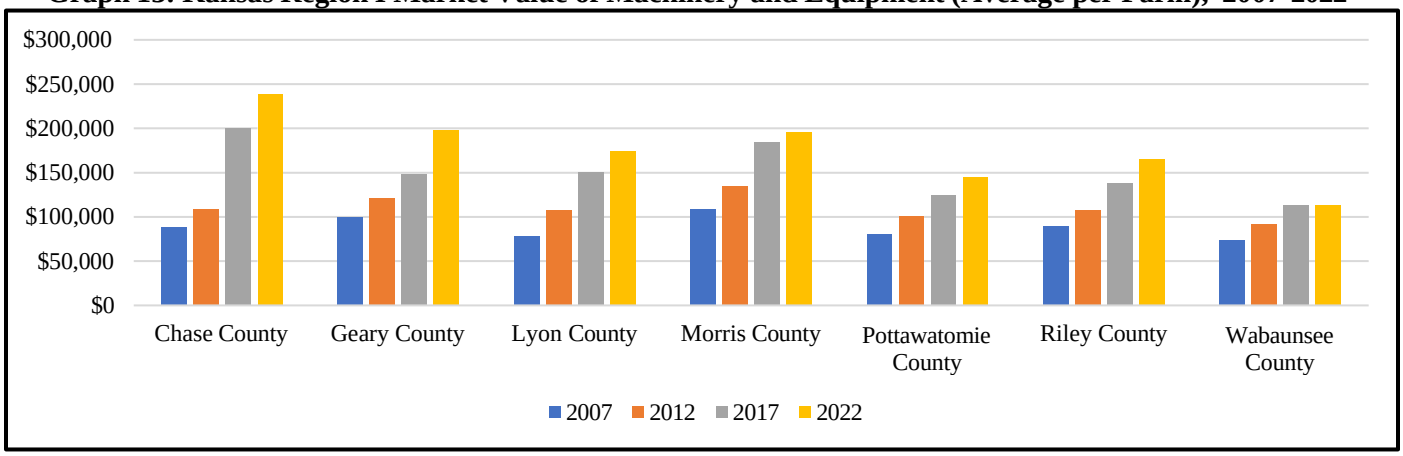
Source: USDA National Agricultural Statistics Service

Table 17: Kansas Region I Market Value of Machinery and Equipment (Average per Farm), 2007-2022

County	2007	2012	2017	2022
Chase County	$88,836	$108,387	$199,983	$238,887
Geary County	$100,460	$121,774	$148,272	$197,495
Lyon County	$78,578	$107,999	$150,828	$174,250
Morris County	$108,849	$134,231	$184,687	$195,563
Pottawatomie County	$80,528	$101,524	$124,388	$145,343
Riley County	$89,015	$107,046	$137,948	$165,016
Wabaunsee County	$74,138	$92,043	$113,289	$112,826

Source: USDA National Agricultural Statistics Service

Graph 13: Kansas Region I Market Value of Machinery and Equipment (Average per Farm), 2007-2022



Source: USDA National Agricultural Statistics Service

3.15 Regional Climate

Kansas Region I experiences a humid continental climate characterized by four distinct seasons, moderate to high annual precipitation, and significant temperature variability that directly influences hazards such as flooding, severe storms, drought, extreme heat, and winter weather events. The Flint Hills lie in the transition between the wetter eastern Kansas climate and the drier central plains, creating a blend of humid and prairie weather patterns.

Summers are typically hot and humid, with July and August highs commonly in the 88–95°F range and heat index values frequently exceeding 100°F during heat waves. Prolonged extreme heat events occur periodically, especially during drought years.

Winters are cold, with January lows averaging in the 15–20°F range and subzero temperatures occurring during Arctic outbreaks. Wind chill values can drop well below zero, increasing risk to exposed populations and livestock.

Annual precipitation averages approximately 32–38” across the region, which is higher than western Kansas and supports tallgrass prairie systems. Most precipitation falls from April through September, driven by frontal systems and convective thunderstorms. Spring and early summer produce the highest severe-weather risk, including hail, damaging winds, flash flooding, and tornadoes.

Late summer and early fall may feature dry spells and heightened drought conditions, particularly during La Niña phases or after periods of above-normal heat.

Snowfall is moderate, typically 15–20” per season, with considerable variability from year to year. Ice storms and freezing rain occur occasionally and can cause widespread utility disruptions and hazardous travel conditions. Blizzards, while infrequent, do occur and can severely impact transportation, emergency response, and isolated rural areas.

Section 4 –Capability Assessment

4.1 Introduction

This capability overview for Kansas Region I and participating jurisdictions documents programs, policies, and funding mechanisms for participating jurisdictions. All listed capabilities documented in the previous LHMP were reviewed for relevance and updated to reflect the current environment, as necessary. Additionally, any programs, policies, or funding mechanisms that are no longer applicable, are outdated, or are no longer in existence have been removed. As part of this process, updated jurisdictional capability profiles were sent for review and, if necessary, further revision.

This section of the plan discusses the current capacity of regional communities to mitigate the effects of identified hazards. A capability assessment is conducted to determine the ability of a jurisdiction to execute a comprehensive mitigation strategy, and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs or projects.

A capability assessment helps to determine which mitigation actions are practical based on a jurisdiction's fiscal, staffing and political resources, and consists of:

- An inventory of relevant plans, ordinances, or programs already in place
- An analysis capacity to carry them out.

A thoughtful review of jurisdictional capabilities will assist in determining gaps that could limit current or proposed mitigation activities, or potentially aggravate a jurisdiction's vulnerability to an identified hazard. Additionally, a capability assessment can detail current successful mitigation actions that should continue to receive support.

4.2 Granted Authority

In implementing a mitigation plan or specific action, a local jurisdiction may utilize any or all of the four broad types of government authority granted by the State of Kansas. The four types of authority are defined as:

- Regulation
- Acquisition
- Taxation
- Spending

The scope of regulation is subject to constraints, however, as all of Kansas' political subdivisions must not act without proper delegation from the State. Under a principle known as "Dillon's Rule," all power is vested in the State and can only be exercised by local governments to the extent it is delegated.

The power of acquisition can be a useful tool for pursuing local mitigation goals. Local governments may find the most effective method for completely "hazard-proofing" a particular piece of property or area is to acquire the property, thus removing the property from the private market and eliminating or reducing the possibility of inappropriate development occurring. Kansas legislation empowers cities, towns, counties to acquire property for public purpose by gift, grant, devise, bequest, exchange, purchase, lease, or eminent domain (County Home Rule Powers, K.S.A. 19-101, 19-101a, 19-212).

The power to levy taxes and special assessments is an important tool delegated to local governments by Kansas law. The power of taxation extends beyond merely the collection of revenue and can have a profound impact on the pattern of development in the community. Communities have the power to set preferential tax rates for areas which are more suitable for development in order to discourage development in otherwise hazardous areas. Local units of government also have the authority to levy special assessments on property owners for all or part of the costs of acquiring, constructing, reconstructing, extending or otherwise building or improving flood control within a designated area. This can serve to increase the cost of building in such areas, thereby discouraging development. Because the usual methods of apportionment seem mechanical and arbitrary, and because the tax burden on a particular piece of property is often

quite large, the major constraint in using special assessments is political. Special assessments seem to offer little in terms of control over land use in developing areas. They can, however, be used to finance the provision of necessary services within municipal or county boundaries. In addition, they are useful in distributing to the new property owners the costs of the infrastructure required by new development.

The Kansas General Assembly allocated the ability to local governments to make expenditures in the public interest. Hazard mitigation principles can be made a routine part of all spending decisions made by the local government, including the adoption of annual budgets and a Capital Improvement Plan. A Capital Improvement Plan is a schedule for the provision of municipal or county services over a specified period of time. Capital programming, by itself, can be used as a growth management technique, with a view to hazard mitigation. By tentatively committing itself to a timetable for the provision of capital to extend services, a community can control growth to some extent. In addition to formulating a timetable for the provision of services, a local community can regulate the extension of and access to services. A Capital Improvement Plan that is coordinated with extension and access policies can provide a significant degree of control over the location and timing of growth. These tools can also influence the cost of growth. If the Capital Improvement Plan is effective in directing growth away from environmentally sensitive or high hazard areas.

4.3 Administrative and Technical Capabilities

The administrative and technical functions of Kansas Region I are critical in the effective implementation of hazard mitigation strategies. These functions ensure that the county is prepared to reduce risks associated with natural and human-made hazards and can efficiently identify, integrate, and manage mitigation projects.

Kansas Region I has a small, but dedicated staff across multiple departments for hazard mitigation roles including planning, engineering, and mapping. Additionally, the county has numerous communication channels available, including websites and social media platforms, and a variety of trained Public Information Officers and general staff to disseminate hazard mitigation information to all stakeholders and the public.

The following table details Kansas Region I and participating jurisdiction departments and their roles in supporting hazard mitigation planning:

Table 18: Kansas Region I and Participating Jurisdictions Departments Supporting Mitigation Planning

Department or Position	Hazard Mitigation Roles
Governing Board or Chief Executive	• Provides adoption resolution for LHMP. • Approves ordinances and bylaws and facilitates capital improvements budget.
Building Department	• Enforces building codes that enhance structural resilience to hazards. • Conducts inspections and issues permits ensuring compliance.
Emergency Management Department	• Develops, implements, and updates the LHMP. • Coordinates between various departments, agencies, and external stakeholders to ensure a cohesive approach to hazard mitigation. • Provides public education on matters concerning hazard mitigation. • Coordinates hazard grant application process. • Involving local businesses, non-profits, and residents in the planning process to foster a collaborative approach to mitigation. • Supports the planning and implementation of mitigation projects.
Finance Department	• Allocates funding for hazard mitigation projects. • Manages grants and other financial resources to support mitigation efforts.
Fire Department	• Wildfire mitigation through controlled burns and fuel management. • Outreach programs to educate the public on fire safety, such as how to prevent home fires, create defensible spaces around properties. • Community planning to create defensible spaces and ensure buildings are more fire-resistant

Table 18: Kansas Region I and Participating Jurisdictions Departments Supporting Mitigation Planning

Department or Position	Hazard Mitigation Roles
Geographic Information System (GIS)	• Provides critical data and mapping services for hazard identification and risk assessments. • Utilizes advanced modeling techniques to predict the impact of various hazards on the community. • Supports the planning and implementation of mitigation projects.
Health Department	• Addresses public health risks associated with identified hazards. • Plans for emergency medical response and disease control measures. • Monitors environmental hazards (e.g., water contamination, hazardous materials).
Planning Department	• Enforces zoning and land-use policies to minimize hazard risks. • Integrates hazard mitigation into comprehensive and capital improvement plans.
Public Works Department	• Manages infrastructure resilience projects (e.g., road improvements, drainage systems).

The following table indicates, with an x, if the participating jurisdiction has the above noted departments:

Table 19: Participating Jurisdiction Departments

Jurisdiction	Board / Exec	Building	Emergency Management	Financial	Fire	GIS	Health	Planning	Public Works
Chase County	x		x	x	x	x	x	x	x
Cedar Point	x								x
Cottonwood Falls	x			x					x
Elmdale	x								x
Matfield Green	x								x
Strong City	x			x				x	x
Geary County	x	x	x	x	x	x	x	x	x
Grandview Plaza	x	x		x	x			x	x
Junction City	x	x		x	x			x	x
Milford	x	x		x					x
Lyon County	x		x	x		x	x		x
Admire	x			x					x
Allen	x			x					x
Americus	x	x		x					x
Bushong	x			x					x
Emporia	x	x		x					x
Hartford	x			x					x
Neosho Rapids	x			x					x
Olpe	x			x					x
Reading	x			x					x
Morris County	x		x	x		x	x	x	x
Council Grove	x	x		x				x	x
Dwight	x			x					x
White City	x			x					x
Wilsey	x			x					x
Pottawatomie County	x		x	x		x	x	x	x
Belvue	x			x					x
Emmett	x			x					x
Havensville	x			x					x
Louisville	x			x					x
Olsburg	x	x		x					x

Table 19: Participating Jurisdiction Departments

Jurisdiction	Board / Exec	Building	Emergency Management	Financial	Fire	GIS	Health	Planning	Public Works
Onaga	x			x					x
St. George	x			x					x
St Mary's	x			x					x
Wamego	x	x		x				x	x
Westmoreland	x	x		x					x
Wheaton	x			x					x
Riley County	x	x	x	x	x	x	x	x	x
Leonardville	x	x		x					x
Manhattan	x	x	x	x	x	x		x	x
Ogden	x	x		x				x	x
Randolph	x			x					x
Riley	x	x		x					x
Wabaunsee County	x	x	x	x		x	x		x
Alma	x			x					x
Alta Vista	x			x	x				x
Eskridge	x			x					x
Harveyville	x	x		x				x	x
Maple Hill	x			x					x
McFarland	x			x					x
Paxico	x		x	x					x

Note: Blank indicates no department

4.4 Regulation of Development

The regulation of development plays a crucial role in helping a community become more resilient in the face of various hazards. Effective regulation of development contributes to community resilience through:

- Risk Reduction: Regulations guide land use and construction practices, ensuring that they provide strong protection against hazards.
- Public Safety: Building codes and land-use regulations establish minimum safety standards for construction, including structural integrity, fire resistance, and the use of resilient materials.
- Infrastructure Resilience: Regulations may require infrastructure improvements, such as the construction of resilient roads, bridges, utility systems, and drainage systems. This strengthens a community's ability to withstand hazards, ensures the continued operation of critical services, and aids in recovery.
- Floodplain Management: Regulations in flood-prone areas can mandate elevation requirements for new construction, ensuring that structures are built above the base flood elevation. This minimizes flood damage, reduces the need for costly post-disaster repairs, and protects property values.
- Land Use Planning: Effective land-use planning helps communities avoid inappropriate development in areas at high risk of hazards.
- Community Awareness: Public education and outreach can be incorporated into regulations, requiring communities to inform residents about local hazards, evacuation routes, and preparedness. Informed residents are more likely to take protective measures and respond effectively to disasters.

The following sections provide further detail on building codes, zoning ordinances, and floodplain management.

Building Codes

In Kansas, the authority for enacting and enforcing building codes lies with local governments, such as cities and counties. Each jurisdiction can adopt its own building code, which can be based on national or international building codes like the International Building Code or the International Residential Code. However, Kansas mandates the 2006 International Building Code as the minimum code for any jurisdiction that does not have a code adopted. All

participating jurisdictions in Kansas Region I utilize the 2006 International Building Code. In general, jurisdictions implementing building codes require building permits for the following activities:

- Construction
- Manufactured home placement
- New Utility service/meter relocation/service upgrade
- Grading-Solar panels
- Accessory structures
- Additions
- Roofs
- Wells
- Demolition

Building codes establish general minimum construction standards and are enforced through authorized local building inspection agencies and inspectors. Building codes provide for:

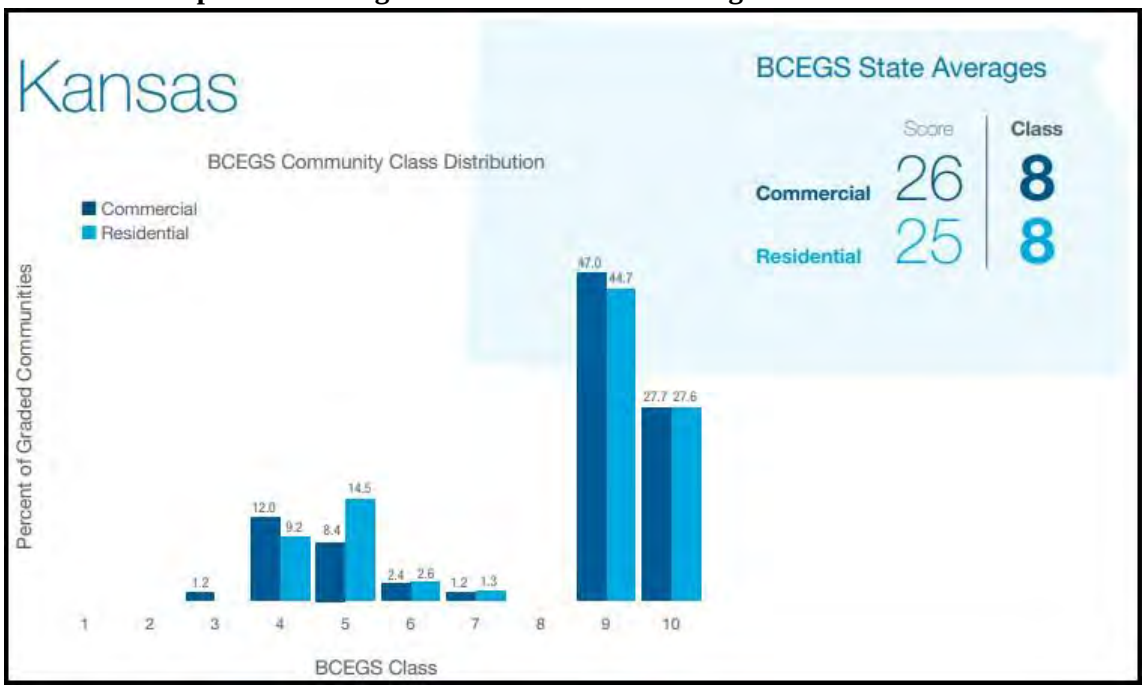
- **Life Safety:** Building codes include provisions for fire safety, emergency egress, and the use of fire-resistant materials.
- **Accessibility and Life Support:** Building codes incorporate accessibility standards, ensuring that buildings are designed to accommodate all individuals. This is crucial during and after disasters when people with mobility issues may require assistance. Accessible features also benefit emergency responders and support recovery efforts.
- **Retrofitting Existing Buildings:** Building codes may require the retrofitting of older structures to meet modern safety standards.
- **Public Awareness:** Building codes promote public awareness of hazards and the importance of resilient construction. This can lead to informed decision-making by property owners, builders, and developers, resulting in safer structures.

Key hazard resistant building code provisions found in current building codes include:

- **Structural Design Requirements:** Provides requirements for the structural design of buildings to ensure their resistance to various hazards, including earthquakes, high winds, and snow loads. These requirements are aimed at enhancing the overall structural integrity and safety of buildings.
- **Wind Design Requirements:** Provides specific provisions for wind design, considering the geographical location of the structure. Wind loads are calculated based on factors such as wind speed, exposure, and building height.
- **Seismic Design Requirements:** Incorporates seismic design provisions to address earthquake hazards. The code includes seismic design categories and requirements for the design and construction of buildings in seismic-prone regions.
- **Flood-Resistant Design Requirements:** Includes provisions related to flood-resistant design, particularly in areas prone to flooding. It may specify elevation requirements, construction materials, and other considerations to reduce the risk of flood damage. The vast majority of the regulations required by the NFIP are included within the International Building Code and the International Residential Code.
- Fire-Resistant Construction Requirements: Requirements for fire-resistant construction are included to mitigate the risk of fire hazards. This includes specifications for fire-resistant materials, assemblies, and building features.
- **Material and Construction Standard Requirements:** Establishes standards for building materials and construction methods to ensure the durability and safety of structures, considering various hazards.

The Building Code Effectiveness Grading Schedule assesses the building codes in effect in a particular community and how the community enforces its building codes, with special emphasis on mitigation of losses from natural hazards. The program assigns each participating municipality a Building Code Effectiveness Grading Schedule grade of 1 (exemplary commitment to building code enforcement) to 10 (lowest possible score). The following graph illustrates the rating for each rated State of Kansas participating municipalities.

Graph 14: Building Code Effectiveness Grading Schedule for Kansas



Source: Building Code Effectiveness Grading Schedule

The average score for the State of Kansas was 26 (Class 8) rating for commercial, and a 25 (Class 8) for residential.

Building Department Representative

As part of this planning effort, both county and participating jurisdiction personnel charged with regulating or overseeing development were given the opportunity to review and comment of the elements of this plan. Please note that not all counties or jurisdictions have building departments. The following personnel involved in regulating development were notified of the planning process and invited to provide input:

Table 20: Participating Jurisdiction Building Department Representatives

Jurisdiction	Name	Title
Chase County	-	-
Cedar Point	-	-
Cottonwood Falls	-	-
Elmdale	-	-
Matfield Green	-	-
Strong City	-	-
Geary County	Troy Livingston	Planning & Zoning Director
Grandview Plaza	Luke Erichsen	City Superintendent
Junction City	Chris Srackangast	Community Development Director
Milford	Tim Himelick	City Clerk
Lyon County	-	-
Admire	-	-
Allen	-	-
Americus	Vacant	Building Inspector
Bushong	-	-

Table 20: Participating Jurisdiction Building Department Representatives

Jurisdiction	Name	Title
Emporia	Kory Krause	Director of Building and Neighborhood Development
Hartford	-	-
Neosho Rapids	-	-
Olpe	-	-
Reading		
Morris County	-	-
Council Grove	-	-
Dwight	-	-
White City	-	-
Wilsey	-	-
Pottawatomie County	-	-
Belvue	Joe Peterson	Planning Director
Emmett	-	-
Havensville	-	-
Louisville	-	-
Olsburg	-	-
Onaga	Alex Miller	Planning Director
St. George	Kirby Hawkins	Planning Director
St Mary's	Maurice Cordell	Planning Director
Wamego	Cameron Matthews	Planning Director
Westmoreland	Robert Krohn	Planning Director
Wheaton	-	-
Riley County	Darrin Hobbs	Planning Compliance Specialist
Leonardville	Darrin Hobbs	Planning Compliance Specialist
Manhattan	Ryan Courtright	Building Official
Ogden	Angela Sheppard	Building Inspector
Randolph	-	-
Riley	Darrin Hobbs	Planning Compliance Specialist
Wabaunsee County	-	-
Alma	-	-
Alta Vista	Ryan Armbrust	Building Department Rep
Eskridge	-	-
Harveyville	Dustin Kuntz	Building Official
Maple Hill	-	-
McFarland	-	-

-: No position

Floodplain Management Ordinances

Floodplain ordinances and management are one of the most effective hazard mitigation tools available against flooding. Local floodplain ordinances, required for NFIP participants, are often used to prevent inappropriate development in floodplains and to reduce flood hazards. In general, they allow the jurisdiction to:

- Minimize the extent of floods by preventing obstructions that inhibit water flow and increase flood height and damage.
- Prevent and minimize loss of life, injuries, and property damage in flood hazard areas.
- Promote the public health, safety and welfare of citizens in flood hazard areas.
- Manage planned growth.
- Grant permits for use in development within special flood hazard areas that are consistent with the community ordinance and the NFIP under 44 CFR 60.3.

The NFIP floodplain management regulations work alongside local building codes by providing specific flood-related requirements that must be met in addition to general building code standards. In NFIP communities, when constructing

or substantially improving a structure in a Special Flood Hazard Area, the structure must be elevated to or above the Base Flood Elevation, which is a requirement imposed by the NFIP's regulations. The following details the relevant municipal code sections for floodplain management for Kansas Region I and participating jurisdictions. Please note that not all participating jurisdictions have floodplain management codes or ordinances.

Zoning Ordinances

Zoning ordinances in Kansas Region I govern land use, development, and building requirements and are overseen by participating Kansas Region I jurisdictions, as applicable. Zoning ordinances work by dividing the land into different zoning districts and establishing rules and guidelines for land use, building placement, density, and setback within the zoning districts. In general, zoning ordinances establish:

- **Zoning districts:** Areas designated for specific types of land use, such as residential, commercial, industrial, agricultural, mixed-use, or special districts.
- **Land usage within a zoning district:** Specifications as to which activities, buildings, and operations are permitted in each zoning district.
- **Enforcement:** Zoning ordinances are enforced by the local building department or zoning enforcement officers.

Zoning is the traditional, and most common, tool available to local jurisdictions to control the use of land. Zoning is used to promote health, safety, and the general welfare of the community. Zoning is used to dictate the type of land use and to set minimum specifications for use such as lot size, building height and setbacks, and density of population.

Legal authority for Kansas Region I local governments to adopt and implement zoning regulations is found at K.S.A. 12-741, which provides for the enactment of planning and zoning laws and regulations by cities and counties. The components of local zoning ordinances are detailed at K.S.A. 12-753(a). and include the provision for the adoption or amendment of zoning regulations and the provision for restricting and regulating the height, number of stories and size of buildings

Zoning ordinances play a significant role in enhancing hazard resilience for communities and can help reduce vulnerability to various natural and man-made hazards by regulating land use and development practices. In Kansas Region I, locally instituted and enforced zoning ordinances provide for:

- **Land Use Planning:** Zoning ordinances designate land use zones within a community, ensuring that certain areas are reserved for particular uses. This can prevent the construction of critical infrastructure, homes, or businesses in high-risk zones, such as floodplains or wildfire-prone areas.
- **Setback Requirements:** Zoning ordinances often mandate specific setbacks, which are distances between structures and property lines or natural features. These setbacks can help prevent buildings from being too close to potential hazards, potentially reducing the risk of damage.
- **Building Height and Design Standards:** Zoning codes can establish building height limits to reduce exposure to certain hazards. Design standards, including materials and construction methods, can be specified to make structures more resilient.
- **Floodplain Management:** Many zoning ordinances incorporate floodplain regulations, which dictate where and how buildings can be constructed within flood-prone areas. These regulations may require buildings to be elevated, use flood-resistant materials, or include openings to allow floodwaters to pass through.
- **Wildfire Mitigation Zones:** In regions susceptible to wildfires, zoning ordinances can establish wildfire mitigation zones with specific requirements for defensible space, fire-resistant landscaping, and building materials to reduce the risk of wildfires spreading to structures.

In addition to zoning ordinances, historic preservation is an important consideration for all jurisdictions within Kansas Region I. Historic preservation is enacted under K.S.A. 12-755(a)(3), and provides local governments the authority they need to adopt zoning regulations to preserve structures listed on local, state, or national historic registers.

Properly applied, zoning restriction and historic preservation are some of the most effective hazard mitigation tools available against a wide variety of hazards.

Code and Ordinance Summary

The following table indicates, with an x, if the participating jurisdiction has the above enumerated codes and ordinances. Please note that none of the participating special districts, universities, hospitals, or electric cooperatives have codes or ordinances.

Table 21: Jurisdictional Codes and Ordinances

Jurisdiction	Building Code*	Floodplain Ordinance	Zoning Ordinance
Chase County		x	
Cedar Point			
Cottonwood Falls		x	x
Elmdale			
Matfield Green			
Strong City		x	x
Geary County	x	x	x
Grandview Plaza	x	x	x
Junction City	x	x	x
Milford	x		x
Lyon County		x	x
Admire		x	x
Allen		x	
Americus	x	x	x
Bushong			x
Emporia	x	x	x
Hartford		x	
Neosho Rapids		x	x
Olpe	x		
Reading			
Morris County			
Council Grove		x	x
Dwight		x	x
White City			x
Wilsey		x	
Pottawatomie County		x	
Belvue	x	x	x
Emmett			x
Havensville		x	x
Louisville			x
Olsburg			x
Onaga	x		x
St. George	x	x	x
St Mary's	x	x	x
Wamego	x	x	x
Westmoreland	x		x
Wheaton			
Riley County	x	x	x
Leonardville	x	x	x
Manhattan	x	x	x
Ogden	x	x	x

Table 21: Jurisdictional Codes and Ordinances

Jurisdiction	Building Code*	Floodplain Ordinance	Zoning Ordinance
Randolph	x	x	x
Riley	x	x	x
Wabaunsee County		x	x
Alma		x	
Alta Vista	x		x
Eskridge		x	
Harveyville	x	x	x
Maple Hill		x	x
McFarland		x	x
Paxico		x	x

Note: Blank indicates no code or ordinance
*: All jurisdictions must adhere to State mandated 2006 IBC

4.5 Jurisdictional Plans

Planning plays a critical role in hazard mitigation by helping communities identify, assess, and reduce risks associated with natural and man-made hazards. Effective planning involves a proactive, strategic, and comprehensive approach to minimize the impact of disasters and enhance community resilience. Jurisdictions were asked if they had completed the following plans:

- **Capital Improvement Plan:** Allocates funding for infrastructure projects, including those that enhance resilience, such as stormwater management systems and building retrofits.
- **Community Wildfire Protection Plan**: Focused on reducing wildfire risks, this plan involves community input and includes strategies for fuel reduction, public education, and emergency response improvements.
- **Comprehensive Plan:** A comprehensive plan establishes the overall vision for a jurisdiction and serves as a guide to decision making, and generally contains information on demographics, land use, transportation, and facilities. As a comprehensive plan is broad in scope the integration of hazard mitigation measures can enhance the likelihood of achieving risk reduction goals.
- **Emergency Operations Plan:** An emergency operations plan outlines the responsibility and means and methods by which resources are deployed during and following an emergency or disaster. In Kansas Region I, the overarching county provides emergency operation planning for jurisdictions within its borders.
- **Floodplain Management Plan:** This plan aims to manage flood risks through zoning, building codes, and public education, often in coordination with FEMA's NFIP.
- **Land Use and Zoning Plan:** These plans regulate development to minimize exposure to hazards, such as restricting construction in flood-prone or wildfire-prone areas.

The following table indicates, with an x, if the applicable Kansas Region I County and/or participating municipalities have the above enumerated plans. Please note that some of these are umbrella plans from the county providing coverage to participating jurisdictions:

Table 22: Participating Jurisdiction Plans

Jurisdiction	Capital Improve	Community Wildfire Protection*	Comprehensive	Emergency Operations*	Floodplain Management	Land Use and Zoning
Chase County	x	x	x	x	x	
Cedar Point						
Cottonwood Falls	x			x	x	x
Elmdale						
Matfield Green						
Strong City	x		x	x	x	x
Geary County	x		x	x	x	x

Table 22: Participating Jurisdiction Plans

Jurisdiction	Capital Improve	Community Wildfire Protection*	Comprehensive	Emergency Operations*	Floodplain Management	Land Use and Zoning
Grandview Plaza	x		x	x	x	x
Junction City	x		x	x	x	x
Milford			x	x		x
Lyon County			x	x	x	x
Admire				x	x	x
Allen				x	x	x
Americus				x	x	x
Bushong				x		x
Emporia			x	x	x	x
Hartford				x	x	
Neosho Rapids				x	x	x
Olpe				x		x
Reading				x		x
Morris County				x		
Council Grove				x	x	x
Dwight				x	x	
White City				x	x	
Wilsey				x	x	
Pottawatomie County	x		x	x	x	x
Belvue				x	x	x
Emmett				x	x	x
Havensville				x	x	
Louisville				x		
Olsburg				x	x	x
Onaga				x	x	x
St. George				x	x	x
St Mary’s				x	x	x
Wamego			x	x	x	x
Westmoreland			x	x		x
Wheaton				x		
Riley County	x	x	x	x	x	x
Leonardville			x	x		x
Manhattan	x	x	x	x	x	x
Ogden			x	x	x	x
Randolph			x	x	x	
Riley			x	x	x	x
Wabaunsee County			x	x	x	x
Alma				x	x	x
Alta Vista	x		x	x		x
Eskridge				x	x	x
Harveyville				x	x	x
Maple Hill				x	x	
McFarland				x	x	
Paxico				x	x	

Note: Blank indicates no plan
*: May be under county plan

4.6 Financial Capabilities

Kansas Region I and all participating jurisdictions can raise revenue through the application of a tax, an assessment, or a fee, each approved by a distinct constitutional and statutory authority. The differences between a tax, assessment, and fee are primarily related to their purpose and how they are imposed:

- **Tax:** A mandatory financial charge imposed by a government on individuals or entities to generate revenue for public services, such as schools, roads, and public safety. Taxes are broad and general in nature.
- **Assessment:** A charge levied on property owners to fund specific local improvements that benefit their property, like road paving or sewer systems. It is usually proportional to the benefit received.
- **Fee:** A charge for a specific service provided by the government, such as a building permit, park entry, or utility connection. Fees are usually voluntary and paid directly by the user of the service.

Additionally, Kansas Region I and all participating jurisdictions can borrow money in a number of different ways, generally used as a means of financing large projects such as infrastructure and buildings. Major methods include:

- **General Obligation Bonds:** General obligation bonds have been the traditional form of financing for capital projects such as land acquisition, park development, and transportation projects that are owned and operated by the county. In general, repayment is guaranteed by both tax revenue and operating revenue.
- **Revenue Bonds:** Generally used to finance water and wastewater projects, airports, and stormwater systems. Payment for debt service on revenue bonds comes from user fees generated by the capital facility that is being built.
- **Local Improvement District Bonds:** When a capital project is going to primarily benefit a subset of the population, a Local Improvement District can be formed. Local Improvement Districts are commonly used for projects such as street improvements, water and sewer systems, and the burying of power lines. Bond payment is through an assessment to property owners in the improvement district.

Concerning hazard mitigation, Kansas Region I and all participating jurisdictions have numerous avenues to fund potential projects, including:

- **Grants:** Kansas Region I can apply for state and federal grants for hazard mitigation projects through myriad programs.
- **Bond Issuance:** Kansas Region I can issue bonds to finance large-scale mitigation projects, such as infrastructure upgrades.
- **Public-Private Partnerships:** Kansas Region I can collaborate with private entities to fund and implement mitigation measures.
- **Reserves and General Funds:** Kansas Region I may allocate funds from their general budget or reserves for mitigation activities.

Participating Stakeholder Financial Capability Summary

The following table indicates, with an x, if the applicable Kansas Region I County and/or participating municipalities has the above enumerated financial capabilities:

Table 23: Participating Financial Capabilities

Jurisdiction	Tax	Assessment	Fee	Grant Application	Public-Private Partnership	Reserves and General Funds
Chase County	x	x	x	x	x	x
Cedar Point	x	x		x	x	
Cottonwood Falls	x	x	x	x	x	x
Elmdale	x	x		x	x	
Matfield Green	x	x		x	x	
Strong City	x	x	x	x	x	x
Geary County	**x**	**x**	**x**	**x**	**x**	**x**

Table 23: Participating Financial Capabilities

Jurisdiction	Tax	Assessment	Fee	Grant Application	Public-Private Partnership	Reserves and General Funds
Grandview Plaza	x	x	x	x	x	x
Junction City	x	x	x	x	x	x
Milford	x	x	x	x	x	x
Lyon County	**x**	**x**	**x**	**x**	**x**	**x**
Admire	x	x	x	x	x	x
Allen	x	x	x	x	x	x
Americus	x	x	x	x	x	x
Bushong	x	x	x	x	x	x
Emporia	x	x	x	x	x	x
Hartford	x	x	x	x	x	x
Neosho Rapids	x	x	x	x	x	x
Olpe	x	x	x	x	x	x
Reading	x	x	x	x	x	x
Morris County	**x**	**x**	**x**	**x**	**x**	**x**
Council Grove	x	x	x	x	x	x
Dwight	x	x	x	x	x	x
White City	x	x	x	x	x	x
Wilsey	x	x	x	x	x	x
Pottawatomie County	**x**	**x**	**x**	**x**	**x**	**x**
Belvue	x	x	x	x	x	x
Emmett	x	x	x	x	x	x
Havensville	x	x	x	x	x	x
Louisville	x	x	x	x	x	x
Olsburg	x	x	x	x	x	x
Onaga	x	x	x	x	x	x
St. George	x	x	x	x	x	x
St Mary’s	x	x	x	x	x	x
Wamego	x	x	x	x	x	x
Westmoreland	x	x	x	x	x	x
Wheaton	x	x	x	x	x	x
Riley County	**x**	**x**	**x**	**x**	**x**	**x**
Leonardville	x	x	x	x	x	x
Manhattan	x	x	x	x	x	x
Ogden	x	x	x	x	x	x
Randolph	x	x	x	x	x	x
Riley	x	x	x	x	x	x
Wabaunsee County	**x**	**x**	**x**	**x**	**x**	**x**
Alma	x	x	x	x	x	x
Alta Vista	x	x	x	x	x	x
Eskridge	x	x	x	x	x	x
Harveyville	x	x	x	x	x	x
Maple Hill	x	x	x	x	x	x
McFarland	x	x	x	x	x	x
Paxico	x	x	x	x	x	x

4.7 Community-Based Classifications

Kansas Region I currently participates in the following community-based classifications, which attest to the continued investment in community resilience.

Public Protection Classification

An Insurance Services Office (ISO) fire rating, officially known as the Public Protection Classification rating, is a score given to evaluate the fire protection capabilities of a community. This rating assesses how well-equipped a local fire

department is to respond to fires, which can impact insurance premiums for homeowners and businesses within that community. Key Components of the ISO Fire Rating include:

- **Emergency Communications:** This evaluates the community's emergency call center and dispatch system. The speed and efficiency of handling emergency calls are critical factors.
- **Fire Department:** The number, training, and equipment of the firefighters are assessed. This includes the department's ability to handle fires, the number of engines, and the availability of water supply.
- **Water Supply:** The availability and reliability of water sources, such as hydrants and water mains, are evaluated. This also includes the volume of water available for firefighting.
- **Community Risk Reduction:** This includes fire prevention efforts, public fire safety education, and building code enforcement. Effective risk reduction programs can positively impact the ISO rating.

The ISO rating is given on a scale from 1 to 10, with a Class 1 rating representing the best public protection and superior fire protection services and a Class 10 rating indicating that the community's fire protection does not meet ISO's minimum standards. A better (lower) ISO rating can lead to lower insurance premiums for property owners because it indicates a lower risk of fire damage. The following table details ISO ratings for program participants:

Table 24: Participating ISO Ratings

Jurisdiction	ISO Rating
Chase County	-
Cedar Point	-
Cottonwood Falls	6
Elmdale	-
Matfield Green	-
Strong City	6
Geary County	3, 3Y
Grandview Plaza	7
Junction City	3
Milford	5
Lyon County	x
Admire	x
Allen	x
Americus	6
Bushong	x
Emporia	x
Hartford	x
Neosho Rapids	x
Olpe	x
Reading	x
Morris County	
Council Grove	5
Dwight	
White City	8
Wilsey	
Pottawatomie County	-
Belvue	7
Emmett	-
Havensville	7
Louisville	-
Olsburg	7

Table 24: Participating ISO Ratings

Jurisdiction	ISO Rating
Onaga	-
St. George	-
St Mary's	-
Wamego	4
Westmoreland	-
Wheaton	-
Riley County	9
Leonardville	7
Manhattan	9
Ogden	7
Randolph	5
Riley	6
Wabaunsee County	-
Alma	-
Alta Vista	7
Eskridge	-
Harveyville	-
Maple Hill	7
McFarland	-
Paxico	-

Source: Insurance Services Office
-: Not rated

Firewise USA Program

The Firewise USA program is a national initiative designed to help communities at risk from wildfires take proactive steps to reduce their vulnerability. Managed by the National Fire Protection Association (NFPA), the program encourages local solutions for wildfire safety by involving homeowners, community leaders, and other stakeholders in reducing fire risks. Key Elements of the program include:

- **Community Engagement:** The program focuses on encouraging communities to work together to develop and implement plans that reduce the risk of wildfire damage. This includes organizing community events, educational workshops, and fire preparedness activities.
- **Risk Assessment:** The program helps communities assess their wildfire risk by identifying vulnerable areas, such as overgrown vegetation or homes with flammable roofing materials. Communities then create a plan to address these risks.
- **Mitigation Actions:** The program encourages property owners to take specific actions to make their homes and surroundings more fire-resistant. These actions might include clearing brush and dead trees, using fire-resistant building materials, and creating defensible space around homes.
- **Education and Resources:** The program provides educational materials and resources to help communities understand wildfire risks and the steps they can take to mitigate them. This includes guidelines for homeowners, tips for creating fire-resistant landscapes, and strategies for community preparedness.
- **Community Cohesion:** The program fosters a sense of shared responsibility and cooperation among community members, which can enhance overall preparedness and resilience.
- **Potential Insurance Discounts:** Some insurance companies offer discounts to homeowners in recognized Firewise communities, reflecting the reduced risk of wildfire damage.

As of this plan, only University Park, located in Riley County participates in the Firewise USA Program

StormReady Community

The StormReady program is a community preparedness initiative developed by the NWS to enhance the ability to prepare for and respond to severe weather events. The goal of StormReady is to help communities develop comprehensive weather safety plans that save lives and protect property. Key Components of the program include:

- **Establishing Warning Systems:** Communities must have multiple ways to receive severe weather warnings and alert the public. This can include NOAA Weather Radios, emergency alert systems, and local broadcast media.
- **Emergency Operations Center:** A designated location where emergency managers and public officials can monitor weather conditions and coordinate responses.
- **Public Education Programs:** Communities in this program must promote weather safety and preparedness through public outreach, including safety fairs, school programs, and distributing weather information materials.
- **Training:** Community leaders and emergency managers undergo training on how to prepare for, respond to, and recover from severe weather.
- **Advanced Monitoring Systems:** Communities are required to monitor local weather conditions in real-time, often using local spotters, weather stations, and other technology to keep track of changing weather patterns.
- **Formal Emergency Plans:** Communities must develop and maintain formal plans for responding to various types of severe weather, including hurricanes, tornadoes, floods, and winter storms. These plans should detail evacuation routes, shelter locations, and post-disaster recovery strategies.
- **Collaboration with the NWS:** Communities work closely with their local NWS office to ensure they have the latest information and resources for weather preparedness and response.
- **Potential Insurance Benefits:** Some insurance providers may offer benefits or discounts to communities that are StormReady certified, reflecting the reduced risk of weather-related damage.

As of this plan, Geary County, Lyon County, Riley County, and the City of Wamego are in the StormReady program.

4.8 Special Districts Mitigation Capabilities

Special districts, which are independent government units created for specific purposes, have several mitigation capabilities:

- **Infrastructure Development and Maintenance:** They can build and maintain infrastructure like levees, drainage systems, or firebreaks to reduce the impact of natural hazards.
- **Emergency Services:** Some districts manage fire protection, flood control, or emergency medical services, which are critical in disaster response and mitigation.
- **Land Use and Zoning:** They can enforce zoning regulations that limit development in high-risk areas.
- **Public Education and Outreach:** Special districts often provide information and resources to help communities prepare for and respond to hazards.
- **Collaboration:** They often work with local, state, and federal agencies to coordinate mitigation efforts and share resources.

Fire district mitigation capabilities include:

- **Fire Prevention Programs:** They conduct inspections, enforce fire codes, and promote fire-safe practices within communities.
- **Hazardous Fuels Management:** Fire districts manage vegetation to reduce fuel loads, including controlled burns and clearing brush, to prevent the spread of wildfires.
- **Emergency Response Planning:** They develop and implement response plans for wildfires, floods, and other emergencies, ensuring quick and effective action.

- **Public Education:** Fire districts educate residents on fire safety, evacuation procedures, and emergency preparedness.
- **Infrastructure Protection:** They work to protect critical infrastructure and buildings by ensuring compliance with building codes and fire-resistant construction practices.

School district mitigation capabilities include:

- **Building Safety:** They enforce building codes and design schools to withstand hazards like earthquakes, floods, and tornadoes.
- **Emergency Preparedness Plans:** School districts develop and regularly update emergency response plans, including evacuation routes, shelter-in-place procedures, and communication strategies.
- **Drills and Training:** They conduct regular safety drills and provide training for students, teachers, and staff on how to respond during emergencies.
- **Community Coordination:** School districts collaborate with local emergency services, law enforcement, and public health agencies to ensure a coordinated response to hazards.
- **Resilience Education:** They integrate disaster preparedness into the curriculum, teaching students about hazard awareness and safety practices.

Water district mitigation capabilities include:

- **Flood Control:** They manage reservoirs, levees, and drainage systems to prevent or reduce flooding.
- **Water Supply Management:** Water districts ensure the stability and reliability of water supplies during droughts or emergencies by implementing conservation measures and diversifying water sources.
- **Infrastructure Resilience:** They maintain and upgrade water infrastructure to withstand hazards like earthquakes, storms, and wildfires.
- **Emergency Response:** Water districts develop and implement emergency response plans to quickly address disruptions in water services due to natural hazards.
- **Public Education:** They educate the community on water conservation, hazard preparedness, and response strategies.

Watershed district mitigation capabilities include:

- **Flood Control:** They design and maintain infrastructure like dams, levees, and retention basins to control flooding and manage stormwater.
- **Water Quality Management:** Watershed districts implement practices to reduce pollution, manage runoff, and protect drinking water sources.
- **Erosion Control:** They work to prevent soil erosion by implementing land management practices and restoring natural vegetation along waterways.
- **Public Education:** Watershed districts educate the community on water conservation, pollution prevention, and the importance of maintaining healthy watersheds.
- **Habitat Restoration:** They engage in efforts to restore wetlands, rivers, and other ecosystems to enhance biodiversity and natural resilience to hazards.

The above enumerated capabilities allow special districts to play a crucial role in reducing risks and enhancing community resilience against natural hazards.

The following table list relevant special districts within Kansas Region I:

Table 25: Kansas Region I Special Districts

Special District Name	District Type	Representative	Title
USD #284 – Chase County	School	Aaron Doty	Superintendent
USD #475 – Geary County	School	Karl DeArmond	Chief Operating Officer
USD #251 – North Lyon County	School	Robert Blair	Superintendent
USD #252 – Southern Lyon County	School	Ryan Muhlig	Superintendent
USD #253 - Emporia	School	Dr. Allison Harder	Superintendent
USD #417 – Morris County	School	Tyson Eslinger	Superintendent
USD #481 – Rural Vista	School	Darlene Griffiths	Superintendent
USD #320 – Wamego	School	Scott Meitler	Asst Superintendent
USD #321 – Kaw Valley	School	Kerry Lacock	Superintendent
USD #322 – Onaga / Havensville / Wheaton	School	Cathi Wilson	Superintendent
USD #323 – Rock Creek	School	Joan Simoneau	Superintendent
USD #378 – Riley County	School	Erin Flair	Superintendent
USD #383 – Manhattan / Ogden	School	Michele Jones	Director of Health and Safety
USD #384 – Blue Valley	School	Rex Boley	Superintendent
USD #329 – Wabaunsee Schools	School	Dr. Troy Pitsch	Superintendent
USD #330 – Mission Valley	School	Bill Clark	Superintendent
Public Wholesale Water Supply District #26	Water	Matt Markley	Operator
Rural Water District	Water	Matt Markley	Operator
Rural Water District #1	Water	Cliff White	Operator
Rural Water District #4	Water	Jeremie Myers	P.W. Director
Rural Water District #4 – Dwight	Water	John Niehues	Superintendent
Coffey County RWD 2	Water	Mike Riley	Operations Manager
Lyon County RWD 1	Water	Jonathan Seimears	Operations Manager
Lyon County RWD 2	Water	Jonathan Seimears	Operations Manager
Lyon County RWD 3	Water	Matt Brinkman	Operations Manager
Lyon County	Water	Jaime Seimears	Operations Manager
Lyon County RWD 5	Water	Jonathan Seimears	Operations Manager
Hunter’s Island Water District	Water	John Ellerman	Director
Konza Water District	Water	John Ellerman	Director
Moehlman Bottom Water District	Water	John Ellerman	Director
Morris County Rural Water District	Water	Steve Euler	Director
Pottawatomie Rural Water District #2	Water	Marcelino Albuerne	Manager
Pottawatomie Rural Water District #3	Water	Stacy Rempe	Manager
Pottawatomie Rural Water District #4	Water	Keith Murphy	Manager
Rilet County Rural Water District #1	Water	Tom Orazem	Manager
University Park Water and Sewer District	Water	John Ellerman	Director
Wabaunsee Rural Water District #1	Water	Jim Foresman	Manager
Wabaunsee Rural Water District #2	Water	Greg Dekat	Assistant Manager
Diamond Creek Watershed Joint District #61	Watershed	Ben Barr	Director
Lyon Creek Watershed	Watershed	George Poland	Director
Rock Creek Watershed Joint District #84	Watershed	George Shellenberger	Director
Tri-County Drainage District	Watershed	Doyle Pearl	Board Member

4.9 Jurisdictional Compliance with NFIP

Kansas Region I NFIP participating communities are committed to continued involvement and compliance. To help facilitate compliance, NFIP participating communities:

- Meet the minimum standards set forth in the program.
- Adopted floodplain regulations through local ordinance.
- Enforce floodplain ordinances through building restrictions.
- Regulate new construction in Special Flood Hazard Areas as outlined in their floodplain ordinance.
- Utilize FEMA DFIRMs, where available.

- Monitor floodplain activities.

A community's NFIP coordinator plays a crucial role in managing and implementing floodplain management activities to reduce flood risk. Rules Governing the Kansas Natural Resource Commission's Floodplain Administrator Accreditation Program Title 18 (amended June 1, 2018) Subtitle I. General provisions Section 1801.1 Purpose. The purpose of this program is to provide a procedure for accrediting floodplain administrators. Each county, city, or town shall designate a person to serve as the floodplain administrator to administer and implement the community Flood Damage Prevention Ordinance or Code pursuant to K.S.A. 12-741 et seq. and K.S.A. 12-766 to reflect accurate State statues and any local codes and regulations relating to the management of flood-prone areas. This program will assure that persons responsible for important economic decisions affecting health, safety, and welfare of the State receive annual training to assist them in managing development in floodplains.

Responsibilities of a floodplain administrator/NFIP coordinator typically include:

- **Administering Floodplain Regulations:** Ensuring the community complies with NFIP standards by enforcing local ordinances and building codes in designated flood-prone areas.
- **Assisting Property Owners:** Providing guidance on flood insurance requirements, helping residents understand their flood risk, and facilitating access to NFIP insurance.
- **Maintaining Flood Maps:** Keeping and updating FIRMs to reflect current flood risks and communicating changes to stakeholders.
- **Coordinating Flood Risk Reduction Efforts:** Collaborating with federal, state, and local agencies to implement flood mitigation strategies and projects.
- **Community Outreach:** Educating the public about flood hazards, mitigation measures, and the importance of flood insurance coverage.

By fulfilling these duties, NFIP coordinators help reduce flood damage and promote community resilience. The following represent NFIP coordinators for each participating community within Kansas Region I:

Table 26: Kansas Region I Jurisdictional NFIP Coordinators

Jurisdiction	Name	Title
Chase County	**Scott Wiltse**	**Floodplain Manager**
Cedar Point	Dow Wilson	City Clerk
Cottonwood Falls	Buddy Sisson	Mayor
Elmdale	Suspended	-
Matfield Green	Does not participate	-
Strong City	Yvonne Kirk	Deputy Clerk
Geary County	**Troy Livingston**	**GIS Zoning**
Grandview Plaza	Luke Erichsen	City Superintendent
Junction City	Chris Srackangast	Community Development Director
Milford	Does not participate	-
Lyon County	**Samuel Seeley**	**Floodplain Manager**
Admire	Ron Kuhn	City Council
Allen	Charles Eastman	Mayor
Americus	Jana Smart	City Clerk
Bushong	Does not participate	-
Emporia	Justin Givens	Planning and Zoning Administrator
Hartford	Susan Hanners	Floodplain Manager
Neosho Rapids	Alanna Martin	City Clerk
Olpe	Does not participate	-
Reading	Does not participate	-

Table 26: Kansas Region I Jurisdictional NFIP Coordinators

Jurisdiction	Name	Title
Morris County	**Does not participate**	**-**
Council Grove	James Masters	Floodplain Manager
Dwight	Lisa Lee	Floodplain Administrator
White City	Susan McKenzie	City Clerk
Wilsey	J.C. Sarratt	Mayor
Pottawatomie County	**Gregg Webster**	**Floodplain Administrator**
Belvue	James Horak	Mayor
Emmett	Does not participate	-
Havensville	Dan Kolterman	City Clerk
Louisville	Does not participate	-
Olsburg	Mike Mayer	Commissioner
Onaga	Sarah McKinsey	City Clerk
St. George	Ben Hawkins	Planning and Zoning Chair
St Mary's	Maurice Cordell	City Administrator
Wamego	Vacant	Vacant position
Westmoreland	Does not participate	-
Wheaton	Does not participate	-
Riley County	**Darin Hobbs**	**Floodplain Manager**
Leonardville	Deandra Anderson	City Clerk
Manhattan	Bill Heatherman	Stormwater Compliance Engineer
Ogden	Angela Schnee	Zoning Admin, FPA
Randolph	Bruce Zimmer	Mayor
Riley	Josie Bulk	City Clerk
Wabaunsee County	**Noel Sylvester**	**Zoning Administrator**
Alma	Michael Slobodnik	City Superintendent
Alta Vista	Does not participate	-
Eskridge	Rex Kraus	Mayor
Harveyville	Chris Tenbrink	City Clerk
Maple Hill	Tom Mayer	Public Works
McFarland	Dorine Schley	City Clerk
Paxico	Ryan Theel	Zoning Administrator

Participation in the NFIP is based on an agreement between the participating community and the federal government. If a community agrees to adopt and enforce a floodplain ordinance designed to reduce future flood risks, all citizens in the participating community can purchase flood insurance. In Kansas Region I, as part of NFIP participation, NFIP communities must:

- Use current NFIP flood maps in adopting floodplain management regulations.
- Require permits and regulate development in SFHAs.
- Ensure that development does not increase the flood hazard on other properties.
- Meet current elevation standards. Ensuring the lowest occupied floor is elevated to or above the base flood elevation indicated on the NFIP flood map.

Communities that do not have a FEMA FIRM can still participate in the NFIP. These communities can enter the NFIP through the Emergency Program, which provides limited flood insurance coverage while FEMA conducts flood risk assessments and develops a FIRM. Communities can voluntarily participate by adopting minimum floodplain management regulations even if no detailed flood hazard data exists. Even without a FIRM, communities must establish basic floodplain management practices to reduce flood risks. This includes restricting construction in known flood-prone areas and requiring elevation standards for new buildings.

Once a community joins NFIP, FEMA may conduct flood studies to create an official FIRM. When the FIRM is completed, the community can transition from the Emergency Program to the Regular Program, allowing access to higher flood insurance coverage and disaster assistance. Property owners and renters in participating communities can purchase NFIP-backed flood insurance, even if there is no official FIRM. This provides financial protection against flood damage, which is not covered under standard homeowners' insurance policies.

A jurisdiction might choose not to participate in the NFIP for several reasons, despite the program's benefits in managing flood risks and providing insurance options. This may be because it requires adopting and enforcing floodplain management regulations, maintaining records, and updating flood maps. As a smaller jurisdictions, with limited resources, the cities of Olpe, Reading, Dunlap, Parkerville, Westmoreland, and Alta Vista find this administrative effort overwhelming. Additionally, Morris County does not participate due to a political lack of will and lack of perceived need.

While most floodplain requirements have been incorporated into the current Building Codes, some additional provisions and regulations may be required by a community. Communities participating in the NFIP are required to adopt, enforce and maintain a local floodplain ordinance as a stipulation of compliance with the program. The purpose of this ordinance is to ensure public safety, minimize impact to people and property from flooding, protect watercourses from encroachment, and maintain the capability of floodplains to retain and carry off floodwaters. The local floodplain coordinator is typically the municipal official responsible for overseeing the enforcement and update of the document.

Kansas Region I jurisdictional floodplain ordinances are typically enforced by law enforcement departments and/or code enforcement offices. For all Kansas Region I NFIP participating communities the enforcement process works as follows:

- **Identification of Violations:** Violations are often identified through various means, such as citizen complaints, routine inspections, or observations by enforcement officers.
- **Notification:** Once a violation is identified, the responsible party is typically notified of the violation. This notification may come in the form of a written citation, warning letter, or verbal communication depending on the severity of the violation and local procedures.
- **Correction Notice:** In many cases, the responsible party is given a certain amount of time to correct the violation. They may be required to remedy the situation, obtain necessary permits, or comply with specific regulations.
- **Follow-up Inspections:** After the designated correction period, enforcement officers may conduct follow-up inspections to ensure that the violation has been addressed satisfactorily.
- **Penalties and Fines:** If the responsible party fails to comply with the ordinance or correct the violation within the specified timeframe, they may face penalties or fines. These penalties can vary depending on the nature and severity of the violation and may escalate for repeated offenses.
- **Legal Action:** In cases of persistent non-compliance or serious violations, local authorities may initiate legal proceedings against the responsible party. This can involve court appearances, injunctions, or other legal measures to compel compliance.

Additionally, FEMA has specific requirements NFIP communities must follow both before (pre-disaster) and after (post-disaster) a flood event. These requirements are designed to mitigate flood risks, promote sustainable development, and ensure eligibility for federal disaster assistance and flood insurance benefits. The following figure represents both pre- and post-disaster NFIP community requirements:

Figure 6: Pre- and Post-Disaster Community NFIP requirements



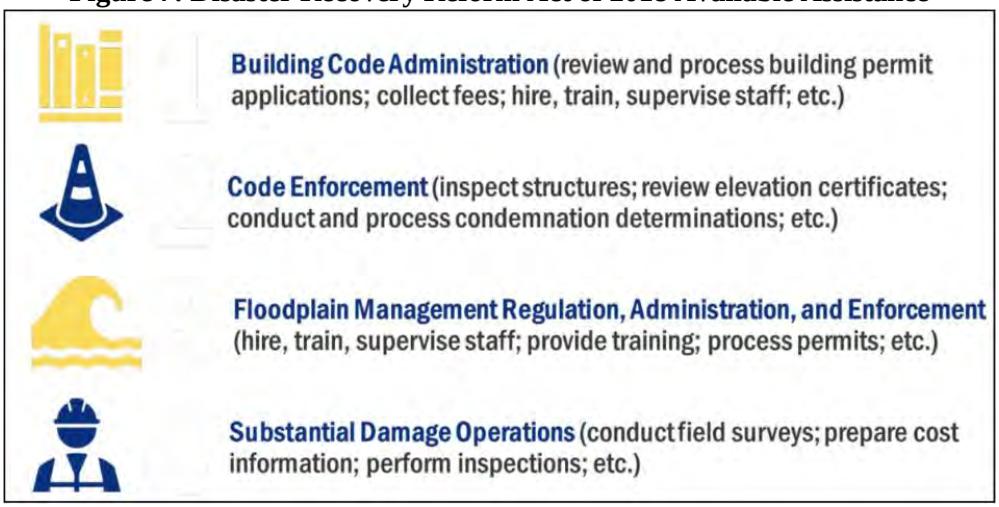
Source: FEMA

When structures located in the SFHAs are substantially modified (more than 50% damaged or improved) they are required to be brought into compliance with current NFIP standards and local building codes. In cases of repairs being conducted as a result of damage, jurisdictional NFIP coordinators are responsible for substantial damage and improvement determinations. These determinations are required for compliance in the NFIP and must be completed before residents begin repairs or permits are issued.

However, the May 2020 Report to Congressional Committees on the National Flood Insurance Program by the United States Government Accountability indicates "FEMA generally does not collect or analyze the results of these assessments, limiting its ability to ensure the process operates as intended. Furthermore, FEMA has not clarified how communities can access NFIP claims data. Such data would help communities target substantial damage assessments after a flood." This has been found to be true in Kansas Region I, with submitted information and data underutilized and some FEMA available data unshared and/or unadvertised.

Section 1206 of the Disaster Recovery Reform Act of 2018 authorizes the FEMA to provide communities with the resources to administer and enforce building code and floodplain management ordinances following a major disaster declaration through FEMA's Public Assistance Program. To be eligible for reimbursement under the Public Assistance Program, including for the Disaster Recovery Reform Act of 2018 Section 1206, communities must be designated for Public Assistance permanent work under a major disaster declaration and be legally responsible to administer and enforce building codes or floodplain management regulations. Communities must also be in good standing with the NFIP. Available assistance includes:

Figure 7: Disaster Recovery Reform Act of 2018 Available Assistance



Source: FEMA

It is worth noting that this assistance is available for a variety of hazards occurrence types, not just flooding.

Key to achieving across the board reduction in flood damages is a robust community assistance, education, and awareness program. As such, Kansas Region I and all NFIP participating jurisdictions will continue to develop both electronic (including social media) and in person outreach activities.

4.10 Challenges and Opportunities for Capability Improvement

As always, challenges exist due to the day-to-day demands of the working environment, including staffing issues, budget restrictions, and staffing turnover. These issues can, and do, impact the utilization and incorporation of the LHMP and the completion of identified hazard mitigation projects.

As part of this planning process, the MPC worked to identify gaps and deficiencies identified in the completion of this LHMP. Resulting from this assessment is a series of problem statements, concise descriptions of issues or challenges that need to be addressed. These problem statements were determined to be applicable to all participating jurisdictions:

- Available funding for the completion of hazard mitigation projects is at a premium, with only occasional room in available budgets for required project match. On a yearly basis, many counties and jurisdictions throughout Kansas Region I fully allocate their tax revenue to basic services and programs. Because of this, funding for mitigation projects is often unavailable or severely limited. While the capability to assess special taxes or issue bonds does exist, historically it has been shown that passing these measures is extremely difficult. As a result, many needed mitigation projects throughout Kansas Region I are not completed due to lack of funding. All Kansas Region I jurisdictions should, as possible, prioritize budgeting for mitigation projects.
- The difficulties in applying for and managing hazard mitigation grants can be a challenge.
- Staffing at all levels is stretched thin, with many personnel wearing multiple hats, compromising mitigation capabilities.

Improving capabilities can lead to enhanced performance, increased efficiency, and better outcomes in hazard mitigation planning and implementation. The following identify recommended improvements:

- Continued instruction should be solicited from KDEM and FEMA Region VII on grant application and grant management strategies to reflect changing requirements.
- All participating jurisdictions should conduct more extensive educational outreach to all communities, especially vulnerable and underserved communities, on mitigation actions and methodologies
- Participating NFIP communities should apply for membership in the CRS to allow citizens to receive discounts off their federally backed flood insurance policies.
- Participating jurisdictions who are not current participants should apply for membership in the Firewise USA program.
- Participating jurisdictions without an ISO Fire Suppression Rating should apply for a rating.
- All participating jurisdictions should continue to explore and engage in public-private emergency planning partnerships to further increase hazard resiliency through the infusion of additional funding and expertise to help complete mitigation projects.
- Participating jurisdictions do not participate in the StormReady program should join.
- All participating jurisdictions should institute a more robust system to track the occurrence and impact of hazard occurrences.

The following table summarizes these opportunities for improvement, marked with an x, for each participating jurisdiction:

Table 27: Participating Opportunities for Capability Improvement

Jurisdiction	Community Outreach	CRS App.	Firewise App.	Grant Education	Impact Tracking	ISO App.	NFIP App.	StormReady App.
Chase County	**x**	**x**	**x**	**x**	**x**	**x**		**x**
Cedar Point	x	x	x	x	x	x		x
Cottonwood Falls	x	x	x	x	x			x
Elmdale	x	x	x	x	x	x	x	x
Matfield Green	x	x	x	x	x	x	x	x
Strong City	x		x	x	x			x
Geary County	**x**		**x**	**x**	**x**			
Grandview Plaza	x	x	x	x	x			x
Junction City	x	x	x	x	x			x
Milford	x	x	x	x	x		x	x
Lyon County	**x**		**x**	**x**	**x**	x		
Admire	x	x	x	x	x	x		x
Allen	x	x	x	x	x	x		x
Americus	x	x	x	x	x			x
Bushong	x	x	x	x	x	x	x	x
Emporia	x	x	x	x	x	x		x
Hartford	x	x	x	x	x	x		x
Neosho Rapids	x	x	x	x	x	x		x
Olpe	x	x	x	x	x	x	x	x
Reading	x	x	x	x	x	x	x	x
Morris County	**x**	**x**	**x**	**x**	**x**	x	X	**x**
Council Grove	x	x	x	x	x			x
Dwight	x	x	x	x	x	x		x
White City	x	x	x	x	x			x
Wilsey	x	x	x	x	x	x	x	x
Pottawatomie County	**x**	**x**	**x**	**x**	**x**	x		**x**
Belvue	x	x	x	x	x			x
Emmett	x	x	x	x	x	x	x	x
Havensville	x	x	x	x	x			x
Louisville	x	x	x	x	x	x	x	x
Olsburg	x	x	x	x	x			x
Onaga	x	x	x	x	x	x		x
St. George	x	x	x	x	x	x		x
St Mary’s	x	x	x	x	x	x		x
Wamego	x		x	x	x			
Westmoreland	x	x	x	x	x	x	x	x
Wheaton	x	x	x	x	x	x	x	x
Riley County	**x**		**x**	**x**	**x**			**x**
Leonardville	x	x	x	x	x			x
Manhattan	x		x	x	x			x
Ogden	x	x	x	x	x			x
Randolph	x	x	x	x	x			x
Riley	x		x	x	x			x
Wabaunsee County	**x**	**x**	**x**	**x**	**x**	x		**x**
Alma	x	x	x	x	x	x		x
Alta Vista	x	x	x	x	x		x	x
Eskridge	x	x	x	x	x	x		x
Harveyville	x	x	x	x	x	x		x
Maple Hill	x	x	x	x	x			x
McFarland	x	x	x	x	x	x		x
Paxico	x	x	x	x	x	x		x

To help overcome many of these identified challenges, participating jurisdictions will work collaboratively using the following strategies, as appropriate:

- **Innovation and Adaptation:** Foster a culture of innovation and adaptability. Encourage employees to think creatively, embrace change, and explore new ways of doing things to overcome challenges.
- **Training and Development:** Invest in training and development to enhance skills and knowledge.
- **Communication Improvement:** Enhance communications and provide clear and transparent communication when sharing information, aligning teams, and addressing concerns.
- **Collaboration and Teamwork:** Encourage collaboration and teamwork which allows for the pooling of diverse skills and perspectives, leading to more effective problem-solving (the MPC is a good example of effective use of this strategy).
- **Technology Adoption:** Embrace technology to streamline operations and enhance productivity.
- **Agile Project Management:** Implement agile project management methodologies to enhance flexibility and responsiveness to changing conditions. Agile approaches allow teams to adapt quickly to challenges.

As appropriate, these strategies will be tailored for specific circumstances, with a combination of these strategies often being more effective than relying on a single approach.

Section 5 – Hazard Identification and Risk Assessment

5.1 Introduction

The goal of this hazard mitigation is to reduce the future impacts of hazards, including deaths and injuries, property damage, and disruption to local and county economies, and to further reduce the amount of public and private funds spent to assist recovery. To complete this goal, hazard mitigation decision-making in this plan has been based on a robust risk assessment, completed to identify natural, human caused, and technological hazards that represent a risk to Kansas Region I. The following provide a definition of the risk assessment terms used during this assessment:

- **Hazard:** An act or phenomenon that has the potential to produce harm or other undesirable consequences to a person or thing.
- **Exposure:** The people, property, systems, or functions that could be lost to a hazard. Generally, exposure includes what lies in the area the hazard could affect.
- **Vulnerability:** Vulnerability is susceptibility to physical injury, harm, damage, or economic loss. It depends on the asset's construction, contents, and economic value of its functions.
- **Risk:** A function of hazard, vulnerability, and exposure. It refers to the likelihood of an event resulting in an adverse condition that causes injury or damage.

In order to accomplish this assessment, all relevant natural, human caused, and technological hazards, potential vulnerabilities, and exposures were identified. As potential hazards, vulnerabilities, and exposure are identified Kansas Region I can continue to develop a strategy to identify and prioritize mitigation action to defend against these potential risks.

5.2 Declared Federal Disasters

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. §§ 5121-5206) provides for the Federal support of State and local governments and their citizens when impacted by an overwhelming disaster. The Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, establishes the process for requesting a Presidential disaster declaration and defines the type of assistance available.

If it is apparent that a Presidential disaster declaration may be necessary to assist in the recovery of an impacted area, Kansas Region I and FEMA Region VII will conduct a Preliminary Damage Assessment (PDA). This assessment is used to determine:

- The extent of the event.
- The impact of the event on individuals and public facilities.
- The types of federal assistance that may be needed.

Once the PDA is complete, and if a determination is made that the damages exceed available State of Kansas resources, the Governor may submit through FEMA Region VII a declaration request to the President.

A major disaster declaration provides a wide range of federal assistance programs for individuals and public infrastructure, including funds for both emergency and permanent work. Not all programs, however, are activated for every disaster. The determination of which programs are authorized is based on the types of assistance specified in the Governor's request and the needs identified during the initial and subsequent PDAs. FEMA disaster assistance programs may include:

- Individual Assistance
- Public Assistance
- Hazard Mitigation

To recognize and encourage mitigation, FEMA considers the extent to which mitigation measures contributed to the reduction of disaster damages. This could be especially significant in those disasters where, because of mitigation, the estimated public assistance damages fell below the per capita indicator.

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. The MPC reviewed the historical federal disaster declarations to assist in hazard identification. The following table details Disaster Declarations for Kansas Region I:

Table 28: Kansas Region I Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Individual and Public Assistance	Mitigation Grants
DR-4824-KS	9/24/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Chase, Geary, Wabaunsee	-	-
DR-4811-KS	8/20/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Morris, Wabaunsee	-	-
DR-4800-KS	7/15/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Morris, Pottawatomie	-	-
DR-4774-KS	4/28/2024	Winter Storm	Chase, Geary, Morris, Wabaunsee	-	-
DR-4640-KS	3/22/2022	Severe Storms and Straight-Line Winds	Geary, Morris, Riley, Wabaunsee	$12,159,785	$79,818
DR-4504-KS	3/29/2020	Covid-19	All Kansas Counties	$447,055,679	$6,948,544
DR-4449-KS	8/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Chase, Geary, Lyon, Morris, Pottawatomie, Wabaunsee	$51,157,548	$3,331,442
DR-4403-KS	10/19/2018	Severe Storms, Straight-Line Winds, and Flooding	Riley	$4,545,539	$614,317
DR-4230-KS	7/20/2015	Severe Storms, Tornadoes, Straight-Line Winds and Flooding	Chase, Lyon, Morris, Pottawatomie, Wabaunsee	$11,018,053	-
DR-4150-KS	10/22/2013	Severe Storms, Straight-Line Winds, Tornadoes	Chase, Geary, Lyon, Morris, Pottawatomie	$10,135,201	-
DR-4010-KS	7/29/2011	Severe Storms, Straight-Line Winds, Tornadoes and Flooding	Lyon, Pottawatomie, Riley	$7,283,729	-
DR-1932-KS	8/10/2010	Severe Storms, Flooding and Tornadoes	Chase, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$7,384,786	-
DR-1885-KS	3/9/2010	Severe Winter Storms and Snowstorm	Geary, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$15,069,228	-
DR-1849-KS	6/25/2009	Severe Storms, Flooding, Straight-Line Winds, and Tornadoes	Chase, Lyon, Morris, Wabaunsee	$11,534,818	-
DR-1848-KS	6/24/2009	Severe Winter Storm and Record and Near Record Snow	Chase, Lyon, Morris	$12,436,207	-
DR-1808-KS	10/31/2008	Severe Storms, Flooding, and Tornadoes	Chase	$3,364,325	-
DR-1776-KS	7/9/2008	Severe Storms, Flooding, and Tornadoes	Riley	$55,300,511	-
DR-1741-KS	2/1/2008	Severe Winter Storms	Chase, Geary, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$227,086,533	-

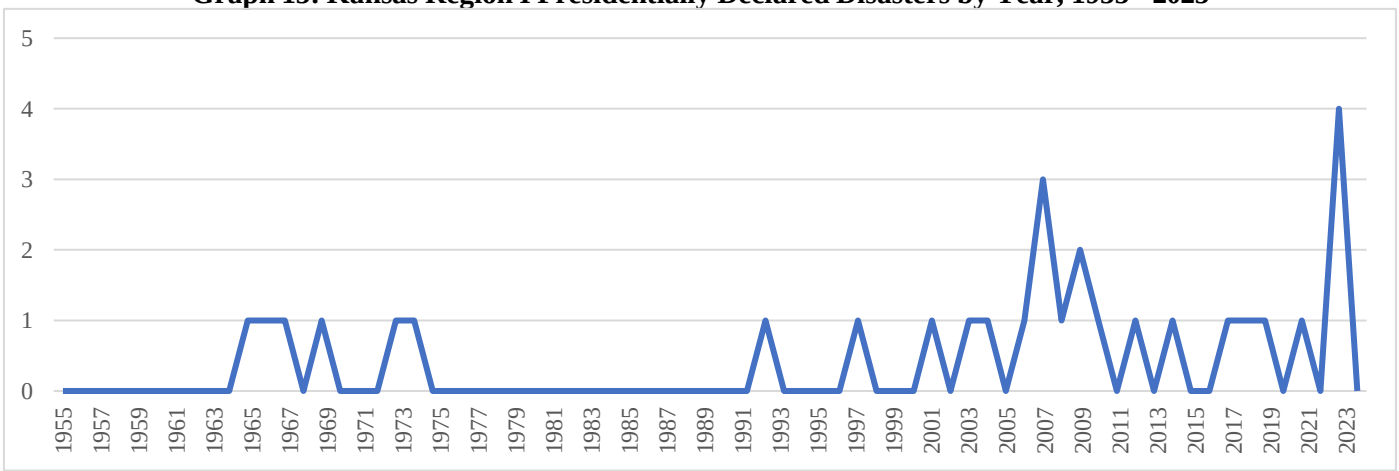
Table 28: Kansas Region I Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Individual and Public Assistance	Mitigation Grants
DR-1699-KS	5/6/2007	Severe Storms, Tornadoes, and Flooding	Chase, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$98,286,095	
DR-1579-KS	2/8/2005	Severe Winter Storm, Heavy Rains, and Flooding	Chase, Lyon, Morris, Pottawatomie, Wabaunsee	$82,381,461	-
DR-1535-KS	8/3/2004	Severe Storms, Flooding, and Tornadoes	Geary, Lyon, Morris, Wabaunsee	$10,223,840	-
DR-1402-KS	2/6/2002	Ice Storm	Lyon	$45,020,240	-
DR-1258-KS	11/5/1998	Severe Storms and Flooding	Chase, Lyon	$9,574,047	-
DR-1000-KS	7/22/1993	Flooding, Severe Storms	Chase, Geary, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	-	-
DR-442-KS	6/10/1974	Severe Storms, Flooding	Lyon	-	-
DR-378-KS	5/2/1973	Severe Storms, Flooding	Lyon, Morris, Pottawatomie, Wabaunsee	-	-
DR-267-KS	7/15/1969	Tornadoes, Severe Storms, Flooding	Lyon, Morris	-	-
DR-229-KS	7/18/1967	Tornadoes, Severe Storms, Flooding	Chase, Lyon, Pottawatomie, Wabaunsee	-	-
DR-219-KS	6/10/1966	Tornadoes, Severe Storms	Riley	-	-
DR-201-KS	6/23/1965	Flooding	Chase, Lyon	-	-

Source: FEMA
-: Not reported

The following graph represents Presidentially Declared Disasters in the Kansas Region I by year, starting in 1955:

Graph 15: Kansas Region I Presidentially Declared Disasters by Year, 1955 - 2025



Source: FEMA

The President can declare an emergency for any occasion or instance when the President determines federal assistance is needed. Emergency Declarations supplement State and local or Indian tribal government efforts in providing emergency services, such as the protection of lives, property, public health, and safety, or to lessen or avert the threat of a catastrophe. The total amount of assistance provided for in a single emergency may not exceed $5,000,000. The following types of assistance are available under an Emergency Declaration:

- Public Assistance, Categories A (debris removal) and B (emergency protective measures)
- Individual Assistance, the Individuals and Households Program

The following table details Emergency Declarations for Kansas Region I.

Table 29: Kansas Region I Emergency Declarations

Designation	Declaration Date	Incident Type	Public Assistance
EM-3481-KS	3/13/2020	Kansas Covid-19	Not reported
EM-3412-KS	5/28/2019	Flooding	Not reported
EM-3282-KS	12/12/2007	Kansas Severe Winter Storms	Not reported
EM-3236-KS	9/10/2005	Hurricane Katrina Evacuation	Not reported

Source: FEMA

The Governor, or the Governor's Authorized Representative, may submit a request for a fire management assistance declaration as required. FEMA will approve declarations for fire management assistance when it is determined that a fire or fire complex on public or private forest land or grassland threatens such destruction as would constitute a major disaster. The MPC reviewed the historical fire management declarations to assist in hazard identification. Research indicates that there have been no fire management declarations for Kansas Region I since 1953:

Table 30: Kansas Region I Fire Management Declarations

Designation	County	Declaration Date	Incident Name	Public Assistance	Emergency Work
-	-	-	-	-	-

Source: FEMA
-: None reported

The Governor of the State of Kansas has declared three Kansas Disaster Declarations during the past five years relevant to Kansas Region I:

- **July 17, 2025:** A severe storm declaration was issued for Morris Counties.
- **June 3, 2025:** A severe storm declaration was issued for Lyon and Morris Counties.
- **April 20, 2020:** A declaration was issued for the COVID-19 pandemic.

Please note that additional proclamations were issued for potentially impeding events or conditions to allow for preparation as necessary.

5.3 Identified Potential Hazards

One of the first steps in developing a hazard assessment is to identify the hazards that have a reasonable risk of occurring. Proper identification allows for appropriate and well-planned action in order to mitigate the extent and cascading impacts of an incident. Furthermore, while not all disaster contingencies can be planned for, applying an all-hazards approach to the mitigation process does yield greater awareness and better preparedness for unforeseen hazard incidents overall.

The MPC met to discuss previously identified hazards and deliberate on any changes or additions to the regional hazard profile. A thorough and comprehensive revision of data for each hazard was completed as part of this plan update. Additionally, this plan has worked, as per FEMA recommendations, to merge similar hazards together with the aim of both simplifying the usage of the plan and reducing duplication of effort.

The MPC confirmed the following natural hazards that may impact the Kansas Region I:

Table 31: Kansas Region I Identified Natural Hazards

Hazard	Notes
Agricultural Infestation	Hazard identified as a concern, but mitigation measures are largely implemented on the State and Federal level.
Dam or Levee Failure	A concern all counties, but the level of concern for additional participating jurisdictions is poorly understood.
Drought	Hazard applicable to all jurisdictions.
Extreme Temperatures	Hazard applicable to all jurisdictions.
Flood	Hazard applicable to all jurisdictions.
Severe Weather	Combined hail, lightning, and high and thunderstorm winds. Applicable to all jurisdictions.
Severe Winter Weather	Renamed from Winter Storm. Applicable to all jurisdictions.
Tornado	Applicable to all jurisdictions
Wildfire	Applicable to all jurisdictions

The MPC confirmed the following human caused and technological hazards that may impact the Kansas Region I, as listed below:

Table 32: Kansas Region I Identified Human Caused and Technological Hazards

Hazard	Included in 2025 HMP	Notes
Cybersecurity Incident	Yes	New
Hazardous Materials Incident	Yes	-
Infrastructure Failure	Yes	Renamed from Utility/Infrastructure Failure
Terrorism	Yes	Now includes active shooter
Transmissible Disease	Yes	Renamed from Major Disease Outbreak

Based on discussion with the MPC, a lack of identified risk or history, and geographic improbability, numerous FEMA identified hazards such as coastal erosion and hurricane were not included in the scope of this plan. Additionally, the following natural hazards included in the State of Kansas HMP were not included for the enumerated reasons:

- **Earthquake:** Information from the Kansas Geological Society indicates that Kansas Region I has had no recorded earthquake above Richter Scale Magnitude 3.0, with effects resembling vibrations caused by heavy traffic. Additionally, FEMA seismic risk maps indicate that the region is in the low-risk category. As such, the MPC opted to not allocate potential resources or funding to mitigate this hazard in favor of prioritizing other hazards.
- **Expansive Soils:** While mapping from the USGS indicates that the majority of Kansas Region I has soils with part of the unit, generally less than 50%, having high swelling potential, no major recorded instances of damage, death, or injury has been noted by the MPC. As such, the MPC opted to not allocate potential resources or funding to mitigate this hazard in favor of prioritizing other hazards.
- **Land Subsidence:** There have been no recorded incidences of subsidence events in Kansas Region I. Additionally, geologic maps indicate that the region has minimal Karst topography, a known contributor to subsidence and minimal identified subsurface void space. Due to a lack of documented history and indicated risk, the MPC opted to not allocate potential resources or funding to mitigate this hazard in favor of prioritizing other hazards.
- **Landslide:** Mapping from the Kansas Geological Survey indicates that Region I has no major areas of landslide risk. Additionally, due to the lack document occurrence and unfavorable topography, the MPC opted to not allocate potential resources or funding to mitigate this hazard in favor of prioritizing other hazards.
- **Soil Erosion and Dust:** The larger concern of soil erosion, and the associated dust caused by this erosion, is an issue that is managed by the Kansas Department of Agriculture on a statewide basis. As such, the MPC elected to remove this hazard from the plan.

The following table indicates the improvement of worsening of conditions related to the identified hazards in this LHMP since the completion of the 2020 LHMP:

Table 33: Kansas Region I Natural Hazards Change in Conditions

Natural Hazard	Change in Conditions	Notes
Agricultural Infestation	Worsening	Increased extreme heat and drought occurrences have exacerbated conditions related to infestation events.
Dam and Levee Failure	Unchanged	The number of dams has not changed. However, drought conditions have tended to lower the storage in dammed reservoirs.
Drought	Worsening	Available data indicates that the rate of drought occurrence is increasing.
Extreme Temperatures	Worsening	Data indicates that the number of high temperature days has been increasing.
Flood	Worsening	Data indicates that while rainfall occurrence has lessened, the number of heavy rainfall events have increased.
Severe Weather	Worsening	Data indicates that incidences of severe weather are increasing.
Severe Winter Weather	Unchanged	Changes in weather patterns indicate severe winter weather precipitation may change from snow to ice and freezing rain.
Tornado	Unchanged	Data indicates the frequency and magnitude of tornadoes has remained consistent.
Wildfire	Worsening	Increased extreme heat and drought occurrences have exacerbated conditions related to wildfire events.

Table 34: Kansas Region I Human Caused or Technological Hazards Change in Conditions

Natural Hazard	Change in Conditions	Notes
Cybersecurity Incident	Worsening	The reliance on web-based systems and data will continue to make this a persistent threat.
Hazardous Materials Incident	Worsening	Aging handling and transportation systems may increase the occurrence of release events.
Infrastructure Failure	Worsening	Aging infrastructure may increase the occurrence of failure events.
Terrorism	Unknown	The nature of terrorism makes quantifying the change in conditions challenging to quantify.
Transmissible Disease	Worsening	Available data indicates that the rate of drought and extreme heat occurrence is increasing, which may increase vector borne disease occurrence.

5.4 Hazard Planning Significance

For the purposes of this plan, hazard planning significance refers to the relevance of the identified hazard to the jurisdictions of Kansas Region I when calculating risk and vulnerability. In order to help quantify the planning significance for a hazard, data was reviewed on two levels, federal (National Risk Index data) and local (researched plan data relevant to occurrence and vulnerability on a county and local level). This allowed for a comparison between data sets for each hazard type and allowed for a summation at the county level. It is recognized that inconsistencies in methodologies and data make it difficult to make a direct comparison across all data levels. However, as possible, collected data was translated into a unified model that accounted for any variability in data and methodologies.

The result of this assessment provides a larger scale snapshot of how Kansas Region I jurisdictions view risk and allowed for integration of hazard data into the LHMP.

For natural hazards, data from this plan was vetted by the Kansas Region I Emergency Manager and participating jurisdictions to ensure it matched local conditions. Additionally, Kansas Region I utilized FEMA's National Risk Index (NRI) which provides a method of understating high and local level jurisdictional vulnerability. FEMA's NRI dataset and online tool was used to help determine local community risk for identified natural hazards in this LHMP.

The risk equation behind the Risk Index includes three components, Expected Annual Loss (EAL), social vulnerability (previously discussed), and community resilience (previously discussed). The dataset supporting EAL provides

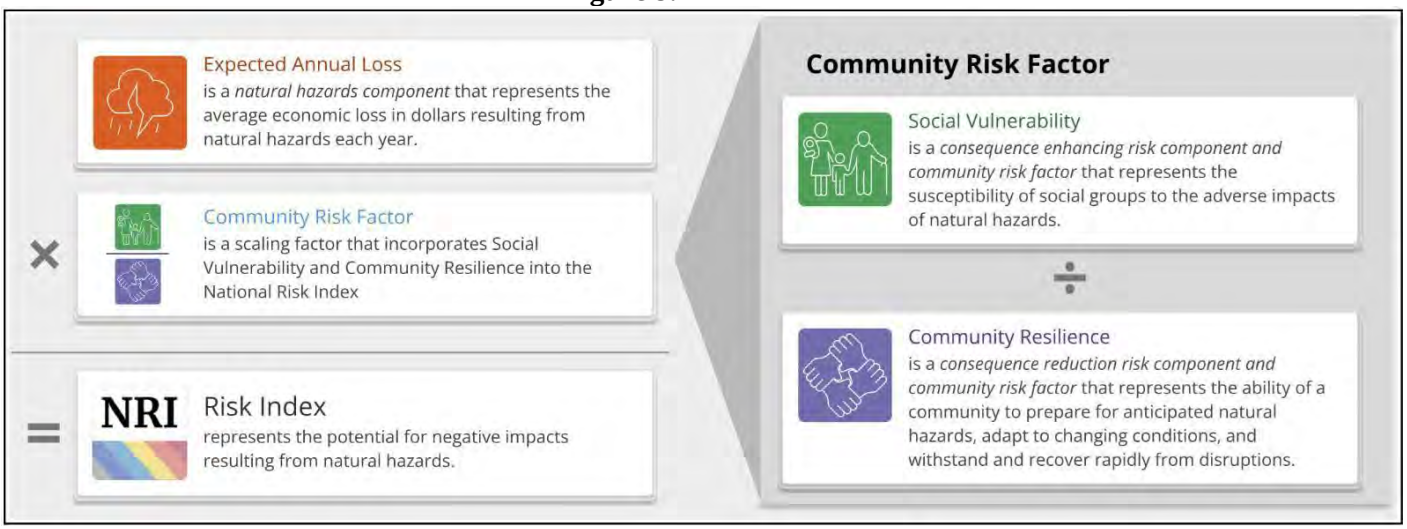
estimates measured in 2022 U.S. dollars. The datasets supporting the social vulnerability and community resilience components have been standardized using a minimum-maximum normalization approach prior to being incorporated into the NRI risk calculation.

As part of the NRI, EAL represents the average economic loss in dollars resulting from a hazard each year. It quantifies loss for relevant consequence types, buildings, people, and agriculture. An EAL score and rating represent a community's relative level of expected losses each year when compared to all other communities at the same level. EAL is calculated using an equation that includes exposure, annualized frequency, and historic loss ratio risk factors. Exposure is a factor that measures the building value, population, and agriculture value potentially exposed to a natural hazard occurrence. Annualized frequency is a factor that measures the expected frequency or probability of a hazard occurrence per year. Historic loss ratio is a factor that measures the percentage of the exposed consequence type value (building, population, or agriculture) expected to be lost due to an occurrence. EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk.

To calculate Risk Index values, the NRI generates a Community Risk Adjustment to scale EAL values up or down, depending on their community risk factors, increasing with social vulnerability and decreases with community resilience. For a jurisdiction, a higher social vulnerability results in a higher Risk Index value while higher community resilience results in a lower Risk Index value.

Using these three components, Risk Index values are calculated for each jurisdiction (county and Census tract). The calculated Risk Index values form an absolute basis for measuring Risk within the NRI, and they are used to generate Risk Index percentiles and ratings across communities. The risk equation behind the NRI is as follows:

Figure 8: FEMA NRI



Source: FEMA

For both the Risk Index and EAL there is a qualitative rating that describes the nature of a community's score in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Because all ratings are relative, there are no specific numeric values that determine the rating.

The National Risk Index provides relative Risk Index percentiles and ratings based on data for Expected Annual Loss due to natural hazards, Social Vulnerability, and Community Resilience. Separate percentiles and ratings are also provided for each component: Expected Annual Loss, Social Vulnerability, and Community Resilience. For the Risk Index and Expected Annual Loss, percentiles and ratings can be viewed as a composite score for all hazards or individually for each of the 18 hazard types.

A community's score is represented by its percentile ranking among all other communities at the same level for Risk, Expected Annual Loss, Social Vulnerability and Community Resilience. For example, if a given Census tract's Risk Index percentile for a hazard type is 85.32 then its Risk Index value is greater than 85.32% of all US Census tracts.

These scores are then assigned a qualitative rating that describes the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." To determine Risk and Expected Annual Loss ratings, a methodology known as k-means clustering or natural breaks is applied to each value. This approach divides all communities into five groups such that the communities within each group are as similar as possible (minimized variance) while the groups are as different as possible (maximized variance). A cubed root transformation is applied to both Risk and Expected Annual Loss values before k-means clustering. Without the transformation, these values are heavily skewed by an extreme range of population and building value densities between urban and rural communities. By applying a cube root transformation, the National Risk Index controls for this characteristic and provides ratings with greater differentiation and usefulness.

In order to gain an understanding of hazard risk, the following table details the estimated FEMA NRI data for Kansas Region I counties and participating jurisdictions (by census tract):

Table 35: Kansas Region I Participating Jurisdiction All Natural Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index
Chase County	**All**	**25.1**	**Very Low**
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	93.9	Relatively High
Geary County	**All**	**65.4**	**Relatively Low**
Junction City	20061000100	80.2	Relatively Moderate
Junction City	20061000200	66.2	Relatively Moderate
Junction City	20061000300	78.7	Relatively Moderate
Junction City	20061000401	73.2	Relatively Moderate
Junction City	20061000402	27.5	Relatively Low
Junction City	20061000500	60.4	Relatively Low
Junction City	20061000601	74.7	Relatively Moderate
Grandview Plaza	20061000700	74.8	Relatively Moderate
Junction City	20061000801	42.4	Relatively Low
Milford	20061000802	79.2	Relatively Moderate
Lyon County	**All**	**50.0**	**Relatively Low**
Emporia	20111000101	55.7	Relatively Low
Emporia	20111000102	18.3	Very Low
Emporia	20111000103	16.2	Very Low
Emporia	20111000201	47.8	Relatively Low
Emporia	20111000202	31.1	Relatively Low
Emporia	20111000203	8.5	Very Low
Emporia	20111000300	64.8	Relatively Moderate
Emporia	20111000400	38.9	Relatively Low
Emporia	20111000500	71.3	Relatively Moderate
Allen, Admire, Bushong, Reading	20111000600	51.9	Relatively Low
Americus	20111000700	57.0	Relatively Low
Hartford, Olpe, Neosho Rapids	20111000800	66.4	Relatively Moderate
Morris County	**All**	**18.8**	**Very Low**
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	83.1	Relatively Moderate
Council Grove	20127963700	67.9	Relatively Moderate
Pottawatomie County	All	38.1	Very Low
Louisville	20149000101	50.3	Relatively Low
St. George	20149000102	72.3	Relatively Moderate
Wamego	20149000200	64.0	Relatively Moderate
Belvue, Emmett, St. Marys	20149000300	58.9	Relatively Low
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	79.8	Relatively Moderate
Riley County	**All**	**75.7**	**Relatively Low**
Manhattan	20161000201	63.3	Relatively Moderate

Table 35: Kansas Region I Participating Jurisdiction All Natural Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index
Manhattan	20161000202	81.4	Relatively Moderate
Manhattan	20161000303	25.5	Very Low
Manhattan	20161000304	59.5	Relatively Low
Manhattan	20161000500	53.4	Relatively Low
Manhattan	20161000601	50.6	Relatively Low
Manhattan	20161000602	75.0	Relatively Moderate
Manhattan	20161000700	71.0	Relatively Moderate
Manhattan	20161000801	60.2	Relatively Low
Manhattan	20161000802	55.2	Relatively Low
Ogden	20161000900	89.9	Relatively High
Manhattan	20161001101	80.5	Relatively Moderate
Manhattan	20161001102	51.8	Relatively Low
Manhattan	20161001301	55.1	Relatively Low
Leonardville, Randloph, Riley	20161001302	83.2	Relatively Moderate
Wabaunsee County	**All**	**17.6**	**Very Low**
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	80.4	Relatively Moderate
Eskridge, Harveyville,	20197483200	69.8	Relatively Moderate

Source: FEMA NRI

In order to gain an understanding of vulnerability, the following table details the estimated FEMA EAL data for Kansas Region I counties and participating jurisdictions (by census tract):

Table 36: Participating Jurisdiction All Natural Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	Building EAL	Population Equivalence EAL (fatalities)	Agricultural EAL	Composite EAL
Chase County	**All**	Very Low	25.8	$1,235,611	0.08	$519,807	$2,711,791
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	Relatively High	93.9	$1,235,611	0.08	$519,807	$2,711,791
Geary County	**All**	Relatively Low	64.9	$1,778,773	0.60	$139,700	$8,935,222
Junction City	20061000100	Relatively Moderate	72.0	$329,866	0.05	$4,147	$918,154
Junction City	20061000200	Relatively Low	54.9	$62,545	0.04	$60	$557,663
Junction City	20061000300	Relatively Moderate	76.1	$142,143	0.08	$1,265	$1,055,075
Junction City	20061000401	Relatively Moderate	71.0	$117,596	0.07	$1	$889,122
Junction City	20061000402	Relatively Low	35.3	$34,551	0.03	$0	$336,390
Junction City	20061000500	Relatively Low	58.5	$125,484	0.04	$288	$614,061
Junction City	20061000601	Relatively Moderate	77.6	$74,250	0.09	$231	$1,115,909
Grandview Plaza	20061000700	Relatively Moderate	72.1	$292,807	0.05	$89,609	$922,129
Junction City	20061000801	Relatively Low	51.6	$63,842	0.04	$329	$509,268

Table 36: Participating Jurisdiction All Natural Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	Building EAL	Population Equivalence EAL (fatalities)	Agricultural EAL	Composite EAL
Milford	20061000802	Relatively Moderate	82.3	$404,195	0.08	$43,459	$1,355,485
Lyon County	**All**	Very Low	51.7	$2,532,255	0.25	$211,389	$5,671,626
Emporia	20111000101	Relatively Low	45.0	$80,176	0.03	$0	$431,303
Emporia	20111000102	Very Low	11.6	$119,342	0.00	$0	$144,224
Emporia	20111000103	Very Low	17.3	$46,171	0.01	$510	$188,054
Emporia	20111000201	Relatively Low	47.7	$171,226	0.02	$104	$460,825
Emporia	20111000202	Relatively Low	38.2	$170,916	0.02	$139	$363,729
Emporia	20111000203	Very Low	8.0	$42,602	0.01	$0	$115,514
Emporia	20111000300	Relatively Moderate	63.3	$290,798	0.04	$1,969	$703,590
Emporia	20111000400	Relatively Low	32.7	$86,907	0.02	$0	$311,914
Emporia	20111000500	Relatively Low	60.6	$280,649	0.03	$1,197	$651,782
Allen, Admire, Bushong, Reading	20111000600	Relatively Moderate	63.6	$385,436	0.02	$66,660	$709,831
Americus	20111000700	Relatively Low	59.7	$330,505	0.02	$49,928	$636,341
Hartford, Olpe, Neosho Rapids	20111000800	Relatively Moderate	73.1	$527,527	0.03	$90,879	$954,521
Morris County	**All**	Very Low	23.3	$663,760	0.09	$821,191	$2,537,576
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	Relatively High	87.8	$429,700	0.05	$789,463	$1,774,071
Council Grove	20127963700	Relatively Moderate	66.2	$234,060	0.04	$31,728	$763,506
Pottawatomie County	**All**	Very Low	43.8	$2,876,606	0.14	$67,480	$4,600,181
Louisville	20149000101	Relatively Low	57.2	$350,900	0.02	$16,153	$592,709
St. George	20149000102	Relatively Moderate	78.3	$651,470	0.04	$4,613	$1,146,292
Wamego	20149000200	Relatively Moderate	67.5	$382,866	0.03	$4,943	$792,654
Belvue, Emmett, St. Marys	20149000300	Relatively Moderate	62.0	$373,274	0.02	$21,587	$677,180
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	Relatively Moderate	82.9	$1,118,096	0.02	$20,183	$1,391,347

Table 36: Participating Jurisdiction All Natural Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	Building EAL	Population Equivalence EAL (fatalities)	Agricultural EAL	Composite EAL
Riley County	**All**	Relatively Low	75.3	$8,670,180	0.44	$455,994	$14,239,915
Manhattan	20161000201	Relatively Low	51.7	$264,111	0.02	$10,875	$511,965
Manhattan	20161000202	Relatively Moderate	80.9	$707,849	0.05	$5,581	$1,271,112
Manhattan	20161000303	Very Low	25.7	$53,264	0.02	$0	$251,252
Manhattan	20161000304	Relatively Moderate	62.2	$379,726	0.03	$0	$681,802
Manhattan	20161000500	Relatively Low	54.2	$240,545	0.03	$0	$547,801
Manhattan	20161000601	Relatively Low	55.0	$303,291	0.02	$0	$558,925
Manhattan	20161000602	Relatively Moderate	76.5	$613,956	0.04	$8,502	$1,070,466
Manhattan	20161000700	Relatively Moderate	68.7	$555,112	0.02	$0	$822,188
Manhattan	20161000801	Relatively Low	56.4	$305,355	0.02	$0	$580,003
Manhattan	20161000802	Relatively Low	49.3	$329,289	0.01	$0	$480,048
Ogden	20161000900	Relatively High	88.3	$1,286,821	0.03	$158,608	$1,829,370
Manhattan	20161001101	Relatively Moderate	79.4	$900,093	0.03	$5,007	$1,199,521
Manhattan	20161001102	Relatively Low	45.2	$179,873	0.02	$423	$433,406
Manhattan	20161001301	Relatively Moderate	61.9	$401,078	0.02	$1,712	$675,562
Leonardville, Randloph, Riley	20161001302	Relatively High	88.13	$1,198,073	0.03	$256,148	$1,806,907
Wabaunsee County	**All**	Very Low	21.6	$1,327,491	0.08	$111,528	$2,374,710
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	Relatively Moderate	82.5	$634,481	0.06	$67,227	$1,363,833
Eskridge, Harveyville,	20197483200	Relatively Moderate	74.8	$693,010	0.02	$44,301	$1,010,877

Source: FEMA NRI

The following tables detail the FEMA NRI and EAL ratings for each FEMA evaluated natural hazard for Kansas Region I counties and participating jurisdictions (by census tract):

Table 37: Chase County FEMA NRI Summary, All Natural Hazards

Natural Hazard	NRI Rating	EAL Rating
Drought	Relatively Low	Relatively Low
Extreme Heat	Relatively Low	Relatively Low
Extreme Cold	Relatively Low	Relatively Low
Flood	Relatively Low	Relatively Low
Hail	Relatively Low	Relatively Low
Lightning	Very Low	Very Low
Strong Wind	Relatively Low	Relatively Moderate
Ice Storm	Relatively Moderate	Relatively Moderate
Winter Weather	Relatively Low	Relatively Low
Tornado	Relatively Low	Relatively Low
Wildfire	Relatively Low	Relatively Low

Source: FEMA NRI

Table 38: Geary County FEMA NRI Summary, All Natural Hazards

Natural Hazard	NRI Rating	EAL Rating
Drought	Relatively Low	Relatively Low
Extreme Heat	Relatively Moderate	Relatively Moderate
Extreme Cold	Relatively Low	Relatively Low
Flood	Relatively Low	Relatively Low
Hail	Relatively High	Relatively High
Lightning	Relatively Low	Relatively Low
Strong Wind	Relatively Low	Relatively Low
Ice Storm	Relatively Low	Relatively Moderate
Winter Weather	Relatively Moderate	Relatively Moderate
Tornado	Relatively Moderate	Relatively Moderate
Wildfire	Relatively Low	Relatively Low

Source: FEMA NRI

Table 39: Lyon County FEMA NRI Summary, All Natural Hazards

Natural Hazard	NRI Rating	EAL Rating
Drought	Relatively Low	Relatively Low
Extreme Heat	Relatively Moderate	Relatively Moderate
Extreme Cold	Relatively Low	Relatively Low
Flood	Relatively Low	Relatively Low
Hail	Very Low	Very Low
Lightning	Relatively Low	Relatively Low
Strong Wind	Very Low	Relatively Low
Ice Storm	Relatively High	Relatively High
Winter Weather	Relatively Moderate	Relatively High
Tornado	Relatively Moderate	Relatively Moderate
Wildfire	Relatively Low	Relatively Low

Source: FEMA NRI

Table 40: Morris County FEMA NRI Summary, All Natural Hazards

Natural Hazard	NRI Rating	EAL Rating
Drought	Relatively Low	Relatively Low
Extreme Heat	Relatively Low	Relatively Low
Extreme Cold	Relatively Low	Relatively Low
Flood	Relatively Low	Relatively Low
Hail	Relatively Low	Relatively Low
Lightning	Very Low	Very Low
Strong Wind	Relatively Low	Relatively Moderate
Ice Storm	Very Low	Very Low
Winter Weather	Relatively Low	Relatively Low
Tornado	Relatively Low	Relatively Low
Wildfire	Relatively Low	Relatively Low

Source: FEMA NRI

Table 41: Pottawatomie County FEMA NRI Summary, All Natural Hazards

Natural Hazard	NRI Rating	EAL Rating
Drought	Relatively Low	Relatively Low
Extreme Heat	Relatively Low	Relatively Low
Extreme Cold	Relatively Low	Relatively Low
Flood	Relatively Moderate	Relatively Moderate
Hail	Relatively Low	Relatively Low
Lightning	Relatively Low	Relatively Low
Strong Wind	Very Low	Very Low
Ice Storm	Relatively Low	Relatively Low
Winter Weather	Relatively Low	Relatively Low
Tornado	Relatively Low	Relatively Moderate
Wildfire	Relatively Moderate	Relatively Moderate

Source: FEMA NRI

Table 42: Riley County FEMA NRI Summary, All Natural Hazards

Natural Hazard	NRI Rating	EAL Rating
Drought	Very Low	Very Low
Extreme Heat	Relatively Low	Relatively Low
Extreme Cold	Relatively Low	Relatively Low
Flood	Relatively Low	Relatively Low
Hail	Relatively Low	Relatively Low
Lightning	Relatively Moderate	Relatively Moderate
Strong Wind	Relatively Moderate	Relatively High
Ice Storm	Relatively Moderate	Relatively High
Winter Weather	Relatively High	Relatively High
Tornado	Relatively Moderate	Relatively Moderate
Wildfire	Relatively Low	Relatively Moderate

Source: FEMA NRI

Table 43: Wabaunsee County FEMA NRI Summary, All Natural Hazards

Natural Hazard	NRI Rating	EAL Rating
Drought	Relatively Low	Relatively Low
Extreme Heat	Relatively Low	Relatively Low
Extreme Cold	Relatively Low	Relatively Low
Flood	Relatively Low	Relatively Low
Hail	Relatively Low	Relatively Low
Lightning	Relatively Low	Relatively Low
Strong Wind	Very Low	Very Low
Ice Storm	Very Low	Very Low
Winter Weather	Relatively Low	Relatively Low
Tornado	Relatively Low	Relatively Low
Wildfire	Relatively Low	Relatively Low

Source: FEMA NRI

Where appropriate, differences in vulnerability to identified hazards are noted in each individual hazard section.

As the FEMA NRI does not provide data concerning human caused and technological caused hazards the hazard rating methodology used on the 20202 Kansas Region I HMP was followed to help determine hazard planning significance for the county level. A standardized methodology, which allows for greater flexibility and room for subject matter expertise, was developed to compare different hazards' risk. Where possible, this method prioritizes hazard risk based on a blend of quantitative factors extracted from available data sources. These factors include:

- Probability of occurrence (expected frequency)
- Probable magnitude of impact (estimated strength, magnitude, onset, duration, and damage potential)
- Warning time of hazard occurrence (what type of warning can be expected)
- Duration of event (how long will hazard conditions exist)

The scores for the four hazard rating factors (probability of hazard occurrence, magnitude, warning time, and duration) were given a criticality rating from one to four (four being the highest concern or impact) and summed at a county level for each natural hazard using the following formula:

(Probability x 0.45) + (Magnitude x 0.30) + (Warning Time x 0.15) + (Duration x 0.10)

The numerical result of the formula for each hazard allowed for an assignment of a planning significance. The following table details planning significance ranges.

Table 44: Planning Significance Rating Range

	Score Range	
Planning Significance	**Low Score**	**High Score**
High	3.0	4.0
Moderate	2.0	2.9
Low	1.0	1.9

The terms high, moderate, and low indicate the level of planning significance for each hazard, and do not indicate the potential impact of a hazard occurring. Hazards rated with moderate or high planning significance were more thoroughly investigated and discussed due to the availability of data and historical occurrences, while those with a low planning significance were generally addressed due to lack of available data and historical occurrences.

The result of this assessment provides a larger scale snapshot of how participating counties view risk and allowed for integration of hazard data into this HMP. This allowed for a comparison between counties for each human caused and technological hazard type. It is recognized that inconsistencies in methodologies and data make it difficult to make a

direct comparison, however, as possible, collected data was translated into a unified model that accounted for any variability in data and methodologies.

The following tables show the hazard planning significance of natural hazards and technological and human caused hazards for Kansas Region I:

Table 45: Kansas Region I Technical and Human Caused Hazard Planning Significance

County	Cybersecurity Incident	Hazardous Materials Incident	Infrastructure Failure	Terrorism	Transmissible Disease
Chase County	High	Low	Moderate	Low	Moderate
Geary County	High	Low	Moderate	Low	Moderate
Lyon County	High	Low	Moderate	Low	Moderate
Morris County	High	Low	Moderate	Low	Moderate
Pottawatomie County	High	Low	Moderate	Low	Moderate
Riley County	High	Low	Moderate	Low	Moderate

Calculations for the planning significance for each human caused and technological hazard on a county basis are presented in the corresponding hazard section.

5.5 Additional Hazard Occurrence and Assessment Data

NOAA's National Centers for Environmental Information (NCEI) Storm Events Database was used as the primary source of information for previous occurrences of storm events. It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or National Weather Service (NWS) office. When reporting an event, the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages. Most of the events from NCEI are not associated with a federal emergency or disaster. If the event occurred at the same time as an event that was later determined to be a federal emergency or disaster, it is included with the NCEI data even if it occurred in a county not included in the federal declaration.

The State of Kansas EOPmapper system was used to determine which critical facilities were located within the boundaries of identified hazards (when applicable, and if data was available).

Data was also obtained and utilized using Hazus-MH, Version 2.2 SP1, a program administered by the FEMA used to model losses. Modelling for hazards uses Hazus analysis to estimate losses and projected impacts from historical and annualized hazard events. Hazus default data was used in the analysis, including the 2020 Census and other State and Federal government facility databases. A level I analysis was run in Hazus for flood and earthquake, meaning the default population, building stock, and critical infrastructure data within the program was used to calculate losses and damages. Multiple hazard scenarios were run to estimate losses for the identified hazards. For the earthquake and hurricane hazards, historic event scenarios and probabilistic scenarios were run. Flood losses were analyzed using the 100 return scenarios as well as a probabilistic scenario.

Where appropriate, other utilized modeling types and systems are detailed in the relevant hazard analysis section.

5.6 Jurisdictional Critical Facilities

Certain facilities and assets, such as infrastructure and community lifelines, have a net positive value on the community as they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, education, and help the economy function. Additionally, there are infrastructure and facilities integral to disaster response and recovery operations. Conversely, some infrastructure and facilities are of extreme importance due to the negative externalities created when they are impacted by a disaster. What fits these definitions will vary slightly from community to community, but the definitions remain as a guideline for identifying critical facilities and infrastructure. Kansas Region I and participating jurisdictions maintain critical facility details under separate cover for security purposes. For this LHMP, it is assumed that all critical facilities are at equal risk to non-point hazard occurrence but

may have varying risk to point hazard occurrence (dam failure and flood). Data concerning critical facilities potentially impacted by these point hazards, as available, is detailed under the respective hazard section.

5.7 Hazard Profiles

Each identified hazard is profiled in the subsequent sections, with the level of detail varying based on available information. Sources of information are cited in the detailed hazard profiles below.

For hazards that have a higher chance of occurrence for specific jurisdictions throughout Kansas Region I, a discussion is provided as to the differing levels of potential vulnerability. All other hazards have been determined to have an equal chance of occurrence for all participating jurisdictions.

The following hazards are presented in alphabetical order, and not by planning significance, for ease of reference.

5.8 Agricultural Infestation

5.8.1 Hazard Description



Agricultural infestation is the naturally occurring infection of vegetation, crops or livestock with insects, vermin (to include lice, roaches, mice, coyote, fox, fleas, etc.), or diseases that render the crops or livestock unfit for consumption or use. The levels and types of agricultural infestation will vary according to many factors, including cycles of heavy rains and drought. A certain level of agricultural infestation is normal; however, infestation becomes an issue when the level of an infestation escalates suddenly, or a new infestation appears, overwhelming normal control efforts. Infestation of crops or livestock can pose a significant risk to state and local economies due to the dominance of the agricultural industry.

The onset of agricultural infestation can be rapid. Controlling an infestation's spread is critical to limiting impacts through methods including quarantine, culling, premature harvest and/or crop destruction when necessary. Duration is largely affected by the degree to which the infestation is aggressively controlled but is generally more than one week. Maximizing warning time is also critical for this hazard and is most affected by methodical and accurate monitoring and reporting of livestock and crop health and vigor, including both private individuals and responsible agencies.

5.8.2 Location & Extent

All of Kansas Region I is vulnerable to agricultural infestation. Based on the non-geographic specific aspect of this hazard, i.e., no one area is at a greater risk, all of the planning area's base is vulnerable.

Of key concern regarding this hazard is the potential introduction of a rapid and economically devastating foreign animal disease, including Foot and Mouth disease and Bovine Spongiform Encephalopathy disease. Because Kansas is a major cattle state, with cattle raised locally as well as imported into the state, the potential for highly contagious diseases such as these is a continuing, significant threat. The loss of production, death of animals, and other lasting problems resulting from an outbreak could cause continual and severe economic losses, as well as widespread unemployment.

Of particular concern are Confined Animal Feeding Operations (CAFOs) facilities, defined as facilities with 300 or more animal units. The CAFO facilities are regulated by the Kansas Department of Health & Environment, Bureau of Water, and Livestock Waste Management. The CAFO includes beef, dairy, sheep, swine, chicken, turkey, and horses. The following is a list of the number of CAFOs per county, using the latest available data, in Kansas Region I:

- Chase County: 19
- Geary County: 22
- Lyon County: 51
- Morris County: 49
- Pottawatomie County: 84
- Riley County: 60
- Wabaunsee County: 27

Knowing where diseased and at-risk animals are, where they've been and when, is important to ensuring a rapid response when animal disease events take place. The Kansas Department of Agriculture (KDA), Division of Animal Health monitors and reports on animal reportable diseases. Producers are required by state law to report any of the reportable animal diseases.
Kansas Region I is also susceptible to various forms of crop infestations and disease. The following major crops are particularly susceptible to infestation:

- **Wheat:** Kansas Region I is part of the Great Plains Wheat Belt. Wheat is susceptible to infestations by pests including insects like the Hessian fly, aphids, and wheat stem sawflies, as well as diseases like wheat rust.

- **Corn and Sorghum:** Staple crops, they are susceptible to infestations by pests such as corn rootworms, corn borers, and aphids. Sorghum may also be affected by sugarcane aphids.
- **Cotton:** Can be susceptible to infestations by pests like cotton bollworms and spider mites.
- **Soybeans:** Susceptible to infestations by pests such as soybean aphids, soybean cyst nematodes, and various caterpillar species.

The region's farmers also lose a significant amount of crops each year as a result of wildlife foraging. This can be particularly problematic in areas where natural habitat has been diminished or in years where weather patterns such as early/late frost deep snow, or drought has caused the wild food sources to be limited.

Trees within Kansas Region I are also susceptible to a variety pest and disease including:

- Emerald Ash Borer
- Pine Wilt
- Oak Wilt
- Dutch Elm Disease

The MPC view agricultural infestation as not only a local or county hazard, but as a regional hazard as well. Discussions with the MPC and a review of all available data indicated that agricultural infestation is a concern for all participating jurisdictions. The following provides a narrative of the level of jurisdictional concern:

- **Chase County:** Agriculture is a large part of the fabric and economy of all jurisdictions within the county. As such, the potential economic and social impacts of an infestation event are of major concern.
- **Geary County:** Agriculture is a large part of the fabric and economy of all jurisdictions within the county. As such, the potential economic and social impacts of an infestation event are of major concern.
- **Lyon County:** Agriculture is a large part of the fabric and economy of all jurisdictions within the county. As such, the potential economic and social impacts of an infestation event are of major concern.
- **Morris County:** Agriculture is a large part of the fabric and economy of all jurisdictions within the county. As such, the potential economic and social impacts of an infestation event are of major concern.
- **Pottawatomie County:** Agriculture is a large part of the fabric and economy of all jurisdictions within the county. As such, the potential economic and social impacts of an infestation event are of major concern.
- **Riley County:** Agriculture is a large part of the fabric and economy of all jurisdictions within the county. As such, the potential economic and social impacts of an infestation event are of major concern.
- **Wabaunsee County:** Agriculture is a large part of the fabric and economy of all jurisdictions within the county. As such, the potential economic and social impacts of an infestation event are of major concern.

5.8.3 Previous Occurrences

The following table, using data from the USDS, indicates the total crop insurance paid per county for infestation events from 2011-2021 (latest available data):

Table 46: Kansas Region I Total Agricultural Crop Insurance Paid per County, 2011-2021

Jurisdiction	Total Crop Insurance Paid
Chase County	$510,480
Geary County	$123,650
Lyon County	$3,506,670
Morris County	$1,296,250
Pottawatomie County	$506,740
Riley County	$553,390
Wichita County	$408,950

Source: FEMA NRI

Infestation events can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total agricultural losses, by county, due to infestation conditions from 1989 to 2023:

5.8.4 Probability of Future Incidents

The probability of agricultural infestation in Kansas Region I can vary depending on a variety of factors. These factors include:

- **Crop Types:** The types of crops grown in Kansas Region I play a significant role in determining the probability of infestation. Different crops are susceptible to different pests and diseases.
- **Climate:** Climate conditions, including temperature and humidity, can influence the prevalence of pests and diseases. Warmer and wetter conditions may be more conducive to certain infestations, while dry conditions may reduce the risk.
- **Geography:** Geographic features, such as proximity to bodies of water, forests, or neighboring agricultural regions, can affect the likelihood of infestations. Certain pests and diseases may be more prevalent in specific geographical areas.
- **Crop Management Practices:** The adoption of pest management practices, including crop rotation, the use of resistant crop varieties, and the application of pesticides, can impact the probability of infestation. Sustainable and integrated pest management practices can help mitigate infestation risks.
- **Seasonal Variability:** Infestation risks can vary from season to season. Some years may see higher infestation levels due to factors like weather patterns or the cyclical nature of pest populations.
- **Migration of Pests:** The movement of pests from other regions or neighboring states can introduce infestation risks. Monitoring and surveillance are essential to detect and respond to potential threats.
- **Disease Vectors:** The presence of disease vectors, such as certain insects or animals that can transmit diseases to crops or livestock, can increase the likelihood of infestations.
- **Biosecurity Measures:** Measures taken to prevent the introduction and spread of pests and diseases, such as quarantine procedures and biosecurity protocols, can help reduce the probability of infestation.

The Kansas Forest Service and Kansas Department of Agriculture have identified the following as emerging agricultural infestation threats:

- **Thousand Cankers Disease of Walnut:** Caused by a combination of a fungus (Geosmithia morbida) and the walnut twig beetle (Pityophthorus juglandis). The walnut twig beetles carry fungal spores, and when they tunnel through the outer bark into the tree the fungus is transmitted during gallery construction. The fungus kills an area under the bark and the areas of dead tissue are called cankers. When the walnut twig beetles are abundant, numerous cankers can form and coalesce to girdle twigs and branches, restricting movement of water and nutrients. Black walnut (Juglans nigra), the most valuable native species to the state, is the most susceptible of the Juglans species to this disease.
- **Asian Longhorned Beetle:** Feeds on a wide variety of hardwood tree species that are native or planted in Kansas. It kills trees by creating large tunnels as larvae causing branches or stems to break and eventually lead to tree death. Because this beetle is not native to North America, it has no known natural enemies, and Kansas trees have low resistance to this pest. It has not been detected in Kansas. It has been stated that if the beetle were to become established in the US, it could become one of the most destructive and costly pests ever to industry, urban neighborhoods, and natural forests.
- **Gypsy Moth:** Moth has been infested the northeast, resulting in massive defoliation of shade, fruit, and ornamental trees as well as hardwood forests. Caterpillars devour the leaves of many hardwood tree species and shrubs that can turn a usually lush summer scene into one of winter.
- **Asian Gypsy Moth:** A native species of Asia, first detected in Washington in 1991. Ongoing and completed eradication of various sites in the U.S. have so far prevented the establishment of this generalist feeder. This

moth is much more destructive if it became established and spread east because of its broad host range and the females are active fliers due to their larger wingspan.

- **Sudden Oak Death:** In June 2019, the causal agent of Sudden Oak Death, Phytophthora ramorum, was detected in rhododendrons originating from Park Hill Plants nursery in Oklahoma, and plants from that nursery were shipped to 60 Walmart stores across Kansas and one Home Depot store in Pittsburg, Kansas. Sudden Oak Death is caused by Phytophthora ramorum, a water mold pathogen. The pathogen is also the cause of the Ramorum Leaf Blight, Ramorum Dieback and Phytophthora Canker Diseases. This pathogen is considered especially dangerous because it affects a wide variety of trees, shrubs and plants and there is no known cure.
- **Tomato Brown Rugose Fruit Virus:** Tomato Brown Rugose Fruit Virus is a newly discovered tobamovirus that has been found, but not yet established, in the United States. Its two main hosts are tomatoes and peppers, causing concern for growers of these plants. The virus is mechanically transmitted, meaning it can be transmitted from one plant to the next on contaminated tools and equipment, and workers handling many plants in a greenhouse.

It's important to note that agricultural infestations are a dynamic and complex issue, and the probability of infestation can vary from year to year. Farmers and agricultural professionals in Kansas Region I typically rely on agricultural extension services, research institutions, and government agencies to provide information, guidance, and resources for managing and mitigating infestation risks. Proactive pest monitoring and management practices are essential for minimizing the impact of infestations on crop yields and agricultural productivity in the region.

The following table, using data from the USDS, indicates the annualized crop insurance paid per county for agricultural infestation events from 2011-2021 (latest available data):

Table 47: Kansas Region I Annualized Agricultural Infestation Crop Insurance Paid per County, 2011-2021

Jurisdiction	Annualized Crop Insurance Paid
Chase County	$51,048
Geary County	$12,365
Lyon County	$350,667
Morris County	$129,625
Pottawatomie County	$50,674
Riley County	$55,339
Wabaunsee County	$40,895

Source: FEMA NRI

5.8.5 Projected Changes in Hazard Location, Intensity, Frequency, and Duration

Changing conditions can have several impacts on agricultural infestation in Kansas Region I, affecting the types and prevalence of pests and diseases that farmers face, and can include:

- **Increased Pest Populations:** Warmer temperatures and milder winters can promote the survival and reproduction of certain pests. In Kansas Region I, this may include insects like aphids, corn borers, and various types of beetles. Higher pest populations can lead to more frequent and severe infestations, potentially reducing crop yields.
- **Altered Pest Behavior:** Changes in temperature and climate patterns can influence the behavior and life cycles of pests. Some insects may emerge earlier in the season or have more generations per year, increasing the likelihood of damage to crops.
- **Extended Growing Seasons:** Longer growing seasons, a consequence of warming temperatures, can provide pests with additional time to feed on crops. This extension can lead to greater crop damage if effective pest management strategies are not in place.

- **Shifts in Pest Distribution:** Changing conditions can result in shifts in the geographic distribution of pests. Pests that were once uncommon in Kansas Region I may become more prevalent as temperatures become more suitable for their survival and reproduction.
- **Altered Disease Dynamics:** Changing conditions can influence the prevalence and distribution of plant diseases. Warmer and wetter conditions can create favorable environments for certain pathogens, such as fungi and bacteria, increasing the risk of disease outbreaks in crops.
- **Increased Risk of Invasive Species:** Changes in temperature and climate patterns can facilitate the introduction and establishment of invasive species. These species may outcompete native pests and diseases, posing new challenges for farmers.
- **Water Stress:** Changing conditions can result in more variable precipitation patterns, including more frequent droughts. Water-stressed crops may be more susceptible to pest infestations, as their natural defenses may be compromised.
- **Pesticide Resistance:** As pest populations adapt to changing conditions, they may develop resistance to pesticides more rapidly. This can reduce the effectiveness of chemical pest control methods.
- **Impact on Beneficial Organisms:** Changing conditions can also affect the populations and behaviors of beneficial organisms, such as natural predators and parasites of pests. Disruptions in these natural control mechanisms can exacerbate infestation problems.

5.8.6 Vulnerability and Impact

FEMA NRI

The FEMA NRI does not provide a rating for the agricultural infestation hazard.

Population

Agricultural infestation is rarely a direct cause of death, though the associated stress can all contribute to increased mortality. However, an agricultural infestation can have significant impacts on the people in an impacted agricultural community, affecting their livelihoods, health, and well-being, and include:

- **Reduced Income:** For farmers and agricultural workers, the most immediate impact of infestations is often reduced income due to crop or livestock losses. Details concerning economic conditions and employment may be found in Section 3.11.
- **Increased Health Risks:** Infestations involving disease vectors can increase the risk of vector-borne diseases.
- **Migration:** In some cases, people may be forced to migrate in search of better economic opportunities due to infestation-related job losses.
- **Increased Healthcare Costs:** Infestations that result in human health issues can lead to increased healthcare costs for individuals and communities, putting additional financial strain on affected populations.
- **Psychological Stress:** Infestations can cause psychological stress and anxiety, particularly for farmers and agricultural workers who face uncertainty and financial pressures due to crop or livestock losses.

Buildings and Structures

In general, buildings within all jurisdictions are not directly vulnerable to losses as a result of agricultural infestation. However, there is a potential that building repair and maintenance could diminish due to resultant economic conditions.

Governmental Operations

Governmental operations and facilities will likely experience minimal impacts from agricultural infestation conditions.

Transportation and Electrical Infrastructure

Aside from additional agricultural checkpoints altering or slowing traffic patterns, agricultural infestation is unlikely to impact either the transportation or electrical infrastructure.

Water and Wastewater Utilities
Water and wastewater utilities will likely experience minimal impacts from agricultural infestation conditions.

Medical and Response Facilities
Medical and response facilities will likely experience minimal impacts from agricultural infestation conditions.

Educational Facilities
Educational facilities will likely experience minimal impacts from agricultural infestation conditions

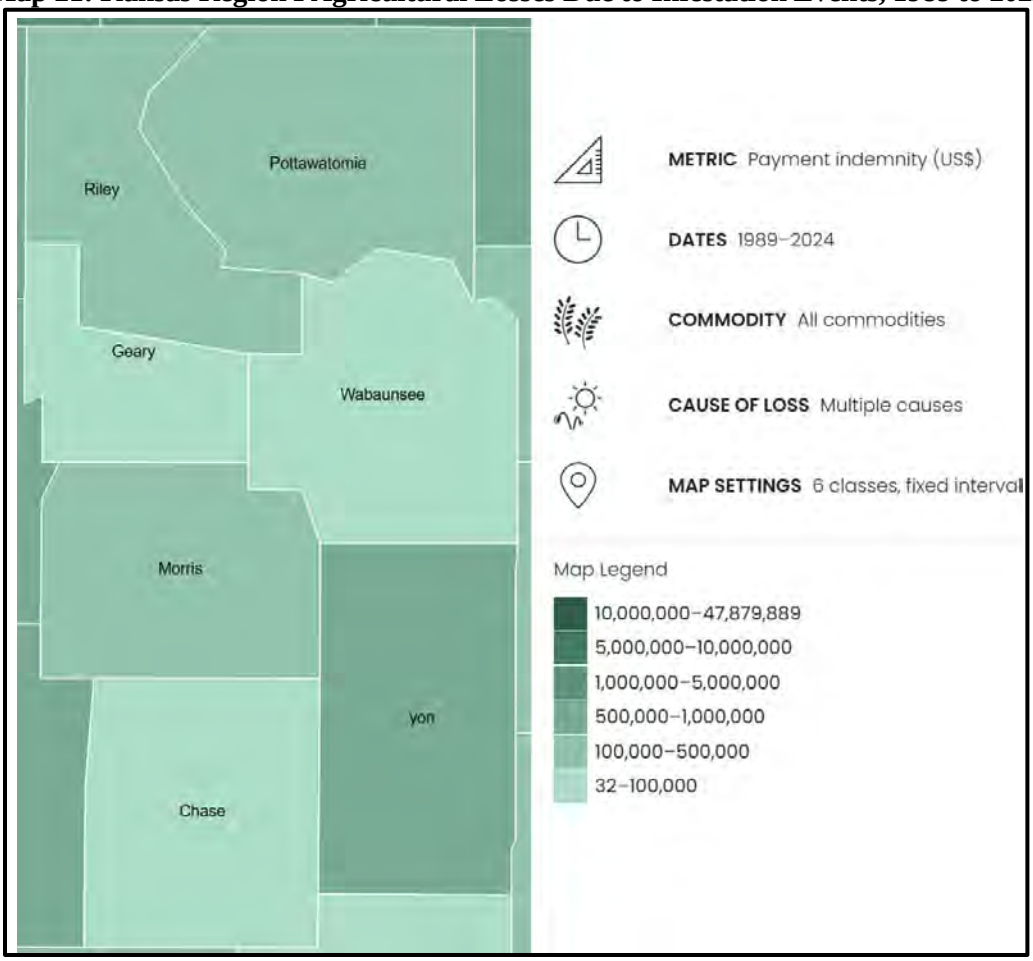
Communication Systems
Communication systems will likely experience minimal impacts from agricultural infestation conditions

Environmental and Agricultural Impacts
Potential impacts on the agricultural community include:

- **Reduced Crop Yields:** One of the most direct impacts of infestation is a decrease in crop yields. Pests, diseases, and invasive species can damage or destroy plants, resulting in smaller harvests.
- **Crop Quality Reduction:** Infestations can also reduce the quality of crops by causing physical damage, deformities, or contamination. This can affect the marketability and value of agricultural products.
- **Livestock Health Issues:** Infestations can lead to health problems in livestock, including weight loss, reduced productivity, and increased susceptibility to diseases. Livestock infestations can also impact meat and dairy quality.
- **Trade Barriers:** Agricultural infestations can lead to trade restrictions and barriers. Countries may impose import bans or stringent regulations on products from regions affected by certain pests or diseases to prevent their spread.
- **Increased Chemical Use:** To combat infestations, farmers may resort to increased pesticide or chemical use. This can have adverse effects on the environment and human health, as well as contribute to pesticide resistance.
- **Disruption of Farming Practices:** Infestations can disrupt normal farming practices, leading to delays in planting or harvesting, increased labor requirements, and a need for specialized pest management.

The following map from the United States Department of Agriculture details total county-wide agricultural losses due to drought conditions from 1989 - 2024:

Map 21: Kansas Region I Agricultural Losses Due to Infestation Events, 1989 to 2023



Source: USDA

Agricultural infestations can have several environmental impacts, often interconnected with agricultural practices, and can include:

- **Pesticide Use:** To combat infestations, farmers may resort to increased pesticide use. The application of pesticides can result in chemical runoff into nearby water bodies, leading to water pollution. This pollution can harm aquatic ecosystems, affecting fish and other aquatic species.
- **Loss of Biodiversity:** Infestations can alter the composition of plant and animal species in agricultural areas. The introduction of invasive species or the suppression of native vegetation can lead to reduced biodiversity, impacting the health of ecosystems.
- **Soil Erosion:** In some cases, infestations can weaken or kill plants, leaving soil exposed to erosion by wind and water. Soil erosion can degrade soil quality, reduce agricultural productivity, and contribute to sedimentation in water bodies.
- **Habitat Changes:** Changes in land use and agricultural practices prompted by infestations can lead to alterations in habitat structure and availability. These changes can affect wildlife populations, including species that rely on specific habitats within agricultural landscapes.
- **Water Quality Impacts:** Infestations can indirectly affect water quality through their influence on land management. Runoff from infested areas, along with pesticide residues and sediment, can compromise water quality and lead to issues such as algal blooms and oxygen depletion in water bodies.
- **Impact on Pollinators:** Some agricultural pests and diseases can have detrimental effects on pollinators, including bees and butterflies. Reduced pollinator populations can harm the reproduction of flowering plants, including many agricultural crops.

- **Secondary Effects on Non-Target Species:** Pest control measures, such as the use of pesticides, may have unintended consequences by affecting non-target species, including beneficial insects, birds, and mammals.
- **Impact on Natural Pest Control:** Some infestations can disrupt natural pest control mechanisms by altering the populations and behaviors of beneficial organisms, such as predators and parasitoids. This can lead to increased reliance on chemical pest control.

Jurisdictional Concerns:
As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts. The following initial vulnerabilities and potential impacts have been identified on a county level:

- **Chase County:** With 315 farms, 491,365 acres in agriculture, $135,076,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of agricultural infestation.
- **Geary County:** With 217 farms, 176,034 acres in agriculture, $247,186,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of agricultural infestation.
- **Lyon County:** With 826 farms, 469,248 acres in agriculture, $193,169,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of agricultural infestation.
- **Morris County:** With 369 farms, 441,414 acres in agriculture, $343,834,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of agricultural infestation.
- **Pottawatomie County:** With 820 farms, 404,286 acres in agriculture, $184,695,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of agricultural infestation.
- **Riley County:** With 424 farms, 209,517 acres in agriculture, $158,063,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of agricultural infestation.
- **Wabaunsee County:** With 618 farms, 383,644 acres in agriculture, $139,183,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of agricultural infestation.

Cascading Impacts
Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with drought may include:

- Decrease in water quality
- Increased wildfire risk
- Environmental degradation
- Land subsidence
- Damage to agricultural lands

Consequence Analysis
This consequence analysis lists the potential impacts of a hazard on various elements of a community. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 48: Agricultural Infestation Consequence Analysis

Subject	Potential Impacts
Health and Safety of the Public	Infestations involving disease vectors can increase the risk of disease transmission to humans.

Table 48: Agricultural Infestation Consequence Analysis

Subject	Potential Impacts
Health and Safety of Responders	Impact would be minimal as no first response effort is anticipated.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Agricultural infestation is not expected to require a plan activation.
Property, Facilities, and Infrastructure	Impact would be minimal.
Impact on Environment	Loss of biodiversity, habitat changes water quality degradation, loss of pollinators, and secondary effects on non-target species from increased pesticide usage.
Economic Conditions	Impacts to the economy will depend on the severity of the infestation. The potential for economic loss to the community could be if the infestation is hard to contain, eliminate, or reduce. Impact could be minimized from crop insurance payments.
Public Confidence in Governance	Confidence could be in question depending on timeliness and steps taken to warn the producers and public and treat/eradicate the infestation.

5.8.7 Future Development

As agricultural activities in Region I continue to expand the threat of infestations from pests, diseases, and invasive species increases, posing serious challenges to productivity and sustainability. Without effective management, agricultural infestations can significantly hinder progress, leading to economic losses, environmental degradation, and food insecurity.

One of the most immediate impacts of infestations is the reduction in crop yields. Pests such as locusts, aphids, and caterpillars can destroy large portions of crops, while plant diseases like rust, blight, and mildew can spread rapidly, decimating entire harvests. This not only affects food availability but also drives up costs for farmers and consumers. Additionally, infestations can lead to increased dependence on pesticides, which may be necessary to control outbreaks but come with financial costs, health risks, and environmental concerns, such as soil and water contamination. Over time, excessive pesticide use can also lead to pesticide-resistant pests, further exacerbating the problem.

Beyond economic losses, infestations can cause supply chain disruptions that affect both local and international markets. If a region is heavily affected by an outbreak, governments may impose trade restrictions, quarantines, or export bans to prevent the spread of pests and diseases. This not only affects the profitability of farmers but can also contribute to food shortages and price volatility, making it harder for vulnerable populations to access affordable food. In developing regions, where many communities rely on agriculture for their livelihoods, severe infestations can push farmers into debt or force them to abandon their fields altogether.

5.8.8 Mitigation Opportunities

The following table presents examples of potential actions that can be instituted for mitigating the agricultural infestation hazard.

Table 49: Example Agricultural Infestation Mitigation Actions

Category	Example Action
Planning and Regulation	Develop an Agricultural Pest and Disease Management Plan to establish response protocols for infestations.
	Implement zoning and land-use policies that encourage crop diversity to reduce the risk of large-scale infestations.
	Coordinate with State and Federal Agencies (e.g., USDA, EPA) for pest control resources and policy alignment.
Infrastructure	Install physical barriers and netting for high-risk crops to minimize pest access.
	Build biosecurity checkpoints at major entry points to prevent the introduction of invasive pests.
Natural Systems	Encourage crop rotation and diversification to disrupt pest life cycles and reduce monoculture vulnerability.

Table 49: Example Agricultural Infestation Mitigation Actions

Category	Example Action
	Promote Soil Health Programs to enhance natural pest resistance through organic matter and beneficial microbes.
	Preserve and restore wetlands that support natural pest control ecosystems.
Education	Conduct farmer training programs on pest identification, reporting, and best mitigation practices.
	Develop public awareness campaigns about invasive species risks and biosecurity measures.
	Create school and community agricultural programs to educate the next generation on sustainable farming.
	Distribute pest and disease prevention guides to help farmers recognize and mitigate potential threats.

5.9 Dam or Levee Failure

5.9.1 Hazard Description



A dam is a barrier across flowing water that obstructs, directs, or slows down the flow, often creating a reservoir, lake, or impoundment. Most dams have a section called a spillway or weir, over or through, which water flows, either intermittently or continuously. Dams commonly come in two types, embankment (the most common) and concrete (gravity, buttress, and arch), as well as sizes. They also serve a number of purposes and provide essential benefits, including drinking water, irrigation, hydropower, flood control, and recreation.

Large or small, dams have a powerful presence that is frequently overlooked until a failure occurs. Dams fail in two ways, a controlled spillway release done to prevent full failure, or the partial or complete collapse of the dam itself. In each instance, an overwhelming amount of water, and potentially debris, is released. Dam failures are rare, but when they do occur, they can cause loss of life and immense damage to property, critical infrastructure, and the environment.

Possible reasons for dam failure include but are not limited to:

- Sub-standard construction materials/techniques
- Spillway design error
- Geological instability caused by changes to water levels during filling or poor surveying
- Sliding of a mountain into the reservoir
- Poor maintenance, especially of outlet pipes
- Human, computer, or design error
- Internal erosion, especially in earthen dams
- Earthquakes

There are three classifications of dam failure, hydraulic, seepage, and structural. The following is an explanation of each these failure classifications:

- **Hydraulic:** This failure is a result of an uncontrolled flow of water over and around the dam structure as well as the erosive action on the dam and its foundation. The uncontrolled flow causing the failure is often classified as wave action, toe erosion, or gullying. Earthen dams are particularly susceptible to hydraulic failure because earthen materials erode more quickly than other materials, such as concrete and steel. This type of failure constitutes approximately 40% of all dam failures.
- **Seepage:** Seepage is the velocity of an amount of water controlled to prevent failure. This occurs when the seepage occurs through the structure to its foundation, where it begins to erode within. This type of failure accounts for approximately 4% of all dam failures.
- **Structural:** A failure that involves the rupture of the dam or the foundation by water movement, earthquake, or sabotage. When weak materials construct dams (large, earthen dams) are the primary cause of this failure. Structural failure occurs with approximately 30% of dam failures.

A levee is a man-made structure built to control or prevent the overflow of water from rivers, lakes, or other bodies of water. Levees are typically earthen embankments or walls constructed along the banks of water bodies to provide protection against flooding. They serve as barriers to keep water within its natural or artificial channels, protecting adjacent land areas from inundation. Levees typically have a sloping side that faces the water (riverside) and a steeper side facing away from the water (landside). They may also include features like berms, floodwalls, and floodgates to enhance their effectiveness in flood control. Levee failures can occur in various ways, and they are typically classified into different types based on the mechanism or cause of the failure, and include:

- **Overtopping:** Occurs when floodwaters rise above the crest or top of the levee. This can happen when the floodwater volume exceeds the levee's design capacity or when the levee has been poorly maintained or constructed. Overtopping can erode the levee's surface and eventually lead to breaches.
- **Erosion:** Occurs when the flowing water erodes the soil or materials comprising the levee. Erosion can result from the force of the water or from seepage of water through the levee's foundation, which can carry soil particles away and weaken the structure.
- **Seepage:** Occurs when water infiltrates the levee through the soil or the levee's foundation. Over time, seeping water can weaken the structural integrity of the levee. Piping, a type of seepage failure, is particularly concerning, as it involves the formation of tunnels or pipes within the levee through which water flows, further eroding the structure.
- **Slumping or Landslide:** Occurs when a portion of the levee's embankment or slope collapses. This can result from saturated soils, unstable materials, or rapid changes in water levels. Slumping or landslides can lead to breaches in the levee.
- **Breach:** A complete failure of the levee, resulting in a significant opening or hole through which floodwaters can freely flow into protected areas. Breaches can occur due to any combination of failure mechanisms, and they can be sudden and catastrophic.
- **Design or Construction Errors:** Levee failures can also occur due to inadequate height or width, poor materials, or improper compaction during construction.

5.9.2 Location and Extent

The KDA Division of Water Resources (KDA-DWR) is responsible for the review and approval of plans for constructing new dams and for modifying existing dams, ensuring quality control during construction, and monitoring dams that, if they failed, could cause loss of life, or interrupt public utilities or services. The KDA-DWR regulates the construction, operation, and maintenance of all dams or other water obstructions, with the exception of federal reservoirs.

The Obstructions in Streams Act (K.S.A 82a-303b) requires owners of high hazard (class C) and significant hazard dams (class B) dams to have a qualified engineer conduct periodic dam inspections. For high hazard dams, the inspection must be done every three years. For significant hazard dams, an inspection must be done every five years. Dam Hazard Classifications are detailed in the following table:

Table 50: Dam Hazard Potential Classification

Hazard Potential	Class	Definition	Inspection Timeline	Number of Regional Dams in Category
High	C	Failure or mis-operation will result in probable loss of life.	Three Years	27
Significant	B	Failure or mis-operation results in no probable loss of life but can cause major economic loss, disruption of lifeline facilities or impact the public's health, safety, or welfare.	Five Years	24
Low	A	Failure or mis-operation results in no probable loss of human life and low economic losses.	Not inspected, downstream conditions are reassessed to determine if conditions have changed to necessitate reclassification .	417

Source: KDA-DWR

The following table details dams by county by hazard potential:

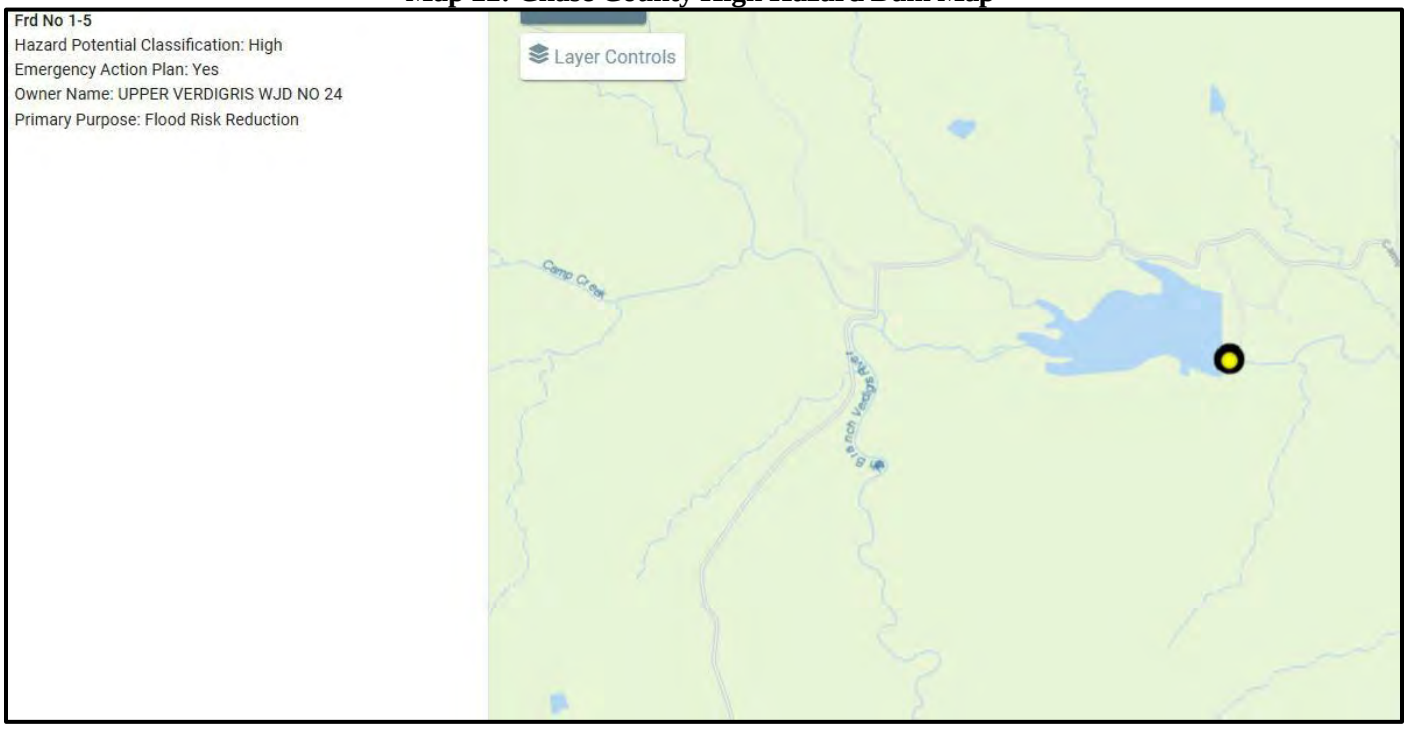
Table 51: Kansas Region I Significant and High Hazard Dams by County

County	Low	Significant	High
Chase County	87	3	1
Geary County	11	0	3
Lyon County	109	12	1
Morris County	51	1	6
Pottawatomie County	87	5	8
Riley County	18	0	5
Wabaunsee County	54	3	3

Source: KDA-DWR

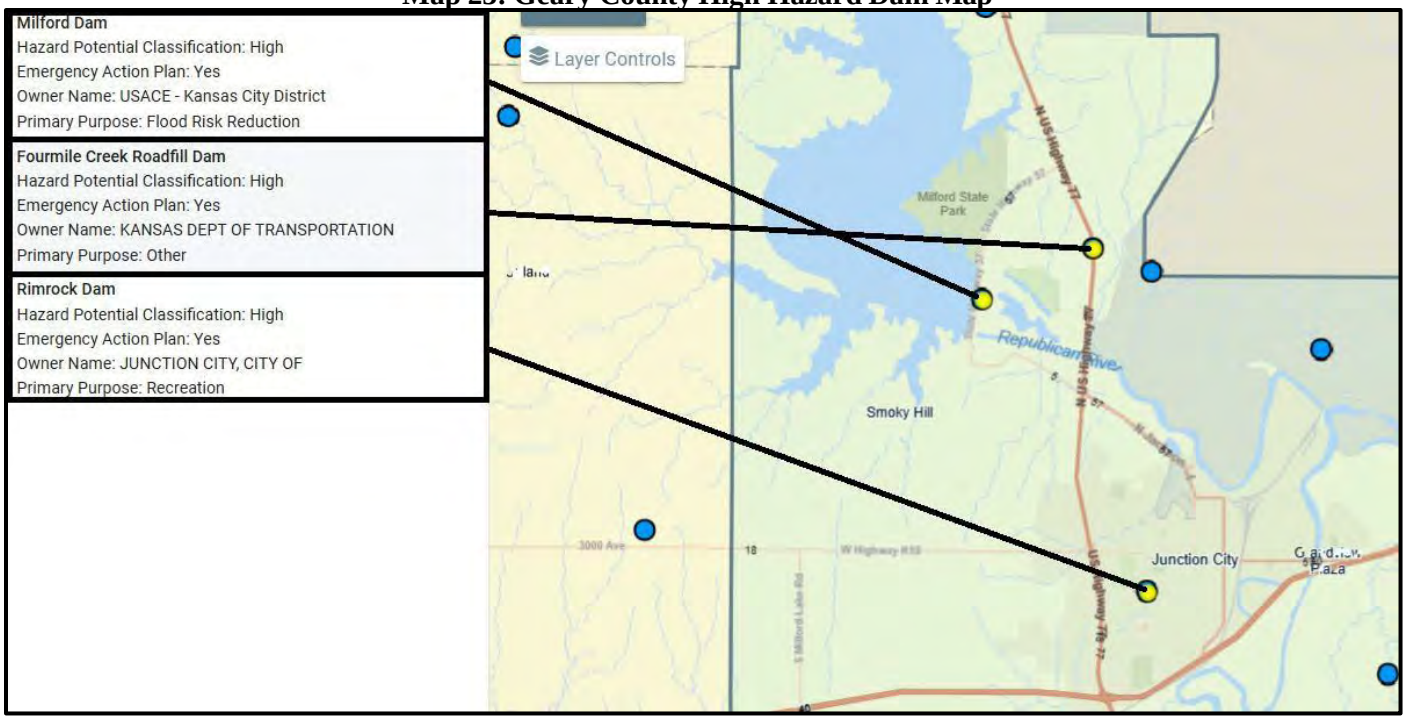
The following map, from the National Inventory of Dams, indicates the location of high hazard dams within Kansas Region I:

Map 22: Chase County High Hazard Dam Map



Source: National Inventory of Dams

Map 23: Geary County High Hazard Dam Map



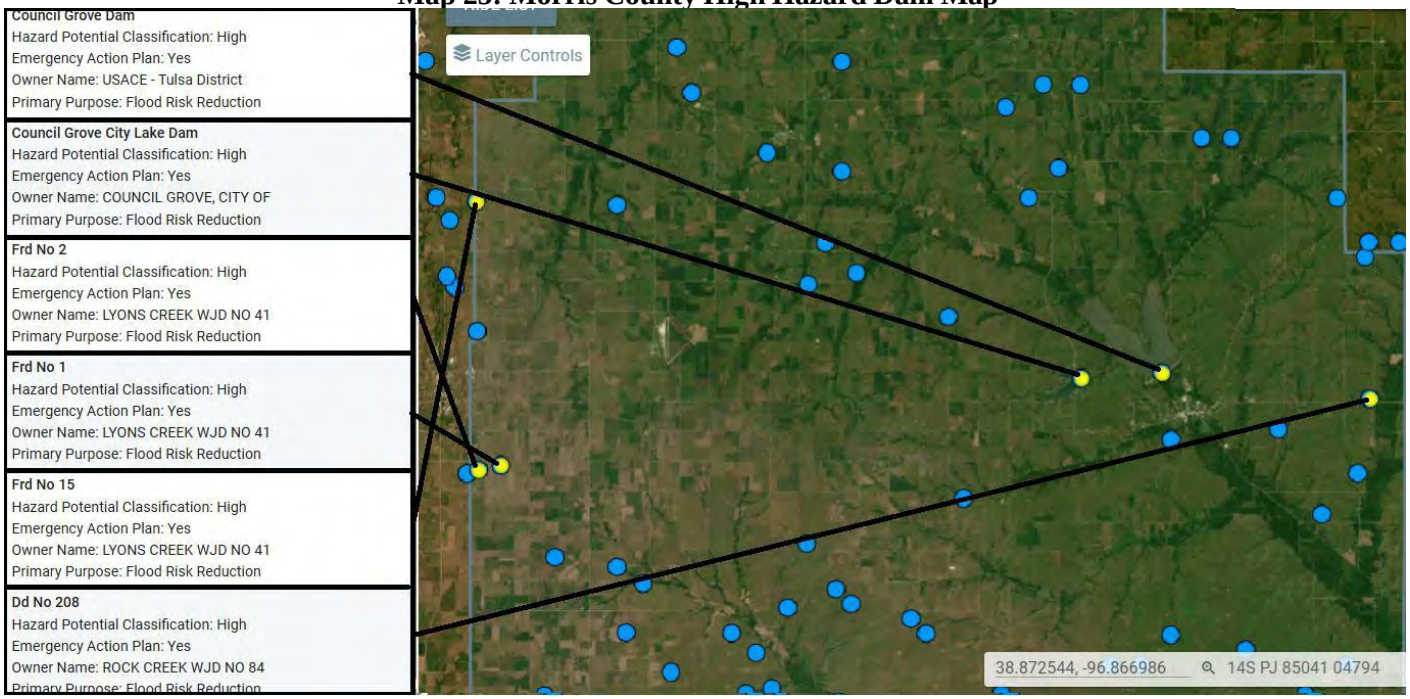
Source: National Inventory of Dams

Map 24: Lyon County High Hazard Dam Map



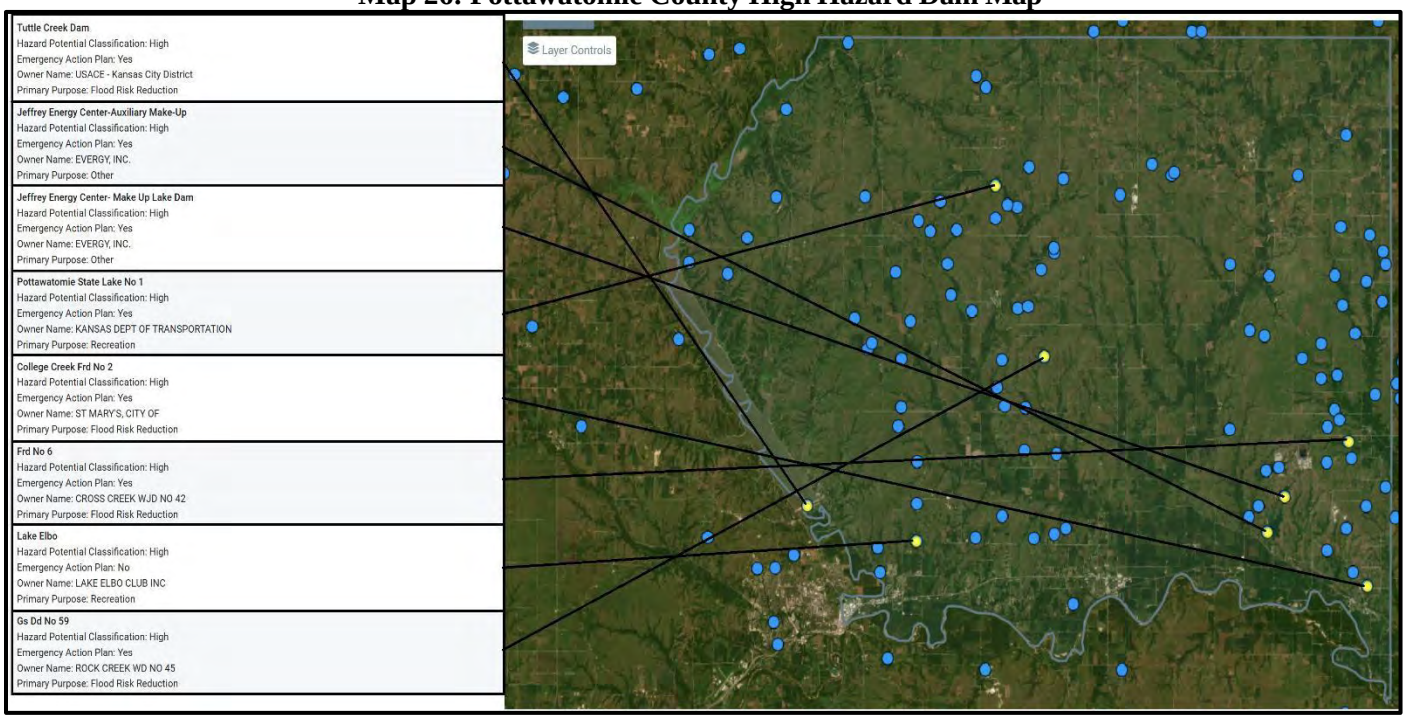
Source: National Inventory of Dams

Map 25: Morris County High Hazard Dam Map



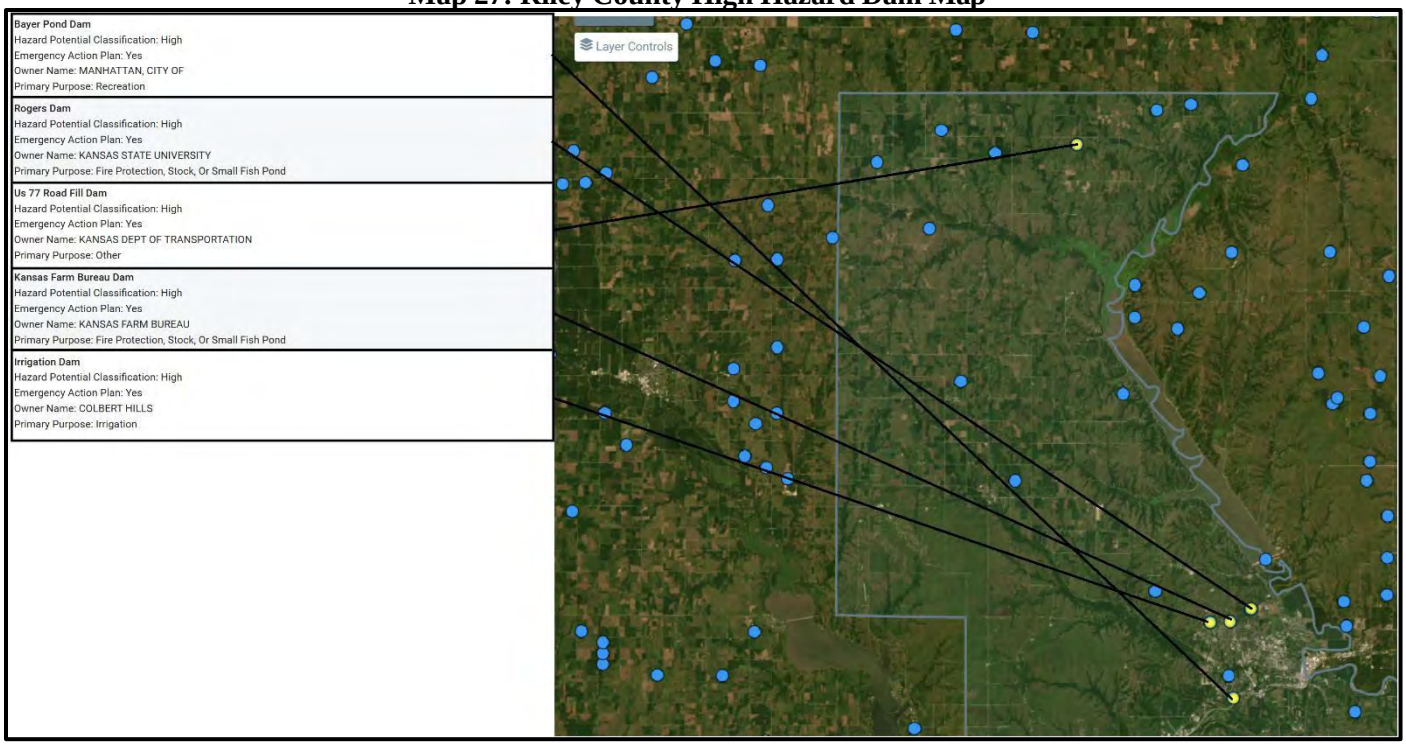
Source: National Inventory of Dams

Map 26: Pottawatomie County High Hazard Dam Map



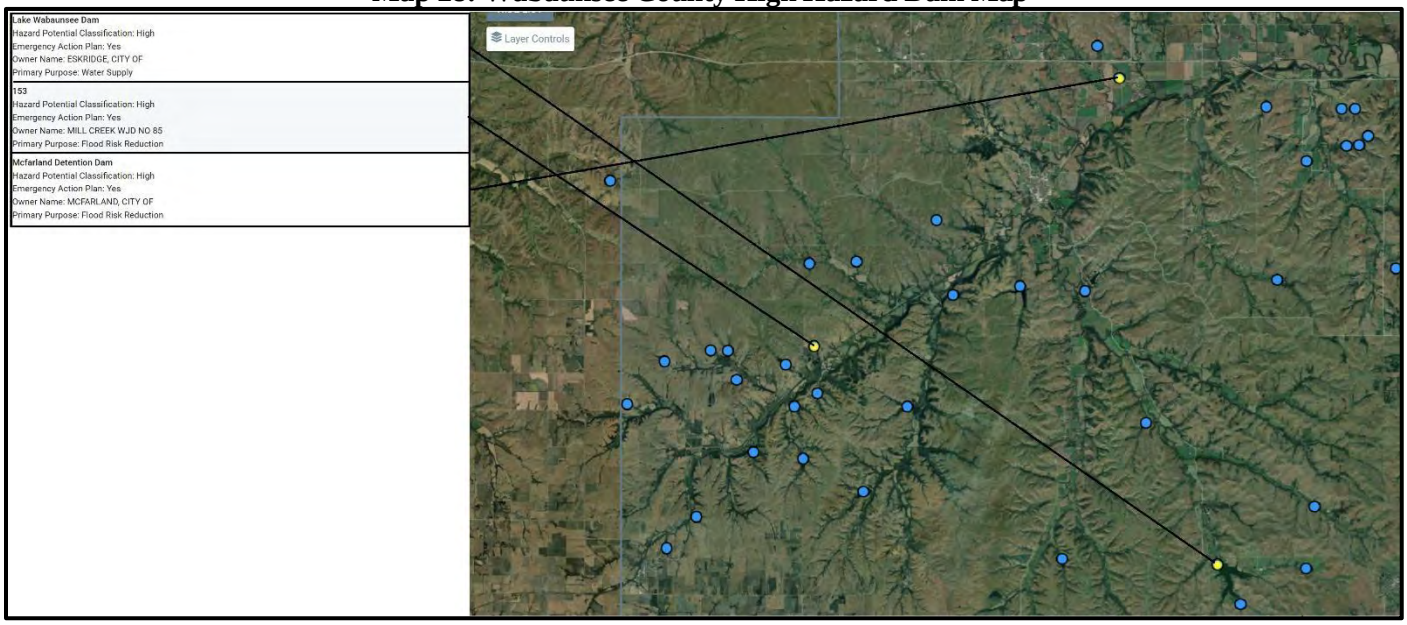
Source: National Inventory of Dams

Map 27: Riley County High Hazard Dam Map



Source: National Inventory of Dams

Map 28: Wabaunsee County High Hazard Dam Map



Source: National Inventory of Dams

There are three federally operated reservoirs within Kansas Region I, as follows:

Table 52: Kansas Region I Federally Operated Reservoirs

County	Federal Reservoir Name	Operating Agency
Geary	Milford	USACE - Kansas City
Morris	Council Grove	USACE - Tulsa
Pottawatomie	Tuttle Creek	USACE - Kansas City

Source: National Inventory of Dams

Regulation of levees in the United States involves multiple entities at different levels of government: These entities include:

- **Local Levee Districts:** In many cases, local levee districts or authorities are responsible for the construction, maintenance, and operation of levees. These districts are often formed by communities or landowners in areas prone to flooding, and they assess taxes or fees to fund levee projects.
- **Local Governments:** Local governments, such as city or county governments, may also have roles in regulating and overseeing levees. They may work in coordination with state and federal agencies to ensure that levees comply with applicable regulations and standards.
- **State Agencies**: State agencies play a role in regulating and overseeing levees within their jurisdiction. They may establish standards, guidelines, and regulations for levee construction, maintenance, and inspection. State agencies may also provide technical assistance to local levee districts.
- **Federal Agencies:** The U.S. Army Corps of Engineers (USACE) is a major federal agency involved in levee regulation. The USACE is responsible for evaluating and accrediting levees through the National Levee Safety Program. FEMA also plays a role in floodplain management and mapping. Levees that are accredited by the USACE may influence floodplain mapping and impact flood insurance requirements for communities.

The regulation of levees involves a combination of engineering standards, safety evaluations, and adherence to local, state, and federal regulations. Levee safety is a critical aspect of flood risk management, and ongoing inspection, maintenance, and potential upgrades are essential to their effectiveness.

The following table, using data from the USACE National Levee Database, details the location of levee systems in Kansas Region I:

Table 53: Kansas Region I USACE NLD Levees

County(ies)	Jurisdiction(s)	Name	Waterway
Chase	Tallgrass Prairie	Tallgrass Prairie Levee	Unknown
Geary	Fort Riley	Ft. Riley Forsyth	Kansas River
Geary	Fort Riley	Ft. Riley Marshall Field	Kansas River
Lyon	Hartford	Hartford Levee	Neosho River
Morris	Council Grove	Council Grove Left Bank	Neosho River
Morris	Council Grove	Council Grove Right Bank	Neosho River
Pottawatomie	Belvue	Belvue Levee 1	Unnamed Stream
Pottawatomie	St Mary's	College Creek-St. Mary's - Left	College Creek
Pottawatomie	St Mary's	College Creek-St. Mary's - Right	College Creek
Pottawatomie	St. George	Kansas River Levee- St. George 1	Kansas River
Pottawatomie	St. George	Kansas River Levee- St. George 2	Kansas River
Pottawatomie and Riley	Manhattan	Kansas River	Kansas River
Riley and Wabaunsee	St. George	Deep Creek Levee	Deep Creek, Kansas River
Riley	Ogden	Ft. Riley Funston	Kansas River
Riley	Manhattan	LRL-0041-FF	Wildcat Creek
Riley and Wabaunsee	St. George	LWB0017	Kansas River
Wabaunsee	Wamego	Kansas River Wabaunsee 1	Kansas River
Wabaunsee	Rossville	Tri-County Drainage District No.1, Section	Kansas River

Source: National Levee Database

The MPC view dam or levee failure as a local hazard. Discussions with the MPC and a review of all available data indicated that dam or levee failure is a concern all counties, but the level of concern for all participating jurisdictions is poorly understood. The following provides a narrative of the level of jurisdictional concern:

- **Chase County:** Both high hazard dams and identified levees within the county are identified as a potential concerns. At present, a complete mapping of all areas within the county, including participating jurisdictions

and special district infrastructure and facilities, has not been completed. A mitigation action at the county level (to include special districts) and at the jurisdictional level have been added to address this data gap.

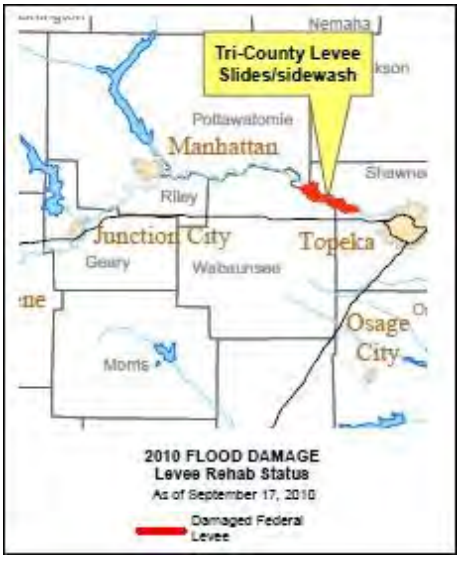
- **Geary County:** Both high hazard dams and identified levees within the county are identified as a potential concerns. At present, a complete mapping of all areas within the county, including participating jurisdictions and special district infrastructure and facilities, has not been completed. A mitigation action at the county level (to include special districts) and at the jurisdictional level have been added to address this data gap.
- **Lyon County:** Both high hazard dams and identified levees within the county are identified as a potential concerns. At present, a complete mapping of all areas within the county, including participating jurisdictions and special district infrastructure and facilities, has not been completed. A mitigation action at the county level (to include special districts and colleges) and at the jurisdictional level have been added to address this data gap.
- **Morris County:** Both high hazard dams and identified levees within the county are identified as a potential concerns. At present, a complete mapping of all areas within the county, including participating jurisdictions and special district infrastructure and facilities, has not been completed. A mitigation action at the county level (to include special districts) and at the jurisdictional level have been added to address this data gap.
- **Pottawatomie County:** Both high hazard dams and identified levees within the county are identified as a potential concerns. At present, a complete mapping of all areas within the county, including participating jurisdictions and special district infrastructure and facilities, has not been completed. A mitigation action at the county level (to include special districts) and at the jurisdictional level have been added to address this data gap.
- **Riley County:** Both high hazard dams and identified levees within the county are identified as a potential concerns. At present, a complete mapping of all areas within the county, including participating jurisdictions and special district infrastructure and facilities, has not been completed. A mitigation action at the county level (to include special districts and KSU) and at the jurisdictional level have been added to address this data gap.
- **Wabaunsee County:** Both high hazard dams and identified levees within the county are identified as a potential concerns. At present, a complete mapping of all areas within the county, including participating jurisdictions and special district infrastructure and facilities, has not been completed. A mitigation action at the county level (to include special districts) and at the jurisdictional level have been added to address this data gap.

5.9.3 Previous Occurrences

Data from the National Performance of Dams Program at Stanford University indicates Kansas Region I has had no reported dam failure incidents.

Kansas Region I has had two recorded levee failure events for the 25-year period from 2000-2025, as detailed below.

- **2010, Regional:** Flooding in 2010 damage the federal Tri-County levee.



- **June and July 2007, Regional:** Heavy rains in the region caused widespread flooding. The following shows damaged regional levees in Kansas that are under the jurisdiction of the USACE Kansas City District.



5.9.4 Probability of Future Incidents

Despite the infrequent historical occurrences of dam failure resulting in an uncontrolled release of the reservoir, there remains a significant concern due to the large number of significant and high hazard dams throughout the region. The probability of dam failure events is not easily measured, but may aligned with:

- The probability of future flood events
- Preventative measure taken by dam owners and operators, maintenance and repair
- Frequent condition inspections
- Proper operating procedures

KDA-DWR conducts routine monitoring and inspection of dams within the state on the previously identified schedule, with priority placed on those dams which pose the greatest potential threat. However, to fully determine the probability of a future event, a full engineering inspection would need to be completed on each dam, something beyond the scope of this plan.

Dams undergoing repair and/or reconstruction are required to be designed to pass at least the 1%-annual-chance rainfall event with one foot of freeboard. The most critical and hazardous dams are required to meet a spillway design standard much higher than passing the runoff from a 1%-annual-chance rainfall event. Although not all the dams have been shown to withstand the 1%-annual-chance rainfall event, most of the dams meet this standard due to original design requirements or recent spillway upgrades.

At present, there is no history of a dam failure of any size in Kansas Region I or its participating jurisdictions. In lieu of any historical events, the next best prediction tool would be based on the structural state of the dam. However, maintenance and structural information on dams or levees was not available for public use. Using the binomial probability equation (number of years with an event divided by total number of years in reporting period) we derive a probability of 0% for a dam or levee failure in a given year. However, it is important to note that the lack of past incidents does not protect against future incidents as both dams and levees may be damaged in future catastrophic regional flood events.

The estimated annual probability of levee failure in Kansas Region I is approximately 8%, based on two documented failures over the past 25 years. This figure is a simple historical average and does not reflect current levee conditions, which may vary by location and maintenance status. Levee safety in the region is overseen by a combination of federal, state, and local entities. Many systems fall under the U.S. Army Corps of Engineers Levee Safety Program, which requires annual and periodic inspections. To remain accredited under FEMA's NFIP, levees must meet design, maintenance, and inspection standards outlined in 44 CFR §65.10. The KDA-DWR also plays a regulatory role, while local levee sponsors are responsible for routine maintenance, inspections, and emergency preparedness. Regular upkeep and documentation are critical to reducing flood risk and maintaining accreditation.

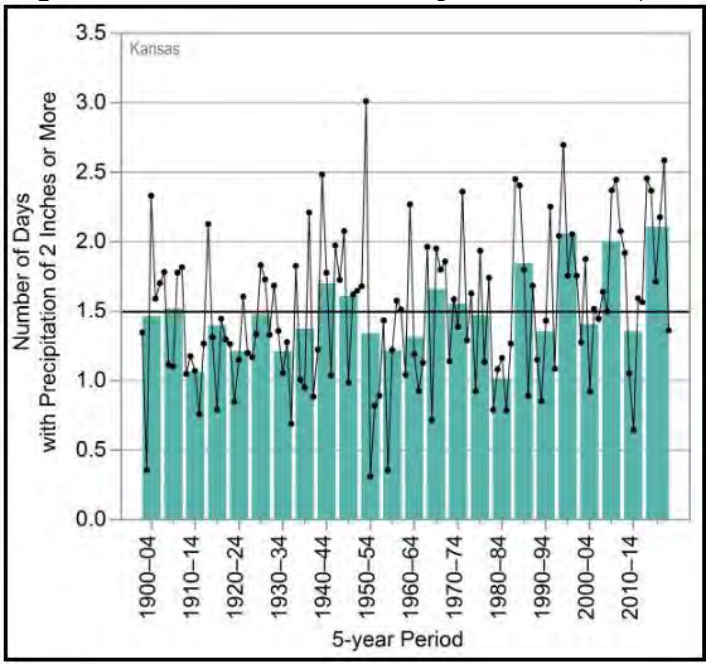
5.9.5 Projected Changes in Hazard Location, Intensity, Frequency, and Duration

The 2018 National Climate Assessment report indicates that much of the water infrastructure in the central portion of the United States, including dams, is nearing the end of its planned life expectancy. As indicated in the report: "Aging and deteriorating dams and levees also represent an increasing hazard when exposed to extreme or, in some cases, even moderate rainfall. Several recent heavy rainfall events have led to dam, levee, or critical infrastructure failures, including the Oroville emergency spillway in California in 2017, Missouri River levees in 2017, 50 dams in South Carolina in October 2015 and 25 more dams in the state in October 2016, and New Orleans levees in 2005 and 2015. The national exposure to this risk has not yet been fully assessed."

A potential outcome of changing climate in Kansas Region I is an increase in extreme precipitation events which may lead to more severe floods and a greater risk of dam failure. Additional projected greater periods of drought conditions and high heat may result in ground cracking, a reduction of soil strength, erosion, and subsidence in earthen dams.

The NOAA NCEI State Climate Summary 2022 for Kansas suggests that the number of extreme precipitation events are projected to increase. These extreme events will likely place increased stress on dams within the State.

Graph 16: Kansas Region I Number of Extreme Precipitation Events (Greater Than 2 Inches)



Source: NOAA NCEI State Climate Summary 2022 for Kansas

At present there is no comprehensive assessment of the vulnerability and risks to existing dams. Additionally, there are no common design standards concerning the repair or modification of existing dams nor for the designed and construction of new dams operated in the face of changing climate risk.

Land use trends can significantly impact a community's vulnerability to dam or levee failure. The way land is developed and used in proximity to dams and levees can influence the potential consequences of failure, affecting the safety of residents and infrastructure.

Development in flood-prone areas or behind levees without adequate consideration for flood risk increases vulnerability. Increased urbanization and population density near dams and levees can intensify the consequences of failure. Higher population density means more people and assets are at risk, leading to greater potential for loss of life and property damage.

The location of critical infrastructure, such as hospitals, schools, and emergency services, in close proximity to dams or levees can heighten vulnerability. Infrastructure assets may be at risk of damage or disruption, impacting the community's ability to respond effectively to a failure.

5.9.6 Vulnerability and Impact

FEMA NRI

The FEMA NRI does not provide a rating for the dam or levee failure hazard.

Dam Condition Survey

The National Inventory of Dams documents all known dams in Kansas. The USACE is responsible for maintaining the National Inventory of Dams and works in close collaboration with federal and State of Kansas dam regulating agencies to obtain accurate and complete information about dams in the database. The database contains information about a dam's location and condition assessment. The condition assessment describes the condition of the dam based on available information, with the following ratings given:

- **Satisfactory:** No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions (static, hydrologic, seismic) in accordance with the minimum applicable state or federal regulatory criteria or tolerable risk guidelines.
- **Fair:** No existing dam safety deficiencies are recognized for normal operating conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency. Risk may be in the range to take further action.
- **Poor:** A dam safety deficiency is recognized for normal operating conditions which may realistically occur. Remedial action is necessary. Poor may also be used when uncertainties exist as to critical analysis parameters which identify a potential dam safety deficiency. Investigations and studies are necessary.
- **Unsatisfactory**: A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.
- **Not Rated:** The dam has not been inspected, is not under state or federal jurisdiction, or has been inspected but, for whatever reason, has not been rated.

The following table details the dam number, dam name, nearest jurisdiction, and condition assessment of all high hazard dams in Region I:

Table 54: Kansas Region I High Hazard Dam Condition Assessment

County	Dam Number	Dam Name	Nearest Jurisdiction	Condition Assessment
Chase	KS02150	Frd No 1-5	Rural	Fair
Geary	KS000728	Fourmile Creek Roadfill Dam	Junction City	Fair
Geary	KS000727	Rimrock Dam	Junction City	Poor
Lyon	KS07613	Dd No 126	Americus	Satisfactory
Morris	KS902512	Council Grove City Lake Dam	Council Grove	Fair
Morris	KS04537	Frd No 2	Herrington	Satisfactory
Morris	KS04536	Frd No1	Herrington	Satisfactory
Morris	KS09344	Frd No 15	Rural	Satisfactory
Morris	KS07400	Dd No 208	Rural	Fair
Pottawatomie	KS07473	Jeffrey Energy Center-Aux Makeup	Rural	Fair
Pottawatomie	KS04634	Jeffrey Energy Center- Makeup Dam	Rural	Satisfactory
Pottawatomie	KS00890	Pottawatomie State Lake No1	Rock Creek	Fair
Pottawatomie	KS02524	College Creek Frd No2	St. Marys	Fair
Pottawatomie	KS04522	Frd No 6	Emmett	Poor
Pottawatomie	KS02061	Lake Elbo	Rural	Not Rated
Pottawatomie	KS07478	GS Dd No 59	Rural	Poor
Riley	KS09531	Bayer Pond Dam	Manhattan	Poor
Riley	KS01809	Rogers Dam	Manhattan	Unsatisfactory

Table 54: Kansas Region I High Hazard Dam Condition Assessment

County	Dam Number	Dam Name	Nearest Jurisdiction	Condition Assessment
Riley	KS01815	US 77 Road Fill Dam	Rural	Poor
Riley	KS07495	Kansas Farm Bureau Dam	Manhattan	Fair
Riley	KS07860	Irrigation Dam	Manhattan	Satisfactory
Wabaunsee	KS02531	Lake Wabaunsee Dam	Rural	Satisfactory
Wabaunsee	KS09295	153	Volland	Satisfactory
Wabaunsee	KS02533	McFarland Detention Dam	McFarland	Fair

Source: National Inventory of Dams
*: State of Kansas compliance project underway

The following table details the dam number, dam name, nearest jurisdiction, and condition assessment of all high hazard federal reservoir dams in Region I:

Table 55: Kansas Region I Federally Operated Reservoirs Risk Assessment

County	Dam Number	Federal Reservoir Name	Nearest Jurisdiction	Risk Assessment
Geary	KS00008	Milford Dam	Junction City	Low
Pottawatomie	KS00012	Tuttle Creek Dam	Manhattan	Moderate
Morris	KS00001	Council Grove	Council Grove	Moderate

Source: National Inventory of Dams

Available Dam Inundation and Location Mapping

The following maps, as available, show the proximate locations to select high hazard dams, and if available, projected inundation mapping from a failure event.

Map 29: Milford High Hazard Dam Map (Geary County)



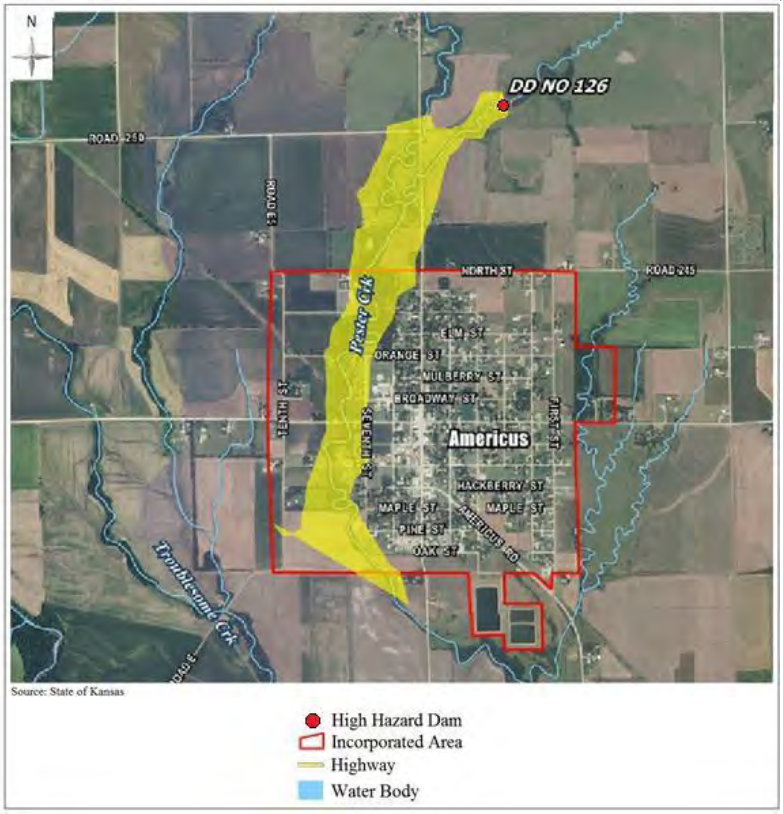
Source: State of Kansas and Geary County

Map 30: Rimrock Pond High Hazard Dam Inundation Area (Geary County)



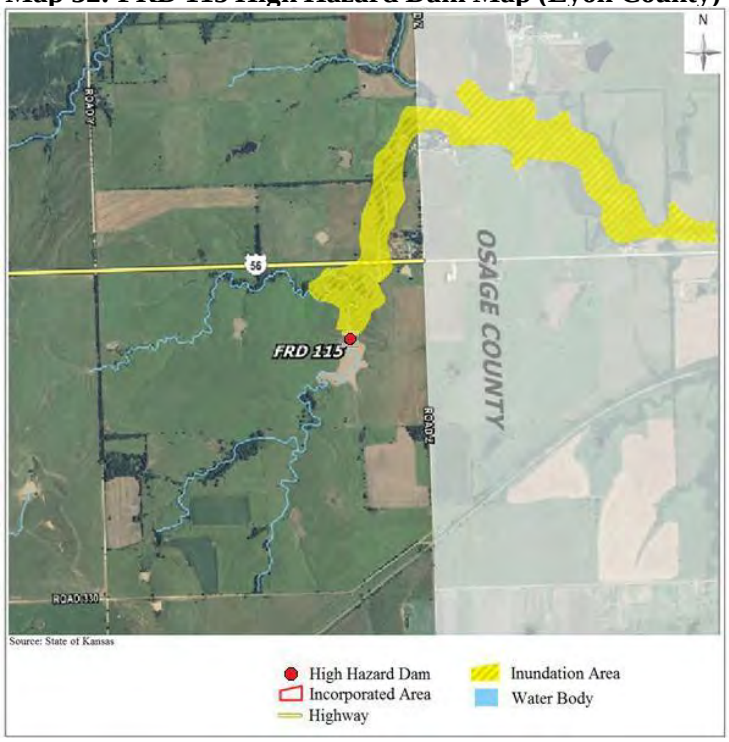
Source: State of Kansas and Geary County

Map 31: Dam Number 126 High Hazard Dam Map (Lyon County)



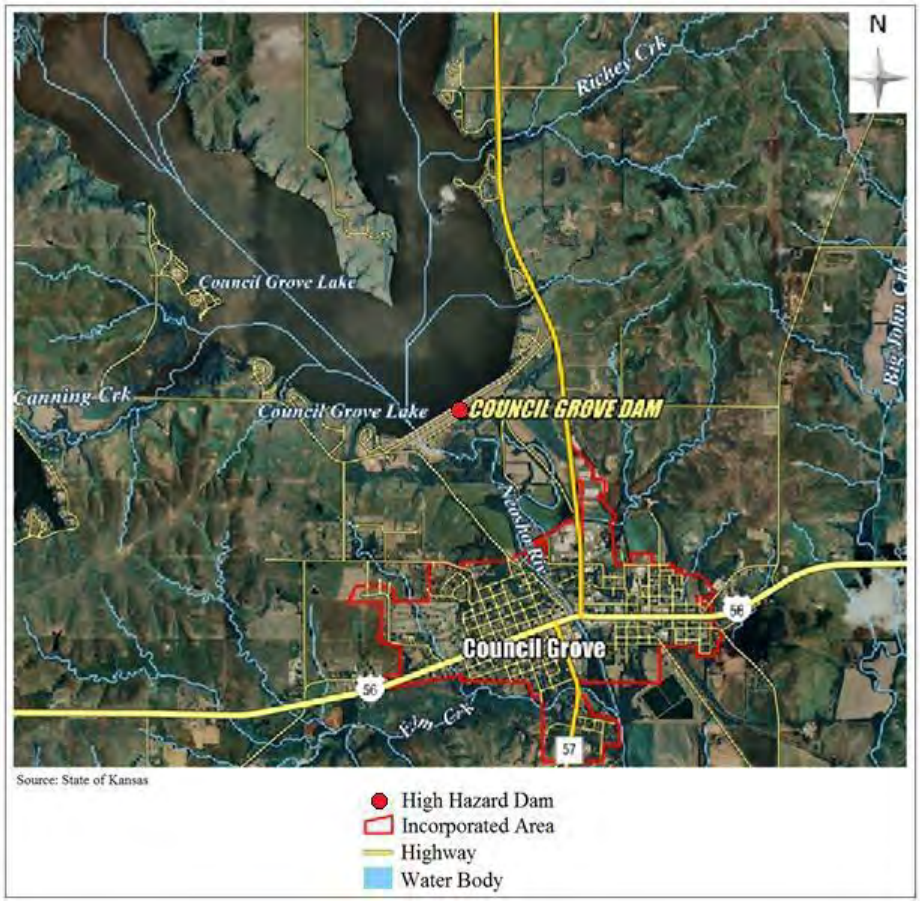
Source: State of Kansas and Lyon County

Map 32: FRD 115 High Hazard Dam Map (Lyon County)



Source: State of Kansas and Lyon County

Map 33: Council Grove Lake High Hazard Dam Map (Morris County)



Source: State of Kansas and Morris County

Map 34: College Creek FRD No. 2 High Hazard Dam Map (Pottawatomie County)



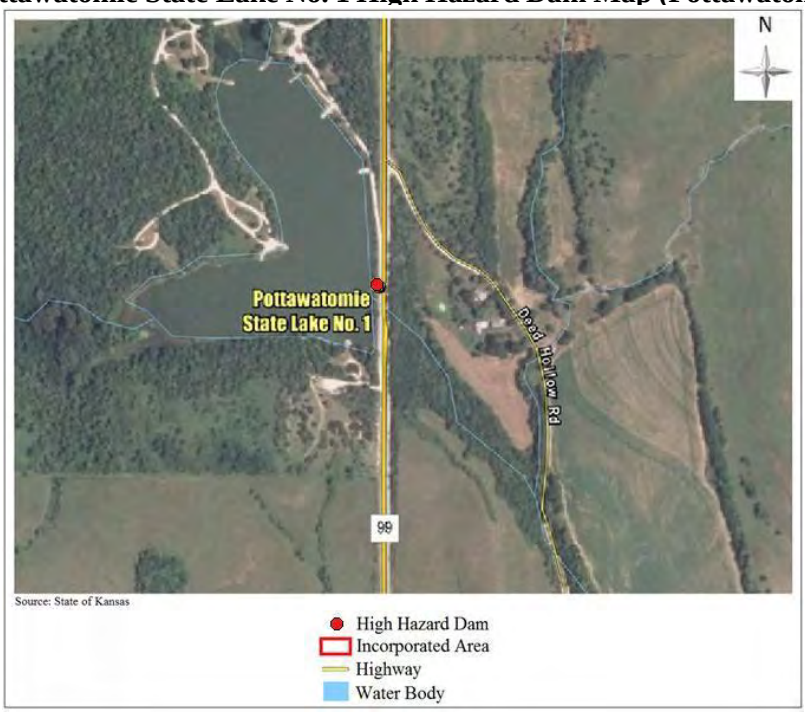
Source: State of Kansas and Pottawatomie County

Map 35: Jeffery Energy Center No. 1 and Auxiliary High Hazard Dam Map (Pottawatomie County)



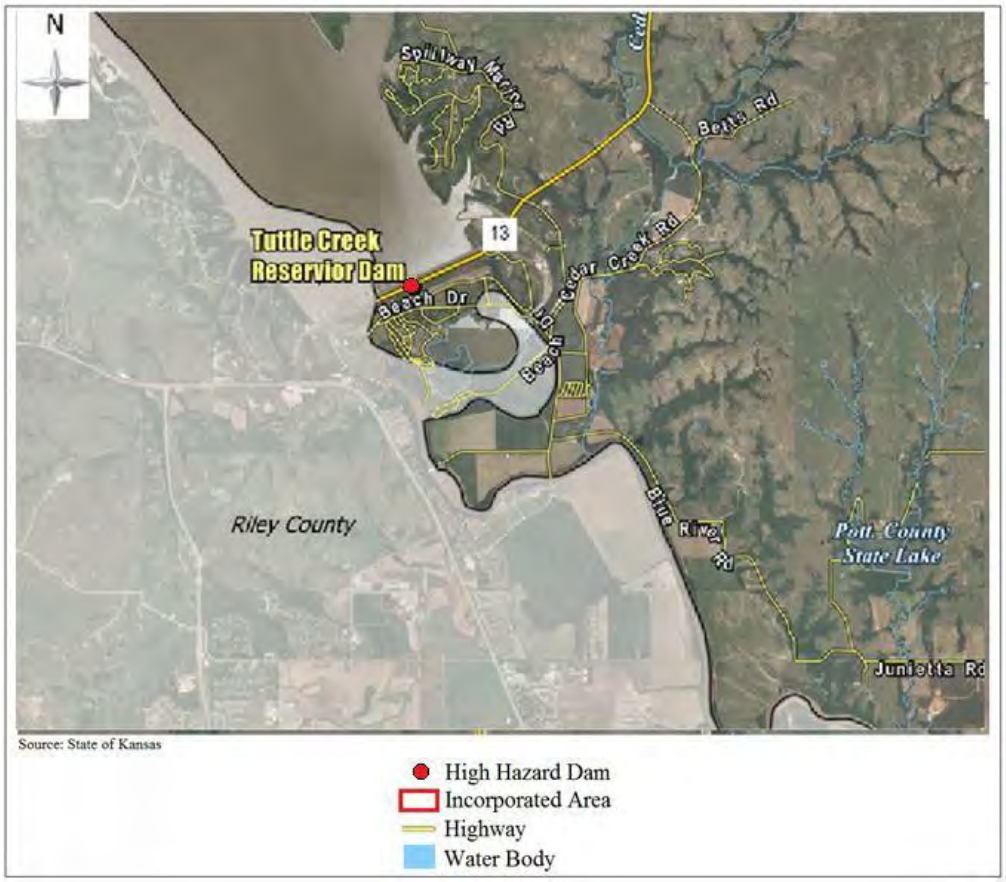
Source: State of Kansas and Pottawatomie County

Map 36: Pottawatomie State Lake No. 1 High Hazard Dam Map (Pottawatomie County)



Source: State of Kansas and Pottawatomie County

Map 37: Tuttle Creek Reservoir High Hazard Dam Map (Pottawatomie County)



Source: State of Kansas and Pottawatomie County

Map 38: Rogers High Hazard Dam Map (Riley County)



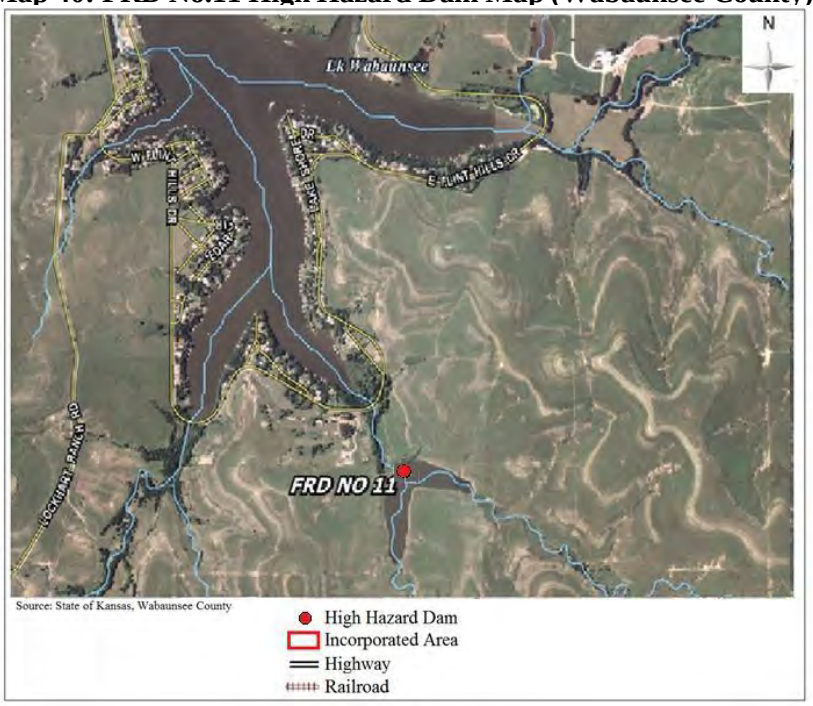
Source: State of Kansas and Riley County

Map 39: Tuttle Creek High Hazard Dam Map (Riley County)



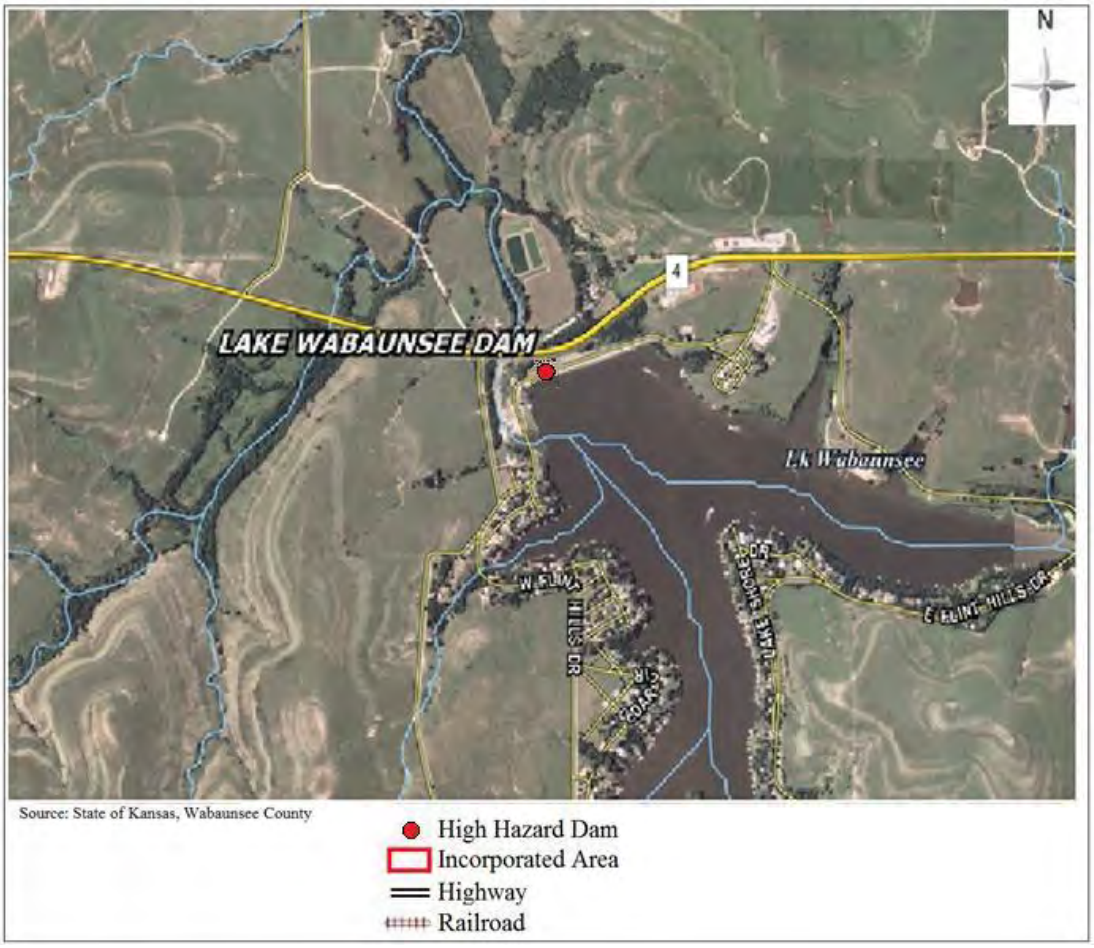
Source: State of Kansas and Pottawatomie County

Map 40: FRD No.11 High Hazard Dam Map (Wabaunsee County)



Source: State of Kansas and Wabaunsee County

Map 41: Lake Wabaunsee High Hazard Dam Map (Wabaunsee County)



Source: State of Kansas and Pottawatomie County

Population

A dam failure event can have devastating and wide-ranging impacts on both people and communities. The severity of these impacts depends on the volume of water released and the location of the dam in relation to communities, and may include:

- **Loss of Life:** The sudden release of a large volume of water can result in flooding downstream, leading to drowning and casualties. The loss of life can be particularly high if a dam failure occurs in highly populated areas or when people are unable to evacuate in time.
- **Long Term Displacement:** People living downstream may be forced to evacuate their homes leading to displacement and requiring long-term shelter assistance.
- **Economic Consequences:** Both property damage and the disruption of transportation and utilities could affect local economies.
- **Psychological Trauma:** Survivors of dam failure events may experience psychological trauma, including post-traumatic stress disorder and anxiety.

As of this plan, a complete analysis has not been conducted on the potential impact of a dam failure event on the population of Kansas Region I nor were all completed Emergency Action Plans available for review. However, data on population impacted by the failure of federal reservoirs was available from the Nation Inventory of Dams, as follows:

Table 56: Kansas Region I Federally Operated Reservoirs

County	Dam Number	Federal Reservoir Name	Nearest Jurisdiction	Daytime People at Risk
Geary	KS00008	Milford Dam	Junction City	93,841
Pottawatomie	KS00012	Tuttle Creek Dam	Manhattan	82,994
Morris	KS00001	Council Grove	Council Grove	3,363

Source: National Inventory of Dams

Data from the USACE National Levee Database indicates the following populations vulnerable to a potential levee failure:

Table 57: Kansas Region I USACE NLD Levees

County(ies)	Jurisdiction(s)	Name	People at Risk
Chase	Tallgrass Prairie	Tallgrass Prairie Levee	11
Geary	Fort Riley	Ft. Riley Forsyth	2,212
Geary	Fort Riley	Ft. Riley Marshall Field	35
Geary and Riley	Fort Riley	Fort Riley Funston	44
Lyon	Hartford	Hartford Levee	161
Morris	Council Grove	Council Grove Left Bank	212
Morris	Council Grove	Council Grove Right Bank	687
Pottawatomie	Belvue	Belvue Levee 1	18
Pottawatomie	Wamego	LWB-0006	1
Pottawatomie	St Mary’s	College Creek-St. Mary’s - Left	696
Pottawatomie	St Mary’s	College Creek-St. Mary’s - Right	576
Pottawatomie	St. George	Kansas River Levee- St. George 1	13
Pottawatomie	St. George	Kansas River Wabaunsee 1	28
Pottawatomie	St. George	Kansas River Levee- St. George 3	3
Pottawatomie	St. George	Kansas River Levee- St. George 5	0
Riley and Wabaunsee	St. George	Deep Creek Levee	10
Riley	Manhattan	Manhattan KS	10,589

Table 57: Kansas Region I USACE NLD Levees

County(ies)	Jurisdiction(s)	Name	People at Risk
Riley	Manhattan	LRL-0041-FF	168

Source: National Levee Database

Additionally, the loss of community lifelines can have a direct economic impact on the population. As an overview, the May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report indicates the following loss values for community lifelines:

Table 58: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)

Category	Loss
Loss of Electrical Service	$199
Loss of Wastewater Services	$66
Loss of Water Services	$138
Loss of Communications/Information Technology Services	$141

Source: May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report

Buildings and Structures

Any jurisdictional facility within an identified inundation zone of a dam or levee failure will be immediately impacted, potentially causing a cessation of all operations at that location. The extent of the impact depends on multiple factors concerning the extent of the failure, and may include:

- **Structural Damage:** Facilities located downstream could sustain severe structural damage. Floodwater can inundate buildings, causing structural failures, collapsing walls, and damaging foundations. This can render facilities inoperable or unsafe for use.
- **Equipment Damage:** Critical facilities often house valuable and sensitive equipment that can be severely damaged or destroyed by floodwaters and debris carried by the flood. This can include electrical systems, machinery, data centers, and communication equipment.
- **Disruption of Operations:** The flooding caused by a dam failure can disrupt the normal operations of critical facilities, including hospitals, emergency response centers, power plants, and water treatment plants. This disruption can have cascading effects on public services and infrastructure.
- **Long-Term Recovery:** The recovery process could be lengthy and resource intensive. It may involve rebuilding damaged infrastructure, restoring functionality, and implementing measures to prevent future vulnerabilities.

As of this plan, a complete analysis has not been conducted on the potential impact of a dam failure event on the buildings of Kansas Region I nor were all completed Emergency Action Plans available for review. Available inundation and location mapping may be reviewed above to get a sense of potential vulnerability.

Data from the USACE National Levee Database indicates the following populations vulnerable to a potential levee failure:

Table 59: Kansas Region I Potentially Impacted Buildings, Levee Failure

County(ies)	Jurisdiction(s)	Name	Structures at Risk	Property Value
Chase	Tallgrass Prairie	Tallgrass Prairie Levee	10	$9,000,000
Geary	Fort Riley	Ft. Riley Forsyth	272	$200,000,000
Geary	Fort Riley	Ft. Riley Marshall Field	15	$46,000,000
Geary and Riley	Fort Riley	Fort Riley Funston	165	$410,000
Lyon	Hartford	Hartford Levee	92	$69,000,000
Morris	Council Grove	Council Grove Left Bank	64	$93,000,000
Morris	Council Grove	Council Grove Right Bank	175	$200,000

Table 59: Kansas Region I Potentially Impacted Buildings, Levee Failure

County(ies)	Jurisdiction(s)	Name	Structures at Risk	Property Value
Pottawatomie	Belvue	Belvue Levee 1	6	$2,000,000
Pottawatomie	Wamego	LWB-0006	1	$520,000
Pottawatomie	St Mary's	College Creek-St. Mary's - Left	21	$81,000,000
Pottawatomie	St Mary's	College Creek-St. Mary's - Right	203	$87,000,000
Pottawatomie	St. George	Kansas River Levee- St. George 1	6	$1,000,000
Pottawatomie	St. George	Kansas River Levee- St. George 2	-	-
Pottawatomie	St. George	Kansas River Levee- St. George 3	1	$240,000
Pottawatomie	St. George	Kansas River Levee- St. George 5	1	$6,000,000
Pottawatomie	St. George	Kansas River Wabaunsee 1	28	$13,000,000
Riley and Wabaunsee	St. George	Deep Creek Levee	5	$5,000,000
Riley	Manhattan	Manhattan KS	1,734	$1,000,000,000
Riley	Manhattan	LRL-0041-FF	35	$62,000,000

Source: National Levee Database
*: Does not protect people or structures

Governmental Operations

Government operations may be immediately impacted, especially if any facilities are within the inundation area of failure. The extent of the impact depends on multiple factors concerning the extent of the failure, and may include:

- **Emergency Response and Management:** Jurisdictional response agencies may be called upon to respond to a failure event. They must coordinate rescue operations, evacuations, and disaster response efforts to mitigate the immediate risks to human life and property.
- **Public Health and Safety:** Jurisdictional public health agencies would provide support for public health needs during and after a dam failure, including responding to injuries, managing emergency shelters, and addressing potential health risks from contaminants or waterborne diseases.
- **Financial Impact:** A dam failure event can strain state budgets due to the costs associated with emergency response, infrastructure repair, environmental cleanup, and long-term recovery efforts. Local governments may need to allocate additional funds to address these needs.

As of this plan, a complete analysis has not been conducted on the potential impact of a dam failure event on the buildings of Kansas Region I nor were all completed Emergency Action Plans available for review. Available inundation and location mapping may be reviewed above to get a sense of potential vulnerability.

Transportation and Electrical Infrastructure

The failure of a dam can have significant and wide-ranging impacts on transportation infrastructure, affecting roads, bridges, railways, and other critical components of transportation systems. Potential impacts may include:

- Flooding and Erosion: Dam failures can lead to rapid and extensive flooding, causing erosion of roadways and bridge foundations. This can result in the collapse or significant damage to roads and bridges, disrupting transportation routes.
- Extended Downtime: The repair of transportation infrastructure, especially major roads and bridges, can take a significant amount of time. During this period, transportation networks may be partially or entirely unavailable.

As of this plan, a complete analysis has not been conducted on the potential impact of a dam failure event on the transportation and electrical infrastructure of Kansas Region I nor were all completed Emergency Action Plans available for review. Available inundation and location mapping may be reviewed above to get a sense of potential vulnerability.

A wide variety of data sources, from the Federal Highway Administration to state and federal Departments of Transportation, can be sourced for construction and repair costs. Average per-mile repair costs for local roads, state highways, and interstates can vary widely depending on factors such as the type of repair (resurfacing, reconstruction, or major rehabilitation), local labor and material costs, geographic conditions, and traffic volumes. The following details a range of repair costs for local, state, and interstate roadway systems:

- **Local Roads**
  - Resurfacing/Repaving: Costs generally range between $20,000 to $100,000 per mile.
  - Major Rehabilitation or Reconstruction: Costs generally range between $150,000 to $1 million per mile.
- **State Highways**
  - Resurfacing/Repaving: Costs generally range between $100,000 to $300,000 per mile.
  - Major Rehabilitation or Reconstruction: Costs generally range between $500,000 to $2,000,000 per mile.
- **Interstates**
  - Resurfacing/Repaving: Costs generally range between $250,000 to $1,000,000 per mile.
  - Major Rehabilitation or Reconstruction: Costs generally range between $2,000,000 to $5,000,00 per mile.

Factors affecting roadway construction and repair costs can include:

- **Extent of Damage:** Minor repairs such as resurfacing are cheaper than full-depth reconstruction.
- **Geography and Terrain:** Roads in mountainous or difficult terrains may cost more due to drainage and foundation issues.
- **Traffic Control and Detours:** Roads with heavy traffic may require expensive detour systems and safety measures, especially for interstates and state highways.
- **Urban vs. Rural:** Repairs in urban areas are typically more expensive due to higher labor costs, complex traffic patterns, and higher land costs.
- **Material Costs:** Prices for materials like asphalt, concrete, and steel can vary significantly based on regional supply chains.
- **Environmental and Regulatory Costs:** Permitting, environmental mitigation, and compliance with federal/state regulations can add to the cost.

Bridges crossing rivers can pose significant concerns during flooding events resulting from a dam or levee failure due to the increased risk of structural failure. Floodwater caused by a dam failure can exert powerful hydraulic forces on bridge structures, with the flow of water, debris, and floating objects impacting the bridge's substructure and foundation. Scouring, the removal of soil or sediment around bridge foundations can increase during a flood event, increasing the risk of failure. Floodwater can also cause the deformation and misalignment of bridge components. As water levels rise and fall, the structural elements may undergo stress and strain, potentially leading to long-term damage and misalignment.

A wide variety of data sources, including the Federal Highway Administration and state and federal Departments of Transportation, can be sourced for bridge construction and repair costs. The average construction and repair costs for bridges vary significantly depending on factors like the size and complexity of the bridge, its location, materials used, and the extent of the repairs or construction required. The following details a range of construction costs for bridges:

- **Small Bridge (local, 2-lane bridge over a small waterway or road):** Costs generally range between $150 to $400 per square foot.
- **Medium-Sized Bridge (state highway, spanning larger rivers or railways):** Costs generally range between $300 to $600 per square foot.
- **Large Bridge (interstate or urban multi-lane bridge, often requiring complex engineering):** Costs generally range between $500 to $1,000+ per square foot.

The following details a range of repair costs for bridges:

- **Minor Repairs (deck resurfacing, guardrail fixes, minor structural repairs):** Costs generally range between $50,000 to $500,000.
- **Medium Repairs (replacing sections of the deck, repairing piers or abutments):** Costs generally range between $500,000 to $5,000,000.
- **Major Repairs or Rehabilitation (full deck replacement, structural strengthening, or seismic retrofitting):** Costs generally range between $5,000,000 to $50,000,000.
- **Emergency Repairs (post-disaster or structural failure):** Costs generally range between $10,000,000 to $100,000,000.

Factors affecting bridge construction and repair costs can include:

- **Bridge Type and Design:** Suspension, cable-stayed, truss, arch, or simple beam bridges each have different design requirements and associated costs.
- **Location:** Urban areas or difficult terrains (e.g., over water, in mountainous regions) can significantly increase costs due to land acquisition, permitting, and construction challenges.
- **Materials:** The use of steel, concrete, or composite materials impacts the price. Specialized materials (e.g., weathering steel for durability) increase costs.
- **Traffic Management:** Bridges over busy roads or waterways may require costly traffic diversion plans or temporary structures.
- **Environmental and Regulatory Compliance:** Projects near sensitive areas (rivers, wetlands, protected lands) or those requiring special permits may face higher costs.
- **Labor and Regional Costs:** Labor costs, equipment rates, and material availability can vary widely by region.

The failure of a dam or levee can have significant impacts on power utilities, affecting both the generation and distribution of electrical power. Potential consequences may include:

- **Power Line Disruption:** Dam or levee failures can cause flooding and erosion, potentially damaging power lines and transmission towers. This can result in the disruption of electricity transmission from power generation facilities to distribution networks.
- **Substation Impact: Substation Flooding:** Flooding from a dam or levee failure can impact electrical substations, which play a crucial role in transforming and distributing electricity. Substation failures can lead to widespread power outages.
- **Grid Instability:** The sudden loss of a significant power source can lead to voltage and frequency fluctuations. This instability can affect the overall reliability of the power grid.
- **Emergency Shutdowns:** In the event of a dam or levee failure, power utilities may need to implement emergency shutdowns of affected power plants and electrical infrastructure to prevent further damage and ensure the safety of personnel.

A wide variety of data sources, including the U.S. Energy Information Administration, Federal Energy Regulatory Commission, and the Electric Power Research Institute, can be sourced for construction and repair costs for electrical

facilities. The repair costs can vary greatly depending on the type of repair, the size of the location, and the specific components that require attention. Typical repairs cost are:

- **Minor Repairs (Routine Maintenance & Component Replacement):** Costs generally range between $10,000 to $100,000.
- **Moderate Repairs (Replacing Medium-Sized Components):** Costs generally range between $100,000 to $1 million.
- **Major Repairs (Structural or Extensive Mechanical/Electrical Work):** Costs generally range between $1,000,000 to $50,000,000, depending on the scale.
- **Emergency Repairs (After Natural Disasters or Accidents):** Costs generally range between $5,000,000 to $100,000,000.

The cost to reconstruct high-capacity (voltage) power transmission lines varies significantly based on several factors, such as the voltage of the line, geographic terrain, regulatory requirements, and environmental considerations. The following present rough cost estimates for construction:

- **High-Voltage Alternating Current Transmission Lines**
  - Overhead lines: Costs generally range between $300,000 to $1,000,000 per mile.
  - Underground lines: Costs generally range between $1,000,000 and $10,000,000 per mile.
- **High-Voltage Direct Current Transmission Lines**
  - Overhead lines: Costs can range between $500,000 to $2 million per mile.
  - Underground lines: Costs can range between $3,000,000 to $15,000,000 per mile Key Factors Affecting Costs:

The cost to construct neighborhood power distribution lines (rather than large high-capacity transmission lines) depends on whether the lines are overhead or underground, as well as factors like geography, local labor rates, and regulatory requirements. The following present rough cost estimates for construction:

- **Overhead Neighborhood Power Distribution Lines:** Costs generally range between $150,000 to $500,000 per mile.
- **Underground Neighborhood Power Distribution Lines:** Costs generally range between $500,000 to $2,000,000 or more per mile.

The cost to repair high-capacity power transmission lines varies widely depending on the extent of the damage, the location, and the type of transmission line. Here are some general considerations:

- **High-Voltage Overhead Transmission Lines**
  - Minor Repairs (fixing or replacing a small section of damaged wire, insulators, or hardware): Costs generally range between $10,000 and $50,000 per mile.
  - Moderate Repairs (replacing several towers or larger segments of lines): Costs generally range between $50,000 and $200,000 per mile.
  - Major Repairs (such as extensive damage from storms, fires, or other disasters requiring multiple towers, wires, and more complex restoration): Costs generally range between $200,000 to over $1,000,000 per mile.
- **High-Voltage Underground Transmission Lines**
  - Minor Repairs: Costs generally range between $100,000 to $500,000 per mile.
  - Major Repairs: Costs generally range between $1,000,000 to $5,000,000 or more per mile.

The cost to repair neighborhood power distribution lines, which typically carry lower voltage power than high-capacity transmission lines, also depends on several factors, such as the extent of the damage, whether the lines are overhead or underground, and the location.

- **Overhead Neighborhood Distribution Lines**
  - Minor Repairs (such as fixing downed lines, poles, or transformers): Costs generally range between $5,000 to $20,000 per mile.
  - Moderate Repairs (replacing several poles, wires, or small transformers): Costs generally range between $20,000 to $100,000 per mile.
  - Major Repairs (extensive damage from a major storm or accident affecting many poles, transformers, and lines): Costs generally range between $100,000 to $500,000 per mile.
- **Underground Neighborhood Distribution Lines**
  - Minor Repairs (fixing small sections of cable or minor equipment malfunctions): Costs generally range between $50,000 to $150,000 per mile.
  - Moderate Repairs (replacing larger segments of underground cable): Costs generally range between $150,000 to $500,000 per mile.
  - Major Repairs (extensive damage to underground systems, possibly caused by floods, storms, or construction accidents): Costs generally range between $500,000 to $2,000,000 per mile.

Factors influencing both reconstruction and repair costs for electrical transmission lines include:

- **Terrain:** Building lines through mountainous or densely populated areas will increase costs.
- **Permitting and Land Acquisition:** Securing permits and land can add significant costs.
- **Environmental and Regulatory Costs:** Meeting environmental impact requirements and complying with local regulations can also influence the final price.
- **Voltage Level:** Higher voltage transmission lines, such as those over 500 kV, are generally more expensive than lower voltage lines.

Water and Wastewater Utilities
As of this plan, a complete analysis has not been conducted on the potential impact of a dam failure event on water and wastewater infrastructure of Kansas Region I nor were all completed Emergency Action Plans available for review. Available inundation and location mapping may be reviewed above to get a sense of potential vulnerability.

Medical and Response Facilities
As of this plan, a complete analysis has not been conducted on the potential impact of a dam failure event on medical and response infrastructure of Kansas Region I nor were all completed Emergency Action Plans available for review. Available inundation and location mapping may be reviewed above to get a sense of potential vulnerability.

Educational Facilities
As of this plan, a complete analysis has not been conducted on the potential impact of a dam failure event on educational infrastructure of Kansas Region I nor were all completed Emergency Action Plans available for review. Available inundation and location mapping may be reviewed above to get a sense of potential vulnerability.

Communication Systems
As of this plan, a complete analysis has not been conducted on the potential impact of a dam failure event on communications infrastructure of Kansas Region I nor were all completed Emergency Action Plans available for review. Available inundation and location mapping may be reviewed above to get a sense of potential vulnerability.

Critical Infrastructure, Levees

Data from the National Levee Database indicates the following critical structures as being identified in potential levee failure inundation areas:

Table 60: Kansas Region I Critical Structures In Potential Levee Failure Inundation Areas

County(ies)	Jurisdiction(s)	Name	Critical Structures
Chase	Tallgrass Prairie	Tallgrass Prairie Levee	0
Geary	Fort Riley	Ft. Riley Forsyth	1 school
Geary	Fort Riley	Ft. Riley Marshall Field	1 airport, 1 fire station
Geary and Riley	Fort Riley	Fort Riley Funston	0
Lyon	Hartford	Hartford Levee	0
Morris	Council Grove	Council Grove Left Bank	0
Morris	Council Grove	Council Grove Right Bank	1 law enforcement, 1 school
Pottawatomie	Belvue	Belvue Levee 1	0
Pottawatomie	Wamego	LWB-0006	0
Pottawatomie	St Mary's	College Creek-St. Mary's - Left	2 schools
Pottawatomie	St Mary's	College Creek-St. Mary's - Right	1 fire station, 1 law enforcement
Pottawatomie	St. George	Kansas River Levee- St. George 1	0
Pottawatomie	St. George	Kansas River Levee- St. George 2	0
Pottawatomie	St. George	Kansas River Levee- St. George 3	0
Pottawatomie	St. George	Kansas River Levee- St. George 5	2 wastewater treatment plants
Pottawatomie	St. George	Kansas River Wabaunsee 1	0
Riley and Wabaunsee	St. George	Deep Creek Levee	0
Riley	Manhattan	Manhattan KS	3 electrical substations, 1 fire, 3 schools, 2 wastewater treatment plants
Riley	Manhattan	LRL-0041-FF	1 fire station

Source: National Levee Database

Environmental and Agricultural Impacts

The environmental impact of dam or levee failures depends on the circumstances of the failure. After a failure occurs, the resulting flooding and moving debris can affect wildlife and natural habitats. The spread of pollution and hazardous materials can have negative impacts on the environment. Ecosystems and natural habitats may be destroyed, causing the migration or death of local wildlife. Depending on the timing and location of the failure, it can result in rapid changes in water temperature downstream. This can be harmful to temperature-sensitive aquatic species and ecosystems. Dam failures can disrupt natural ecological processes, such as nutrient cycling, sediment transport, and flow regimes. These disruptions can have cascading effects on ecosystems.

Jurisdictional Concerns:

As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts. Until a further and fuller understanding is gained, all jurisdictions consider this hazard to be a potential risk. As such, each jurisdiction has included a mitigation action to map all infrastructure and facilities within potential failure inundation areas to understand risk, with special districts included under county level mapping.

A dam or levee failure can pose significant jurisdictional concerns for a county and its incorporated areas. These events often cross municipal boundaries, requiring coordinated emergency response, unified evacuation planning, and consistent public communication. Jurisdictions may face challenges related to overlapping responsibilities, especially if ownership or maintenance of the structure differs from the areas at risk. Discrepancies in land use regulation, development in downstream floodplains, and limitations in response capacity can further complicate risk mitigation and recovery efforts.

At the county level, primary concerns include the coordination of emergency response across jurisdictional boundaries, maintenance of Emergency Action Plans, and effective communication with residents in both urban centers and rural areas. Counties like Geary and Riley, which contain major population centers such as Junction City and Manhattan, face complex response challenges due to the presence of large federal reservoirs and extensive levee systems along the Kansas River. A structural failure or emergency release from these dams could trigger flash flooding downstream, affecting thousands of residents with little warning. Counties must also coordinate with state and federal agencies for dam safety inspections, recovery resources, and floodplain management compliance.

At the jurisdictional level, individual cities and towns have varied but significant vulnerabilities. Manhattan (Riley County) and Junction City (Geary County) have substantial development within areas protected by levees, meaning a failure could impact homes, businesses, and critical facilities like hospitals and schools. Smaller jurisdictions may not have the staffing or technical resources to maintain detailed emergency plans or pursue mitigation projects without external support.

The shared concerns across these counties and jurisdictions include limited funding for inspection and maintenance, the need for updated hydraulic and inundation mapping, and ensuring public awareness of residual flood risk even where levees exist. Proactive intergovernmental coordination, regular emergency drills, and clear designation of roles and responsibilities are essential to reduce the impacts of a dam or levee failure and improve resilience across the region.

Cascading Impacts
Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with dam failure may include:

- Flooding
- Environmental degradation
- Damage to agricultural lands

Consequence Analysis
This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 61: Dam or Levee Failure Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Heavy flooding can cause power loss, property damage, injury, and death, and the displacement of populations. Standing water can also pose a public health risk due to the reproduction of disease vectors such as mosquitos.
Impact on Responders	Heavy flooding may cause inaccessibility of roadways for first responders as well as damage of materials and resources. First responders will also have to facilitate evacuation measures to move people from the flooded area.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Flooding caused by dam failure may create power outages, debris damage, and road closures.

Table 61: Dam or Levee Failure Consequence Analysis

Subject	Potential Impacts
Delivery of Services	Delivery of services may be disrupted due to flood-damaged bridges and roadways. The ability to deliver food, drinking water, and services will be heavily disrupted. Flooding may also interrupt communications and transportation due to power failure and accessibility changes.
Property, Facilities, and Infrastructure	Flooding from failures impact roads and bridges, businesses, hospitals, and other critical entities. Water and sewer systems may also be damaged. Homes and businesses may be completely destroyed if situated close to the failure point.
Impact on Environment	Flooding and moving debris can affect natural areas and wildlife, spreading pollution and hazardous materials. Ecosystems and natural habitats may be completely destroyed, causing migration or death of wildlife.
Economic Conditions	There is a fiscal impact on the government after a failure due to disruption of travel and commerce routes and employee's ability to travel to work. Recourses at all levels are utilized impacting the ability to access resources long-term.
Public Confidence in Governance	Direct, immediate, and effective actions must be taken in order to maintain public confidence. Response activities must include all levels of government.

5.9.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

5.9.8 Jurisdictional Risk and Vulnerability

The following table presents examples of potential actions that can be instituted for mitigating the dam failure hazard.

Table 62: Potential Dam or Levee Failure Mitigation Actions

Category	Example Action
Planning and Regulation	Advise the public about the local dam inundation areas and flood protection measures.
	Require a thorough watershed analysis for all proposed dam or reservoir projects.
	Establish a green infrastructure program to link, manage, and expand existing parks, preserves, greenways, etc.

Table 62: Potential Dam or Levee Failure Mitigation Actions

Category	Example Action
	Take action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning.
Infrastructure	Implement an inspection, maintenance, and enforcement program to help ensure continued structural integrity of dams.
	Routinely clean debris from support bracing underneath low-lying bridges.
	Remove dam and return to natural system.
Natural Systems	Develop an open space acquisition, reuse, and preservation plan targeting hazard areas.
	Preserve floodplain storage capacity by limiting or prohibiting the use of fill within the floodplain.
	Compensate an owner for partial rights, such as easement or development rights, to prevent a property from being developed.
Education	Educate the public about securing debris, propane tanks, yard items, or stored objects that may otherwise be swept away, damaged, or pose a hazard if picked up and washed away by floodwater.
	Use outreach programs to advise homeowners of risks to life, health, and safety.
	Offer GIS hazard mapping online for residents and design professionals.

5.10 Drought

5.10.1 Hazard Description



Drought is defined as an abnormally dry period lasting months or years when an area has a deficiency of water and precipitation in its surface and or underground water supply. It is, however, a normal, seasonal, and recurrent feature of climate that occurs in virtually all climate zones—typically in late spring through early fall. The duration of drought varies widely. There are cases when drought develops relatively quickly and lasts a very short period of time, exacerbated by extreme heat and/or wind, and there are other cases when drought spans multiple years, or even decades. The hydrological imbalance can be grouped into the following non-exclusive categories:

- **Agricultural:** When the amount of moisture in the soil no longer meets the needs of previously grown crops.
- **Hydrological:** When surface and subsurface water levels are significantly below their normal levels.
- **Meteorological:** When there is a significant departure from the normal levels of precipitation.
- **Socio-Economic:** When the water deficiency begins to significantly affect the population.

When below average, little or no rain falls, soil can dry out, and plants can die. If unusually dry weather persists and water supply problems develop, the period is defined as a drought. Human activity such as over-farming, excessive irrigation, deforestation, and poor erosion controls can exacerbate a drought's effects. It can take weeks or months before the effects of below average precipitation on bodies of water are observed. Depending upon the region, droughts can happen more quickly, and be noticed sooner, or have their effects naturally mitigated. The more humid and wet an area is, the faster the effects will be realized. A naturally dry region, which typically relies more on subsurface water, will take more time to actualize its effects.

Periods of drought can have significant environmental, agricultural, health, economic, and social consequences. The effects vary depending upon vulnerability and regional characteristics. Droughts can also reduce water quality through a decreased ability for natural rivers and streams to dilute pollutants and increase contamination. The most common effects are diminished crop yield, increased erosion, dust storms, ecosystem damage, reduced electricity production due to reduced flow through hydroelectric dams, shortage of water for industrial production, and increased risk of wildland fires.

5.10.2 Location and Extent

All of Kansas Region I, including all participating jurisdictions, is susceptible to drought conditions. However, the specific susceptibility to drought depends on various factors, including climate patterns, land use practices, and water management strategies.

Water is a critical resource for the residents, farmers, and industries of Kansas Region I. As a semi-arid region with limited natural surface water, the area relies heavily on groundwater for domestic, agricultural, and industrial needs. Understanding the sources of domestic water, its usage patterns, and the challenges faced in maintaining water security is essential for ensuring sustainable water management in the region.

The primary water sources for this region are the surface-water systems of the Kansas River Basin and its major tributaries, including the Big Blue, Neosho, and Cottonwood Rivers. These rivers support several large federal reservoirs, such as Milford Lake, Tuttle Creek Lake, and Council Grove Lake, which provide the majority of municipal, agricultural, and industrial water supply for communities throughout the area. Surface water is generally more abundant here than in western Kansas, and these reservoirs play a critical role in water storage, flood control, and drought resilience.

Groundwater also contributes to the region's water supply but is drawn mainly from shallow alluvial aquifers along river valleys and smaller bedrock aquifers rather than from the Ogallala system. Well yields vary significantly based on local geology, and many rural households rely on private wells or rural water districts that operate well fields in alluvial deposits. Farm ponds and small impoundments are common and provide seasonal water for livestock and supplemental irrigation but are not major sources of domestic supply.

Overuse for irrigation and municipal needs has significantly lowered water levels in some parts of Kansas Region I. Additionally, drier conditions may exacerbate water shortages in the coming decades as the frequency of droughts will continue to reduce surface water availability and increase reliance on groundwater. The Kansas Water Office and local water districts have implemented long-term plans to reduce excessive groundwater withdrawal and promote sustainable usage.

Droughts are regularly monitored by multiple federal agencies using a number of different indices. One of the best indicators of historic drought periods is provided by the U.S. Drought Monitor. The U.S. Drought Monitor provides a summary of drought conditions across the United States, including Kansas Region I. Often described as a blend of art and science, the map is updated weekly by combining a variety of data-based drought indices and indicators, along with local expert input, into a single composite drought indicator. The following table details the U.S. Drought Monitor categories:

Table 63: U.S. Drought Monitor Categories

Rating	Described Condition	Possible Impacts
None	No drought conditions	None
D0	Abnormally Dry	Short-term dryness slowing planting, growth of crops Some lingering water deficits Pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures Some water shortages developing Voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture loss likely Water shortages are common Water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses Widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses Shortages of water creating water emergencies

Source: U.S. Drought Monitor

In Kansas, there are 3 phased drought stages (Watch, Warning, and Emergency Stages) that mirror the stages used in the *Kansas 2007 Municipal Water Conservation Plan Guidelines*. Parameters monitored to determine the drought stage include the Standardized Precipitation Index, Percent of Normal Precipitation, Soil Moisture Percentile, Crop Moisture Index, Satellite Vegetative Health Index, and the 7-Day Median Flow Percentile. The stages identified consider impacts along with moisture/water resource conditions. Kansas drought response transitions from primarily local response under a Drought Watch, with increases in the State and Federal roles at the Drought Warning and Drought Emergency stages. The following table shows the drought stage descriptions and impacts as a combination of U.S. Drought Monitor and the Municipal Guidelines.

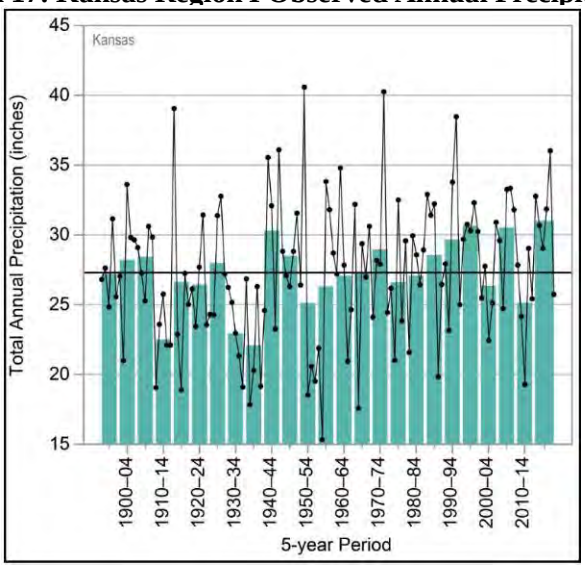
Table 64: Kansas Phased Drought Response Summary

Stage	U.S. Drought Monitor Description	Declared By	Possible Impacts	Response Summary
Drought Watch	Moderate Drought	Governor	Some damage to crops and pastures; high rangeland fire danger, streams or reservoirs low, serious public water system shortage not imminent, but likelihood of shortages growing.	Governor notified by Kansas Water Office, Governor's Drought Response Team activated, public notification, outdoor burning bans may be imposed; public water systems may implement Stage 1 Water Watch phase of municipal water conservation plan, Governor may request USDA disaster Declaration for drought.
Drought Warning	Severe Drought	Governor	Crop or pasture losses likely; some stock water shortages; very high rangeland fire danger; public water system water shortages present; some streamflow targets not met.	Public water systems may implement Stage 2 Water Warning phase of municipal water conservation plan; Hay and Pasture Exchange activated; urgent surplus water contracts from state-controlled storage authorized; Governor may request authorization for haying and grazing of Conservation Reserve Program acres; Governor may request USDA disaster declaration for drought.
Drought Emergency	Extreme and Exceptional Drought	Governor	Crop or pasture losses likely; some stock water shortages; very high rangeland fire danger; public water system water shortages present; some streamflow targets not met. reservoir supplies low.	Governor may declare outdoor burning ban upon advice of Adjutant General; public water systems may implement Stage 3 Water Emergency phase of municipal water conservation plans; emergency surplus water contracts from state-controlled storage authorized; emergency water withdrawals from USACE emergency water assistance; Governor may request Presidential disaster declaration and/or USDA disaster declaration for drought.

Source: Kansas Drought Operations Plan, Governors Drought Team

Precipitation data is collected by the NWS throughout the State of Kansas. Additional rainfall data is also collected by the NWS through citizen weather rainfall sites. The following graph indicates annual precipitation averages for Kansas from 1895 to 2020:

Graph 17: Kansas Region I Observed Annual Precipitation



Source: NOAA NCEI State Climate Summary 2022 for Kansas

The MPC view drought as not only a local or county hazard, but as a regional hazard as well. Discussions with the MPC and a review of all available data indicated that drought is a concern for all participating jurisdictions, with all jurisdictions having similar concerns. The following provides a narrative of the level of jurisdictional concern:

- **Chase County:** Drought identified as a community concern for all participating jurisdictions as citizens, agriculture, and the environment are vulnerable. Additionally, an increase in drought condition will have a negative impact on both the surrounding agricultural community and on potential wildfire conditions.
- **Geary County:** Drought identified as a community concern for all participating jurisdictions as citizens, agriculture, and the environment are vulnerable. Additionally, an increase in drought condition will have a negative impact on both the surrounding agricultural community and on potential wildfire conditions.
- **Lyon County:** Drought identified as a community concern for all participating jurisdictions as citizens, agriculture, and the environment are vulnerable. Additionally, an increase in drought condition will have a negative impact on both the surrounding agricultural community and on potential wildfire conditions.
- **Morris County:** Drought identified as a community concern for all participating jurisdictions as citizens, agriculture, and the environment are vulnerable. Additionally, an increase in drought condition will have a negative impact on both the surrounding agricultural community and on potential wildfire conditions.
- **Pottawatomie County:** Drought identified as a community concern for all participating jurisdictions as citizens, agriculture, and the environment are vulnerable. Additionally, an increase in drought condition will have a negative impact on both the surrounding agricultural community and on potential wildfire conditions.
- **Riley County:** Drought identified as a community concern for all participating jurisdictions as citizens, agriculture, and the environment are vulnerable. Additionally, an increase in drought condition will have a negative impact on both the surrounding agricultural community and on potential wildfire conditions.
- **Wabaunsee County:** Drought identified as a community concern for all participating jurisdictions as citizens, agriculture, and the environment are vulnerable. Additionally, an increase in drought condition will have a negative impact on both the surrounding agricultural community and on potential wildfire conditions.

5.10.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. Kansas Region I has experienced no Presidential Disaster Declarations related to drought.

The following detail recent State of Kansas Executive Orders related to drought:

- **2022:** Governor Kelly signed Executive Order 22-03 declaring all counties within the State of Kansas as being in one of the 3 stages of drought.
- **2018:** Governor Jeff Colyer signed Executive Order 18-11 declaring all counties within the State of Kansas as being in one of the 3 stages of drought.
- **2016**: Governor Sam Brownback signed Executive Order 16-02 declaring all counties within the State of Kansas Drought Free.
- **2014-2015:** Executive Order 14-04 declared all 105 counties into one the three stages of drought. This remained in place for over one year, through the end of June 2015. The conditions in 2015 made producers in 44 counties eligible for federal disaster programs due to drought conditions.

Comprehensive data on droughts, drought impacts, and drought forecasting is extremely limited and often inaccurate. Due to the complexity of drought monitoring and the large areas droughts impact, agencies have difficulty quantifying and standardizing drought data. One of the best indicators of historic drought periods is provided by the U.S. Drought Monitor, which lists weekly drought conditions for the Kansas Region I. Historical data was gathered from the U.S. Drought Monitor weekly reports for the 20-year period between 2005 and 2024. This data was compiled and aggregated to provide a yearly estimate of the percentage of Kansas Region I in each Drought Monitor category.

Table 65: Percentage Area in U.S. Drought Monitor Category, 2005 - 2024

Year	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2024	51.9%	50.0%	22.9%	10.9%	0.0%	0.0%
2023	18.9%	81.1%	62.3%	53.2%	44.9%	36.2%
2022	0.0%	100.0%	100.0%	83.5%	69.8%	44.8%
2021	59.0%	41.0%	13.2%	0.0%	0.0%	0.0%
2020	45.7%	54.3%	28.4%	0.2%	0.0%	0.0%
2019	63.0%	38.9%	26.4%	4.0%	0.0%	0.0%
2018	38.6%	61.4%	56.3%	50.1%	25.6%	4.7%
2017	59.4%	40.6%	29.1%	5.5%	0.0%	0.0%
2016	65.1%	34.9%	25.1%	9.5%	0.0%	0.0%
2015	61.0%	39.0%	22.4%	11.9%	0.2%	0.0%
2014	0.0%	100.0%	86.3%	71.9%	15.8%	0.0%
2013	0.0%	100.0%	100.0%	100.0%	69.7%	24.7%
2012	0.0%	100.0%	97.8%	82.2%	72.7%	6.8%
2011	0.0%	100.0%	100.0%	70.0%	42.4%	23.9%
2010	73.1%	26.9%	9.0%	0.0%	0.0%	0.0%
2009	76.6%	23.4%	8.4%	0.0%	0.0%	0.0%
2008	25.2%	76.7%	9.0%	0.0%	0.0%	0.0%
2007	90.2%	9.8%	0.0%	0.0%	0.0%	0.0%
2006	7.7%	92.3%	75.4%	16.0%	1.5%	0.0%
2005	93.2%	6.8%	0.0%	0.0%	0.0%	0.0%

Source: U.S. Drought Monitor

The Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency loans available to producers suffering losses in those counties and in counties that are contiguous to a designated county. USDA Secretarial disaster designations must be requested of the Secretary of Agriculture by a governor or the governor's authorized representative, and there is an expedited process for drought. The following table represents the total number of Secretarial Disaster Declarations, by county, for the Kansas Region I:

Table 66: Secretarial Drought Disaster Declarations, 2019 -2024

County	2024	2023	2022	2021	2020	2019
Chase County	3	1	1	1	2	0
Geary County	2	2	2	2	6	0
Lyon County	3	2	1	2	3	0
Morris County	3	1	1	1	2	0

Table 66: Secretarial Drought Disaster Declarations, 2019 -2024

County	2024	2023	2022	2021	2020	2019
Pottawatomie County	2	3	3	3	3	0
Riley County	2	1	4	1	1	0
Wabaunsee County	3	2	2	2	3	0
Stevens County	2	2	2	2	4	0
Wichita County	2	1	2	1	3	0

Source: USDA Farm Service Agency

The following table, using data from the USDS, indicates the total crop insurance paid per county for drought events from 2011-2021 (latest available data):

Table 67: Kansas Region I Total Drought Crop Insurance Paid per County, 2011-2021

Jurisdiction	Total Crop Insurance Paid
Chase County	$6,657,828
Geary County	$5,763,700
Lyon County	$24,714,451
Morris County	$23,028,906
Pottawatomie County	$9,582,798
Riley County	$5,173,979
Wabaunsee County	$14,926,472

Source: FEMA NRI

5.10.4 Probability of Future Events

Historically, drought has affected Kansas Region I and all participating jurisdictions on a reoccurring basis. In reviewing historical data from the U.S. Drought Monitor weekly reports for Kansas Region I from 2005 through 2024 a weekly average can be created indicating the percentage time in each Drought Monitor category. This average can be used to extrapolate the potential likelihood of future drought conditions.

Table 68: Estimated Weekly Probability of Kansas Region I Being in U.S. Drought Monitor Category

None	D0-D4	D1-D4	D2-D4	D3-D4	D4
37.2%	63.1%	49.5%	35.1%	16.3%	9.2%

Data: U.S. Drought Monitor

The following table, using data from the USDA, indicates the annual crop insurance paid per county for drought events from 2011-2021 (latest available data):

Table 69: Kanas Region I Annual Drought Crop Insurance Paid per County, 2011-2021

Jurisdiction	Annual Crop Insurance Paid
Chase County	$665,783
Geary County	$576,370
Lyon County	$2,471,445
Morris County	$2,302,891
Pottawatomie County	$958,280
Riley County	$517,398
Wabaunsee County	$1,492,647

Source: FEMA NRI

Kansas Region I and all participating jurisdictions can experience rapid droughts, with a sudden onset of intense dry periods following a period of normal precipitation. While these conditions may last only a few months, they can result in agricultural losses, water supplies shortages, and low stream and river volume.

While predicting drought provides many challenges, NOAA's National Integrated Drought Information System provides the Drought Early Warning System to improve drought early warning capacity. The system is a network of regional and national partners that share information and coordinate actions to help communities in the Region Iope with drought. Developing and implementing the system allows Kansas and Kansas Region I to quickly respond to emerging drought conditions. Through developing regional systems, the National Integrated Drought Information System is building the foundation for a nationwide system to improve drought forecasting.

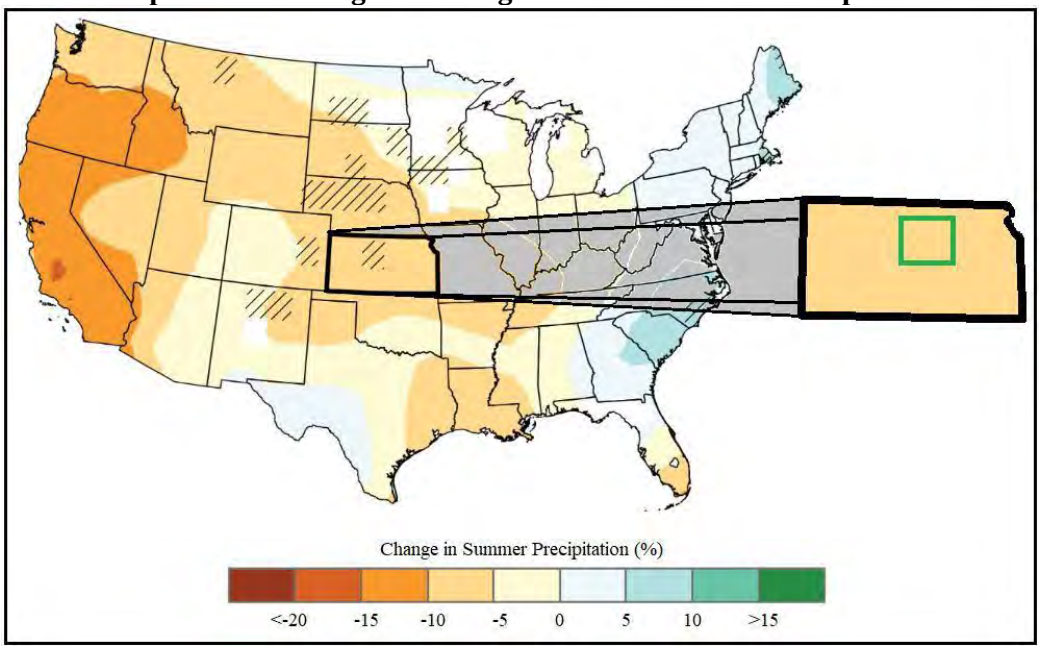
5.10.5 Projected Changes in Hazard Location, Intensity, Frequency, and Duration

According to the National Institutes of Health National Center for Biotechnology Information publication Global Drought Trends and Future Projections "Drought is one of the most difficult natural hazards to quantify and is divided into categories (meteorological, agricultural, ecological and hydrological), which makes assessing recent changes and future scenarios extremely difficult." However, using long term data estimates of future drought conditions can be determined through a combination of climate modeling, historical data analysis, and scientific assessments. This modelling takes into account factors such as temperature, precipitation, soil moisture, and other relevant variables.

Because rainfall plays an important role in the management of Kansas's complex water system, some of the most impactful droughts have coincided with years of abnormally low rainfall. The historical record indicates periodic prolonged wet and dry periods . Drought conditions can be exacerbated by warm temperatures. The record warmth in 2014 and 2015, in combination with multiple years of below average precipitation, led to one of Kansas's most severe droughts.

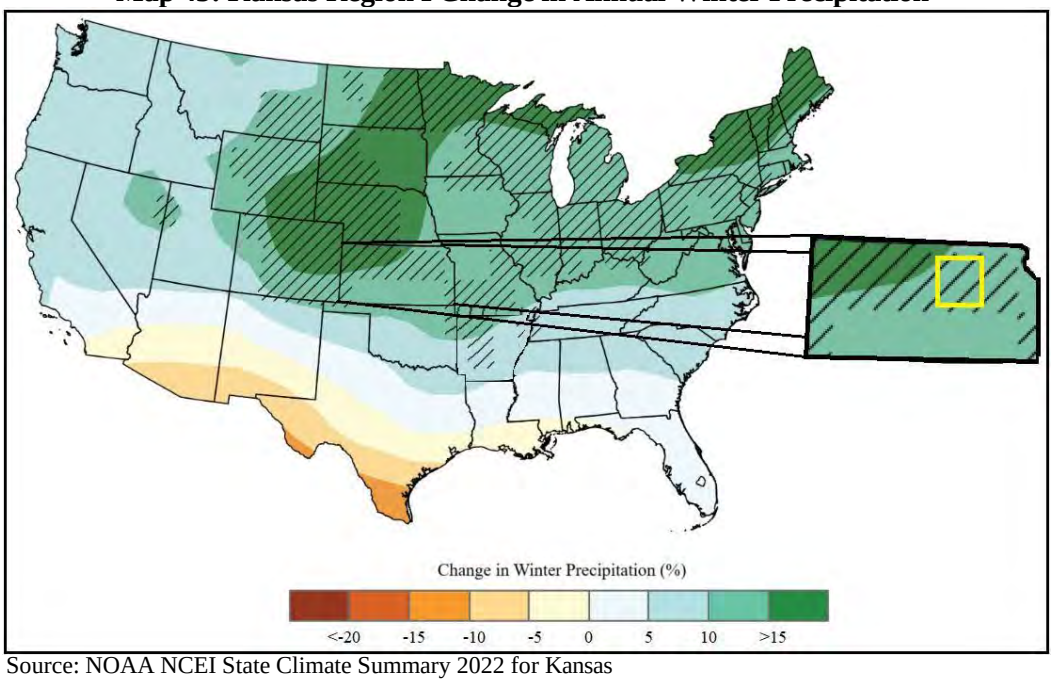
Current modelling from the NOAA State Climate Summary 2022 for Kansas suggests that summer precipitation is expected to decrease slightly while winter precipitation is projected to increase slightly in Kansas Region I and all participating jurisdictions, but these changes are small relative to the natural variability. The following maps indicate these expected precipitation changes for Kansas Region I and all participating jurisdictions:

Map 42: Kansas Region I Change in Annual Summer Precipitation



Source: NOAA NCEI State Climate Summary 2022 for Kansas
Note: Hatching represents areas where the majority of climate models indicate a statistically significant change.

Map 43: Kansas Region I Change in Annual Winter Precipitation



Source: NOAA NCEI State Climate Summary 2022 for Kansas
Note: Hatching represents areas where the majority of climate models indicate a statistically significant change.

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5.10.6 Vulnerability and Impact

FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the first table was created indicating the potential risk to Kansas Region I and all participating jurisdictions from drought. In order to gain an understanding of vulnerability, the second table details the estimated annual loss data for Kansas Region I and participating jurisdictions. To help understand the risk and vulnerability participating jurisdictions data from the FEMA NRI was run on a census tract level. As the NRI does not generate data for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Table 70: Kansas Region I Participating Jurisdiction Drought Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Chase County	**All**	55.4	Relatively Low	23.9
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	96.0	Relatively Moderate	23.9
Geary County	**All**	50.4	Relatively Low	16.1
Junction City	20061000100	82.3	Relatively Low	10.2
Junction City	20061000200	71.4	Very Low	10.2
Junction City	20061000300	78.4	Very Low	10.2
Junction City	20061000401	0.0	No Rating	11.1
Junction City	20061000402	0.0	No Rating	10.2
Junction City	20061000500	73.7	Very Low	11.1
Junction City	20061000601	73.1	Very Low	10.2
Grandview Plaza	20061000700	93.9	Relatively Moderate	16.9
Junction City	20061000801	77.4	Very Low	11.1
Milford	20061000802	91.0	Relatively Low	15.9
Lyon County	**All**	66.1	Relatively Low	18.2
Emporia	20111000101	0.0	No Rating	12.1
Emporia	20111000102	0.0	No Rating	12.1

Table 70: Kansas Region I Participating Jurisdiction Drought Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Emporia	20111000103	77.7	Very Low	12.1
Emporia	20111000201	75.4	Very Low	12.7
Emporia	20111000202	73.1	Very Low	12.7
Emporia	20111000203	0.0	No Rating	12.7
Emporia	20111000300	84.6	Relatively Low	12.1
Emporia	20111000400	0.0	No Rating	12.1
Emporia	20111000500	83.5	Relatively Low	12.1
Allen, Admire, Bushong, Reading	20111000600	94.9	Relatively Moderate	20.0
Americus	20111000700	95.1	Relatively Moderate	18.1
Hartford, Olpe, Neosho Rapids	20111000800	95.8	Relatively Moderate	16.5
Morris County	**All**	62.9	Relatively Low	21.5
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	97.3	Relatively Moderate	21.6
Council Grove	20127963700	85.8	Relatively Low	17.8
Pottawatomie County	All	51.1	Relatively Low	11.3
Louisville	20149000101	89.7	Relatively Low	9.2
St. George	20149000102	86.5	Relatively Low	8.0
Wamego	20149000200	87.7	Relatively Low	9.9
Belvue, Emmett, St. Marys	20149000300	92.7	Relatively Low	12.7
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	90.2	Relatively Low	11.8
Riley County	**All**	46.7	Very Low	7.7
Manhattan	20161000201	82.3	Relatively Low	6.7
Manhattan	20161000202	80.4	Very Low	6.7
Manhattan	20161000303	0.0	No Rating	6.7
Manhattan	20161000304	0.0	No Rating	6.7
Manhattan	20161000500	0.0	No Rating	6.7
Manhattan	20161000601	0.0	No Rating	6.7
Manhattan	20161000602	80.9	Very Low	6.7
Manhattan	20161000700	0.0	No Rating	6.7
Manhattan	20161000801	0.0	No Rating	6.7
Manhattan	20161000802	0.0	No Rating	7.0
Ogden	20161000900	91.9	Relatively Low	11.5
Manhattan	20161001101	76.4	Very Low	6.7
Manhattan	20161001102	74.7	Very Low	6.7
Manhattan	20161001301	76.2	Very Low	6.7
Leonardville, Randloph, Riley	20161001302	90.9	Relatively Low	6.7
Wabaunsee County	**All**	57.5	Relatively Low	18.5
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	95.3	Relatively Moderate	18.5
Eskridge, Harveyville,	20197483200	93.8	Relatively Moderate	18.5

Source: FEMA NRI

In order to gain an understanding of vulnerability, the following table details the estimated FEMA EAL data for Kansas Region I counties and participating jurisdictions (by census tract):

Table 71: Participating Jurisdiction Drought Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Chase County	**All**	56.6	Relatively Low	$37,191
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	96.1	Relatively Moderate	$37,191
Geary County	**All**	51.2	Relatively Low	$23,736

Table 71: Participating Jurisdiction Drought Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Junction City	20061000100	81.3	Relatively Low	$406
Junction City	20061000200	71.2	Very Low	$6
Junction City	20061000300	78.1	Very Low	$160
Junction City	20061000401	0.0	No Expected Annual Losses	$0
Junction City	20061000402	0.0	No Expected Annual Losses	$0
Junction City	20061000500	73.8	Very Low	$30
Junction City	20061000601	73.4	Very Low	$26
Grandview Plaza	20061000700	93.6	Relatively Moderate	$15,398
Junction City	20061000801	78.4	Very Low	$174
Milford	20061000802	91.4	Relatively Low	$7,533
Lyon County	**All**	69.9	Relatively Low	$111,569
Emporia	20111000101	0.0	No Expected Annual Losses	$0
Emporia	20111000102	0.0	No Expected Annual Losses	$0
Emporia	20111000103	78.1	Very Low	$160
Emporia	20111000201	75.6	Very Low	$66
Emporia	20111000202	73.7	Very Low	$30
Emporia	20111000203	0.0	No Expected Annual Losses	$0
Emporia	20111000300	84.5	Relatively Low	$1,046
Emporia	20111000400	0.0	No Expected Annual Losses	$0
Emporia	20111000500	82.5	Relatively Low	$574
Allen, Admire, Bushong, Reading	20111000600	96.0	Relatively Moderate	$36,318
Americus	20111000700	95.5	Relatively Moderate	$29,939
Hartford, Olpe, Neosho Rapids	20111000800	96.4	Relatively Moderate	$43,436
Morris County	**All**	66.7	Relatively Low	$88,566
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	97.8	Relatively Moderate	$87,097
Council Grove	20127963700	85.7	Relatively Low	$1,469
Pottawatomie County	**All**	53.9	Relatively Low	$30,119
Louisville	20149000101	90.6	Relatively Low	$5,919
St. George	20149000102	87.3	Relatively Low	$2,305
Wamego	20149000200	88.1	Relatively Low	$2,915
Belvue, Emmett, St. Marys	20149000300	93.1	Relatively Low	$12,900
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	90.6	Relatively Low	$6,080
Riley County	**All**	48.2	Very Low	$17,820
Manhattan	20161000201	81.4	Relatively Low	$425
Manhattan	20161000202	80.3	Very Low	$309
Manhattan	20161000303	0.0	No Expected Annual Losses	$0
Manhattan	20161000304	0.0	No Expected Annual Losses	$0
Manhattan	20161000500	0.0	No Expected Annual Losses	$0
Manhattan	20161000601	0.0	No Expected Annual Losses	$0
Manhattan	20161000602	81.1	Very Low	$389
Manhattan	20161000700	0.0	No Expected Annual Losses	$0
Manhattan	20161000801	0.0	No Expected Annual Losses	$0
Manhattan	20161000802	0.0	No Expected Annual Losses	$0
Ogden	20161000900	91.5	Relatively Low	$7,968
Manhattan	20161001101	76.3	Very Low	$86
Manhattan	20161001102	74.5	Very Low	$42
Manhattan	20161001301	76.9	Very Low	$106
Leonardville, Randloph, Riley	20161001302	91.6	Relatively Low	$8,200
Wabaunsee County	**All**	59.8	Relatively Low	$50,592
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	95.5	Relatively Moderate	$30,783

Table 71: Participating Jurisdiction Drought Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Eskridge, Harveyville,	20197483200	94.3	Relatively Moderate	$19,809

Source: FEMA NRI

Population

Droughts are rarely a direct cause of death, though the associated heat, dust, and stress can all contribute to increased mortality. However, drought can severely challenge a public water supplier through depletion of the raw water supply and greatly increased customer water demand. Even if the raw water supply remains adequate, problems due to limited treatment capacity or limited distribution system capacity may be encountered. Water supply planning is the key to minimizing the effects of drought on the population. Public water suppliers should continue to work to identify vulnerabilities and develop infrastructure, conservation plans, and partnerships to reduce the likelihood of running out of water during a drought.

Additionally, the loss of community lifelines can have a direct economic impact on the population. As an overview, the May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report indicates the following loss values for community lifelines:

Table 72: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)

Category	Loss
Loss of Wastewater Services	$66
Loss of Water Services	$138

Source: May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report

At greater risk may be the vulnerable populations, including the especially young, the elderly, and those below the poverty level. Hazard occurrences can exacerbate existing vulnerabilities and create new challenges. Vulnerable populations may have pre-existing health conditions that make them more susceptible to heat-related illnesses and dehydration, both of which can be exacerbated during droughts. People on fixed incomes and with limited resources may face difficulties in adapting their homes to withstand hazard conditions or may lack financial resources to cope with the increased costs of food, water, and energy. Details concerning potentially vulnerable populations may be found in Section 3.4: Socially Vulnerable and At-Risk Populations.

Buildings and Structures

In general, buildings within all jurisdictions are not directly vulnerable to losses as a result of drought. However, there is a potential that building occupants could be impacted by power failures caused by either increased utility demand or damaged power delivery infrastructure. In addition, drinking water infrastructure may be specifically vulnerable to the impacts of drought. Any decrease in groundwater supplies would stress this infrastructure and may cause shortages or rationing.

Governmental Operations

Governmental operations and facilities will likely experience minimal impacts from drought conditions, unless there are substantial power, communications, or water outages. However, reduced water availability would likely have an immediate impact on firefighting efforts in urban and suburban areas as fire suppression equipment requires a minimum level of water pressure to activate.

Transportation and Electrical Infrastructure

Droughts can have numerous impacts on both transportation and electrical distribution systems, often leading to challenges that require proactive management. The impacts of droughts on transportation systems may include:

- **Cracking and Shifting:** Drought conditions can cause soil to dry out and shrink, leading to cracks and shifts in roadways, especially in areas with expansive clay soil. This can result in uneven surfaces, potholes, and damage to the structural integrity of roads, making them unsafe for use.
- **Roadbed Damage:** Low moisture levels can cause subsidence and roadbed instability, requiring more frequent road repairs and maintenance.

- **Soil Subsidence:** The foundations of bridges can be compromised if the surrounding soil dries out and shifts. This can increase the stress on bridge supports, potentially leading to structural issues that require costly repairs.
- **Track Shifting and Damage:** The ground beneath railroad tracks can shift or crack during prolonged droughts, leading to track misalignment or buckling. This increases the risk of derailments and requires more frequent inspection and maintenance.
- **Runway Damage:** The same soil subsidence issues that affect roadways can also impact runways, causing cracks and instability that may need repairs.

Additionally, drought can impact both the electrical generation capacity and transmission. The impacts of droughts on electrical systems may include:

- **Thermal Power Plant (Water-Cooled) Cooling Water Shortages:** Thermal power plants (such as coal, natural gas, and nuclear plants) rely on water for cooling. Drought can reduce the availability of water for these cooling processes, forcing plants to reduce output or shut down temporarily.
- **Damage to Power Lines:** Drought increases the risk of wildfires, which can damage or destroy electrical transmission lines, substations, and other infrastructure.
- **Preemptive Power Shutoffs:** To prevent wildfires, power utilities may preemptively shut down power lines during extreme drought and dry wind conditions to avoid sparking fires. This can lead to significant disruptions for businesses and residents.
- **Transmission Line Sag:** Droughts often coincide with extreme heat, which can cause power as the wires expand. This increases the risk of contact with trees or the ground, potentially leading to power outages or safety hazards.

Mapping concerning transportation and electrical infrastructure may be found in Section 3.9: Critical Infrastructure. Information concerning the costs to repair or reconstruct transportation and electrical infrastructure may be found in Section 5.9.6.

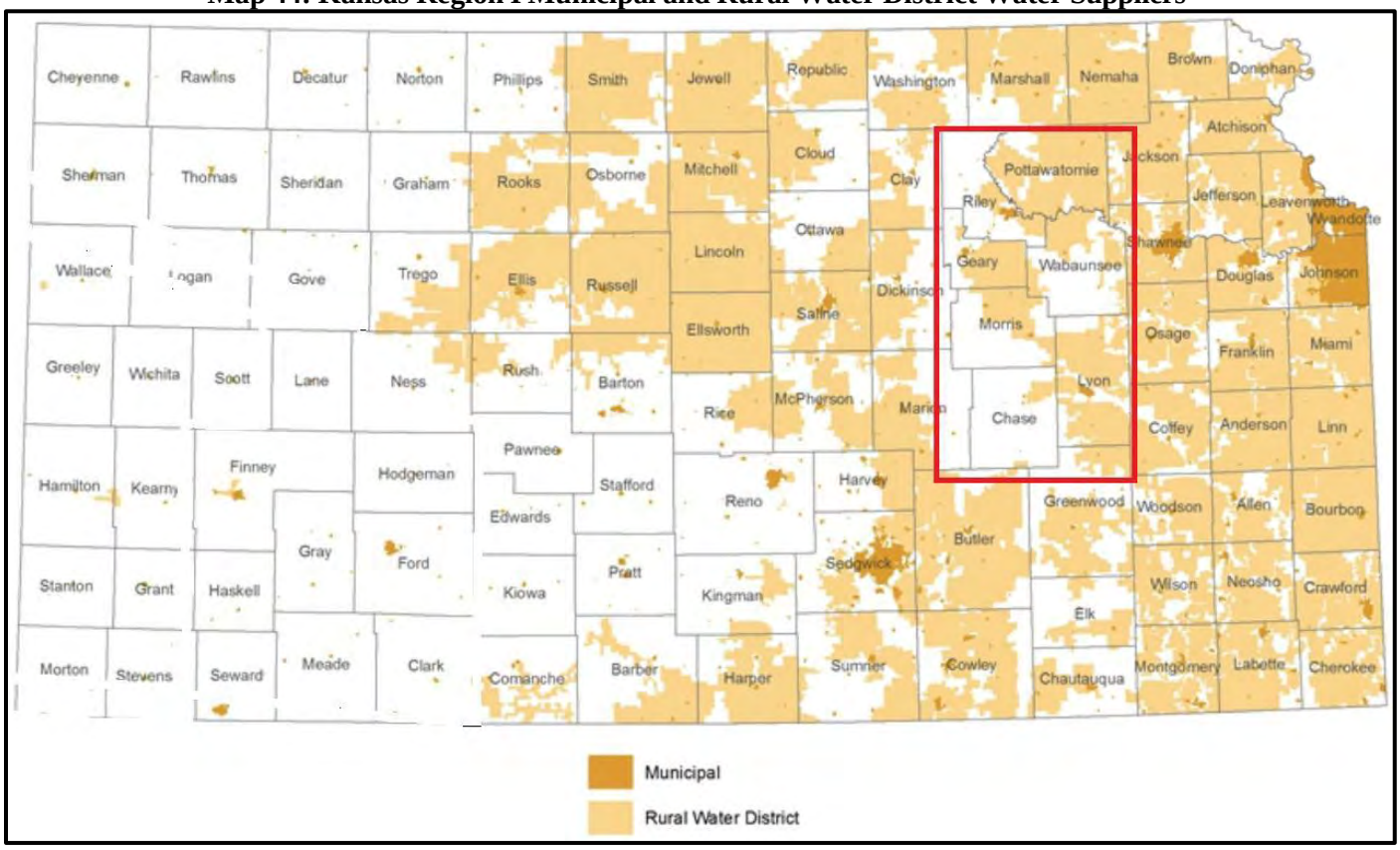
Water and Wastewater Utilities

Water utilities are particularly vulnerable to drought conditions due to the direct impact on both water availability and supply. Water utilities can be affected by drought through:

- **Reduced Water Availability:** The reduction in water availability directly impacts the amount of water that water utilities can draw from local sources.
- **Lower Reservoir Levels**: Lower reservoir levels can affect the ability to meet water demand during periods of high usage.
- **Declining Groundwater** Levels: Lower groundwater levels make it more challenging for utilities to extract water.
- **Water Quality Challenges:** Lower water levels can lead to higher concentrations of contaminants, minerals, and sediments in the available water sources, requiring more extensive and costly treatment processes.
- **Increased Treatment Costs:** Treating water from depleted or lower-quality sources during drought conditions may require additional treatment steps, technologies, or chemicals, leading to increased operational costs for water utilities.
- **Competition for Water Resources:** During droughts, there is increased competition for limited water resources among various users, including agriculture, industry, and households. Water utilities may face challenges in securing sufficient water supplies amid this heightened competition.
- **Impact on Water Infrastructure:** Reduced water flow in rivers and streams can expose water infrastructure, such as pipelines, to the risk of corrosion.
- **Water Use Restrictions:** To conserve water during droughts, authorities may implement water use restrictions and conservation measures.

In the State of Kansas, a public water supply system is defined by Kansas Statutes Annotated (K.S.A.) 65-162a and Kansas Administrative Regulations (K.A.R.) 28-15a-2 as a "system for delivery to the public of piped water for human consumption that has at least 10 service connections or regularly serves at least 25 individuals daily at least 60 days out of the year." These systems are regulated by the state to assure the citizenry safe and pathogen-free drinking water. Private domestic/residential groundwater wells are not considered public water supply systems and are not regulated by the section. The following map, from the University of Kansas Institute for Policy and Social Research, details the location of both municipal and rural water district suppliers:

Map 44: Kansas Region I Municipal and Rural Water District Water Suppliers



Source: University of Kansas Institute for Policy and Social Research

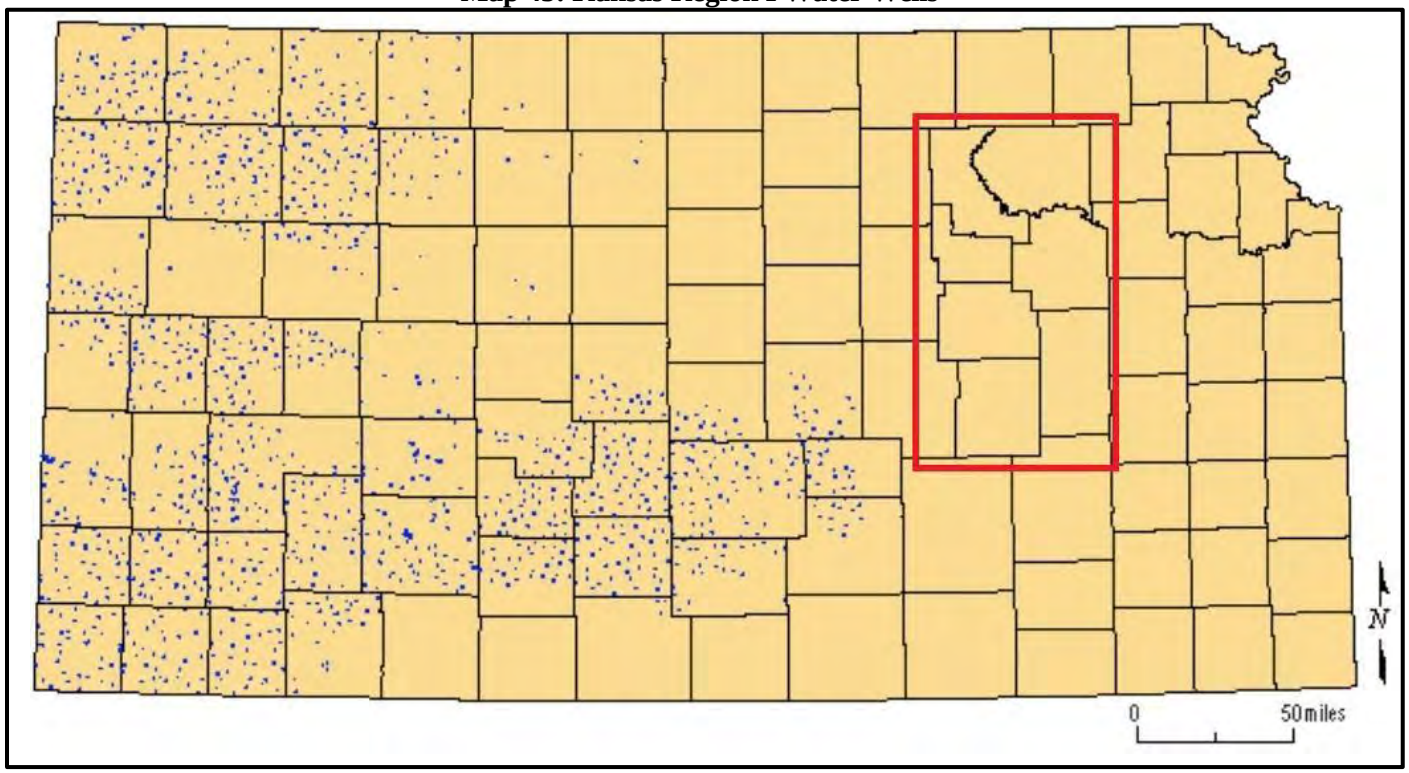
Drought can severely challenge a public water supplier through depletion of the raw water supply and greatly increased customer water demand. Even if the raw water supply remains adequate, problems due to limited treatment capacity or limited distribution system capacity may be encountered. Water supply planning is the key to minimizing the effects of drought on the population. Public water suppliers should continue to work to identify vulnerabilities and develop infrastructure, conservation plans, and partnerships to reduce the likelihood of running out of water during a drought. Communities and citizens served by private wells rather than water supply districts may be at higher risk to drought conditions, and may see the following impacts:

- **Lowering of Water Table:** Drought conditions can lead to a lowering of the water table, which is the level at which groundwater is located. Private wells that rely on groundwater may experience reduced yields or, in extreme cases, may run dry.
- **Decreased Well Recharge:** Drought reduces the amount of precipitation, leading to decreased recharge of groundwater. Private wells depend on a sustainable recharge rate to maintain a consistent and reliable water supply.
- **Increased Competing Demands:** During a drought, increased water demand for agricultural irrigation, municipal water supply, and other uses can create competition for the available groundwater. Private wells may face challenges due to this increased demand.

- **Water Quality Concerns:** Lower groundwater levels during droughts can lead to changes in water quality. Concentrations of minerals, contaminants, and pollutants may increase, affecting the suitability of water for drinking and other uses.

Should it be required to drill a private well deeper to accommodate for drought conditions impacting the level of the water table, on average, the cost to drill a private water well in the United States can range from $15 to $45 per foot. However, it's important to note that this is a general estimate, and actual costs can vary based on geological and hydrogeological conditions and well depth. The following map, from the Kansas Geological Survey, indicates the location of water wells throughout Kansas Region I:

Map 45: Kansas Region I Water Wells



Source: Kansas Geological Survey

Additionally, drought can impact wastewater treatment facilities, and operations, including:

- **Biological Treatment Efficiency:** Many wastewater treatment plants use biological processes that rely on microorganisms to break down waste. These microorganisms depend on a certain balance of water, oxygen, and waste concentration to function effectively. During droughts, changes in the wastewater's composition and flow can reduce the efficiency of biological treatment systems, requiring process adjustments or additional chemical treatments.
- **Pipe Cracking and Ground Shifts:** Drought causes soil to dry out and shrink, potentially leading to ground shifts that can crack or damage underground sewer pipes. This can result in leaks, blockages, or sewer line failures that require costly repairs.
- **Increased Infiltration and Inflow:** During drought, groundwater levels may drop, and sewer systems can experience increased infiltration of saline or contaminated water, particularly in coastal areas. This can exacerbate the corrosion of pipes and other infrastructure.

The costs to repair or reconstruct water and wastewater utility plants and distribution systems can vary significantly based on factors such as the size of the facility, the extent of the damage, local labor costs, and material availability. However, some general estimates can provide insight into the typical expenses.

- **Water Utility Plants**
    - Minor repairs: These may involve fixes to pumps, valves, or small sections of piping. On average, minor repairs for water treatment facilities can range from $10,000 to $100,000, depending on the scale of the damage and the equipment involved.
    - Moderate repairs: More substantial repairs, such as fixing filtration systems or repairing damaged tanks, can cost anywhere from $500,000 to $2,000,000. These projects often involve replacing large equipment and reconfiguring damaged systems.
    - Major repairs or partial reconstruction: For significant damage, such as structural failures, system-wide overhauls, or upgrades, the cost may rise to $10,000,000. This typically includes substantial replacement of infrastructure, new piping systems, and modernizations to meet current standards.
    - Reconstruction Costs: Complete reconstruction of a water utility plant can be very expensive, often costing between $30,000,000 and $20,000,000, depending on the capacity of the plant and the complexity of the systems involved.
- **Wastewater Treatment Plants**
    - Minor repairs (such as fixing aerators, pumps, or control systems) can cost between $50,000 and $500,000, depending on the facility's size and the severity of the issues.
    - Moderate repairs: Involves fixing critical components like clarifiers or digesters and can range from $1,000,000 to $5,000,000.
    - Major repairs or upgrades: For larger systems, like upgrading an entire section of a plant or replacing significant infrastructure, the costs can escalate to $10,000,000.
    - Reconstruction Costs: Complete reconstruction of wastewater plants typically ranges between $50,000,000 and $30,000,000, depending on the plant's capacity and required technology. Factors such as meeting modern regulatory standards can also drive costs.
- **Distribution Systems (Water and Wastewater)**
    - Water Distribution System Repair Costs: Repairing or replacing damaged pipelines, pumps, or valves in water distribution systems can cost anywhere from $50,000 to $200,000 per mile for minor repairs. More extensive pipe replacement, especially in urban areas where digging and rerouting traffic are involved, can escalate to $500,000 to $2,000,000 per mile.
    - Wastewater Distribution Repair Costs: pipelines (especially those dealing with larger sewage systems) tend to have higher repair costs due to increased complexity. These can range from $1 million to $3 million per mile, especially in densely populated regions or for large diameter pipes.
    - Water Distribution Reconstruction Costs: For water distribution system reconstruction, costs can range from $1,000,000 to $5,000,000 per mile, particularly for high-capacity urban systems with large pipe diameters or advanced technology like smart metering.
    - Wastewater Distribution Reconstruction Costs: For wastewater system reconstruction, particularly for larger pipelines, the cost per mile can range from $3,000,000 to $8,000,000, depending on the urban density, excavation challenges, and regulatory requirements.

Medical and Response Facilities

In general, medical and response facilities are not directly vulnerable to losses as a result of drought. Both operations and facilities will likely experience minimal impacts from drought conditions, unless there are substantial power, communications, or water outages.

Educational Facilities

Educational facilities will likely experience minimal impacts from drought conditions.

Communication Systems

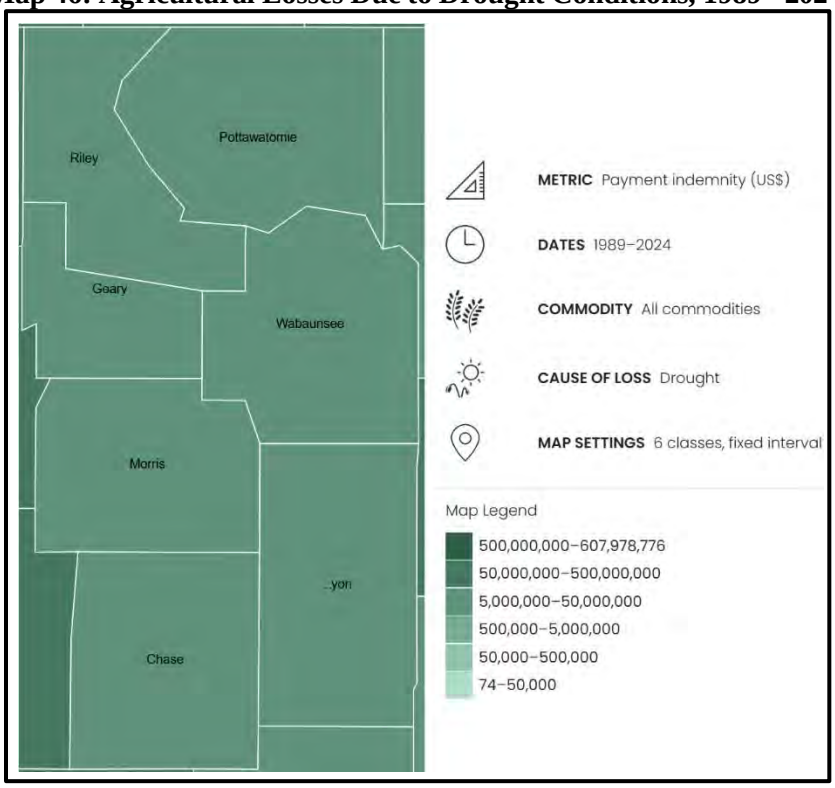
In general, communications systems are not directly vulnerable to losses as a result of drought, and would likely experience minimal impacts from drought conditions, unless there are substantial power outages.

Environmental and Agricultural Impacts

Drought conditions can cause significant agricultural impacts. In addition to obvious losses in yields in both crop and livestock production, drought is associated with increases in insect infestations, plant disease, and wind erosion. Droughts also bring increased problems with insects and disease to forests and reduce growth. The incidence of wildfires increases substantially during extended droughts, which in turn places both human and wildlife populations at higher levels of risk.

The following map from the United States Department of Agriculture details total county-wide agricultural losses due to drought conditions from 1989 - 2024:

Map 46: Agricultural Losses Due to Drought Conditions, 1989 - 2024



Source: United States Department of Agriculture

Although environmental losses are difficult to quantify, increasing public awareness and concern for environmental quality has forced public officials to focus greater attention and resources on these effects. Environmental losses are the result of damage to plant and animal species, wildlife habitat, and air and water quality, wildfires, degradation of landscape quality, loss of biodiversity, and soil erosion. Some of the effects are short-term and conditions quickly return to normal following the end of the drought. Other environmental effects linger for some time or may even become permanent. Wildlife habitat, for example, may be degraded through the loss of wetlands, lakes, and vegetation. However, many species will eventually recover from it if it is a temporary aberration. However, the degradation of landscape quality, with increased soil erosion, may lead to a more permanent loss of biological productivity.

Jurisdictional Concerns:

As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts. The following initial vulnerabilities and potential impacts have been identified on a jurisdictional level:

- **Chase County:** With 315 farms, 491,365 acres in agriculture, $135,076,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of drought.
- **Geary County:** With 217 farms, 176,034 acres in agriculture, $247,186,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of drought.

- **Lyon County:** With 826 farms, 469,248 acres in agriculture, $193,169,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of drought.
- **Morris County:** With 369 farms, 441,414 acres in agriculture, $343,834,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of drought.
- **Pottawatomie County:** With 820 farms, 404,286 acres in agriculture, $184,695,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of drought.
- **Riley County:** With 424 farms, 209,517 acres in agriculture, $158,063,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of drought.
- **Wabaunsee County:** With 618 farms, 383,644 acres in agriculture, $139,183,000 in products sold, all participating jurisdictions agriculture base will continue to be vulnerable to the impacts of drought.

Cascading Impacts

Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with drought may include:

- Decrease in water quality
- Increased wildfire risk
- Environmental degradation
- Land subsidence
- Damage to agricultural lands

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of a community. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 73: Drought Consequence Analysis

Subject	Potential Impacts
Impact on the Public	If the drought coincides with warmer months, vulnerable populations may face an increased risk of dehydration, death, heat-related illness, heat stroke. Lower quantities of water may also increase the likelihood of contamination. During droughts, an increase in airborne particles, such as pollen, can worsen chronic respiratory illnesses.
Impact on Responders	Reduced water availability would likely complicate firefighting efforts where wildfire-fighting tactics such as chemical retardants and controlled burns are less suitable. Some fire suppression equipment requires a minimum level of water pressure to activate. In warm months, first responders may face increased risk of heat-related injuries or death.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. While the expectation is minimal, critical life-saving activities and fire suppression may be directly impacted by these outages.
Delivery of Services	Droughts may impact delivery of goods or services if there are shortages of materials.
Property, Facilities, and Infrastructure	Drought conditions may threaten the levels or quality of municipal public water supplies or impact small communities and/or private potable water wells.
Impact on Environment	Drought conditions may also increase the potential for fires. Drought is also associated with insect infestations, plant disease, wind erosion of soil, and decrease in levels of water produced by natural aquifers.
Economic Conditions	The economic impacts from a drought could be significant. Droughts have the potential to drain state, and local resources, which will have a significant fiscal impact t.
Public Confidence in Governance	Direct, effective, and timely response by all levels of government is required for public confidence in governance, especially in recognizing and mitigating economic impacts.

5.10.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

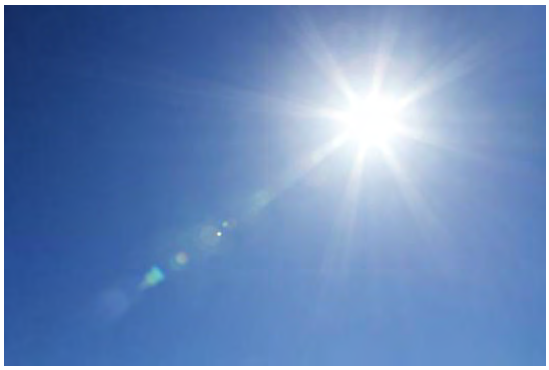
5.10.8 Mitigation Opportunities

The following table presents examples of potential actions that can be instituted for mitigating the drought hazard.

Table 74: Example Drought Mitigation Actions

Category	Example Action
Planning and Regulation	Analyze water and climate data to gain an understanding of local climate and drought history.
	Identify available water supplies and improve water supply monitoring.
	Develop a drought emergency plan.
	Develop criteria or triggers for drought-related actions.
	Develop a drought communication plan to facilitate timely communication of information.
	Establish an irrigation scheduling program so that agricultural land gets adequate water.
	Develop an ordinance to restrict the use of public water resources for non-essential usage.
	Adopt ordinances to prioritize or control water use, particularly for fire fighting
Infrastructure	Design water delivery systems to accommodate drought events.
	Develop new or upgrading existing water delivery systems to eliminate breaks and leaks
Natural Systems	Incorporate drought tolerance practices into landscape ordinances to reduce irrigation.
	Provide incentives for xeriscaping.
	Use permeable driveways and surfaces to reduce runoff and promote groundwater recharge
Education	Provide information on installing low-flow water saving showerheads and toilets.
	Provide information on adjusting sprinklers to water the lawn and not the sidewalk or street.
	Provide information on installing rain-capturing devices for irrigation.
	Encourage the installation of graywater systems in homes to encourage water reuse

5.11 Extreme Temperatures



5.11.1 Hazard Description

Extreme temperature events occur when climate conditions produce temperatures well outside of the predicted norm. These extremes can have severe impacts on human health and mortality, natural ecosystems, agriculture, and other economic sectors.

The Centers for Disease Control and Prevention (CDC) identifies the following six groups as being especially vulnerable to extreme temperatures:

- Older Adults (aged 65)
- Infants and Children
- Individuals with Chronic Conditions
- Low-income Individuals
- Athletes
- Outdoor workers

5.11.2 Location & Extent

All of Kansas Region I is vulnerable to extreme temperatures. Based on the non-geographic specific aspect of this hazard, i.e., no one area is at a greater risk, all of the planning area's structural inventory and population is vulnerable.

The Midwest climate region is known for extremes in temperature. Specifically, Kansas lacks any mountain ranges that could act as a barrier to cold air masses from the north or hot, humid air masses from the south or any oceans or large bodies of water that could provide a moderating effect on the climate. The polar jet stream is often located over the region during the winter, bringing frequent storms and precipitation. Kansas summers are generally warm and humid due to the clockwise air rotation caused by Atlantic high-pressure systems bringing warm humid air up from the Gulf of Mexico.

All of Kansas Region I is vulnerable to both extreme heat and extreme cold, defined as follows.

- **Extreme Heat:** Extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Ambient air temperature is one component of heat conditions, with relative humidity being the other. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when an area of high atmospheric pressure traps moisture laden air near the ground.
- **Extreme Cold:** Although no specific definition exists for extreme cold, an extreme cold event can generally be defined as temperatures at or below freezing for an extended period of time. Extreme cold events are usually part of Winter Storm events but can occur during anytime of the year and can have devastating effects on agricultural production.

Data from the following High Plains Regional Climate Center weather stations from the first available date to present was obtained to illustrate temperature norms.

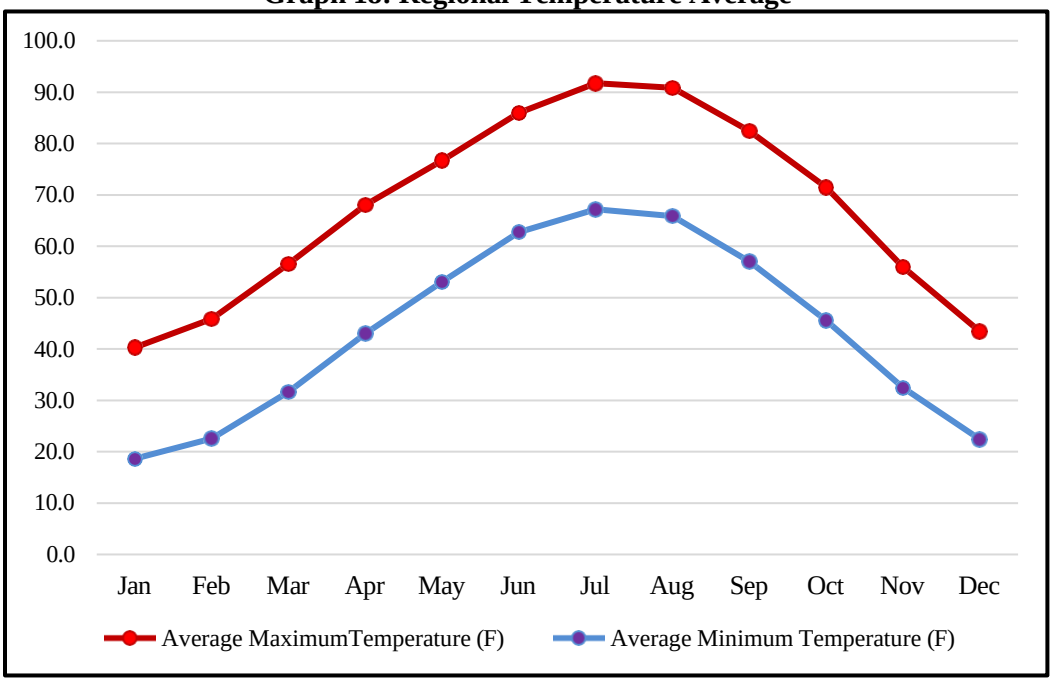
Table 75: Regional Average Temperatures

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Min Temperature (F)	18.7	22.6	31.7	43.0	53.1	62.8	67.2	65.9	57.0	45.5	32.4	22.5	43.5
Average Max Temperature (F)	40.3	45.9	56.6	68.0	76.7	86.0	91.7	90.8	82.5	71.5	55.9	43.4	67.4

Source: High Plains Regional Climate Center

The following graph illustrates the above data:

Graph 18: Regional Temperature Average



Source: High Plains Regional Climate Center

The MPC view extreme heat as both a local and county-wide hazard. Discussions with the MPC and a review of all available data indicated that while extreme heat is a concern for all participating jurisdictions, some jurisdictions may have a greater concern. The following provides a narrative of the level of jurisdictional concern:

- **Chase County:** Extreme temperatures identified as a community concern for all jurisdictions as citizens, agriculture, and the environment are potentially vulnerable. Any increase in extreme heat conditions may increase agricultural losses, drought conditions, and wildfire events.
- **Geary County:** Extreme temperatures identified as a community concern for all jurisdictions as citizens, agriculture, and the environment are potentially vulnerable. Any increase in extreme heat conditions may increase agricultural losses, drought conditions, and wildfire events.
- **Lyon County:** Extreme temperatures identified as a community concern for all jurisdictions as citizens, agriculture, and the environment are potentially vulnerable. Any increase in extreme heat conditions may increase agricultural losses, drought conditions, and wildfire events.
- **Morris County:** Extreme temperatures identified as a community concern for all jurisdictions as citizens, agriculture, and the environment are potentially vulnerable. Any increase in extreme heat conditions may increase agricultural losses, drought conditions, and wildfire events.
- **Pottawatomie County:** Extreme temperatures identified as a community concern for all jurisdictions as citizens, agriculture, and the environment are potentially vulnerable. Any increase in extreme heat conditions may increase agricultural losses, drought conditions, and wildfire events.
- **Riley County:** Extreme temperatures identified as a community concern for all jurisdictions as citizens, agriculture, and the environment are potentially vulnerable. Any increase in extreme heat conditions may increase agricultural losses, drought conditions, and wildfire events.
- **Wabaunsee County:** Extreme temperatures identified as a community concern for all jurisdictions as citizens, agriculture, and the environment are potentially vulnerable. Any increase in extreme heat conditions may increase agricultural losses, drought conditions, and wildfire events.

5.11.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. Kansas Region I has experienced no Presidential Disaster Declarations related to extreme heat. The President can declare an emergency

for any occasion or instance when the President determines federal assistance is needed. Kansas Region I has experienced no Emergency Declarations related to extreme temperatures.

Data from NOAA indicates the following historic temperatures for Kansas Region I and participating jurisdictions:

Table 76: Kansas Region I Historic Temperatures

County	Historic Low Temperature (F)	Historic High Temperature (F)
Chase	-30 (1905)	118 (1936)
Geary	-26 (1947)	114 (1954)
Lyon	-24 (1947)	116 (1936)
Morris	-21 (1943)	115 (1936)
Pottawatomie	-26 (1947)	114 (1954)
Riley	-35 (1899)	116 (1936)
Wabaunsee	-25 (1989)	115 (1936)

Source: High Plains Regional Climate Center

Additionally, data from the NCEI from 1950 through 2024 indicates the following recorded extreme temperature events. As these events tend to cover large areas, they are reported on a regional basis:

Table 77: Kansas Region I Extreme Temperature Events, 1950 - 2024

Event Type	Number of Events	Property Damage	Deaths	Injuries
Extreme Cold	5	$0	0	0
Excessive Heat	15	$0	0	0

Source: NOAA NCEI

Recent events of note include:

- **December 22, 2022, Regional:** Wind chills dropped into the -25 to -40 degree range during the overnight and early morning hours of December 22nd. Northwest winds of 25 to 45 mph along with air temperatures of zero to -10F will do that. Numerous counties opened various locations to act as warming shelters for vulnerable populations.
- **February 14, 2021, Regional:** A historic cold outbreak overspread all of the Plains on February 6th and lasted through February 18th. A persistent Arctic airmass like this hasn't affected the region since the 1980s. There were days where the high temperature did not make it out of the single digits. The Arctic surge made it all the way down to south Texas, where snow was observed on the beaches of Galveston.

It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or National Weather Service (NWS) office. When reporting an event, the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages. Most of the events from NCEI are not associated with a federal emergency or disaster. If the event occurred at the same time as an event that was later determined to be a federal emergency or disaster, it is included with the NCEI data even if it occurred in a county not included in the federal declaration.

The following table, using data from the USDS, indicates the total crop insurance paid per county for extreme temperature events from 2016-2021 (latest available data):

Table 78: Kanas Region I Extreme Temperature Total Crop Insurance Paid per County, 2016-2021

Jurisdiction	Total Crop Insurance Paid
Chase County	$268,347
Geary County	$511,823
Lyon County	$153,607

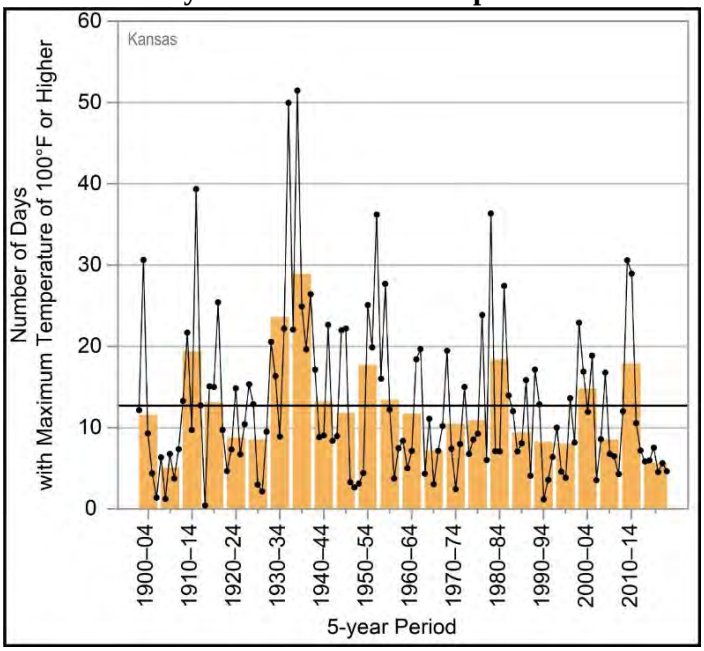
Table 78: Kanas Region I Extreme Temperature Total Crop Insurance Paid per County, 2016-2021

Jurisdiction	Total Crop Insurance Paid
Morris County	$371,023
Pottawatomie County	$307,477
Riley County	$220,359
Wabaunsee County	$132,370

Source: FEMA NRI

The following graph details the annual number of hot days (maximum temperature of 100°F or higher) for Kansas from 1900 to 2020. Data indicates that since 2000, Kansas has experienced some of the highest springtime temperatures on record, while summer temperatures have been near to above average. The warmest summers on record were 1934 and 1936.

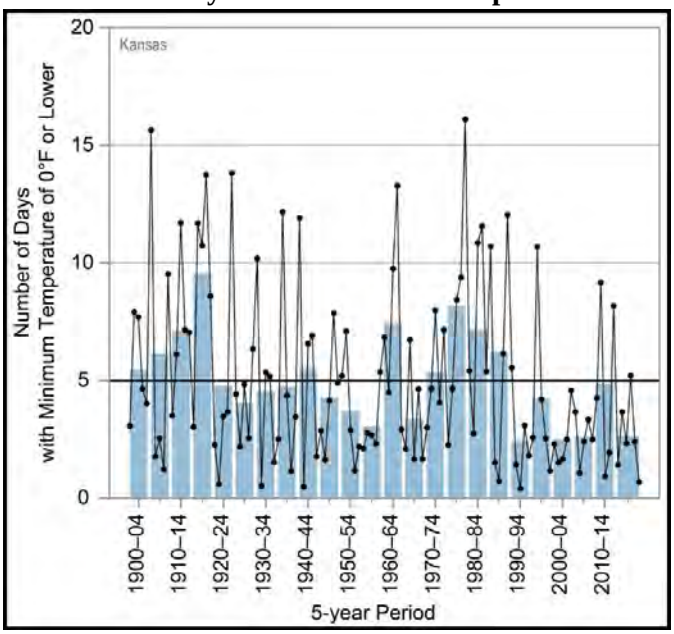
Graph 19: Number of Days with Maximum Temperature of 100° F or Higher



Source: NOAA NCEI State Climate Summary 2022 for Kansas

The following graph details the annual number of very cold days (minimum temperature of 0°F or lower) for Kansas from 1900 to 2020. Since 1990, Kansas has experienced a near to below average number of very cold nights, indicative of overall winter warming in the region:

Graph 20: Number of Days with Minimum Temperature of 0° F or Less

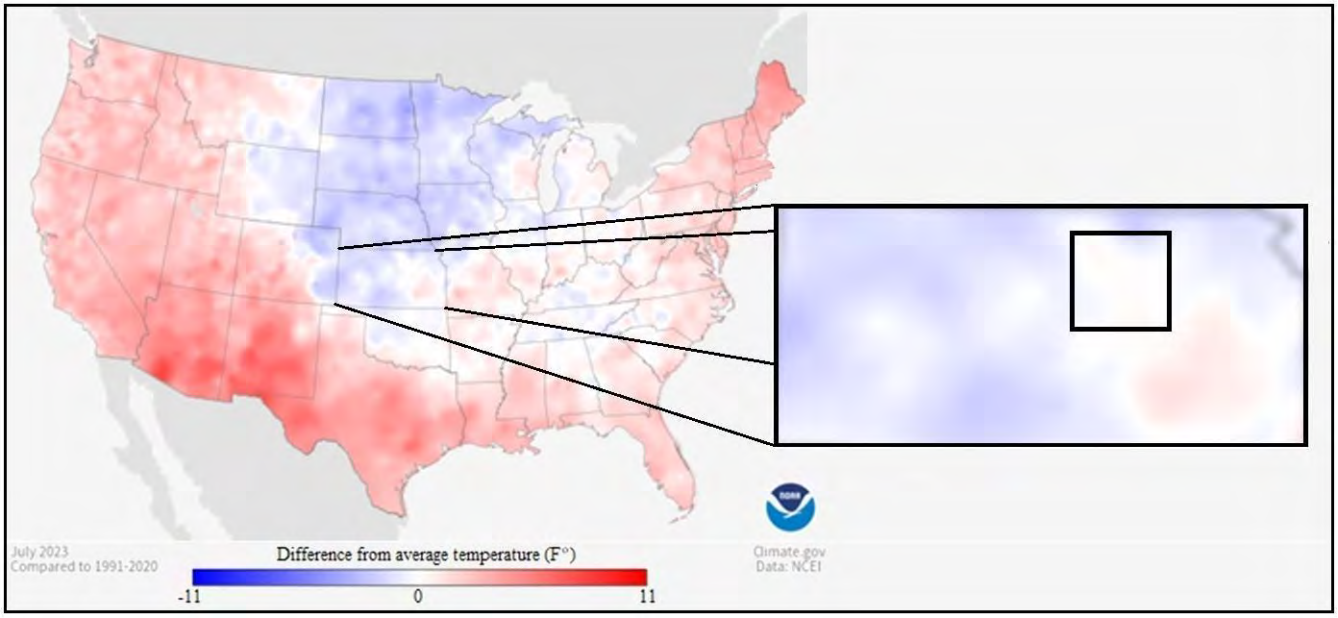


Source: NOAA NCEI State Climate Summary 2022 for Kansas

5.11.4 Probability of Future Events

Predicting the probability of extreme temperature occurrences is tremendously changing due to the large number of factors involved. Available data suggests that both the average high temperatures and the record high temperature will likely increase over the coming years as indicated by the following map:

Map 47: Kansas Region I Temperature Difference from Average, 1990 – 2020



Source: NOAA

Temperatures in Kansas Region I have risen by 1.5° F since the early 1900s, with the number of hot days above the long-term average since the 1990s. There is no long-term trend in very warm nights or extremely hot days, although both were slightly above average during the 2010–2014 period. The number of very cold nights has been mostly below average since 1990.

The following tables, using data from the NCEI, indicate the yearly probability of extreme heat and cold event, the number of deaths or injuries, and estimated property damage for all Kansas Region I participating jurisdictions based on 75 years' worth of reporting data:

Table 79: Kansas Region I NCEI Extreme Temperature Event Probability Summary

Event Type	Number of Events	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Cold	5	<1	0	0	$0	$0
Heat	15	<1	0	0	$0	$0

Source: NCEI

The following table, using data from the USDA, indicates the annual crop insurance paid per county for extreme temperature events from 2016-2021 (latest available data):

Table 80: Kanas Region I Annual Extreme Temperature Crop Insurance Paid per County, 2016-2021

Jurisdiction	Annual Crop Insurance Paid
Chase County	$53,669
Geary County	$102,365
Lyon County	$30,721
Morris County	$74,205
Pottawatomie County	$61,495
Riley County	$44,072
Wabaunsee County	$26,474

Source: FEMA NRI

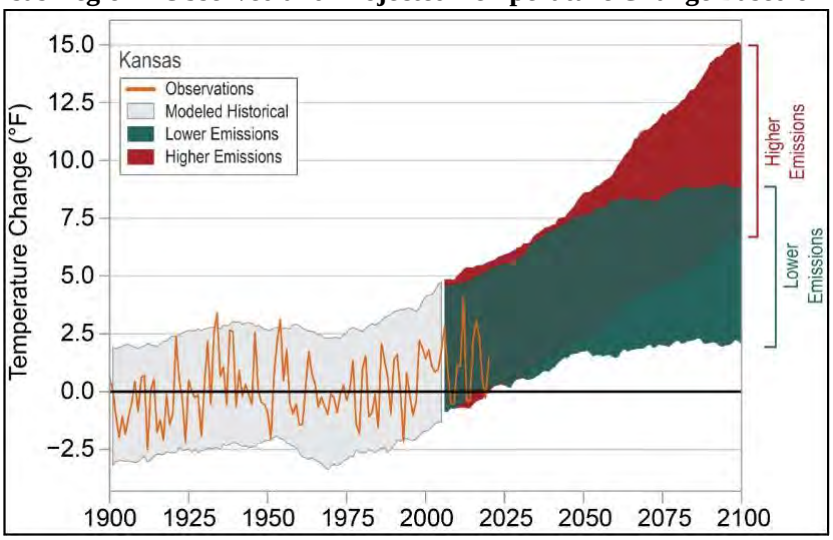
5.11.5 Projected Changes in Location, Intensity, Frequency, and Duration

Recent modeling results indicate that extreme heat events may become more common for Kansas Region I and participating jurisdictions. 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. Additionally, rising temperatures can harm air quality and amplify existing threats to human health. Warmer weather can increase the production of ground-level ozone, a pollutant that causes lung and heart problems. Heat stress is expected to increase with hotter summer temperatures and more humidity. Certain people are especially vulnerable, including children, the elderly, the sick, and those living below the poverty line.

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. Additionally, rising temperatures can harm air quality and amplify existing threats to human health. Warmer weather can increase the production of ground-level ozone, a pollutant that causes lung and heart problems. Heat stress is expected to increase due to hotter summer temperatures and more humidity. Certain people are especially vulnerable, including children, the elderly, the sick, and those living below the poverty line.

The following graph indicates the projected temperature change for Kansas Region I utilizing two global climate models. One model utilizes information in which greenhouse gas emissions continue to increase (higher emissions), with the other model utilizing information in which greenhouse gas emissions increase at a slower rate (lower emissions). Temperatures in, detailed by the orange line, have risen 1.5° F since the beginning of the early 1900s. Based on both the higher emission and lower emission models, continued warming is projected throughout this century.

Graph 21: Kansas Region I Observed and Projected Temperature Change Based on Climate Model



Source: NOAA NCEI State Climate Summary 2022 for Kansas

5.11.6 Vulnerability and Impact

FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the first table was created indicating the potential risk to Kansas Region I and all participating jurisdictions from extreme temperatures. In order to gain an understanding of vulnerability, the second table details the estimated annual loss data for Kansas Region I and participating jurisdictions. To help understand the risk and vulnerability participating jurisdictions data from the FEMA NRI was run on a census tract level. As the NRI does not generate data for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Table 81: Kansas Region I Participating Jurisdiction Cold Wave Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Chase County	**All**	32.6	Relatively Low	3.0
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	72.7	Relatively Moderate	0.2
Geary County	**All**	34.0	Relatively Low	6.0
Junction City	20061000100	46.6	Relatively Low	0.4
Junction City	20061000200	47.0	Relatively Low	0.4
Junction City	20061000300	49.7	Relatively Low	0.4
Junction City	20061000401	48.3	Relatively Low	0.4
Junction City	20061000402	43.5	Very Low	0.4
Junction City	20061000500	45.8	Relatively Low	0.4
Junction City	20061000601	49.3	Relatively Low	0.4
Grandview Plaza	20061000700	65.8	Relatively Low	0.4
Junction City	20061000801	44.4	Relatively Low	0.4
Milford	20061000802	56.6	Relatively Low	0.4
Lyon County	**All**	40.3	Relatively Low	6.0
Emporia	20111000101	53.0	Relatively Low	0.4
Emporia	20111000102	43.0	Very Low	0.4
Emporia	20111000103	46.1	Relatively Low	0.4
Emporia	20111000201	51.0	Relatively Low	0.4
Emporia	20111000202	47.4	Relatively Low	0.4
Emporia	20111000203	44.3	Relatively Low	0.4
Emporia	20111000300	55.6	Relatively Low	0.4

Table 81: Kansas Region I Participating Jurisdiction Cold Wave Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Emporia	20111000400	50.6	Relatively Low	0.4
Emporia	20111000500	56.9	Relatively Low	0.4
Allen, Admire, Bushong, Reading	20111000600	68.0	Relatively Low	0.4
Americus	20111000700	66.3	Relatively Low	0.4
Hartford, Olpe, Neosho Rapids	20111000800	75.7	Relatively Moderate	0.4
Morris County	**All**	37.0	Relatively Low	6.0
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	84.3	Relatively Moderate	0.4
Council Grove	20127963700	52.9	Relatively Low	0.4
Pottawatomie County	All	31.8	Relatively Low	6.0
Louisville	20149000101	50.7	Relatively Low	0.4
St. George	20149000102	49.0	Relatively Low	0.4
Wamego	20149000200	47.9	Relatively Low	0.4
Belvue, Emmett, St. Marys	20149000300	52.6	Relatively Low	0.4
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	55.7	Relatively Low	0.4
Riley County	**All**	33.1	Relatively Low	6.0
Manhattan	20161000201	46.1	Relatively Low	0.4
Manhattan	20161000202	48.2	Relatively Low	0.4
Manhattan	20161000303	44.0	Very Low	0.4
Manhattan	20161000304	45.2	Relatively Low	0.4
Manhattan	20161000500	45.2	Relatively Low	0.4
Manhattan	20161000601	44.5	Relatively Low	0.4
Manhattan	20161000602	47.5	Relatively Low	0.4
Manhattan	20161000700	45.4	Relatively Low	0.4
Manhattan	20161000801	45.3	Relatively Low	0.4
Manhattan	20161000802	43.8	Very Low	0.4
Ogden	20161000900	52.6	Relatively Low	0.4
Manhattan	20161001101	46.1	Relatively Low	0.4
Manhattan	20161001102	45.4	Relatively Low	0.4
Manhattan	20161001301	44.6	Relatively Low	0.4
Leonardville, Randloph, Riley	20161001302	52.8	Relatively Low	0.4
Wabaunsee County	**All**	33.6	Relatively Low	6.0
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	70.2	Relatively Low	0.4
Eskridge, Harveyville,	20197483200	65.2	Relatively Low	0.4

Source: FEMA NRI

In order to gain an understanding of vulnerability, the following table details the estimated FEMA EAL data for Kansas Region I counties and participating jurisdictions (by census tract):

Table 82: Participating Jurisdiction Cold Wave Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Chase County	**All**	34.1	Relatively Low	$6,282
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	72.1	Relatively Moderate	$6,282
Geary County	**All**	35.7	Relatively Low	$9,666
Junction City	20061000100	45.6	Relatively Low	$340
Junction City	20061000200	46.0	Relatively Low	$375
Junction City	20061000300	49.2	Relatively Low	$710
Junction City	20061000401	48.2	Relatively Low	$587
Junction City	20061000402	44.5	Very Low	$230

Table 82: Participating Jurisdiction Cold Wave Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Junction City	20061000500	46.0	Relatively Low	$377
Junction City	20061000601	50.1	Relatively Low	$816
Grandview Plaza	20061000700	64.6	Relatively Low	$3,457
Junction City	20061000801	45.7	Relatively Low	$355
Milford	20061000802	57.6	Relatively Low	$1,979
Lyon County	**All**	43.1	Relatively Low	$28,276
Emporia	20111000101	51.3	Relatively Low	$966
Emporia	20111000102	43.5	Very Low	$82
Emporia	20111000103	47.0	Relatively Low	$464
Emporia	20111000201	51.5	Relatively Low	$1,002
Emporia	20111000202	49.2	Relatively Low	$706
Emporia	20111000203	44.8	Relatively Low	$264
Emporia	20111000300	55.2	Relatively Low	$1,566
Emporia	20111000400	50.1	Relatively Low	$814
Emporia	20111000500	53.7	Relatively Low	$1,327
Allen, Admire, Bushong, Reading	20111000600	72.5	Relatively Moderate	$6,480
Americus	20111000700	67.7	Relatively Low	$4,403
Hartford, Olpe, Neosho Rapids	20111000800	78.3	Relatively Moderate	$10,202
Morris County	**All**	40.6	Relatively Low	$20,553
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	86.7	Relatively Moderate	$19,396
Council Grove	20127963700	52.6	Relatively Low	$1,157
Pottawatomie County	**All**	33.8	Relatively Low	$5,832
Louisville	20149000101	52.6	Relatively Low	$1,157
St. George	20149000102	50.6	Relatively Low	$872
Wamego	20149000200	48.8	Relatively Low	$663
Belvue, Emmett, St. Marys	20149000300	53.6	Relatively Low	$1,311
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	56.8	Relatively Low	$1,829
Riley County	**All**	34.8	Relatively Low	$7,970
Manhattan	20161000201	45.3	Relatively Low	$311
Manhattan	20161000202	48.2	Relatively Low	$596
Manhattan	20161000303	44.6	Very Low	$247
Manhattan	20161000304	46.0	Relatively Low	$377
Manhattan	20161000500	45.8	Relatively Low	$361
Manhattan	20161000601	45.4	Relatively Low	$320
Manhattan	20161000602	48.1	Relatively Low	$578
Manhattan	20161000700	45.4	Relatively Low	$326
Manhattan	20161000801	45.4	Relatively Low	$321
Manhattan	20161000802	44.1	Very Low	$180
Ogden	20161000900	51.8	Relatively Low	$1,044
Manhattan	20161001101	46.2	Relatively Low	$394
Manhattan	20161001102	45.3	Relatively Low	$316
Manhattan	20161001301	45.7	Relatively Low	$349
Leonardville, Randloph, Riley	20161001302	54.9	Relatively Low	$1,500
Wabaunsee County	**All**	35.9	Relatively Low	$9,983
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	70.8	Relatively Low	$5,642
Eskridge, Harveyville,	20197483200	67.5	Relatively Low	$4,341

Source: FEMA NRI

Table 83: Kansas Region I Participating Jurisdiction Heat Wave Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Chase County	**All**	54.4	Relatively Low	4.2
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	92.8	Relatively High	4.2
Geary County	**All**	91.3	Relatively Moderate	3.6
Junction City	20061000100	92.4	Relatively High	3.6
Junction City	20061000200	94.1	Relatively High	3.6
Junction City	20061000300	96.7	Very High	3.6
Junction City	20061000401	95.6	Very High	3.6
Junction City	20061000402	79.9	Relatively High	3.6
Junction City	20061000500	91.7	Relatively High	3.6
Junction City	20061000601	96.2	Very High	3.6
Grandview Plaza	20061000700	92.6	Relatively High	3.6
Junction City	20061000801	86.1	Relatively High	3.6
Milford	20061000802	95.2	Very High	3.6
Lyon County	**All**	79.4	Relatively Moderate	4.5
Emporia	20111000101	87.3	Relatively High	4.5
Emporia	20111000102	51.0	Relatively Moderate	4.5
Emporia	20111000103	65.4	Relatively Moderate	4.5
Emporia	20111000201	83.7	Relatively High	4.5
Emporia	20111000202	74.2	Relatively Moderate	4.5
Emporia	20111000203	59.0	Relatively Moderate	4.5
Emporia	20111000300	90.1	Relatively High	4.5
Emporia	20111000400	82.8	Relatively High	4.5
Emporia	20111000500	91.5	Relatively High	4.5
Allen, Admire, Bushong, Reading	20111000600	70.3	Relatively Moderate	4.5
Americus	20111000700	76.0	Relatively Moderate	4.5
Hartford, Olpe, Neosho Rapids	20111000800	81.2	Relatively High	4.5
Morris County	**All**	64.9	Relatively Low	4.1
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	92.2	Relatively High	4.1
Council Grove	20127963700	92.9	Relatively High	4.1
Pottawatomie County	All	53.7	Relatively Low	3.5
Louisville	20149000101	50.0	Relatively Moderate	3.5
St. George	20149000102	74.1	Relatively Moderate	3.5
Wamego	20149000200	69.1	Relatively Moderate	3.5
Belvue, Emmett, St. Marys	20149000300	65.2	Relatively Moderate	3.5
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	67.9	Relatively Moderate	3.5
Riley County	**All**	69.1	Relatively Low	3.5
Manhattan	20161000201	58.9	Relatively Moderate	3.5
Manhattan	20161000202	69.8	Relatively Moderate	3.5
Manhattan	20161000303	48.4	Relatively Low	3.5
Manhattan	20161000304	59.6	Relatively Moderate	3.5
Manhattan	20161000500	57.8	Relatively Moderate	3.5
Manhattan	20161000601	54.6	Relatively Moderate	3.5
Manhattan	20161000602	67.3	Relatively Moderate	3.5
Manhattan	20161000700	62.1	Relatively Moderate	3.5
Manhattan	20161000801	59.8	Relatively Moderate	3.5
Manhattan	20161000802	52.4	Relatively Moderate	3.5
Ogden	20161000900	68.9	Relatively Moderate	3.5
Manhattan	20161001101	68.8	Relatively Moderate	3.5

Table 83: Kansas Region I Participating Jurisdiction Heat Wave Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Manhattan	20161001102	58.5	Relatively Moderate	3.5
Manhattan	20161001301	54.9	Relatively Moderate	3.5
Leonardville, Randloph, Riley	20161001302	62.2	Relatively Moderate	3.5
Wabaunsee County	**All**	51.4	Relatively Low	4.1
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	86.4	Relatively High	4.1
Eskridge, Harveyville,	20197483200	73.8	Relatively Moderate	4.1

Source: FEMA NRI

In order to gain an understanding of vulnerability, the following table details the estimated FEMA EAL data for Kansas Region I counties and participating jurisdictions (by census tract):

Table 84: Participating Jurisdiction Heat Wave Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Chase County	**All**	55.8	Relatively Low	$94,326
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	93.2	Relatively High	$94,326
Geary County	**All**	91.7	Relatively Moderate	$1,119,931
Junction City	20061000100	89.6	Relatively High	$66,354
Junction City	20061000200	91.9	Relatively High	$81,542
Junction City	20061000300	96.6	Very High	$150,527
Junction City	20061000401	95.6	Very High	$128,225
Junction City	20061000402	85.6	Relatively High	$50,131
Junction City	20061000500	92.0	Relatively High	$82,443
Junction City	20061000601	97.3	Very High	$169,065
Grandview Plaza	20061000700	92.3	Relatively High	$84,851
Junction City	20061000801	90.7	Relatively High	$72,885
Milford	20061000802	96.5	Very High	$146,226
Lyon County	**All**	80.4	Relatively Moderate	$457,232
Emporia	20111000101	84.5	Relatively High	$46,472
Emporia	20111000102	46.5	Relatively Low	$6,714
Emporia	20111000103	67.8	Relatively Moderate	$19,466
Emporia	20111000201	85.2	Relatively High	$48,874
Emporia	20111000202	79.6	Relatively High	$35,641
Emporia	20111000203	59.9	Relatively Moderate	$13,213
Emporia	20111000300	90.4	Relatively High	$70,836
Emporia	20111000400	81.7	Relatively High	$39,733
Emporia	20111000500	88.5	Relatively High	$60,583
Allen, Admire, Bushong, Reading	20111000600	77.5	Relatively High	$32,139
Americus	20111000700	78.3	Relatively High	$33,455
Hartford, Olpe, Neosho Rapids	20111000800	85.6	Relatively High	$50,108
Morris County	**All**	68.1	Relatively Low	$203,680
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	94.5	Very High	$110,882
Council Grove	20127963700	93.1	Relatively High	$92,798
Pottawatomie County	**All**	58.7	Relatively Low	$108,761
Louisville	20149000101	54.4	Relatively Moderate	$10,190
St. George	20149000102	78.3	Relatively High	$33,395
Wamego	20149000200	71.5	Relatively Moderate	$23,546
Belvue, Emmett, St. Marys	20149000300	67.8	Relatively Moderate	$19,472
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	70.3	Relatively Moderate	$22,158

Table 84: Participating Jurisdiction Heat Wave Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Riley County	**All**	71.0	Relatively Low	$240,763
Manhattan	20161000201	52.9	Relatively Moderate	$9,476
Manhattan	20161000202	68.9	Relatively Moderate	$20,680
Manhattan	20161000303	49.5	Relatively Moderate	$7,902
Manhattan	20161000304	62.1	Relatively Moderate	$14,656
Manhattan	20161000500	59.5	Relatively Moderate	$12,956
Manhattan	20161000601	58.2	Relatively Moderate	$12,210
Manhattan	20161000602	68.4	Relatively Moderate	$20,059
Manhattan	20161000700	60.9	Relatively Moderate	$13,862
Manhattan	20161000801	58.4	Relatively Moderate	$12,330
Manhattan	20161000802	50.1	Relatively Moderate	$8,164
Ogden	20161000900	66.7	Relatively Moderate	$18,389
Manhattan	20161001101	67.7	Relatively Moderate	$19,379
Manhattan	20161001102	56.1	Relatively Moderate	$11,067
Manhattan	20161001301	59.8	Relatively Moderate	$13,179
Leonardville, Randloph, Riley	20161001302	67.1	Relatively Moderate	$19,000
Wabaunsee County	**All**	55.3	Relatively Low	$91,171
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	88.2	Relatively High	$59,403
Eskridge, Harveyville,	20197483200	77.3	Relatively High	$31,768

Source: FEMA NRI

Population

A primary concern with this hazard is human health safety issues, as extreme heat can be a direct cause of death to citizens of all jurisdictions within the county. Specific at-risk groups include outdoor workers, farmers, young children, and senior citizens. Impacts on human health can include:

- **Heat Exhaustion and Heat Stroke:** Prolonged exposure to high temperatures can lead to heat exhaustion, characterized by heavy sweating, weakness, and dizziness. If untreated, it can escalate to heat stroke, a life-threatening condition with symptoms like confusion, high body temperature, and loss of consciousness.
- **Respiratory Issues:** High temperatures can worsen air quality, increasing levels of ozone and allergens, which can exacerbate asthma and other respiratory conditions.
- **Cardiovascular Strain:** Extreme heat can put additional stress on the heart, increasing the risk of heart attacks and other cardiovascular problems, particularly in older adults.
- **Dehydration:** Heat can lead to increased fluid loss through sweating, which can result in dehydration, affecting bodily functions and overall health.

The following table discusses potential impacts on human health related to excessive heat by temperature range:

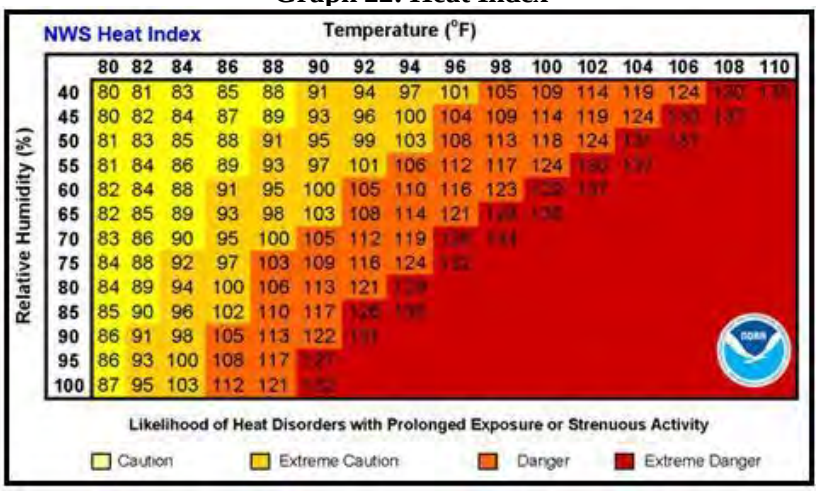
Table 85: Extreme Heat Impacts on Human Health

Heat Index Temperature	Potential Impact on Human Health
80-90° F	Fatigue possible with prolonged exposure and/or physical activity
90-105° F	Sunstroke, heat cramps, and heat exhaustion possible
105-130° F	Heatstroke/sunstroke is highly likely with continued exposure

Source: National Weather Service Heat Index Program

Exposure to direct sun can increase Heat Index values by as much as 15°F. The zone above 105°F corresponds to a Heat Index that may cause increasingly severe heat disorders with continued exposure and/or physical activity. The following graph, from the NWS, indicates Heat Index values.

Graph 22: Heat Index



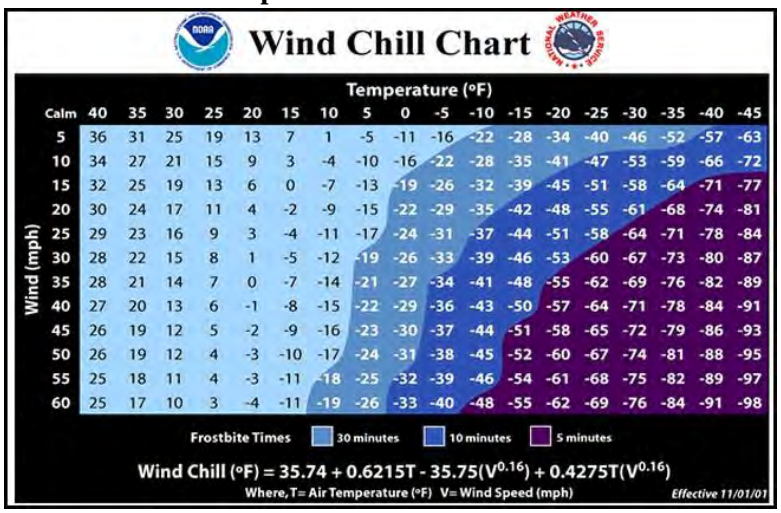
Source: NWS

Extreme cold temperatures can result in a variety of concerns, including:

- **Frostbite:** The freezing of skin and the body tissue just beneath it
- **Hypothermia**: Dangerously low body temperature (and the most common winter weather killer)

When extremely cold temperatures are accompanied by strong winds the result can be potentially lethal wind chills. Wind chill is the temperature your body feels when the air temperature is combined with the wind speed and is based on the rate of heat loss from exposed skin caused by the effects of wind and cold. As the speed of the wind increases, it can carry heat away from your body much more quickly, causing skin temperature to drop. The wind chill graph shows the difference between the actual air temperature and the perceived temperature due to wind, and amount of time until frostbite occurs.

Graph 23: Wind Chill Chart



Source: NOAA

Extreme temperatures may disproportionately affect socially vulnerable populations, exacerbating pre-existing inequalities and making recovery more difficult for these groups. Extreme temperatures may disproportionately impact vulnerable populations in the following ways:

- **Elderly Individuals:** Older adults often have reduced physiological resilience to extreme temperatures due to age-related factors and chronic health conditions, making them more susceptible to temperature-related illnesses.
- **Children: Young** children are less able to regulate their body temperature and are at a higher risk to temperature-related illnesses.
- **Low-Income Communities:** Those in low-income neighborhoods may lack access to air conditioning, heating, adequate housing, or resources to stay temperate, increasing their risk during extreme temperature events.
- **People with Chronic Health Conditions:** Individuals with cardiovascular, respiratory, or other chronic health issues may face heightened risks from extreme temperatures, as their bodies may struggle to cope with outside the norm temperatures.
- **Homeless Individuals:** People experiencing homelessness often have limited access to shelter and cooling or heating facilities, making them particularly vulnerable.

All Kansas Region I and participating jurisdictions citizens are vulnerable to the impacts of extreme temperatures. Please see Section 3.3: Population Data and Section 3.4: Socially Vulnerable and At-Risk Populations for data concerning jurisdictional populations.

Buildings and Structures
In general, buildings and structures, including historic buildings, will not be impacted by short-term extreme temperature events. It is possible that long-term temperature events could cause impacts, including:

- **Thermal Expansion:** Outside the norm temperatures can cause building materials, such as metal and concrete, to expand or contract. This can lead to warping, cracking, and structural stress.
- **Roof Damage:** Prolonged exposure to extreme temperatures can deteriorate roofing materials, leading to leaks, reduced lifespan, and increased maintenance costs.
- **Foundation Issues:** Prolonged heat or cold can affect the moisture content in the soil surrounding a building's foundation, potentially leading to shifting or settling.

Transportation and Electrical Infrastructure
Extreme temperatures can have numerous impacts on both transportation and electrical distribution systems, often leading to challenges that require proactive management. The impacts of extreme temperatures on transportation systems may include:

- **Softening of Asphalt:** High temperatures can cause asphalt to soften and become more susceptible to deformation. This leads to the development of ruts and potholes as the road surface loses its stability.
- **Rutting and Raveling:** The combination of high temperatures and heavy traffic loads can result in rutting, where depressions or grooves form in the road surface. Raveling, the disintegration of the asphalt surface, may also occur.
- **Expansion and Contraction:** Materials like concrete and asphalt expand in high temperatures and contract in cooler temperatures. This expansion and contraction can lead to cracking and deterioration of the road surface over time.
- **Freeze-Thaw Cycles:** Fluctuations between freezing and thawing can lead to the formation of ice within the road structure. The expansion of water as it freezes can result in cracks and damage to the road surface.
- **Frost Heaving:** During freeze-thaw cycles, moisture in the soil beneath the road can freeze, causing the ground to heave upward. This can result in uneven surfaces and damage to the road structure.

Extreme temperatures can impact both the electrical generation capacity and transmission. The impacts of extreme temperatures on electrical systems may include:

- **Increased Demand:** Extreme temperatures typically lead to increased use of air conditioning or heating, resulting in a surge in electricity demand that can strain the grid.
- **Transformer Overheating:** Electrical transformers can overheat during extreme heat events, leading to failures or outages.
- **Power Lines:** Extreme heat can cause power lines to sag due to thermal expansion, increasing the risk of contact with trees or other objects, which can result in outages or fires.
- **Substation Performance:** Extreme temperatures can impair the performance of substations, potentially leading to overloads and failures.
- **Energy Efficiency:** Extreme temperatures can reduce the efficiency of power generation, leading to decreased output during peak demand times.
- **Renewable Energy Impact:** While solar panels can generate more energy in high temperatures, their efficiency can drop significantly beyond certain heat thresholds.

Mapping concerning transportation and electrical infrastructure may be found in Section 3.9: Critical Infrastructure. Information concerning the costs to repair or reconstruct transportation and electrical infrastructure may be found in Section 5.9.6.

Water and Wastewater Utilities
Water and wastewater utilities are vulnerable to extreme temperature events due to the potential for plant damages and distribution system damages. Impacts may include:

- **Pipe bursts and leaks:** Extreme temperatures can cause soil to dry and shift, leading to cracks or bursts in aging water distribution pipes. Temperature fluctuations also lead to expansion and contraction in pipes, potentially increasing the risk of failure.
- **Reduced efficiency of equipment:** Pumps, motors, and other mechanical systems in water treatment facilities may become less efficient or experience overheating during prolonged high temperatures.
- **Reduced water availability:** In open water storage or reservoirs, high temperatures lead to greater evaporation, reducing the overall available water supply. This may lead to restrictions or necessitate sourcing from alternative supplies.
- **Changes in treatment efficiency:** Biological treatment processes in wastewater treatment plants can be disrupted due to temperature, impacting the breakdown of organic matter and nutrient removal processes.

Information concerning the costs to repair or reconstruct water and wastewater infrastructure may be found in Section 5.10.6.

Medical and Response Facilities
While extreme temperatures may result in a temporary increase in patients, it is considered unlikely that any influx would overwhelm current medical capabilities. In general, medical and response facilities are not directly vulnerable to losses as a result of extreme temperatures. Both operations and facilities will likely experience minimal impacts from, unless there are substantial power, communications, or water outages.

Educational Facilities
Depending on educational facility capability, extreme temperatures may necessitate the closure of the facility for the duration of the event. These closures are expected to have additional economic consequences as caregivers may be required to miss or modify work.

Communication Systems
Extreme temperatures can disrupt this vital communications system, affecting reliability and functionality. Extreme temperatures can lead to power outages due to down power lines or damaging electrical substations. Communication systems that rely on electricity, such as landline phones, internet routers, and cellular towers, may cease to function during power outages.

The cost to repair communications networks can vary widely depending on the extent of the damage, the size of the network, and the specific technologies involved. Repair costs may include expenses for labor, equipment replacement or repair, materials, and any additional resources required to restore the network to full functionality. The following data, from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency, indicates cost ranges for communications system components:

Table 86: Summary of Communication System Component Costs

Components	Examples	Cost	Expected Lifespan
Infrastructure	Towers, shelters, commercial and backup power equipment,	$$$–$$$$$	20–25 years
Fixed Station Equipment	Antennas, repeaters, towers on wheels, consoles, mobile stations, servers, computers, physical and electronic security elements (e.g., fencing, cameras, monitors, environmental conditions)	$$-$$$	3-15 years
Devices	Handheld portable radios, cellular phones, satellite phones, mobile data devices	$-$$	2-10 years
Accessories	Holsters, chargers, speakers, lapel microphone extensions, Bluetooth, vehicle kits, air cards, intercoms	$	2-10 years
Features	Encryption to protect against security risks, ruggedization to ensure reliant services, Over-the-Air-Programming, automatic roaming	$-$$$	-
Software and Data Storage	Global information system, emergency notifications, monitoring, call answering, database access, Automatic Vehicle Locator	$-$$	-

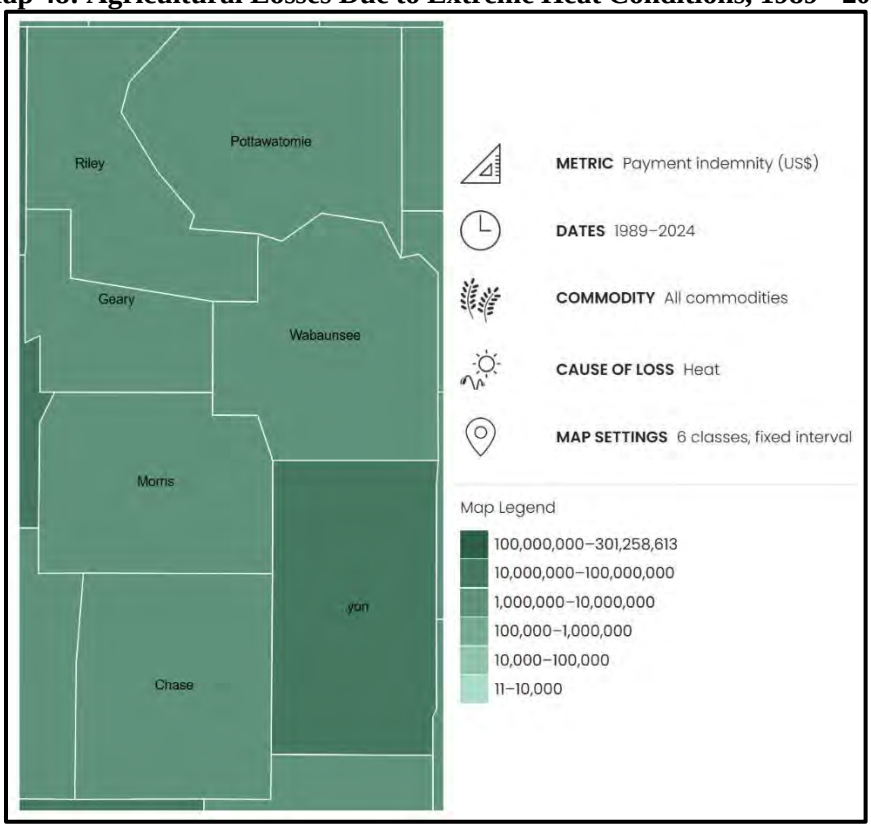
Source: U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency

Environmental and Agricultural Impacts

Extreme temperatures can cause significant damage to the local environment by dehydrating vegetation and wildlife, which may result in cascading effects to the surrounding environment, such as drought, wildfires, mudslides, or landslides. Extreme temperatures may severely decrease the yield of the agricultural sector. The yield of cash crops may be reduced, livestock may be adversely impacted by extreme heat, or grazing losses may be incurred by farmers or ranchers; potentially resulting in decreased food security. In the event of significant agricultural losses caused by extreme temperatures, some assistance may be available to impacted farms or ranches.

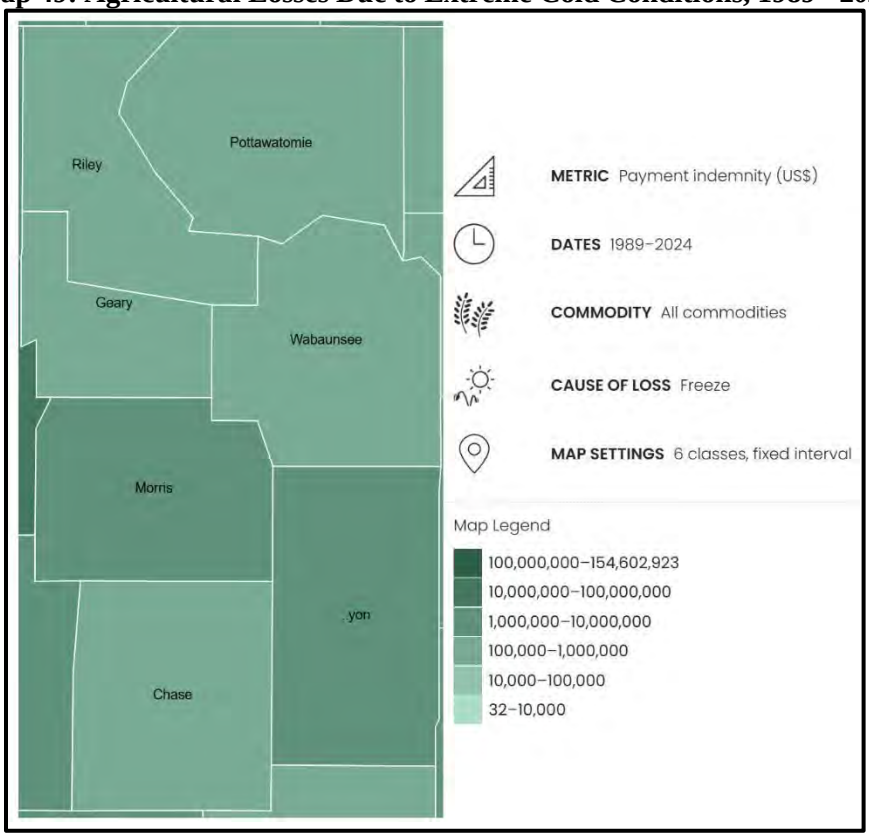
The following map from the United States Department of Agriculture details total county-wide agricultural losses, by county, due to extreme heat and extreme cold conditions from 1989 - 2024:

Map 48: Agricultural Losses Due to Extreme Heat Conditions, 1989 - 2024



Source: United States Department of Agriculture

Map 49: Agricultural Losses Due to Extreme Cold Conditions, 1989 - 2024



Source: United States Department of Agriculture

Jurisdictional Concerns:
As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts.

Across Kansas Region F, extreme temperatures present a truly regional hazard. Heat indices above 105 °F are now common in midsummer while wind-chill values can plunge below -20 °F in winter. Because Chase, Geary, Lyon, Morris, Pottawatomie, Riley, and Wabaunsee counties share a largely continental climate, oppressive heat waves and hard-freeze outbreaks typically blanket the entire seven-county area at the same time. This synchronicity strains mutual-aid agreements, as every jurisdiction is competing for the same portable cooling units, salt deliveries, and electric load-shedding capacity just when regional demand peaks.

At the county scale, rural demographics magnify risk. Chase, Morris, and Wabaunsee counties have aging populations and long ambulance response times; seniors living alone on un-air-conditioned farms are disproportionately at risk of heat stroke or hypothermia. In Lyon and Geary counties, anchored by Emporia and Junction City, mobile-home parks and pre-1970 housing stock lack adequate insulation, increasing both high-heat indoor temperatures and wintertime burst-pipe damage. Pottawatomie and Riley counties contain rapidly growing suburbs around Manhattan and Kansas State University, where heat islands from new pavement and multistory student housing elevate overnight minimum temperatures, reducing the physiological relief normally gained after sunset.

Jurisdictional concerns become more granular. Small towns such rely on volunteer fire departments that double as informal cooling or warming centers. However, limited hours and staffing can leave residents without access during prolonged events. School districts must manage outdoor sports schedules and ensure bus fleets are winterized and operational in early summer and late summer heat.

Vulnerable populations cut across county lines. Field hands harvesting hay, construction crews, and unhoused individuals all face elevated exposure. Public-health departments note that low-income households often choose between utility bills and medication, a trade-off exacerbated by sustained heat waves.

By acknowledging both the shared regional climate and the local nuances of population, infrastructure, and capacity, Kansas Region I can craft strategies that protect residents from the full spectrum of extreme-temperature hazards.

Cascading Impacts
Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with extreme may include:

- Drought conditions, or worsening of drought conditions
- Road and rail disruptions
- Heat-related illnesses and mortality
- Power outages
- Water shortage and/or diminished water quality
- Increased wildfires

Consequence Analysis
This consequence analysis lists the potential impacts of a hazard on various elements of a community. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 87: Extreme Temperature Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Extreme temperatures can have severe consequences for health, particularly for the elderly and young. Loss of electricity may impact heating or air conditioning leading to poorly tolerated indoor temperatures. Physical effects of extreme heat can cause major health problems and may lead to injury or death.
Impact on Responders	Responders may be susceptible to temperature-related illness. High temperatures may damage instruments or equipment necessary for response activities. Responders may face dangerous road conditions leading to accidents and prolonged response times.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. This hazard may impact an agency's ability due to power outages.
Delivery of Services	Extreme temperatures can impact efficient delivery or inability of goods or services due to potential health impacts on workers. Equipment and vehicles may be damaged, and the delivery of services may be delayed due to poor travel conditions
Property, Facilities, and Infrastructure	Facility integrity is at risk with regards to power cables and stations being overused and limiting operations. This could lead to limits on facility heating or cooling.
Impact on Environment	Extreme temperatures can cause significant damage to the local environment and result in habitat loss, invasive species, and changes in migration. Extreme temperatures may severely decrease the yield of cash crops. Impacts on water supply may include an increase in frequency of harmful algal blooms and occurrence of cyanobacteria.
Economic Conditions	Extreme temperatures may drain local resources. Under some conditions, some of the costs can be recouped through federal grant reimbursements.
Public Confidence in Governance	Governmental response, on all levels, requires direct actions that must be immediate and effective to maintain public confidence.

5.11.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

5.11.8 Mitigation Opportunities

The following table presents examples of potential actions that can be instituted for mitigating the extreme heat hazard.

Table 88: Example Extreme Heat Mitigation Actions

Category	Example Action
Planning and Regulation	Adopt and enforce updated building code provisions to properly insulate structures.
	Support financial incentives, such as low interest loans or tax breaks, for home and business owners who retrofit their structures to mitigate extreme temperatures.
	Develop an inventory of public buildings that may be used for temperature shelters.
Infrastructure	Encourage installation of green roofs, which provide shade and remove heat from the roof surface and surrounding air.
	Use cool roofing products that reflect sunlight and heat away from a building.
Natural Systems Protection	Increase tree plantings around buildings to shade parking lots and along public rights-of-way.
Education	Develop an outreach program about personal extreme temperature mitigation activities.
	Educate homeowners about retrofitting homes and encouraging retrofit to mitigate heat.

5.12 Flood

5.12.1 Hazard Description



Flooding is the overflow or accumulation of water on normally dry land, often caused by heavy rainfall, snowmelt, or the failure of natural or artificial barriers. Flooding can lead to the inundation of homes, roads, farmland, and other areas, causing damage to property, disruption of daily life, and potential threats to human safety and the environment.

A floodplain is a flat or gently sloping area adjacent to a river, stream, or other water body. These areas act as a buffer during periods of heavy rainfall or snowmelt, absorbing excess water and preventing it from rushing downstream too quickly. In its common usage, a floodplain refers to areas inundated by the 100-year flood, the flood that has a 1% chance of being equaled or exceeded in any given year, and the 500-year flood, the flood that has a 0.2% chance of being equaled or exceeded in any given year. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the NFIP.

5.12.2 Location and Extent

A variety of factors affect the severity of flooding within Kansas Region I. These include topography, weather characteristics, development, and geology. Intense flooding may create extreme damage and disruption in any jurisdiction affected.

Flash Flooding

Flash flooding occurs during heavy or extended periods of rain, generally when the ground is unable to rapidly absorb the water. Most flash flooding in Kansas Region I is caused by intense and stationary storm events and atmospheric rivers. Heavy sustained rain can create rapid flooding very quickly, and flooding can occur miles away from where the rain fell. Factors that can contribute to the severity of flash flooding include rainfall intensity, duration, drainage condition, and ground conditions (paved or unpaved). Flash floods are particularly dangerous to people and property, as six inches of moving water can knock a person down and two feet can lift a vehicle. As there is often little warning of a flash flood event, they are the cause of most flood fatalities.

Riverine Flooding

Riverine flooding refers to the overflow of water from a river or a stream onto adjacent land areas. This type of flooding occurs when the water level in a river or stream rises significantly and exceeds its banks, inundating the surrounding areas. The severity of riverine flooding can be influenced by the amount and intensity of rainfall in the watershed, the size, shape, and slope of the river or stream channel, and the presence of dams on the river system.

Urban Flooding

FEMA defines urban flooding as ‘the inundation of property in a built environment, particularly in more densely populated areas, caused by rain falling on increased amounts of impervious surfaces and overwhelming the capacity of drainage systems.” In Kansas Region I, urban flooding has consistently increased due to a number of factors, including the reduction of permeable surfaces and the aging and insufficient capacity of stormwater systems.

To establish floodplains, FEMA adopted the Base Flood Elevation (BFE), which is the computed elevation that floodwater is anticipated to rise during a flood that has a 1% chance of occurring in any given year. The BFE establishes the regulatory requirement for the elevation or floodproofing of structures, and the relationship between the BFE and a given structure’s elevation determines the flood insurance premium through the NFIP.
FEMA, through the Risk Mapping, Assessment, and Planning (Risk MAP) program, works with partners to assess and map these flood risks producing Flood Insurance Rate Maps (FIRMs). As an additional benefit, the FIRMs serve as the basis for NFIP regulations and flood insurance purchase requirements.

SFHAs are defined as the area that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance flood is also referred to as the base flood or 100-year flood. The FIRM depicts the SFHA, including the 1%-annual-chance flood. These areas are labeled on the map as zone, as explained in the following table:

The following table details FEMA's FIRM flood zone classifications.

Table 89: Flood Zone Classifications

Zone	Description
A	The 1%-annual-chance or base floodplain. There are six (6) types of A Zones.
AE	The base floodplain where base flood elevations are provided.
AH	Shallow flooding base floodplain. BFEs are provided.
AO	The base floodplain with sheet flow, ponding, or shallow flooding. Base flood depths (feet above ground) are provided.
AR	The base floodplain that results from the decertification of a previously accredited flood protection system that is in the process of being restored to provide a 1%-annual-chance or greater level of flood protection.
A99	Area to be protected from base flood by levees or Federal Flood Protection Systems under construction. BFEs are not determined.
B or Shaded X	Areas between the limits of the base flood and the 0.2% annual-chance (or 500-year) flood.
C or Unshaded X	Areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2% annual-chance flood

Source: FEMA

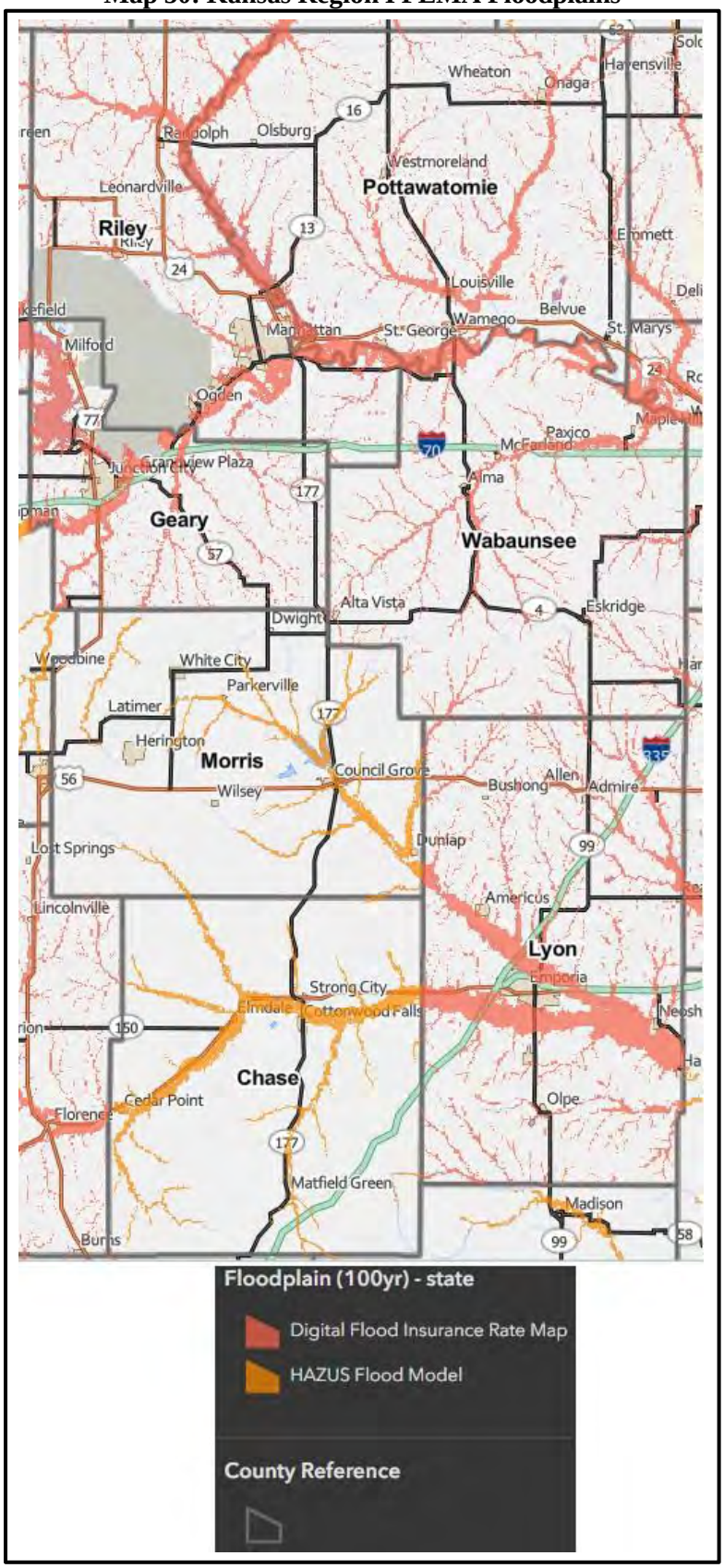
FEMA's National Flood Hazard Layer viewer was researched to determine the current mapping status of each Kansas Region I County. The following table indicates mapping status as of this plan:

Table 90: Kanas Region I Flood Insurance Rate Map Availability

Jurisdiction	Mapping Status
Chase County	Available
Geary County	Available
Lyon County	Available
Morris County	Available
Pottawatomie County	Available
Riley County	Available
Wabaunsee County	Available

Source: FEMA NRI

Map 50: Kansas Region I FEMA Floodplains

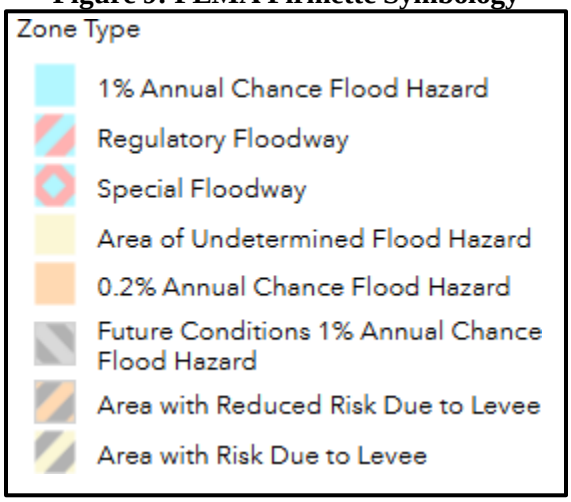


Source: KDEM EOPmapper

FEMA “Firmettes” are letter-size snapshots of a community’s official Flood Insurance Rate Map (FIRM) that can be generated from FEMA’s online Map Service Center. Additionally, they contain every regulatory element found on the full-size map, flood-hazard zones, base-flood elevations, cross-section lines, and scale information. Firmettes allow local officials, planners, and residents zoom in on a specific neighborhood and quickly visualize where homes, schools, or critical facilities sit relative to high-risk flood areas. This accessibility makes Firmettes a practical tool for hazard mitigation planning.

The following legend details the symobilogy in the following jurisdictional Firmettes:

Figure 9: FEMA Firmette Symbology



Source: FEMA

Map 51: Cedar Point, Chase County



Source: FEMA

Map 52: Cottonwood Falls, Chase County



Source: FEMA

Map 53: Elmdale, Chase County



Source: FEMA

Map 54: Matfield Green, Chase County



Source: FEMA

Map 55: Strong City, Chase County



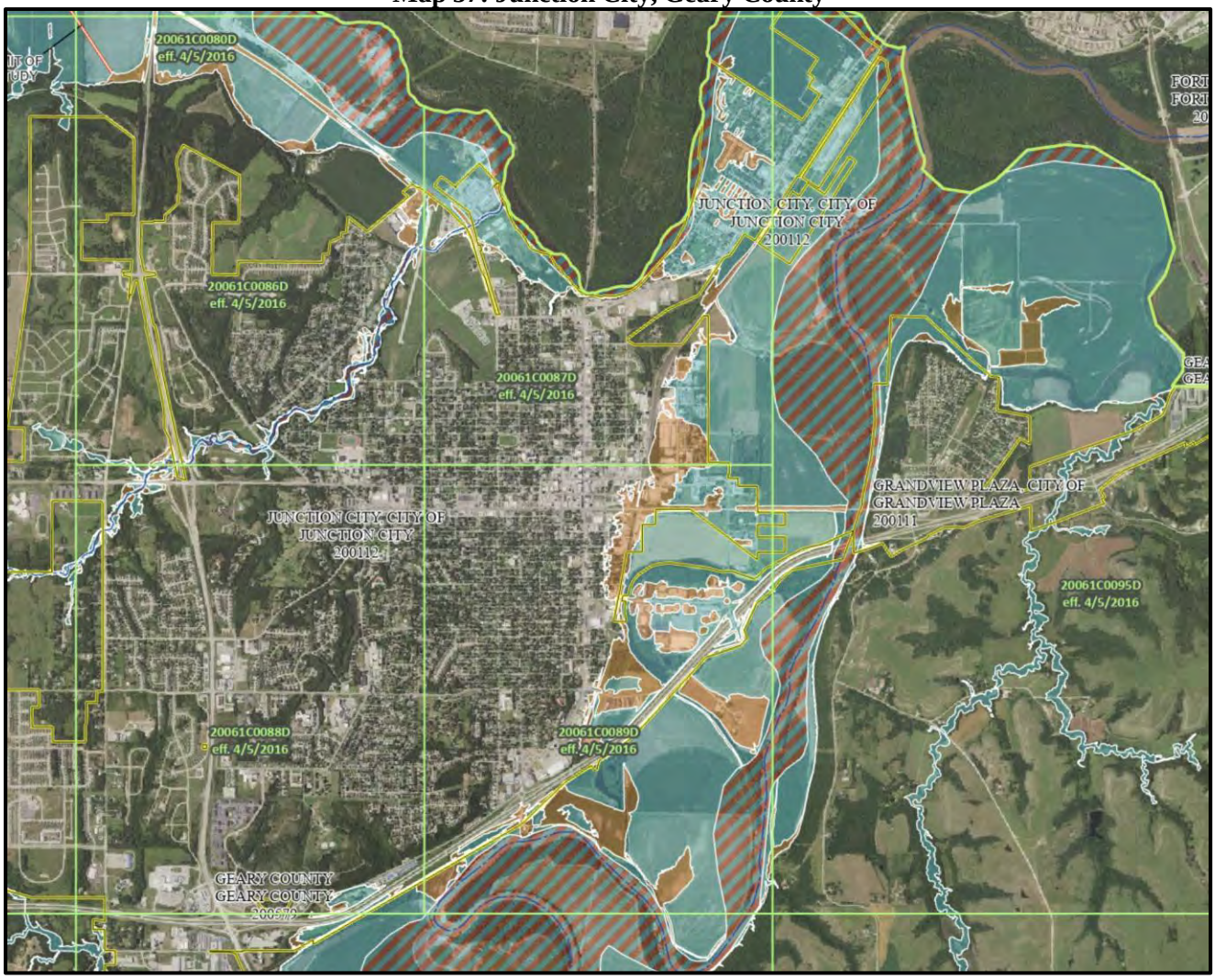
Source: FEMA

Map 56: Grandview Plaza, Geary County



Source: FEMA

Map 57: Junction City, Geary County



Source: FEMA

Map 58: Milford, Geary County



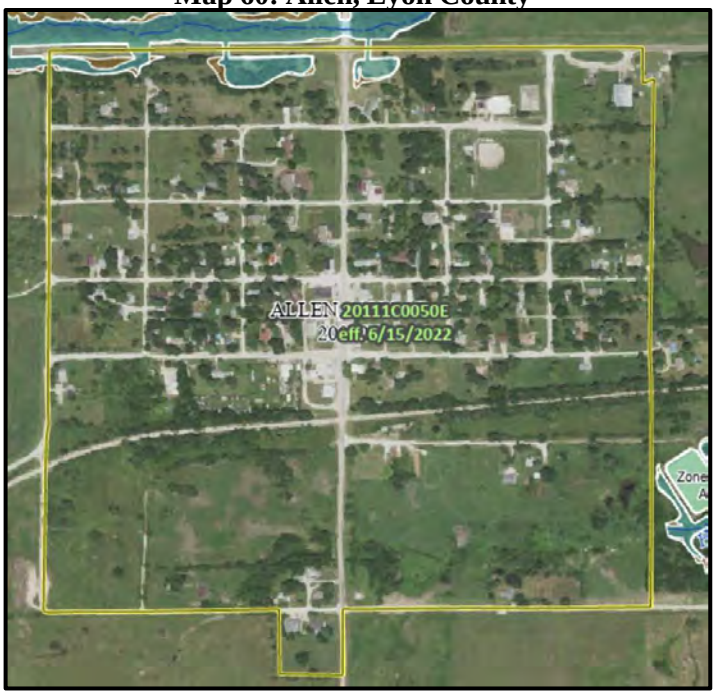
Source: FEMA

Map 59: Admire, Lyon County



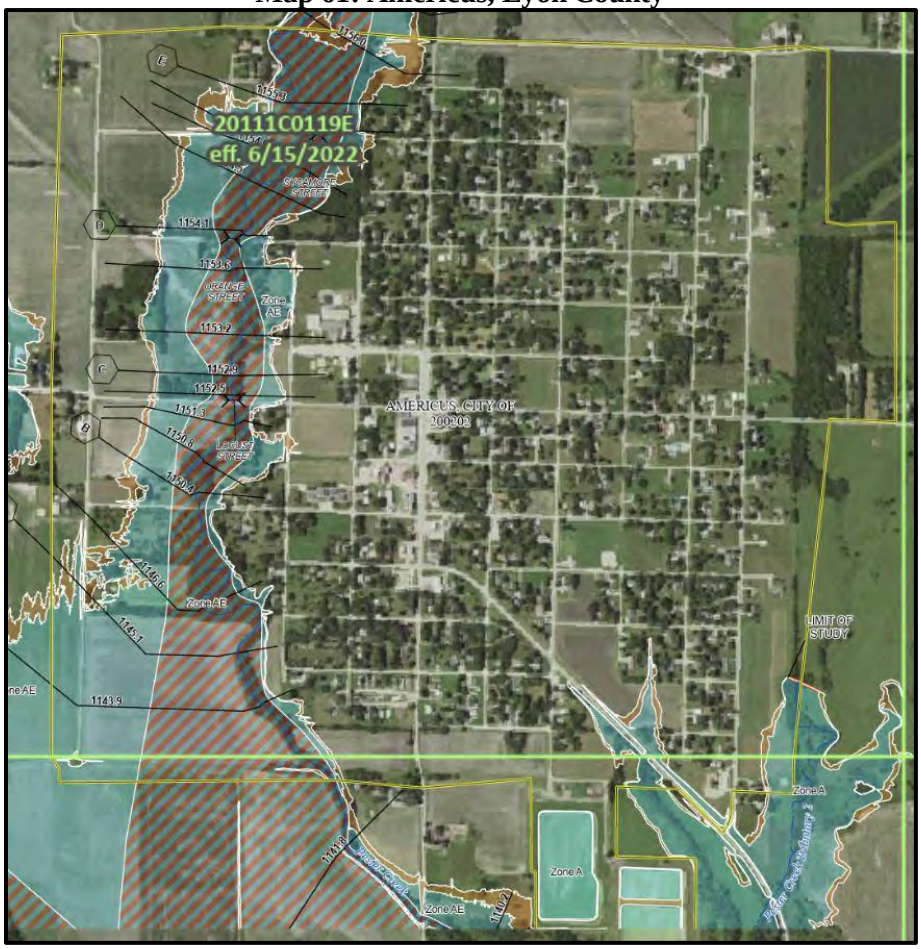
Source: FEMA

Map 60: Allen, Lyon County



Source: FEMA

Map 61: Americus, Lyon County



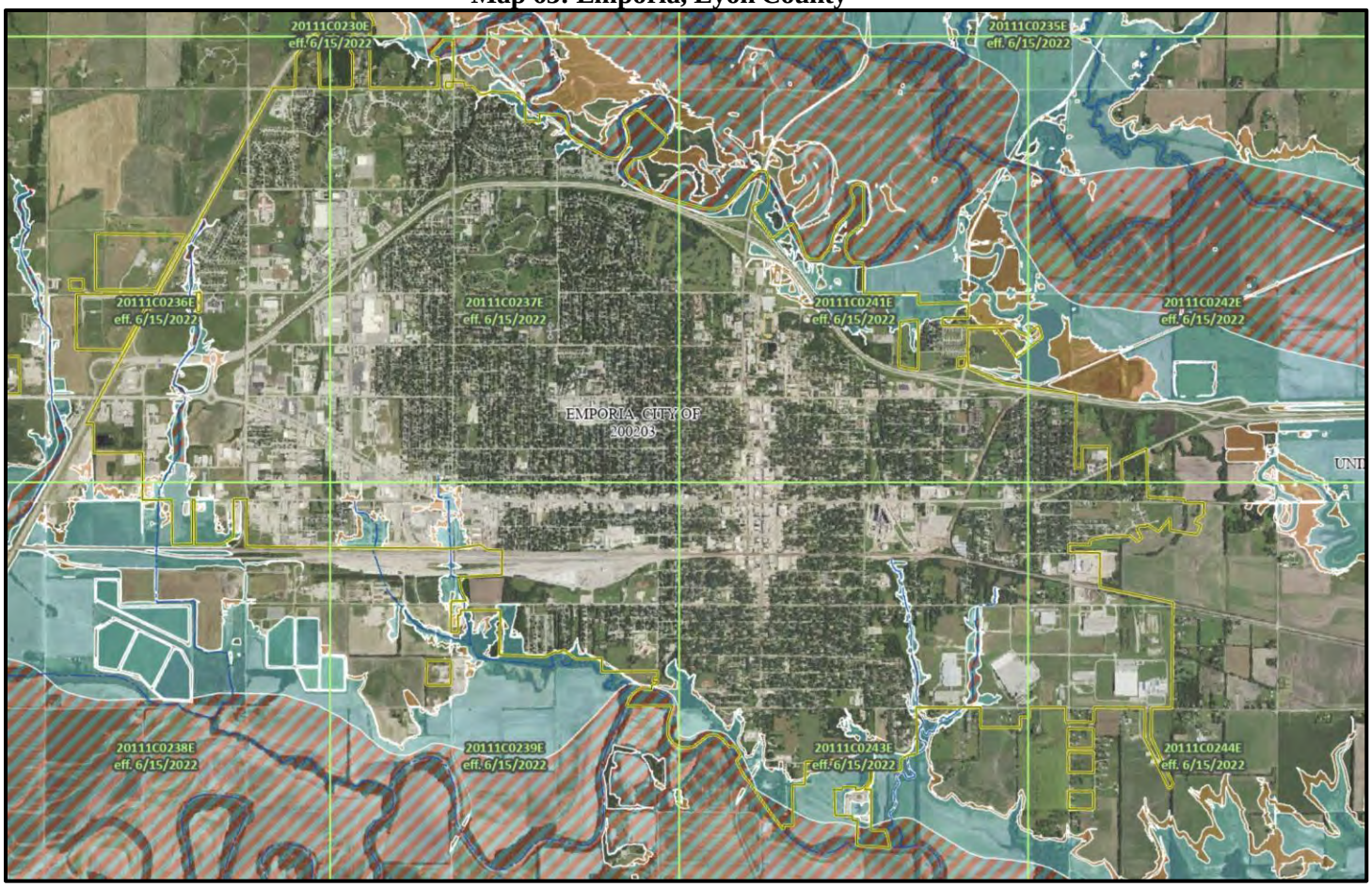
Source: FEMA

Map 62: Bushong, Lyon County



Source: FEMA

Map 63: Emporia, Lyon County



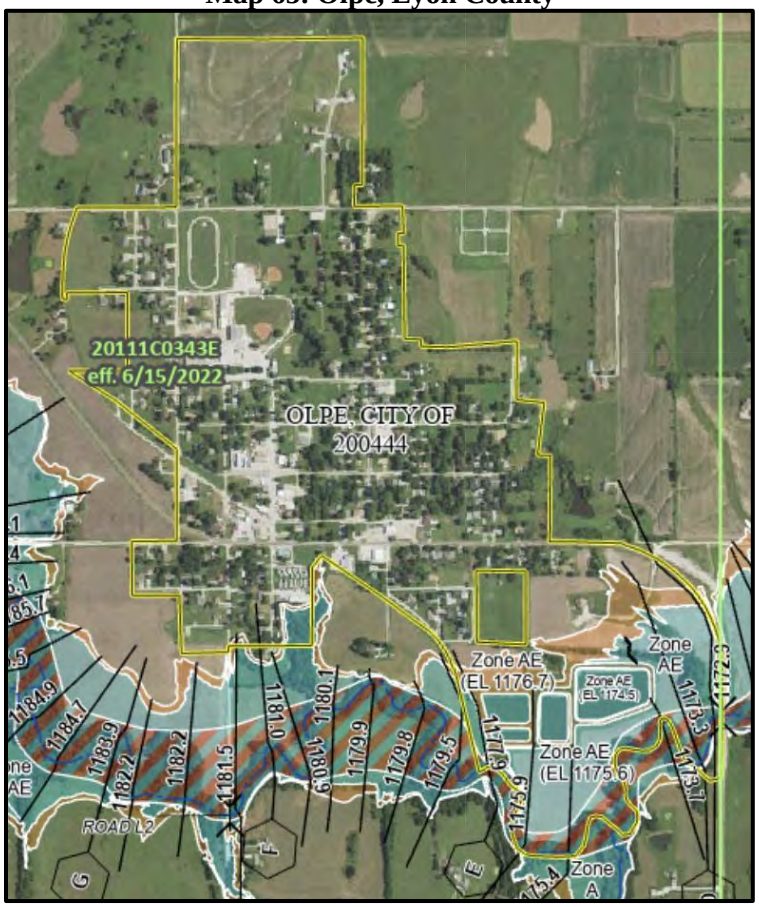
Source: FEMA

Map 64: Hartford, Lyon County



Source: FEMA

Map 65: Olpe, Lyon County



Source: FEMA

Map 66: Neosho Rapids, Lyon County



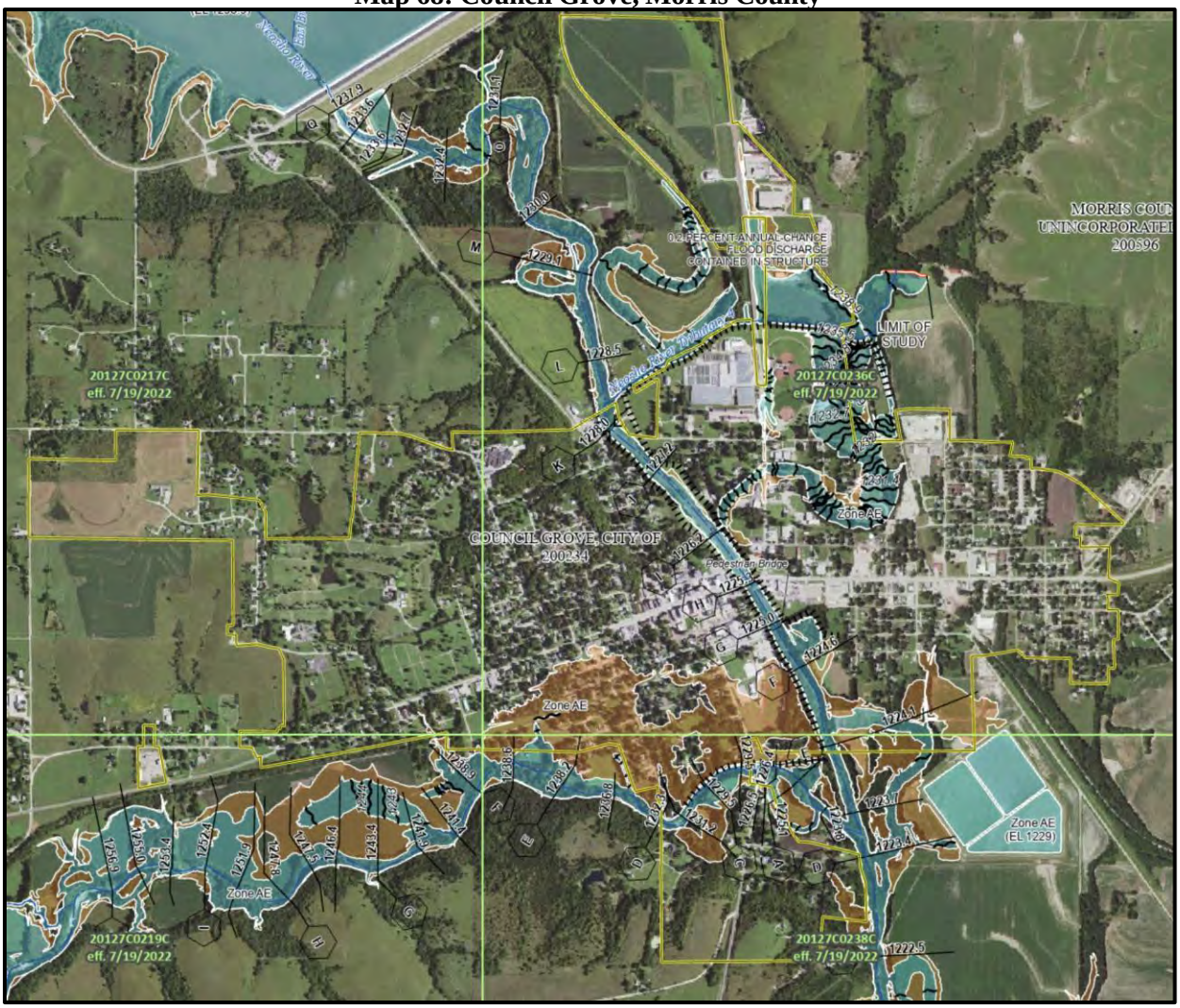
Source: FEMA

Map 67: Reading, Lyon County



Source: FEMA

Map 68: Council Grove, Morris County



Source: FEMA

Map 69: Dwight, Morris County



Source: FEMA

Map 70: White City, Morris County



Source: FEMA

Map 71: Wilsey, Morris County



Source: FEMA

Map 72: Belvue, Pottawatomie County



Source: FEMA

Map 73: Emmett, Pottawatomie County



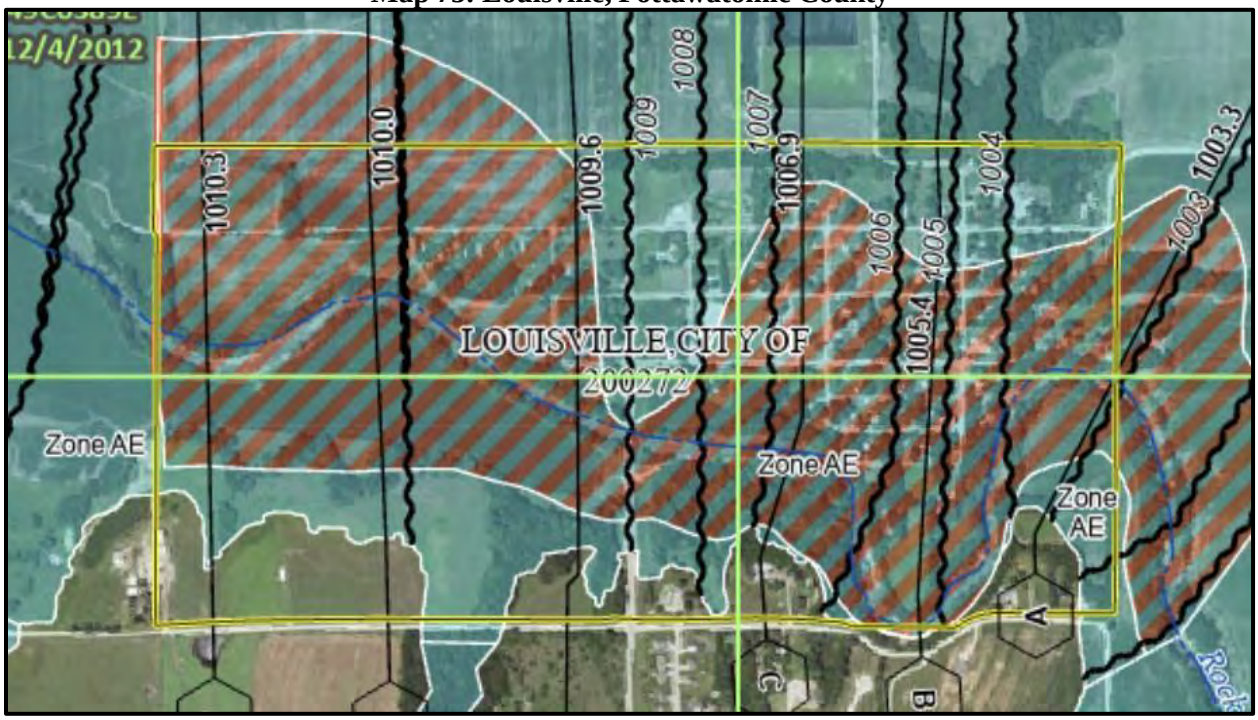
Source: FEMA

Map 74: Havensville, Pottawatomie County



Source: FEMA

Map 75: Louisville, Pottawatomie County



Source: FEMA

Map 76: Olsburg, Pottawatomie County



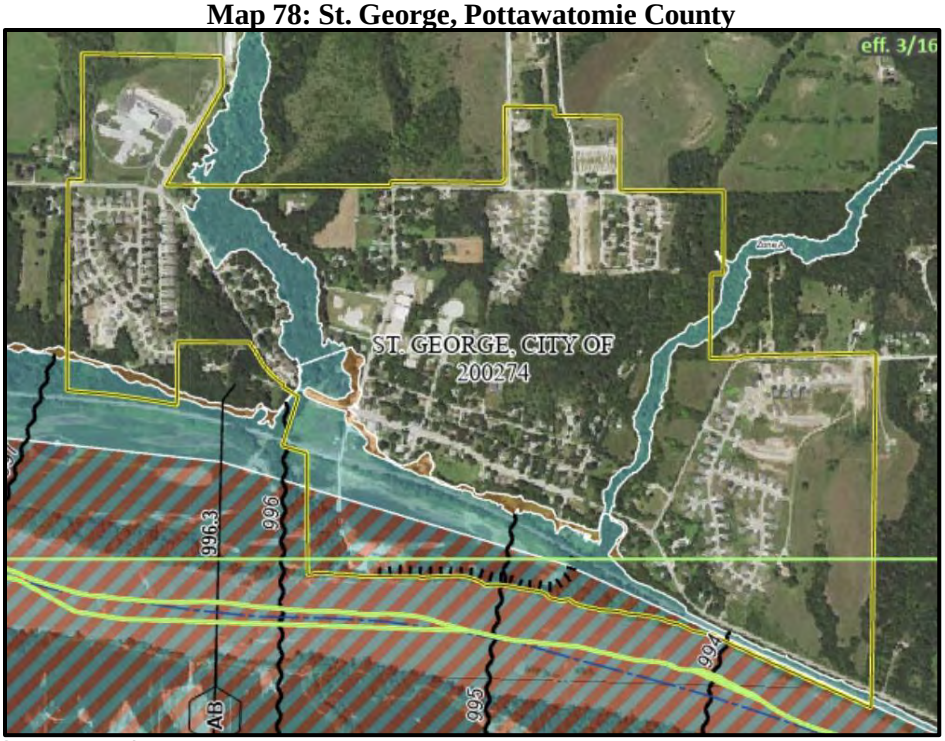
Source: FEMA

Map 77: Onaga, Pottawatomie County



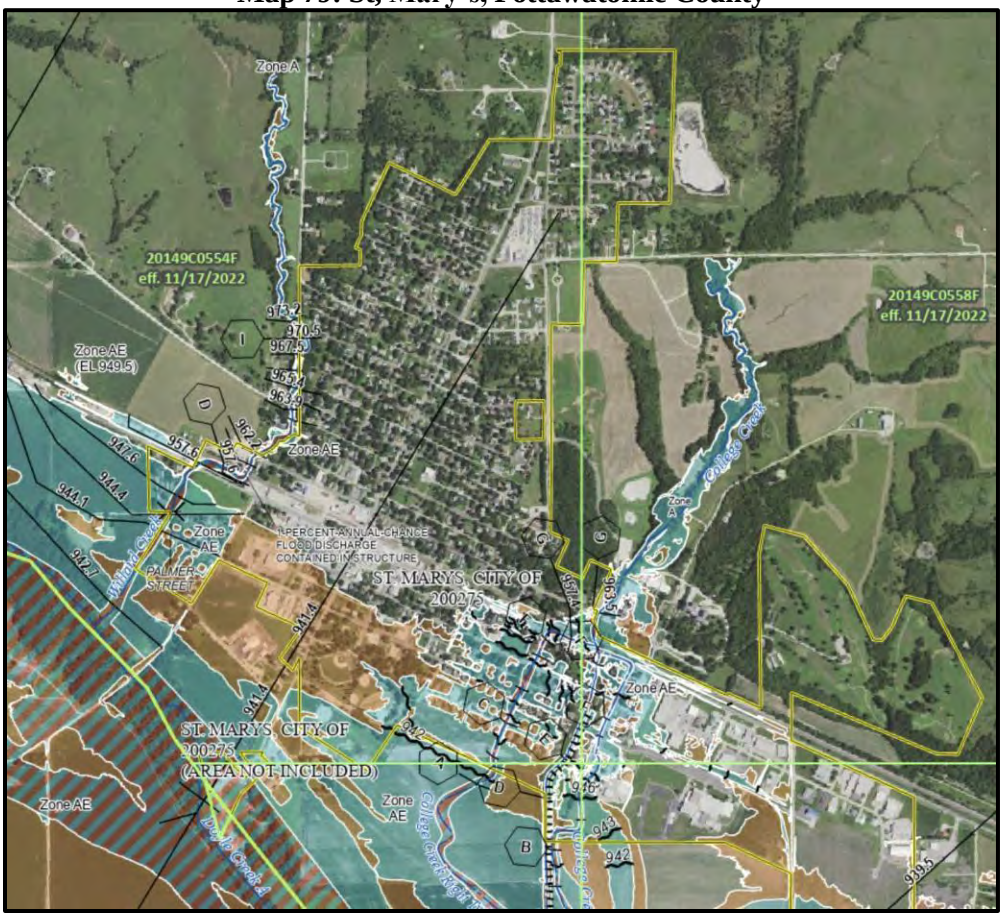
Source: FEMA

Map 78: St. George, Pottawatomie County



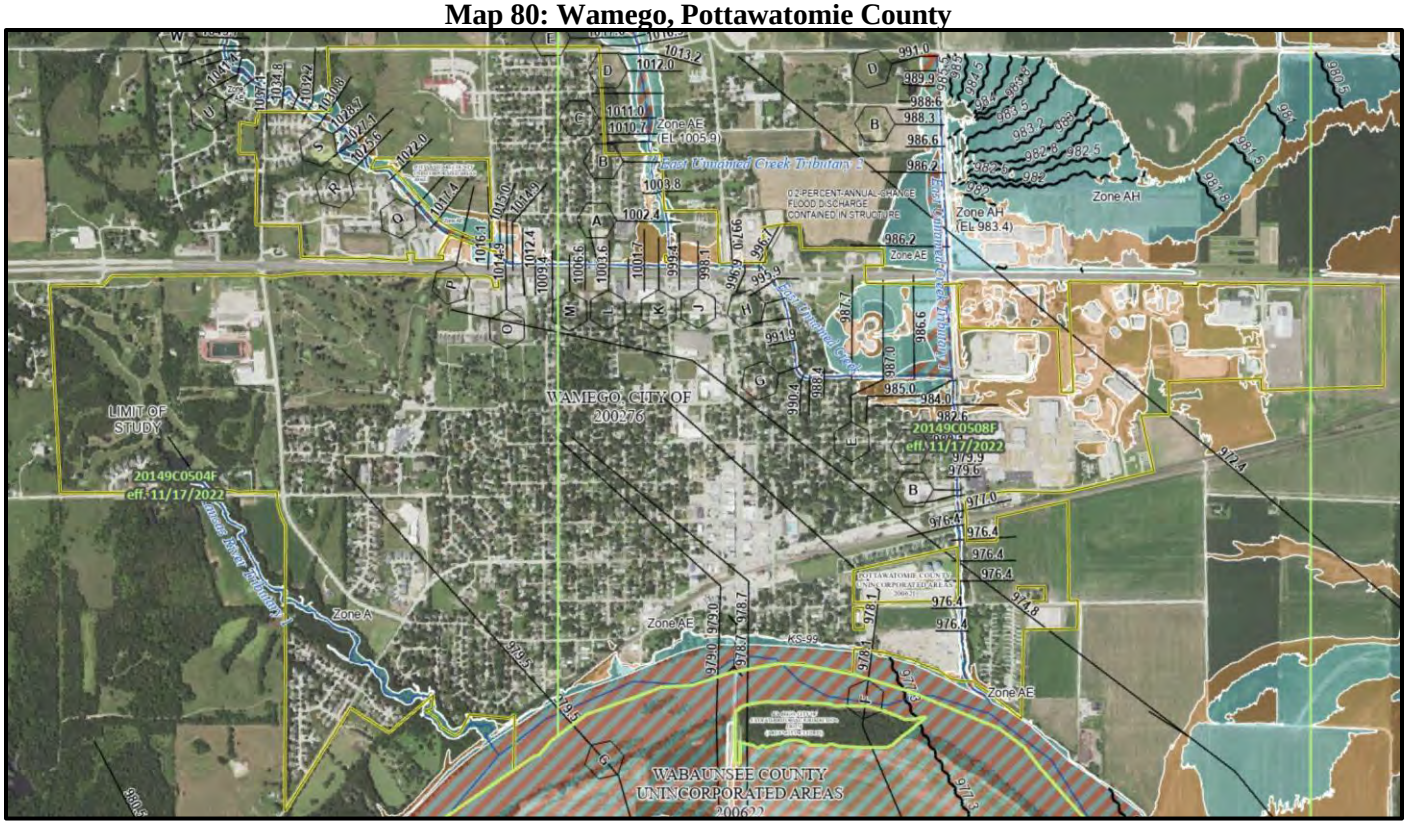
Source: FEMA

Map 79: St, Mary's, Pottawatomie County



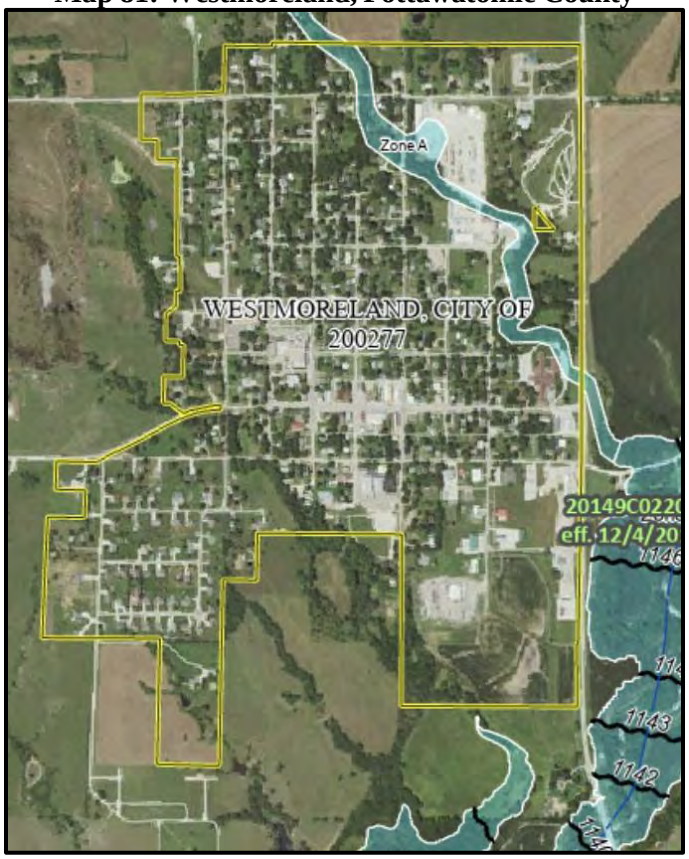
Source: FEMA

Map 80: Wamego, Pottawatomie County



Source: FEMA

Map 81: Westmoreland, Pottawatomie County



Source: FEMA

Map 82: Wheaton, Pottawatomie County



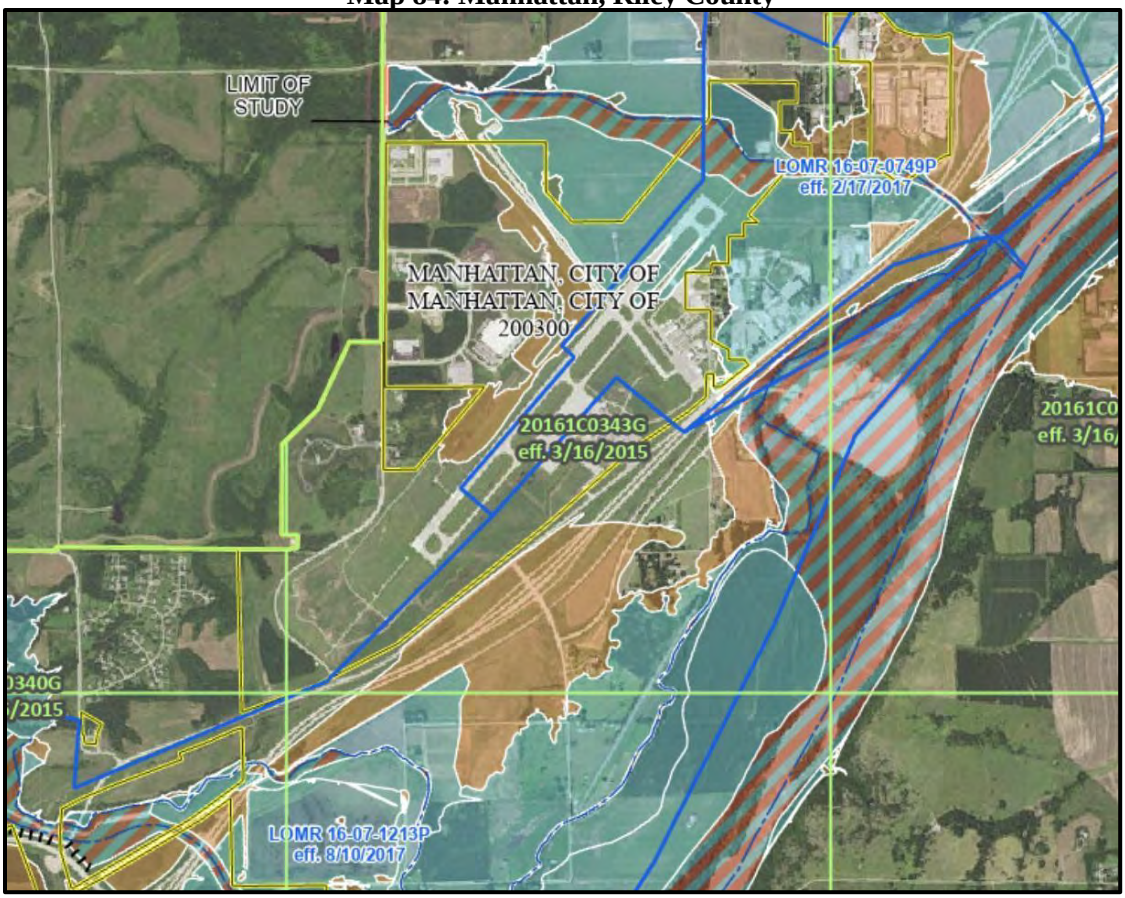
Source: FEMA

Map 83: Leonardville, Riley County



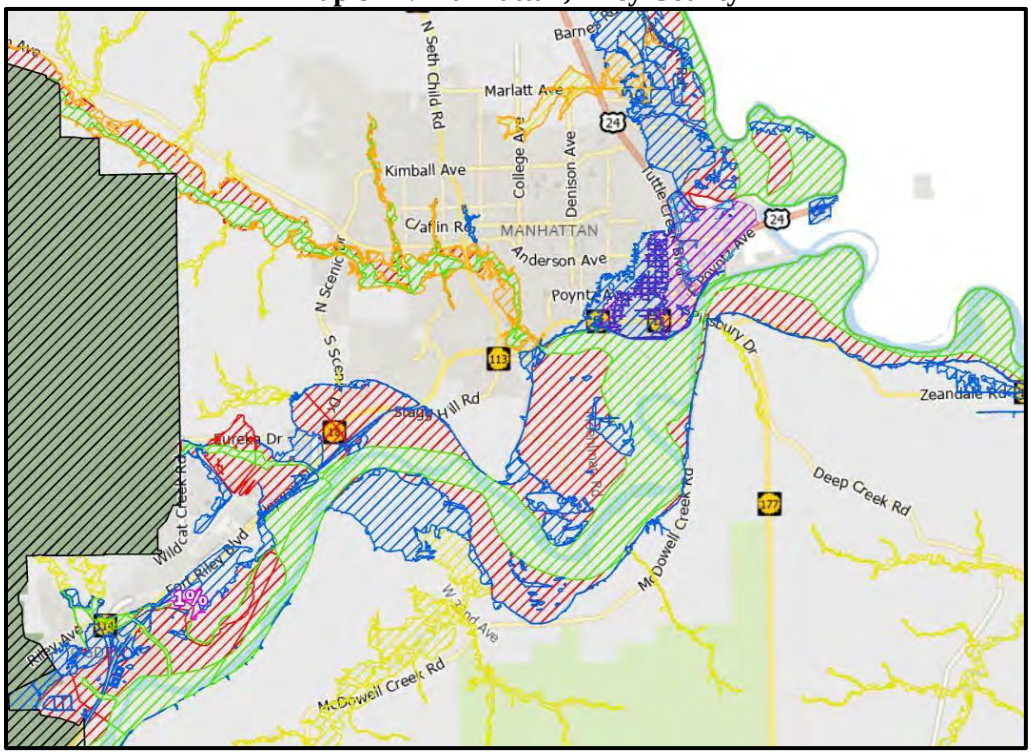
Source: FEMA

Map 84: Manhattan, Riley County



Source: FEMA

Map 84A: Manhattan, Riley County



Source: Riley County and City of Manhattan

Map 85: Ogden, Riley County



Source: FEMA

Map 86: Randolph, Riley County



Source: FEMA

Map 87: Riley, Riley County



Source: FEMA

Map 88: Alma, Wabaunsee County



Source: FEMA

Map 89: Alta Vista, Wabaunsee County



Source: FEMA

Map 90: Eskridge, Wabaunsee County



Source: FEMA

Map 91: Harveyville, Wabaunsee County



Source: FEMA

Map 92: Maple Hill, Wabaunsee County



Source: FEMA

Map 93: McFarland, Wabaunsee County



Source: FEMA

Map 94: Paxico, Wabaunsee County



Source: FEMA

Discussions with the MPC and a review of all available data indicated that while flooding is a concern for all participating jurisdictions, levels of concern may vary. The following provides a narrative of the level of jurisdictional concern:

- **Chase County** All participating jurisdictions are potentially vulnerable to flood events.

- **Geary County:** All participating jurisdictions are potentially vulnerable to flood events.
- **Lyon County:** All participating jurisdictions are potentially vulnerable to flood events.
- **Morris County:** All participating jurisdictions are potentially vulnerable to flood events.
- **Pottawatomie County:** All participating jurisdictions are potentially vulnerable to flood events.
- **Riley County:** All participating jurisdictions are potentially vulnerable to flood events.
- **Wabaunsee County:** All participating jurisdictions are potentially vulnerable to flood events.

5.12.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. Kansas Region I has experienced seven Presidential Disaster Declarations related to flooding, reflected in the following table.

Table 91: Kansas Region I Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Individual and Public Assistance	Mitigation Grants
DR-4824-KS	9/24/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Chase, Geary, Wabaunsee		
DR-4811-KS	8/20/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Morris, Wabaunsee	-	-
DR-4800-KS	7/15/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Morris, Pottawatomie	-	-
DR-4449-KS	8/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Chase, Geary, Lyon, Morris, Pottawatomie, Wabaunsee	$51,157,548	$3,331,442
DR-4403-KS	10/19/2018	Severe Storms, Straight-Line Winds, and Flooding	Riley	$4,545,539	$614,317
DR-4230-KS	7/20/2015	Severe Storms, Tornadoes, Straight-Line Winds and Flooding	Chase, Lyon, Morris, Pottawatomie, Wabaunsee	$11,018,053	-
DR-4010-KS	7/29/2011	Severe Storms, Straight-Line Winds, Tornadoes and Flooding	Lyon, Pottawatomie, Riley	$7,283,729	-
DR-1932-KS	8/10/2010	Severe Storms, Flooding and Tornadoes	Chase, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$7,384,786	-
DR-1849-KS	6/25/2009	Severe Storms, Flooding, Straight-Line Winds, and Tornadoes	Chase, Lyon, Morris, Wabaunsee	$11,534,818	-
DR-1808-KS	10/31/2008	Severe Storms, Flooding, and Tornadoes	Chase	$3,364,325	-
DR-1776-KS	7/9/2008	Severe Storms, Flooding, and Tornadoes	Riley	$55,300,511	-
DR-1699-KS	5/6/2007	Severe Storms, Tornadoes, and Flooding	Chase, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$98,286,095	-
DR-1579-KS	2/8/2005	Severe Winter Storm, Heavy Rains, and Flooding	Chase, Lyon, Morris, Pottawatomie, Wabaunsee	$82,381,461	-
DR-1535-KS	8/3/2004	Severe Storms, Flooding, and Tornadoes	Geary, Lyon, Morris, Wabaunsee	$10,223,840	-

Table 91: Kansas Region I Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Individual and Public Assistance	Mitigation Grants
DR-1258-KS	11/5/1998	Severe Storms and Flooding	Chase, Lyon	$9,574,047	-
DR-1000-KS	7/22/1993	Flooding, Severe Storms	Chase, Geary, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	-	-
DR-442-KS	6/10/1974	Severe Storms, Flooding	Lyon	-	-
DR-378-KS	5/2/1973	Severe Storms, Flooding	Lyon, Morris, Pottawatomie, Wabaunsee	-	-
DR-267-KS	7/15/1969	Tornadoes, Severe Storms, Flooding	Lyon, Morris	-	-
DR-229-KS	7/18/1967	Tornadoes, Severe Storms, Flooding	Chase, Lyon, Pottawatomie, Wabaunsee	-	-
DR-201-KS	6/23/1965	Flooding	Chase, Lyon	-	-

Source: FEMA
-: Not reported

The President can declare an emergency for any occasion or instance when the President determines federal assistance is needed. Kansas Region I has experienced no Emergency Declarations related to flooding.

In addition to the above, the following table presents NCEI identified flood events in Kansas Region I from 1950 to 2024:

Table 92: Kansas Region I NCEI Flood Events, 1950 - 2024

County	Event Type	Number of Days with Events	Property Damage	Deaths and Injuries
Chase	Flood	11	$2,100,000	0
	Flash Flood	13	$286,000	6
Geary	Flood	6	$100,000	0
	Flash Flood	25	$1,640,000	0
Lyon	Flood	26	$1,381,000	0
	Flash Flood	44	$4,556,000	1
Morris	Flood	13	$431,000	0
	Flash Flood	22	$523,500	1
Pottawatomie	Flood	8	$201,000	0
	Flash Flood	23	$741,000	0
Riley	Flood	6	$338,000	0
	Flash Flood	31	$17,965,000	3
Wabaunsee	Flood	9	$0	0
	Flash Flood	29	$461,000	1

Source: NCEI

The following provides both local accounts and NOAA NCEI descriptions of notable recorded events:

- **September 3, 2018, Keats, Riley County:** Residents in the city of Keats were being evacuated due to the rapidly rising water on Wildcat Creek. Property damage was recorded at $17,200,000.
- **June 12, 2005, Emporia, Lyon County:** Moderate flooding of the mainstem of the Cottonwood and Neosho Rivers. Highway 99, 11/2 miles south of Emporia, was closed for a time. Traffic was rerouted to the Kansas Turnpike. Property damage was recorded at $500,000.

- **July 24, 2004, Admire, Lyon County:** Thunderstorms produced heavy rains totaling 3 to 6 inches the morning of the 24th with flash flooding the result. Numerous rural roads and bridges were washed out or badly damaged. Property damage was recorded at $900,000.
- **June 15, 2004, Junction City, Geary County:** Heavy rain caused flash flooding with water covering roadways. Considerable damage occurred to farmland due to erosion. Many roads and bridges were also heavily damaged.. Property damage was recorded at $500,000.
- **August 31, 2003, Chase County:** Torrential rains of 6-8 inches, occurring in about 3 hours, caused flash flooding of Jacob Creek along I-35, the Kansas Turnpike, near milepost 116, 12 miles southwest of Emporia. The exceptionally heavy rains turned what had been a nearly dry creek into a raging river that surged almost due north at a rate of about 4,100 cubic feet per second. The creek overflowed across the northeast bound lanes and against a concrete median separating the northeast bound from the southwest bound lanes. The median consisted of 10 cement barriers, each 20 feet long and weighing 10,000-20,000 pounds. The water pressure built to the point that the median suddenly broke, allowing 6 to 7 feet of water to surge in a mini tsunami-like manner across the rest of the interstate. Seven vehicles were swept off the turnpike. Of these, one was a minivan carrying a family of six. Of the six occupants, five perished.
- **November 5, 1998, Chase County:** Widespread heavy rains of 6-10 inches inundated South-Central and Southeast Kansas from the evening of October 30th thru November 1st while 4-8 inches drenched Central Kansas. In Chase County, approximately 200 people were evacuated in Cedar Point, Saffordville, Strong City and Elmdale. In Elmdale only 1 residence escaped flooding. The $2 million damage was inflicted upon crops, roads, residences and soil erosion.

It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or NWS office. When reporting an event oftentimes the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages.

5.12.4 Probability of Future Incidents

Based on historical occurrences, Kansas Region I will continue to experience flood events on an annual basis. The definition of each flood zone's classification is used for the purpose of calculating the yearly probability of a riverine flood. Jurisdictions with property in a 100-year floodplain can expect a 1% annual chance of flooding within the designated areas. Jurisdictions with property in a 500-year floodplain can expect a 0.2% annual chance of flooding within the designated areas. FEMA FIRMs can be consulted to provide assistance in determining flooding probability for jurisdictions within Kansas Region I.

The following tables, using data from the NCEI, indicate the yearly probability of a flood or flash flood event, the number of deaths or injuries, and estimated property damage for each county in Kansas Region I.

Table 93: Kansas Region I NCEI Flood Event Probability Summary

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Chase	11	<1	0	0	$2,100,000	$28,000
Geary	6	<1	0	0	$100,000	$1,333
Lyon	26	<1	0	0	$1,381,000	$18,413
Morris	13	<1	0	0	$431,000	$5,747
Pottawatomie	8	<1	0	0	$201,000	$2,680
Riley	6	<1	0	0	$338,000	$4,507
Wabaunsee	9	<1	0	0	$0	$0

Source: NCEI

Table 94: Kansas Region I NCEI Flash Flood Event Probability Summary

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Chase	13	<1	6	<1	$286,000	$3,813
Geary	45	1	0	<1	$1,640,000	$21,867
Lyon	44	1	0	<1	$4,556,000	$60,747
Morris	22	<1	1	<1	$523,500	$6,980
Pottawatomie	23	<1	1	<1	$741,000	$9,880
Riley	31	<1	0	<1	$17,965,000	$239,533
Wabaunsee	29	<1	1	<1	$461,000	$6,147

Source: NCEI

5.12.5 Projected Changes in Location, Intensity, Frequency, and Duration

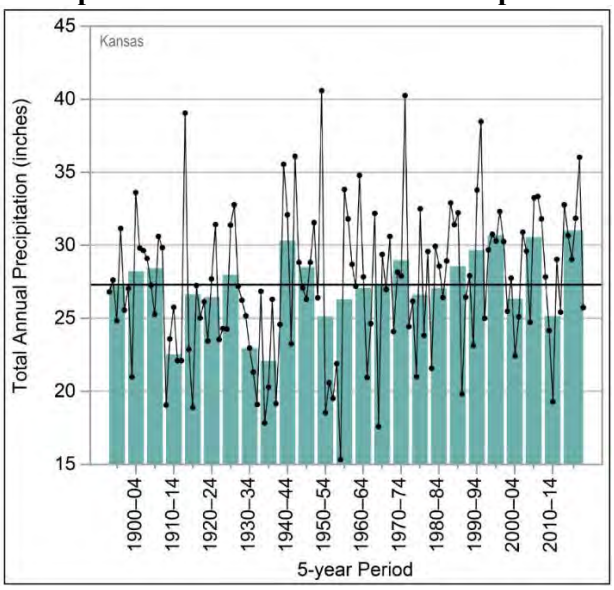
The location, intensity, frequency, and duration of flooding are influenced by a combination of natural and human-induced factors. Continued urbanization, deforestation, and changes in land use can alter natural drainage patterns. The conversion of natural landscapes to impervious surfaces, such as roads and buildings, reduces the ability of the land to absorb water, leading to increased runoff and the potential for urban flooding. Alterations to river channels, including channelization and dam construction, can influence the flow of water. Modifications may lead to changes in river behavior, affecting the potential for both upstream and downstream flooding. Poorly planned infrastructure, inadequate stormwater management, and the lack of effective drainage systems in urban areas can contribute to localized flooding. The increase in impervious surfaces reduces natural infiltration, leading to more runoff during rainfall events.

Potentially impacting the future of flood events, **t**he NOAA NCEI State Climate Summary 2022 for Kansas indicates:

- Precipitation is highly variable from year to year.
- The majority of precipitation falls during the warm-season months.
- Throughout the period of record (1895–2020), total annual precipitation has generally been above average since 1985.
- The wettest consecutive 5-year interval was 2015–2019.
- The frequency of extreme precipitation events has been highly variable but shows a general increase.
- The number of 2-inch precipitation events was well above average during the 2015–2020 period.
- The increase in extreme precipitation events has been more pronounced in the eastern part of the state.

The following graph details the annual precipitation and extreme precipitation events for Kansas Region I:

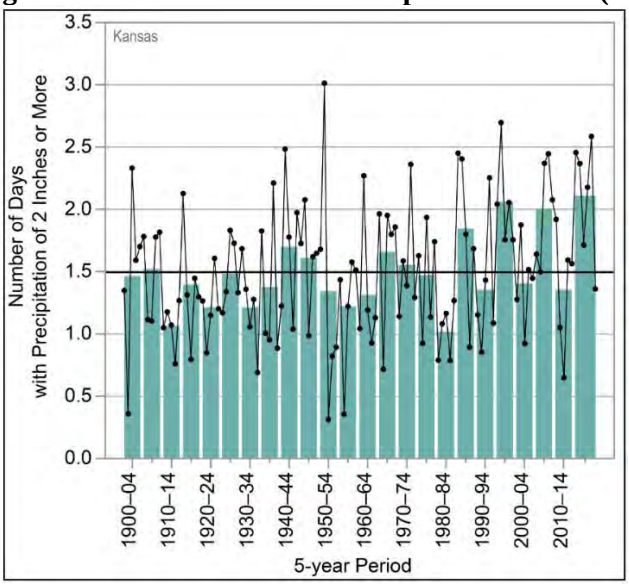
Graph 24: Kansas Total Annual Precipitation



Source: NOAA NCEI Summary 2022 for Kansas

Additionally, the NOAA NCEI State Climate Summary 2022 for Kansas suggests that the number of extreme precipitation events are projected to increase. These extreme events will likely increase the incidence of flooding within Kansas Region I.

Graph 25: Kansas Region I Number of Extreme Precipitation Events (Greater Than 2 Inches)



Source: NOAA NCEI State Climate Summary 2022 for Kansas

5.12.6 Vulnerability and Impact

FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the first table was created indicating the potential risk to Kansas Region I and all participating jurisdictions from riverine flooding. In order to gain an understanding of vulnerability, the second table details the estimated annual loss data for Kansas Region I and participating jurisdictions. To help understand the risk and vulnerability participating jurisdictions data from the FEMA NRI was run on a census tract level. As the NRI does not generate data for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Table 95: Kansas Region I Participating Jurisdiction Riverine Flood Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Chase County	**All**	62.8	Relatively Low	0.9
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	98.0	Relatively High	0.9
Geary County	**All**	63.1	Relatively Low	1.2
Junction City	20061000100	97.1	Relatively High	1.2
Junction City	20061000200	51.7	Relatively Low	1.2
Junction City	20061000300	70.7	Relatively Moderate	1.2
Junction City	20061000401	25.8	Very Low	1.2
Junction City	20061000402	0.0	No Rating	0.0
Junction City	20061000500	54.7	Relatively Low	1.2
Junction City	20061000601	27.1	Very Low	1.2
Grandview Plaza	20061000700	87.1	Relatively Moderate	1.2
Junction City	20061000801	37.0	Relatively Low	1.2
Milford	20061000802	81.0	Relatively Moderate	1.2
Lyon County	**All**	62.1	Relatively Low	2.4
Emporia	20111000101	85.4	Relatively Moderate	2.4
Emporia	20111000102	35.0	Very Low	2.4
Emporia	20111000103	72.6	Relatively Moderate	2.4
Emporia	20111000201	81.0	Relatively Moderate	2.4
Emporia	20111000202	41.8	Relatively Low	2.4
Emporia	20111000203	0.0	No Rating	0.0
Emporia	20111000300	82.7	Relatively Moderate	2.4
Emporia	20111000400	0.0	No Rating	0.0
Emporia	20111000500	89.8	Relatively Moderate	2.4
Allen, Admire, Bushong, Reading	20111000600	85.6	Relatively Moderate	2.4
Americus	20111000700	86.8	Relatively Moderate	2.4
Hartford, Olpe, Neosho Rapids	20111000800	86.6	Relatively Moderate	2.4
Morris County	**All**	3.7	Very Low	1.1
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	28.9	Very Low	1.1
Council Grove	20127963700	0.0	No Rating	0.0
Pottawatomie County	All	39.6	Relatively Low	1.2
Louisville	20149000101	84.0	Relatively Moderate	1.2
St. George	20149000102	79.3	Relatively Moderate	1.2
Wamego	20149000200	82.0	Relatively Moderate	1.2
Belvue, Emmett, St. Marys	20149000300	56.7	Relatively Low	1.2
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	73.1	Relatively Moderate	1.2
Riley County	**All**	79.9	Relatively Moderate	1.4
Manhattan	20161000201	89.6	Relatively Moderate	1.4
Manhattan	20161000202	95.7	Relatively High	1.4
Manhattan	20161000303	0.0	No Rating	0.0
Manhattan	20161000304	60.7	Relatively Low	1.4
Manhattan	20161000500	0.0	No Rating	0.0
Manhattan	20161000601	64.5	Relatively Low	1.4
Manhattan	20161000602	89.1	Relatively Moderate	1.4
Manhattan	20161000700	88.4	Relatively Moderate	1.4
Manhattan	20161000801	0.0	No Rating	0.0
Manhattan	20161000802	56.6	Relatively Low	1.4
Ogden	20161000900	98.0	Relatively High	1.4
Manhattan	20161001101	26.6	Very Low	1.4

Table 95: Kansas Region I Participating Jurisdiction Riverine Flood Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Manhattan	20161001102	47.2	Relatively Low	1.4
Manhattan	20161001301	56.3	Relatively Low	1.4
Leonardville, Randloph, Riley	20161001302	88.0	Relatively Moderate	1.4
Wabaunsee County	**All**	48.6	Relatively Low	1.5
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	94.8	Relatively High	1.5
Eskridge, Harveyville,	20197483200	84.0	Relatively Moderate	1.5

Source: FEMA NRI

In order to gain an understanding of vulnerability, the following table details the estimated FEMA EAL data for Kansas Region I counties and participating jurisdictions (by census tract):

Table 96: Participating Jurisdiction Riverine Flood Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Chase County	**All**	63.7	Relatively Low	$720,822
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	98.1	Relatively High	$720,822
Geary County	**All**	58.8	Relatively Low	$590,321
Junction City	20061000100	96.0	Relatively High	$380,174
Junction City	20061000200	47.4	Relatively Low	$5,465
Junction City	20061000300	68.4	Relatively Low	$25,611
Junction City	20061000401	25.8	Very Low	$4
Junction City	20061000402	0.0	No Expected Annual Losses	$0
Junction City	20061000500	53.6	Relatively Low	$9,113
Junction City	20061000601	27.1	Very Low	$66
Grandview Plaza	20061000700	86.1	Relatively Moderate	$97,710
Junction City	20061000801	38.9	Relatively Low	$2,306
Milford	20061000802	82.2	Relatively Moderate	$69,360
Lyon County	**All**	64.2	Relatively Low	$733,100
Emporia	20111000101	82.6	Relatively Moderate	$71,943
Emporia	20111000102	33.5	Very Low	$976
Emporia	20111000103	73.6	Relatively Moderate	$36,614
Emporia	20111000201	81.5	Relatively Moderate	$65,331
Emporia	20111000202	44.0	Relatively Low	$4,008
Emporia	20111000203	0.0	No Expected Annual Losses	$0
Emporia	20111000300	82.1	Relatively Moderate	$69,065
Emporia	20111000400	0.0	No Expected Annual Losses	$0
Emporia	20111000500	86.9	Relatively Moderate	$105,375
Allen, Admire, Bushong, Reading	20111000600	89.3	Relatively Moderate	$134,211
Americus	20111000700	88.0	Relatively Moderate	$117,289
Hartford, Olpe, Neosho Rapids	20111000800	88.8	Relatively Moderate	$128,290
Morris County	**All**	3.7	Very Low	$281
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	29.3	Very Low	$281
Council Grove	20127963700	0.0	No Expected Annual Losses	$0
Pottawatomie County	**All**	44.3	Relatively Low	$292,747
Louisville	20149000101	86.5	Relatively Moderate	$100,666
St. George	20149000102	81.7	Relatively Moderate	$66,678
Wamego	20149000200	83.2	Relatively Moderate	$75,295
Belvue, Emmett, St. Marys	20149000300	57.4	Relatively Low	$12,157
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	74.1	Relatively Moderate	$37,950

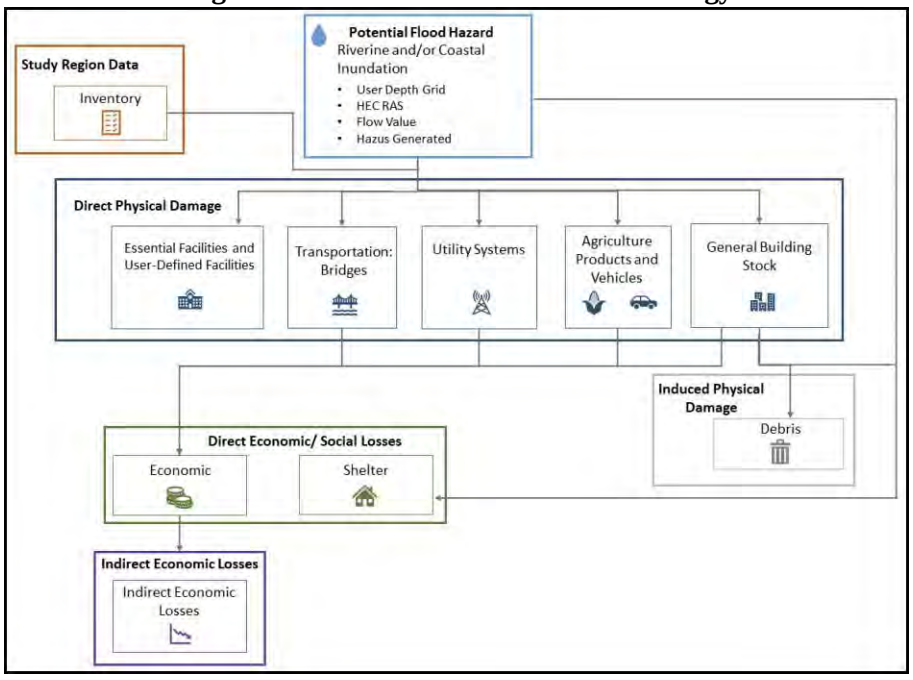
Table 96: Participating Jurisdiction Riverine Flood Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Riley County	**All**	79.4	Relatively Moderate	$1,558,877
Manhattan	20161000201	87.0	Relatively Moderate	$105,707
Manhattan	20161000202	95.6	Relatively High	$347,401
Manhattan	20161000303	0.0	No Expected Annual Losses	$0
Manhattan	20161000304	61.3	Relatively Low	$15,997
Manhattan	20161000500	0.0	No Expected Annual Losses	$0
Manhattan	20161000601	66.1	Relatively Low	$22,030
Manhattan	20161000602	89.6	Relatively Moderate	$139,810
Manhattan	20161000700	87.8	Relatively Moderate	$115,574
Manhattan	20161000801	0.0	No Expected Annual Losses	$0
Manhattan	20161000802	54.1	Relatively Low	$9,535
Ogden	20161000900	97.7	Relatively High	$635,525
Manhattan	20161001101	26.6	Very Low	$31
Manhattan	20161001102	45.2	Relatively Low	$4,513
Manhattan	20161001301	58.5	Relatively Low	$13,126
Leonardville, Randloph, Riley	20161001302	90.2	Relatively Moderate	$150,000
Wabaunsee County	**All**	51.4	Relatively Low	$419,926
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	95.3	Relatively High	$325,069
Eskridge, Harveyville,	20197483200	85.8	Relatively Moderate	$94,857

FEMA Hazus

For purposes of this plan, a Hazus Flood Model was generated to provide an estimate of the consequences to a flood. The resulting loss estimate generally describes the scale and extent of damage and disruption that may result from the modeled flood event. The Hazus software uses GIS technologies for performing analyses with inventory data and displaying losses and consequences on applicable tables and maps. The following figure provides a graphic representation of the modules that the Hazus Flood Model Methodology is composed of, and their interrelation in deriving estimates.

Figure 10: Hazus Flood Model Methodology



Source: FEMA

The results of the Hazus analysis were utilized to estimate potential losses for flooding. The intent of this analysis was to enable Kansas Region I to estimate where flood losses could occur and the degree of severity using a consistent methodology. The Hazus model helps quantify risk along known flood-hazard corridors as well as lesser streams and rivers that have a drainage area of ten square miles or more.

Hazus determines the displaced population based on the inundation area, not necessarily impacted buildings. As a result, there may be a population vulnerable to displacement even if the structure is not vulnerable to damage. Individuals and households will be displaced from their homes even when the home has suffered little or no damage either because they were evacuated or there was no physical access to the property because of flooded roadways.

Flood sheltering needs are based on the displaced population, not the damage level of the structure. Hazus determines the number of individuals likely to use government-provided short-term shelters through determining the number of displaced households as a result of the flooding. To determine how many of those households and the corresponding number of individuals will seek shelter in government-provided shelters, the number is modified by factors accounting for income and age. Displaced people using shelters will most likely be individuals with lower incomes and those who do not have family or friends within the immediate area. Since the income and age factors are taken into account, the proportion of displaced population and those seeking shelter will vary from county to county.

Additionally, Hazus takes into account flood depth when modeling damage (based on FEMA's depth-damage functions). Generated reports capture damage by occupancy class (in terms of square footage impacted) by damage percent classes. Occupancy classes include agriculture, commercial, education, government, industrial, religion, and residential. Damage percentage classes are grouped by 10% increments up to 50%. Buildings that sustain more than 50% damage are considered to be substantially damaged.

The Hazus analysis also provides an estimate of the repair costs for impacted buildings as well as the associated loss of building contents and business inventory. Building damage can also cause additional losses to a community by restricting a building's ability to function properly. Income loss data accounts for losses such as business interruption and rental income losses as well as the resources associated with damage repair and job and housing losses. These losses are calculated by Hazus using a methodology based on the building damage estimates.

The damaged building counts generated by Hazus are susceptible to rounding errors and are likely the weakest output of the model due to the use of census blocks for analysis. Generated reports include this disclaimer: "Unlike the earthquake and hurricane models, the flood model performs its analysis at the census block level. This means that the analysis starts with a small number of buildings within each census block and applies a series of distributions necessary for analyzing the potential damage. The application of these distributions and the small number of buildings make the flood model more sensitive to rounding errors that introduces uncertainty into the building count results." Additionally, losses are not calculated for individual buildings, but instead are based on the performances of entire classes of buildings obtained from the general building stock data. In the flood model, the number of grid cells (pixels) at each flood depth value is divided by the total number of grid cells in the census block. The result is used to weigh the flood depths applied to each specific occupancy type in the general building stock. First floor heights are then applied to determine the damage depths to analyze damages and losses.

The following table provides the HAZUS results for damaged buildings, destroyed buildings, and total economic loss for Kansas Region I:

Table 97: Kansas Region I Hazus Flood Scenario Economic Impacts

County	Damaged Buildings	Destroyed Buildings	Total Economic Loss
Chase	4	0	$23,040,000
Geary	109	99	$89,770,000
Lyon	4	0	$47,440,000
Morris	9	0	$43,130,000
Pottawatomie	40	0	$26,840,000

Table 97: Kansas Region I Hazus Flood Scenario Economic Impacts

County	Damaged Buildings	Destroyed Buildings	Total Economic Loss
Chase	4	0	$23,040,000
Riley	76	10	$73,680,000
Wabaunsee	26	0	$45,610,000

Source: FEMA Hazus

The following table provides the HAZUS results for displaced households, damaged buildings, destroyed buildings, and total economic loss for Kansas Region I:

Table 98: Kansas Region I Hazus Flood Scenario Economic Impacts

County	Displaced Households	Displaced Population	Persons Seeking Shelter
Chase	74	222	9
Geary	279	836	52
Lyon	211	632	29
Morris	104	312	11
Pottawatomie	169	507	25
Riley	260	779	81
Wabaunsee	110	329	7

Source: FEMA Hazus

The Hazus model indicated that the following number of critical facilities are estimated to be damaged or suffer loss of use from the flood scenario.

Table 99: Kansas Region I Hazus Flood Scenario Number of Critical Facilities Damaged or Impacted

County	Emergency Operations Centers	Fire Stations	Hospitals	Police Stations	Schools
Chase	0	0	0	0	0
Geary	0	0	0	0	0
Lyon	0	0	0	0	0
Morris	0	0	0	0	0
Pottawatomie	0	0	0	0	0
Riley	0	0	0	0	0
Wabaunsee	0	0	0	0	0

Source: FEMA Hazus

Population

A primary concern with this hazard is human health safety issues, as extreme heat can be a direct cause of death. Specific at-risk groups include outdoor workers, farmers, young children, and senior citizens. Impacts on human health can include:

- **Loss of Life**: Flooding is one of the leading causes of weather-related fatalities worldwide. Fast-rising floodwaters can lead to drowning and other water-related accidents, resulting in the tragic loss of lives.
- **Injuries:** Floods can cause injuries due to waterborne diseases, contaminated floodwaters, debris, and accidents during evacuation or rescue operations.
- **Displacement:** Many people may be forced to evacuate their homes during floods and will require emergency shelter or temporary housing. Prolonged displacement can be emotionally and economically challenging.
- **Health Risks:** Floodwaters often contain pollutants, sewage, and hazardous materials. Exposure to contaminated water can lead to waterborne diseases, infections, and other health risks.
- **Mental Health Effects:** Survivors of floods may experience a range of emotional and psychological challenges, including post-traumatic stress disorder, anxiety, depression, and grief.

- **Food and Water Shortages:** Floods can contaminate water supplies and disrupt the distribution of food. This can lead to shortages of clean drinking water and essential food items.
- **Impact on Vulnerable Populations:** Vulnerable populations, including the elderly, children, people with disabilities, and those living in poverty, are often disproportionately affected by floods due to limited resources and mobility challenges.

Especially critical is timely evacuation orders, and adherence to those orders. If evacuation is not heeded, or flood waters rise quickly enough, citizens could drown or become trapped for extended periods of time with no access to services or medical care. Of special concern are long-term care and medical facilities where it can take longer to evacuate, or evacuation may be impossible. Additionally, lower income citizens may not have the means to relocate, whether it be lack of transportation or lack of resources to afford temporary shelter.

Please see the above Hazus section for a discussion of potentially impacted populations.

Buildings and Structures

Floods can have significant and often costly impacts on buildings and structures. These impacts can disrupt essential services, damage infrastructure, and pose safety risks. The extent of the impact depends on factors such as the severity of the flood, the preparedness of the infrastructure, and the effectiveness of flood management measures. Here are some of the common impacts of floods on facilities and critical infrastructure:

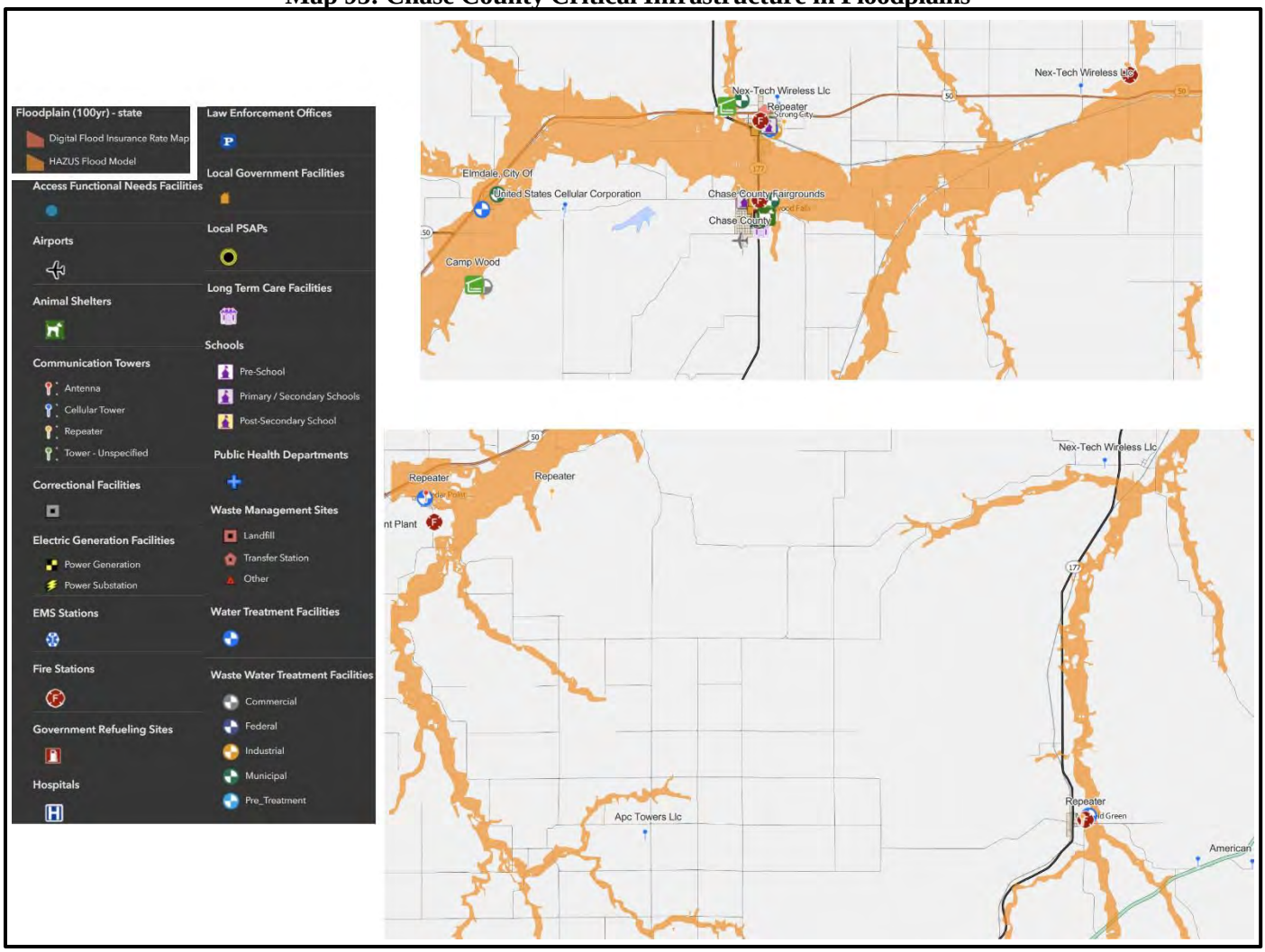
- **Foundation Damage:** Floodwaters can erode the soil supporting the foundation, leading to settling, cracks, or even collapse. Scouring and soil liquefaction during floods may undermine the stability of buildings, especially those on weak soils.
- **Wall and Floor Damage:** High water pressure, especially from fast-moving floods, can crack walls, warp floors, and cause floors to collapse.
- **Building Collapse:** If the foundation is significantly compromised, or if water levels rise too quickly, entire buildings may collapse, especially older structures or those not designed for flood resilience.
- **Water Seepage:** Even shallow flooding can cause water to seep into the building's structure, leading to rotting of wooden frames, mold growth, and damage to insulation and electrical systems.
- **Interior Damage:** Drywall, carpets, furniture, and appliances may all be ruined by prolonged exposure to floodwater, which often carries contaminants like sewage and chemicals.
- **Electrical Short Circuits and Fire:** Floodwaters can cause electrical systems to short-circuit, posing risks of fire or electrocution.
- **HVAC and Plumbing System Damage:** Heating, ventilation, and air conditioning systems, as well as plumbing systems, are vulnerable to water damage, potentially leading to the loss of potable water and proper sanitation in the building.
- **Mold:** After the floodwaters recede, mold and mildew can quickly develop in damp environments. This can lead to respiratory problems for occupants and further deterioration of the building materials.
- **Wood Rot and Corrosion:** Prolonged exposure to water can cause wooden materials to rot and metal components, like steel reinforcements, to corrode, weakening the building over time.

Please see the above Hazus section for a discussion of potentially impacted buildings.

Critical Infrastructure In Floodplain Mapping

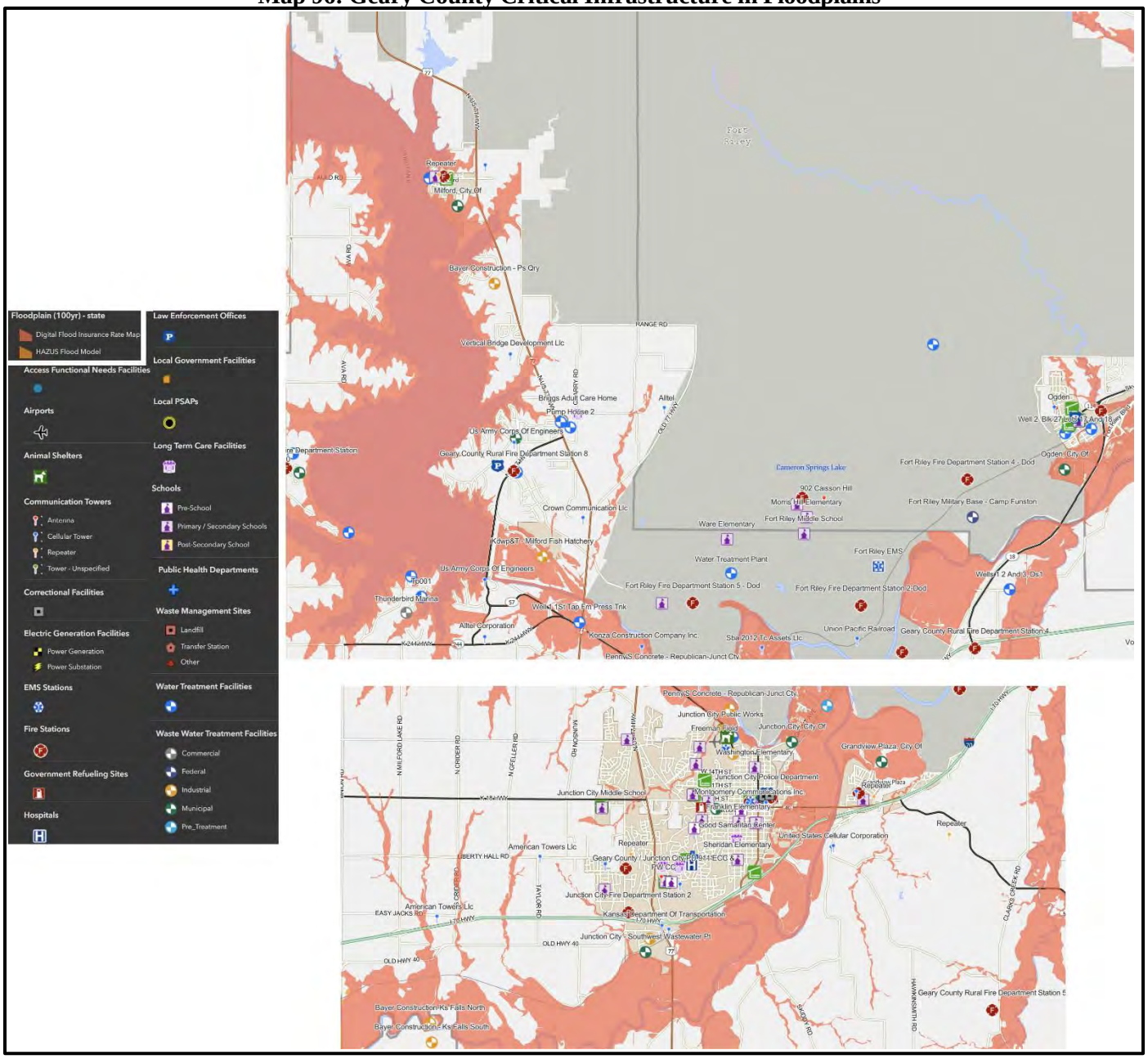
Utilizing the State of Kansas EOPmapper system, which utilizes FEMA Hazus data and/or DFIRM data (when available), the following maps were generated to illustrate critical facilities in potential floodplains.

Map 95: Chase County Critical Infrastructure in Floodplains



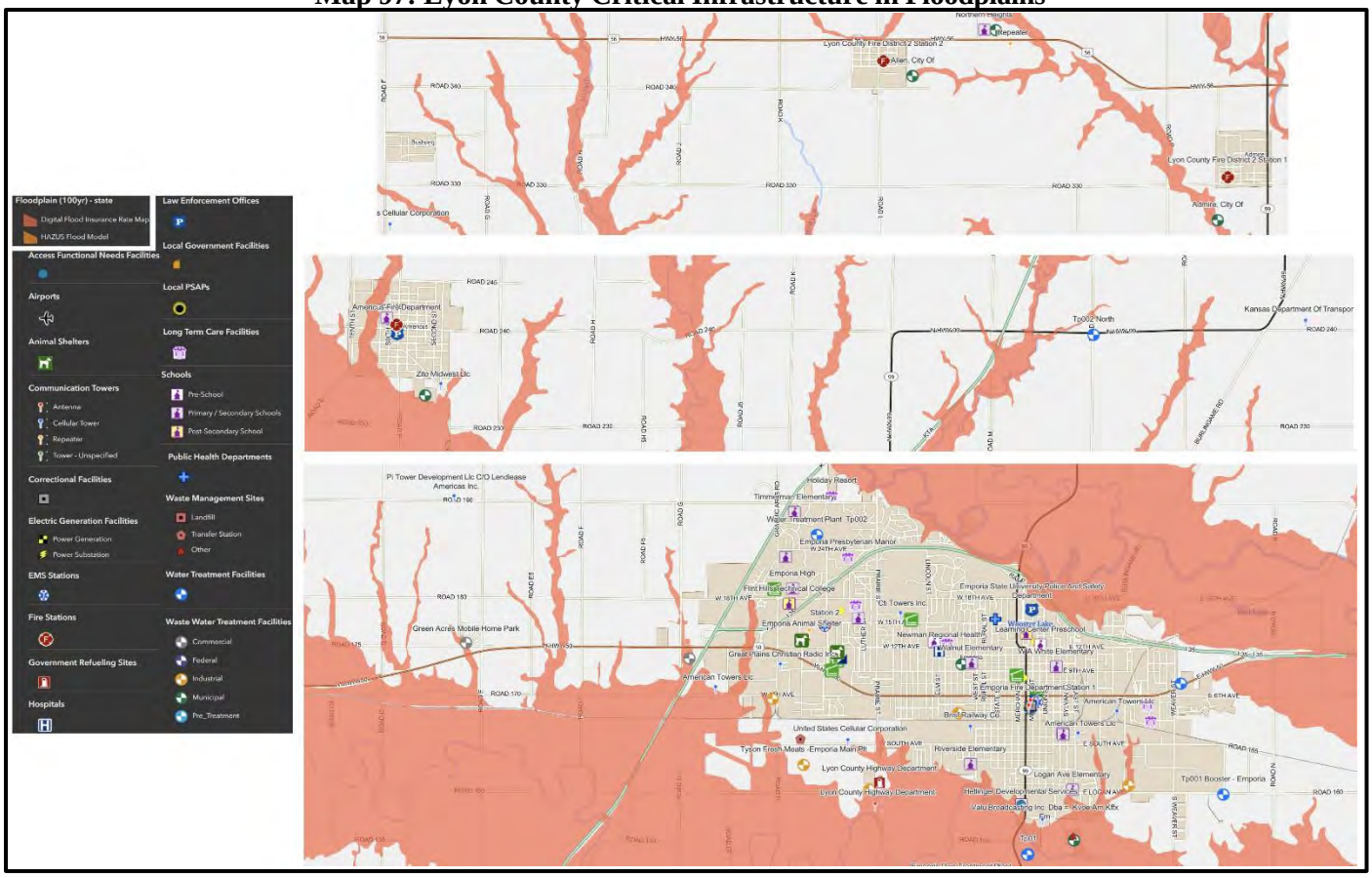
Source: EOPmapper

Map 96: Geary County Critical Infrastructure in Floodplains



Source: EOPmapper

Map 97: Lyon County Critical Infrastructure in Floodplains



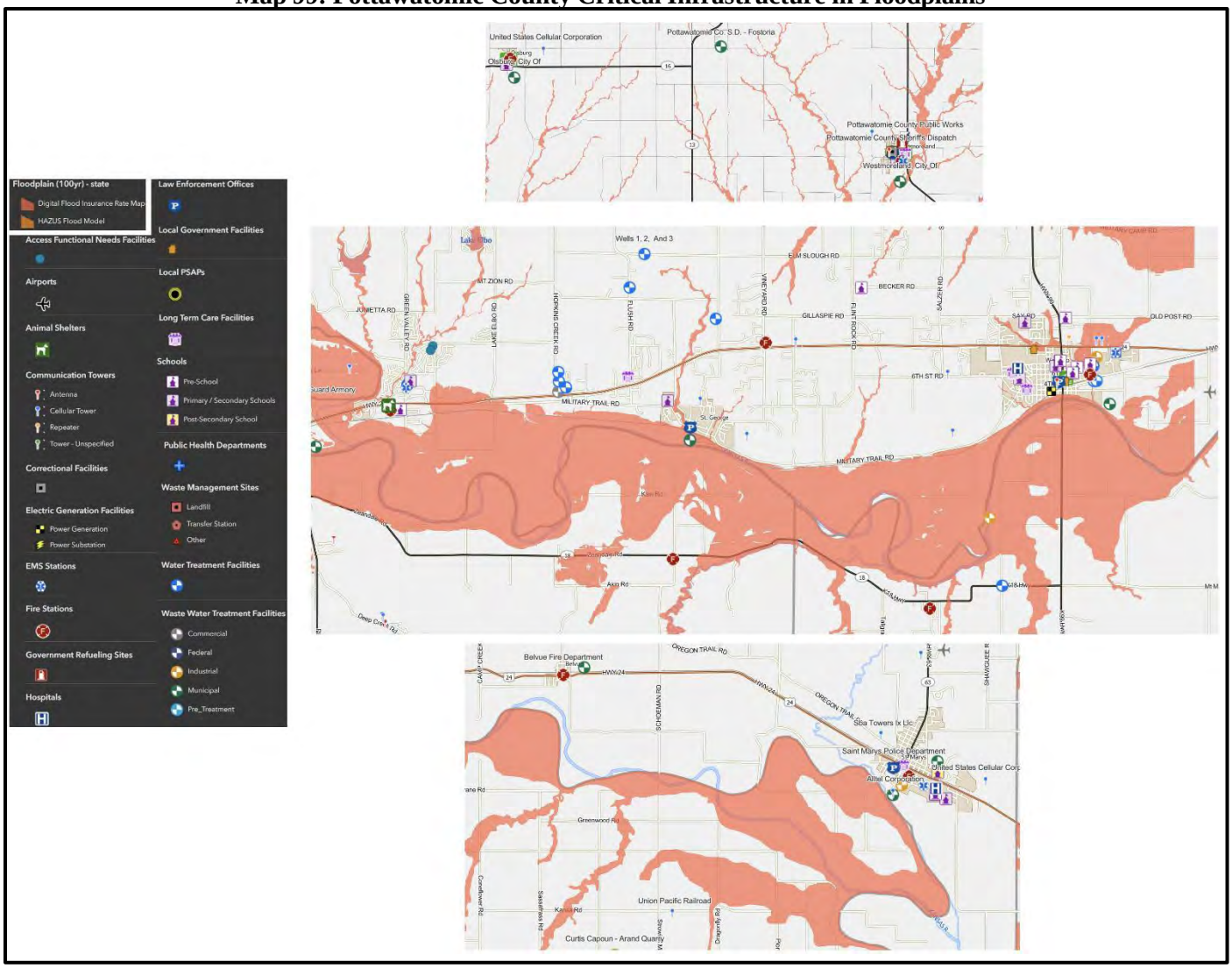
Source: EOPmapper

Map 98: Morris County Critical Infrastructure in Floodplains



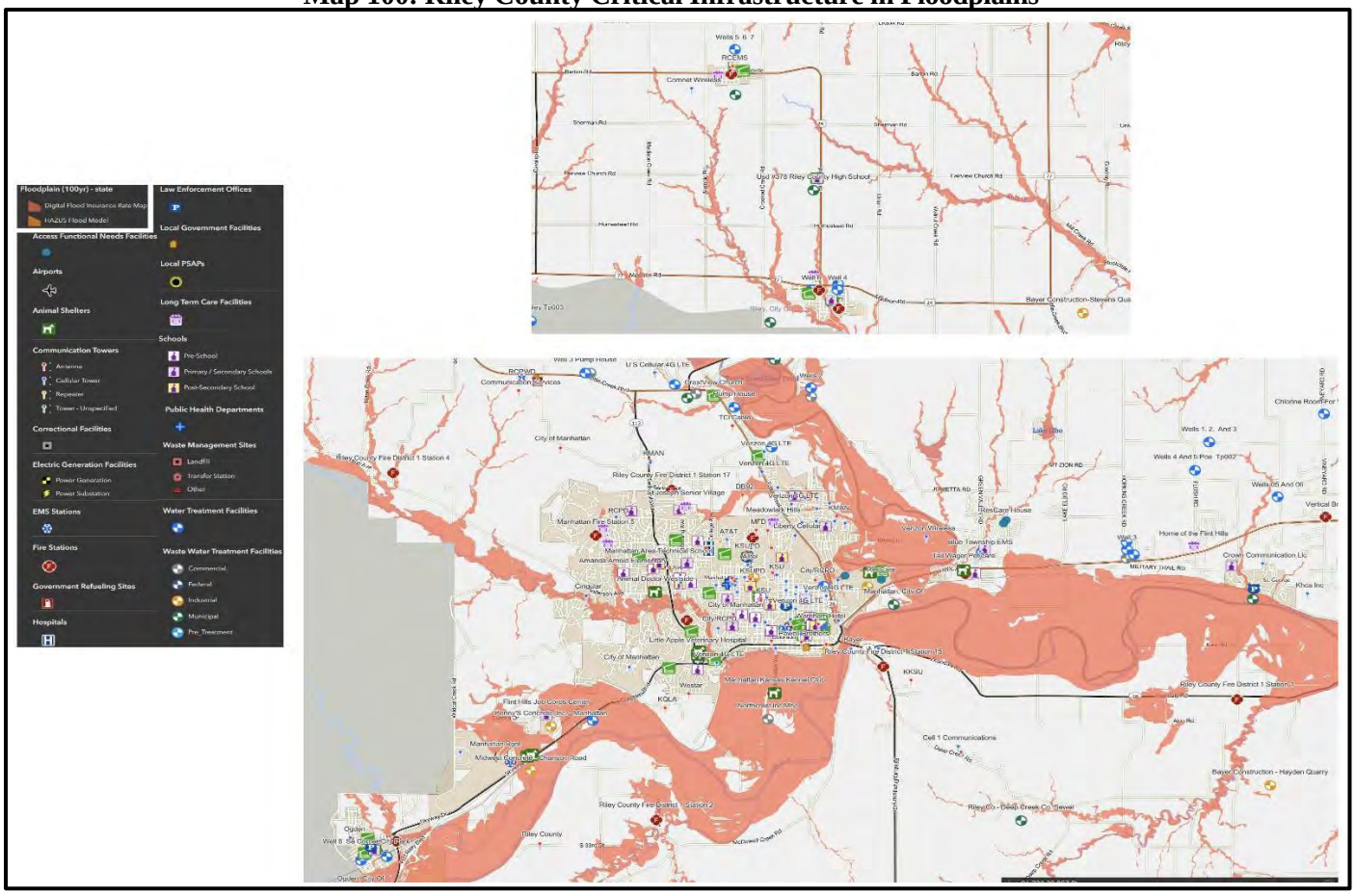
Source: EOPmapper

Map 99: Pottawatomie County Critical Infrastructure in Floodplains



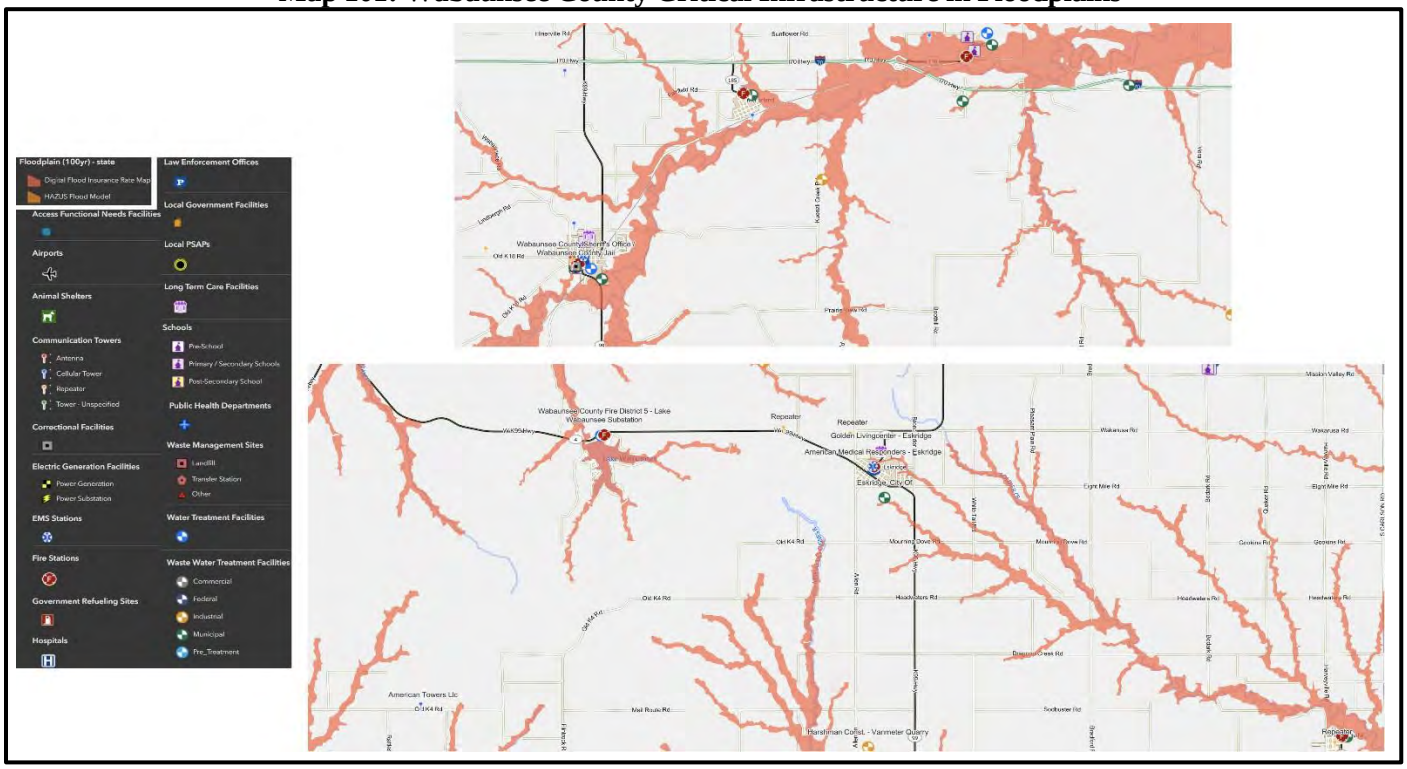
Source: EOPmapper

Map 100: Riley County Critical Infrastructure in Floodplains



Source: EOPmapper

Map 101: Wabaunsee County Critical Infrastructure in Floodplains



Source: EOPmapper

The following sections detail potential impacts on these facilities and systems.

Transportation and Electrical Infrastructure
Flooding can have numerous impacts on both transportation and electrical distribution systems. The impacts of flooding on transportation systems may include:

- **Scour and Erosion:** Floodwaters can wash away the supporting soil around and beneath roads, a process known as scour. This can lead to the collapse of the roadbed and destabilization of bridges and overpasses.
- **Undermining of Pavement:** Prolonged exposure to floodwaters can weaken the pavement structure, leading to cracks, potholes, and eventual failure of the roadway.
- **Potholes and Cracks:** Water penetrates cracks in the pavement, weakening the sublayers. Once the floodwaters recede and the weight of vehicles passes over, potholes can quickly form, creating hazards for drivers.
- **Surface Damage:** Asphalt roads, in particular, can become brittle after repeated water exposure, resulting in chunks of road surface breaking off.
- **Bridge Collapse:** Flooding can damage the support structures of bridges, particularly if water levels rise to exert pressure on the bridge's piers. Debris carried by floodwaters can accumulate around bridge structures, further stressing them.
- **Blocked or Collapsed Culverts:** Culverts, which allow water to pass beneath roads, can become blocked by flood debris, leading to water pooling on roads or forcing water to erode the roadbed around the culvert.
- **Road Inundation:** Flash floods or slow-rising waters can make roads impassable, either because of deep standing water or swift currents.
- **Debris Flows:** Heavy rains can wash debris, rocks, and soil onto roads, making them impassable and causing further damage to the road surface.
- **Foundation Weakening:** Repeated flooding over time can weaken the structural foundation of roads, even if the damage isn’t immediately apparent. This could lead to long-term deterioration of highways and bridges.

Flooding can impact both the electrical generation capacity and transmission. The impacts of extreme heat on electrical systems may include:

- **Flooding of Substations:** Electrical substations in low-lying or flood-prone areas are vulnerable to flooding. Water ingress can cause short circuits and failures of critical equipment, causing large areas to lose power.
- **Transformer Damage:** Floodwaters can compromise oil-insulated transformers. This can lead to transformer failures and extended outages.
- **Downed Power Lines:** Strong flood currents, debris, or trees falling due to saturated soil can bring down power lines, leading to localized or widespread outages.
- **Foundation Erosion:** Transmission towers and utility poles are susceptible to soil erosion during floods, which can undermine their foundations and cause structural instability or collapse.
- **Corrosion of Equipment:** Prolonged exposure to floodwaters can lead to the corrosion of metal components in transmission and distribution systems, shortening the lifespan of equipment and increasing the risk of failure.
- **Water Infiltration:** Electrical equipment, including power meters, transformers, and underground cabling, can experience short circuits if water infiltrates, leading to power outages and potential safety hazards. Underground electrical vaults can flood, damaging cables and transformers, and posing fire and electrocution risks.

Water and Wastewater Facilities
Water and wastewater utilities are vulnerable to flood events due to the potential for plant damages and distribution system damages. Impacts may include:

- **Damage to Water Treatment Plants:** Floodwaters can inundate water treatment plants, damaging pumps, electrical systems, and filtration equipment. This can prevent the proper treatment of drinking water, leading to unsafe water supplies.

- **Damage to Wastewater Treatment Plants:** Wastewater facilities may experience flooding that overwhelms the capacity to treat sewage, leading to raw or partially treated sewage being discharged into nearby water bodies, contaminating them.
- **Damage to Pumping Stations:** Flooded pumping stations can fail, leading to service interruptions in both water distribution and sewage removal. These failures may require costly repairs or replacements.
- **Drinking Water Contamination:** Floodwaters often carry contaminants such as chemicals, sewage, and industrial waste. If this water infiltrates drinking water systems through broken pipes or overwhelmed treatment systems, it can lead to widespread contamination.
- **Backflow of Sewage:** In severe flooding, sewage can backflow into homes, streets, and businesses through overwhelmed or broken sewer systems. This not only poses health risks but also results in costly cleanup.
- **Increased Flow in Sewer Systems:** During floods, combined sewer systems (which handle both stormwater and sewage) can be overwhelmed by the sheer volume of water. This leads to combined sewer overflows where untreated sewage is discharged directly into rivers, harming the environment and public health.
- **Overwhelmed Stormwater Systems:** Flooding can overwhelm stormwater management systems, causing backups that flood streets and neighborhoods. In older urban areas, this may also overwhelm the sewer system, as stormwater and sewage often share the same infrastructure.

Medical and Response Facilities
A GIS analysis of medical, educational, and response facilities within the 100-year floodplain indicates the following may be found in the mapping above.

Any response facility located in areas of flooding may be impacted, resulting in delayed response times. Impacts may include:

- **Physical Damage to Infrastructure:** Flood waters can cause physical damage to facilities. This damage can result in interruptions or complete failure of response services.
- **Power Outages:** Flood waters can lead to power outages by knocking down power lines or damaging electrical substations. Dispatch systems that rely on electricity may be impacted, disrupting services.

While flooding may result in a temporary increase in patients, it is considered unlikely that any influx would overwhelm current medical capabilities.

Educational Facilities
Depending on the educational facility capability and location, flooding may necessitate the closure of the facility for the duration of the event due to damages or lack of access. These closures are expected to have additional economic consequences as caregivers may be required to miss or modify work.

Communication Systems
No comprehensive mapping of communications systems was available for review to compare against known flood hazard areas. However, it is assumed that communications lines and towers are in known hazard areas. Flooding can disrupt this vital communications system, affecting reliability and functionality. Some of the key vulnerabilities include:

- **Physical Damage to Infrastructure:** Flood waters can cause physical damage to communication infrastructure such as cell towers, antennas, satellite dishes, and power lines. This damage can result in interruptions or complete failure of communication services.
- **Power Outages:** Flood waters can lead to power outages by knocking down power lines or damaging electrical substations. Communication systems that rely on electricity, such as landline phones, internet routers, and cellular towers, may cease to function during power outages.
- **Structural Instability:** Flood waters can cause structural instability in communication towers and buildings housing communication equipment. If these structures are not properly reinforced, they may collapse or sustain damage, disrupting communication services.

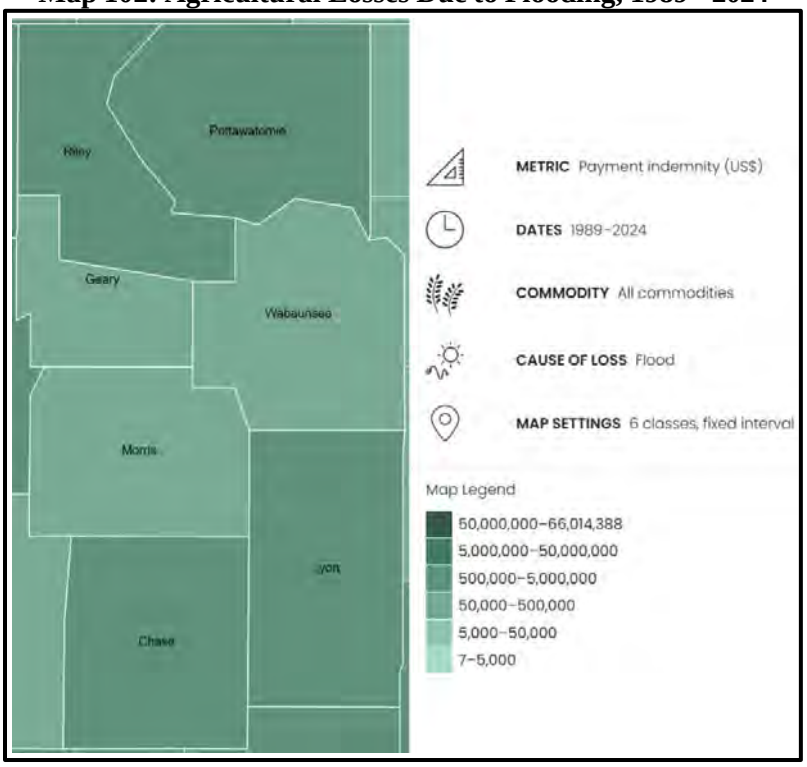
The cost to repair communications networks can vary widely depending on the extent of the damage, the size of the network, and the specific technologies involved. Repair costs may include expenses for labor, equipment replacement or repair, materials, and any additional resources required to restore the network to full functionality. Estimated repair cost from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency may be found in Section 5.11.6.

Environmental and Agricultural Impacts

Environmental impacts from flooding can be far reaching. Of particular concern is flood related runoff, potentially carrying sewage, pesticides, or hazardous chemicals, which can cause long lasting environmental harm. Expected negative outcomes could include changes in habitat, a decrease of available food, and an increase in the spread of vector-associated disease due to standing water.

Flooding can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total county-wide agricultural losses, by county, due to flooding from 1989 - 2024:

Map 102: Agricultural Losses Due to Flooding, 1989 - 2024



Source: United States Department of Agriculture

Jurisdictional Concerns:

As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts. The following initial vulnerabilities and potential impacts have been identified on a jurisdictional level:

- **Chase County:** The cities of Cottonwood Falls, Strong City, Cedar Point, and Elmdale are all located along the Cottonwood river, with each city having identified areas of inundation. The city of Elmdale is also located at the junction of the Middle Creek and Cottonwood river.
- **Geary County:** Portions of Geary County, due to the presence of the Republican and Smokey rivers, are at risk to flooding. Junction City is located along the Republican and Smoky Hill rivers and has identified flood hazard areas located on the north, northeast, and east sides of the city due to proximity to the two rivers. Many of the identified areas have little development.

- **Lyon County:** The city of Americus has two SFHAs within the city that include some residential development and industrial lagoons. The city of Emporia is located between the Neosho River to the north and the Cottonwood River to the south. Multiple small SFHAs are created by these rivers, but the areas are largely undeveloped except for roads and intermittent residences. The city of Hartford has areas designated as both Zone A and Zone X Protected by Levee. The Hartford Levee creates a barrier around the eastern city limits of the city and provides protection from the 100-year flood to developed areas along State Street, Neosho Street, and Congress Street. Other protected areas are in the north-central part of city along Main Street and in the southeastern section of Hartford between College Avenue and East South Avenue. In Neosho Rapids, two small SFHAs were identified. These areas appear to contain no development. The city of Olpe identified two SFHAs that appear to be largely undeveloped. In the city of Reading one undeveloped SFHA was noted.
- **Morris County:** The city of Council Grove has SFHAs located along the area of the Neosho River, which trends north-south through the center of the city. An additional SFHA is indicated east of the river, south of Main Street, and includes developed areas along 3rd Street, 4th Street, 5th Street, Elm Street, and Walnut Street. Additional SFHAs are located west of the Neosho River, along Elm Creek, in the southern portion of Council Grove. The city of Dunlap has SFHAs located throughout much of the city
- **Pottawatomie County:** The city of Louisville has one flood zone along Rock Creek that includes the majority the cities developed areas Rock Creek. The city of Onaga has one largely undeveloped primary flood zone that follows Hine Creek across the southern portion of the city. The city of St. George has two primary, largely undeveloped flood zones, one in the northwest portion of the city, west of Jackson Street and one south of the UP railroad tracks near Blackjack Creek and the Kansas River. The city of St. Mary's has three identified largely undeveloped flood zones, one located along the east boundary of the corporate limits along Willard Creek, one along the southwest corporate boundaries of the city from Willard Creek to College Creek, and one that in the southeast of the city that follows College Creek. The city of Wamego has three flood zones within developed areas, one along the Kansas River that runs along the south edge of the corporate limits of the city, one along the east edges of Wamego that follows Cat Creek, and one that follows East Unnamed Creek (a tributary of the Kansas River) from the west corporate limits to the north corporate limits.
- **Riley County:** The city of Manhattan areas most susceptible to flooding occur along two floodways identified with Zones A, AE, AH, and Zone X. The first floodway is located along Wildcat Creek which enters Manhattan on the west city boundary along Anderson Road and moves east-southeast until joining the Kansas River. There were no major population centers or improvements identified within the floodway up to the levee located along the southeast side of Manhattan that protects an area identified as Zone X. The levee protected area begins along Fair Lane at Denison Avenue, and trends north-northeast to Bertrand Street and Highway 24. Notable population areas were identified within this protected area. The second floodway is along city of Manhattan and the Kansas River boundary to the south and east. Large areas of floodplain appear to be within sparsely populated agricultural areas of the county as the river trends away from Manhattan to the east. The city of Ogden has one SFHA that includes some outlying city-owned property areas. In addition, the Dry Branch Creek flood area is located along the east side of the and includes some populated residential areas of the city the city of Riley identified two Zone AE flood hazard areas. Wildcat Creek is located along the west side of the city and touches a very small area of the city limits and includes a small portion of improved properties. Wildcat Creek Tributary enters the city from the north and runs south through the city where it joins Wildcat Creek outside the city limits. This narrow floodway does appear to include a small number of residential properties.
- **Wabaunsee County:** A small, undeveloped portion of the southeast corner the city of Alma has a flood area that is designated as Zone A. The city of Alta Vista has one primary flood area, designated as Zone A, that is created by Munkers Creek. This wide strip of floodplain is located south of Elm Street and travels from east to west crossing over Main Street as the road intersects its path and is largely undeveloped. The city of Eskridge has a narrow floodplain, designated Zone A, that winds through the city and includes a limited number of residential properties. The city of Harveyville has one flood area, designated Zone A, in northeast corner of the city that includes several commercial properties. The city of McFarland has one flood area, designated as Zone A, created by Paw Paw Creek in the northeast corner of city. This floodplain area does not appear to impact

improved areas in the city. The city of Paxico has one flood area, designated as Zone A, that covers most of the city located south of Elm Street, including both residential and commercial development.

Cascading Impacts

Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with extreme may include:

- Infrastructure and utility failure
- Economic disruption
- Flood related illnesses and mortality
- Power outages
- Population displacement

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of a community. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 100: Flood Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Significant flooding events can lead to the damage and loss of homes, property, and businesses. Flash flooding and excessive rainfall may lead to dangerous conditions on roadways. Closures of medical facilities is a major public health concern if flooding damages those facilities. Water sources may become contaminated, and water or sewer systems may be disrupted. Vector-associated disease may increase.
Impact on Responders	Fire, police, and emergency responders may be called on to evacuate people from impacted areas, as well as close roads, attend to the injured, and direct traffic away from the flooded area and roads. First responders may face challenges with transportation and access to a location. Flash floods and mudslides due to heavy rainfall can also injure first responders, as well as delay response operations.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted based on the situation. Floods which create power outages, debris damage, and road closures are not uncommon.
Delivery of Services	Flooding can cause road and bridge closures, as well as disrupt transit services, impacting the ability to deliver goods and services. Exposure to flood waters may also damage or destroy physical goods such as food, clothing, and hygiene products.
Property, Facilities, and Infrastructure	Flooding can cause significant property destruction. Floods can disrupt normal daily activities due to the potential impact on schools, hospitals, and other public infrastructure. Transportation infrastructure can be damaged. Water sources can become contaminated. Water and sewer systems may be disrupted.
Impact on Environment	Rising waters from flooding impact the environment by spreading pollution, inundating water and wastewater treatment plants, and disrupting wildlife. Standing water following a flood event can facilitate the spread of vector-associated diseases.
Economic Conditions	Significant and repeated flooding can lower property value throughout the state, which can have a deleterious effect on the tax base. Furthermore, flooding drains response resources, which can be costly during a large flooding event for disaster reimbursement
Public Confidence in Governance	Ineffective flooding response can decrease the public's confidence in the ability to respond and govern. Multi-level government response requires direct actions that must be immediate and effective to maintain public confidence.

5.12.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State

University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

5.12.8 National Flood Insurance Program Communities

The NFIP is a federal program, managed by FEMA, which exists to provide flood insurance for property owners in participating communities, to improve floodplain management practices, and to develop maps of flood hazard areas. The following table presents NFIP participating communities:

Table 101: Kansas Region I NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
Chase County	**09/13/1977**	**05/01/90**	**03/22/2022**
Cedar Point	12/17/1976	02/19/1987	03/22/2022
Cottonwood Falls	03/26/1976	06/01/2009	03/22/2022
Elmdale	Suspended	Suspended	Suspended
Matfield Green	Does not participate	Does not participate	Does not participate
Strong City	08/16/74	09/01/90	03/22/2022
Geary County	**10/18/1977**	**02/04/1988**	**04/05/2016**
Grandview Plaza	08/09/1974	04/05/2016	04/05/2016
Junction City	02/01/1974	09/29/1978	04/05/2016
Milford	Does not participate	Does not participate	Does not participate
Lyon County	**06/28/1977**	**11/17/1982**	**06/15/2022**
Admire	-	02/20/2008	NSFHA
Allen	-	02/20/2008	06/15/2022(M)
Americus	02/01/1974	04/15/1982	06/15/2022
Emporia	02/01/1974	10/02/1979	06/15/2022
Hartford	09/26/1975	02/20/2008	12/17/10(M)
Neosho Rapids	01/03/1975	02/20/2008	06/15/2022
Olpe	Does not participate	Does not participate	Does not participate
Reading	Does not participate	Does not participate	Does not participate
Morris County	Does not participate	Does not participate	Does not participate
Council Grove	12/21/1973	04/03/1987	07/19/22
Dunlap	Does not participate	Does not participate	Does not participate
Dwight	09/19/1975	07/19/2022	NSFHA

Table 101: Kansas Region I NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
Parkerville	Does not participate	Does not participate	Does not participate
White City	09/19/1975	07/19/2022	NSFHA
Wilsey	-	07/19/2022	NSFHA
Pottawatomie County	**12/20/1977**	**02/17/1988**	**11/17/2022**
Belvue	12/20/1977	02/17/1988	11/17/2022(M)
Havensville	-	12/4/2012	12/04/2012(M)
Louisville	Suspended	Suspended	Suspended
Olsburg		12/04/2012	NSFHA
Onaga	08/13/1976	09/01/2011	12/04/2012(M)
St. George	01/03/1975	02/03/1993	11/17/2022
St. Mary's	12/7/1973	02/01/1980	11/17/2022
Wamego	12/7/1973	02/18/1981	11/17/2022
Westmoreland	Does not participate	Does not participate	Does not participate
Wheaton	Does not participate	Does not participate	Does not participate
Riley County	**02/15/1974**	**04/01/1982**	**03/16/2015**
Manhattan	03/08/1974	04/01/1982	03/16/2015
Ogden	06/07/1974	10/15/1981	03/16/2015
Randolph	-	11/19/2003	NSFHA
City of Riley	02/15/1974	11/01/1979	03/16/2015
Wabaunsee County	**-**	**03/19/2007**	**08/24/2021**
Alma	03/08/1974	03/19/2007	08/24/2021(M)
Alta Vista	Does not participate	Does not participate	Does not participate
Eskridge	08/22/1975	12/01/1989	08/24/2021(M)
Harveyville	11/8/1974	03/19/2007	08/24/2021(M)
Maple Hill	11/5/1976	03/19/2007	NSFHA
McFarland	11/22/1974	03/19/2007	08/24/2021(M)
Paxico	12/20/1974	01/04/1985	08/24/2021

Notes: NSFHA: No Special Flood Hazard Area - All Zone C
(M): No elevation determined - All Zone A, C and X

Additionally, the NFIP's Community Rating System (CRS) incentive rewards communities for the work they do managing their floodplains. Eligible communities that qualify for this voluntary program go above the minimum NFIP requirements and can offer their citizens discounted flood insurance in both Special Flood Hazard Areas (SFHAs) areas or non-SFHA areas. Additionally, work already being done by the state of Kansas (e.g., dam safety program and state freeboard requirements) gives communities additional discounts. The following Region I community is currently a CRS participant:

Table 102: Kansas Region I CRS Participating Jurisdictions

Jurisdiction	County	CRS Entry Date	CRS Class	% Discount
Geary County	Geary	10/01/2017	9	5%
Lyon County	Lyon	10/01/2007	8	10%
Manhattan	Riley	05/01/2013	6	20%
Riley County	Riley	05/01/2015	9	5%
City of Riley	Riley	10/01/2018	9	5%
Strong City	Chase	05/01/2020	9	5%
Wamego	Pottawatomie	10/01/2012	8	10%

Source: FEMA and KDEM

5.12.9 FEMA Flood Policy and Loss Data

Kansas Region I flood policy information was sourced from FEMA's Flood Insurance Data and Analytics. The number of flood insurance policies in effect may not include all structures at risk of flooding, and it is likely that some properties are under-insured. The flood insurance purchase requirement is for flood insurance in the amount of federally backed mortgages, not the entire value of the structure. Additionally, contents coverage is not required. The following table shows the details of NFIP policy statistics for Kansas Region I:

Table 103: Kansas Region I NFIP Coverage

Jurisdiction	Policies in Force	Insurance in Force
Chase County	**8**	**$879,000**
Cedar Point	1	$15,000
Elmdale	2	$76,300
Strong City	5	$225,600
Geary County	**11**	**$2,344,400**
Grandview Plaza	1	$70,000
Junction City	41	$7,282,400
Unknown	2	$458,000
Lyon County	**25**	**$4,760,800**
Americus	3	$625,000
Emporia	29	$5,346,500
Neosho Rapids	1	$70,000
Unknown	2	$237,000
Morris County	**None**	**$0**
Council Grove	1	$53,400
Pottawatomie County	**67**	**$19,491,300**
Manhattan	13	$7,107,800
Onaga	1	$300,000
St. George	3	$371,000
St. Mary's	8	$2,077,000
Unknown	11	$1,900,000
Wamego	21	$7,457,300
Riley County	**65**	**$15,428,600**
Manhattan	385	$108,913,900
Ogden	10	$761,800
Riley (City)	6	$1,144,700
Unknown	4	$1,119,000
Wabaunsee County	**15**	**$3,549,400**
Eskridge	1	$175,000
Maple Hill	1	$350,000
Paxico	10	$1,223,300
Unknown	4	$185,000

Source: FEMA, Policy and Loss Data by Community with County and State Data

The following table details the change in NFIP coverage from 2019 to 2025 for Kansas Region I:

Table 104: Kansas Region I NFIP Coverage Changes

Jurisdiction	Policies in Force 2019	Policies in Force 2025	Change in Policies, 2019 - 2025	Total Coverage 2019	Total Coverage 2025	Change in Coverage, 2019 - 2025
Chase County	**9**	**8**	**-1**	**$871,300**	**$879,000**	**$7,700**
Cedar Point	1	1	0	$15,000	$15,000	$0
Elmdale	2	2	0	$76,300	$76,300	$0
Strong City	7	5	-2	$324,200	$225,600	-$98,600

Table 104: Kansas Region I NFIP Coverage Changes

Jurisdiction	Policies in Force 2019	Policies in Force 2025	Change in Policies, 2019 - 2025	Total Coverage 2019	Total Coverage 2025	Change in Coverage, 2019 - 2025
Geary County	**15**	**11**	**-4**	**$4,901,600**	**$2,344,400**	**-$2,557,200**
Grandview Plaza	0	1	1	$0	$70,000	$70,000
Junction City	51	41	-10	$11,767,800	$7,282,400	-$4,485,400
Lyon County	27	25	-2	$4,504,400	$4,760,800	$256,400
Americus	3	3	0	$625,000	$625,000	$0
Emporia	35	29	-6	$6,079,300	$5,346,500	-$732,800
Neosho Rapids	1	1	0	$70,000	$70,000	$0
Morris County	**0**	**0**	**0**	**$0**	**$0**	**$0**
Council Grove	2	1	-1	$141,500	$53,400	-$88,100
Pottawatomie County	**120**	**67**	**-53**	**$30,620,400**	**$19,491,300**	**-$11,129,100**
Onaga	1	1	0	$300,000	$300,000	$0
St. George	5	3	-2	$423,900	$371,000	-$52,900
St. Marys	12	8	-4	$2,778,900	$2,077,000	-$701,900
Wamego	1	21	20	$150,000	$7,457,300	$7,307,300
Riley County	**115**	**65**	**-50**	**$23,921,800**	**$15,428,600**	**-$8,493,200**
Manhattan	721	385	-336	$179,020,600	$108,913,900	-$70,106,700
Ogden	8	10	2	$1,227,500	$761,800	-$465,700
Riley (City)	4	6	2	$908,200	$1,144,700	$236,500
Wabaunsee County	**19**	**15**	**-4**	**$4,479,700**	**$3,549,400**	**-930,300**
Eskridge	1	1	0	$175,000	$175,000	$0
Maple Hill	2	1	-1	$525,000	$350,000	-$175,000
Paxico	14	10	-4	$1,138,400	$1,223,300	$84,900

Source: FEMA, “Policy and Loss Data by Community with County and State Data"

5.12.10 Repetitive Loss Structures

The NFIP defines a repetitive loss property as:

- Any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978. At least two of the claims must be more than 10 days apart.

The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended, 42 U.S.C. 4102a. A severe repetitive loss property is defined as a residential property that is covered under an NFIP flood insurance policy and:

- That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or
- For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both of the above, at least two of the referenced claims must have occurred within any ten-year period and must be greater than ten days apart.

The following table details non-mitigated repetitive loss properties in Kansas Region I.

Table 105: Kansas Region I Repetitive Loss Properties

County Name	Community Name	Mitigated	Insured	Occupancy	Losses	Total Paid
Lyon County	Emporia	No	No	Single Family	5	$346,926
Lyon County	Emporia	No	No	Single Family	2	$5,950
Lyon County	Emporia	No	Yes	Single Family	2	$42,040

Table 105: Kansas Region I Repetitive Loss Properties

County Name	Community Name	Mitigated	Insured	Occupancy	Losses	Total Paid
Lyon County	Lyon County	No	No	Single Family	3	$43,879
Lyon County	Lyon County	No	No	Single Family	2	$44,867
Lyon County	Lyon County	No	Yes	Single Family	2	$56,902
Lyon County	Lyon County	No	No	Single Family	2	$6,607
Riley County	Manhattan	No	No	Single Family	6	$198,824
Riley County	Manhattan	No	No	Single Family	7	$92,144
Riley County	Manhattan	No	No	Single Family	4	$14,964
Riley County	Manhattan	No	No	Single Family	2	$25,182
Riley County	Ogden	No	No	Single Family	3	$25,434
Riley County	Riley County	No	No	Single Family	2	$3,622
Riley County	Riley County	No	No	Single Family	4	$30,064
Riley County	Riley County	No	Yes	Single Family	3	$77,143
Riley County	Riley County	No	No	Single Family	2	$21,774

Source: KDEM and FEMA

The following table details non-mitigated severe repetitive loss properties in Kansas Region I.

Table 106: Kansas Region I Severe Repetitive Loss Properties

County Name	Community Name	Mitigated	Insured	Occupancy	Losses	Total Paid
Riley County	Manhattan	No	No	Single Family	6	$198,824
Riley County	Manhattan	No	No	Single Family	7	$ 92,144

Source: KDEM and FEMA

5.12.11 Mitigation Opportunities

The following table presents examples of potential actions that can be instituted for mitigating the flood hazard.

Table 107: Example Flood Mitigation Actions

Category	Example Action
Planning and Regulation	Determine and enforcing acceptable land uses to alleviate exposure in flood hazard areas.
	Develop a floodplain management plan and update it regularly.
	Establish a program to link, manage, and expand existing parks, preserves, and greenways.
	Prohibit or limiting floodplain development through regulatory or incentive-based measures.
	Limit the percentage of allowable impervious surface within developed parcels.
	Encourage the use of porous pavement, vegetative buffers, and islands in large parking areas.
	Conduct NFIP community workshops to provide information for property owners.
Infrastructure	Install, re-route, or increase the capacity of a storm drainage system.
	Increase capacity of stormwater detention and retention basins.
	Routinely clean debris from support bracing underneath low-lying bridges.
	Elevate structures so that the lowest floor, including the basement, is raised above the BFE.
	Elevate roads and bridges above the base flood elevation to maintain dry access.
	Floodproof water and wastewater treatment facilities located in flood hazard areas.
	Require that all critical facilities be located outside of flood-prone areas.
Natural Systems	Establish and managing riparian buffers along rivers and streams.
	Protect and preserve wetlands to help prevent flooding in other areas.
	Develop an open space acquisition, reuse, and preservation plan targeting hazard areas.
	Protect and enhance landforms that serve as natural mitigation features
Education	Encourage homeowners to purchase flood insurance.
	Distribute flood protection safety pamphlets to the owners of flood-prone property.
	Educate citizens about safety during flood conditions.

5.13 Severe Weather



5.13.1 Hazard Description

Severe weather comprises the hazardous and damaging weather effects often found in violent storm fronts and severe winter storms. They can occur together or separate, they are common and usually not hazardous, but on occasion they can pose a threat to life and property.

This plan defines severe weather as a combination of the following as defined by NOAA and the NWS:

- **Hail:** Precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud.
- **Lightning:** A visible electrical discharge produced by a thunderstorm. The discharge may occur within or between clouds, between the cloud and air, between a cloud and the ground or between the ground and a cloud.
- **Thunderstorm Winds:** The same classification as high or strong winds but accompanies a thunderstorm. It is also referred to as a straight-line wind to differentiate from rotating or tornado associated wind. Additionally, these winds can rapidly create dust storms that severely impact visibility.

Severe weather has been so consistent throughout modern history that much of the vulnerability is mitigated. However, this section is not concerned with everyday wind, lightning, or mild precipitation. This section is concerned with common storm elements when they behave such that they pose a threat to property and life.

5.13.2 – Location and Extent

All of Kansas Region I is vulnerable to severe weather events. Based on the non-geographic specific aspect of this hazard, i.e., no one area is at a greater risk, all of the planning area's structural inventory and population is vulnerable. Severe weather can rapidly descend on an area, but in many cases is predictable. Most weather forecasts focus on changing conditions that may lead to the onset of severe storms.

The NWS classifies thunderstorms, often the generator of hail, lightning and high winds, using the following categories.

- **Marginal:** Isolated severe weather, limited in duration and/or coverage and/or intensity
- **Slight:** Scattered severe storms possible, short-lived and/or not widespread, isolated intense storms possible
- **Enhanced:** Numerous severe storms possible, more persistent and/or widespread, a few intense
- **Moderate:** Widespread severe storms likely, long-lived, widespread and intense
- **High:** Widespread severe storms expected, long-lived, very widespread and particularly intense

In the United States, hail causes billions of dollars in damage to property each year. Vehicles, roofs of buildings and homes, and landscaping are most commonly damaged by hail. Hail has been known to cause injury and the occasional fatality to humans, often associated with traffic accidents.

Based on information provided by the National Weather Service concerning size, the following table describes potential damage impacts of the various sizes of hail.

Table 108: Hail Size Comparison and Damage Descriptions

Diameter (inches)	Size Description	Potential Damage Impacts
1/4	Pea Size	No damage
1/2	Mothball, peanut, USB Plug	Slight damage to vegetation
3/4	Penny Size	Increased damage to crops and vegetation
7/8	Nickel Size	Severe damage to crops and vegetation, damage begins to glass and plastic

Table 108: Hail Size Comparison and Damage Descriptions

Diameter (inches)	Size Description	Potential Damage Impacts
1	Quarter Size	Increased glass damage, damage begins to bodies of vehicles
1 1/4	Half Dollar Size	Large scale glass damage, begin roof damage, risk of injury to exposed persons
1 1/2	Ping Pong Ball Size	Large scale glass damage, begin roof damage, increased risk of injury to exposed persons
1 3/4	Golf Ball Size	Severe roof damage, risk of serious injuries to exposed persons
2	Lime or Medium Sized Hen Egg	Potential structural damage, risk of very severe injuries to exposed persons
2 1/2	Tennis Ball Size	Extensive structural damage, risk of very severe injuries or death to exposed persons

Source: National Weather Service

A recent report by the Insurance Information Institute says lightning strikes caused $1,300,000,000 in damage across the United States in 2021. There is currently no scale to indicate the severity of a lightning strike, but data from NOAA indicates that there approximately 25,000,000 cloud-to-ground lightning strikes per year in the United States.

To measure wind speed and its correlating potential for damage, experts use the Beaufort scale as shown below.

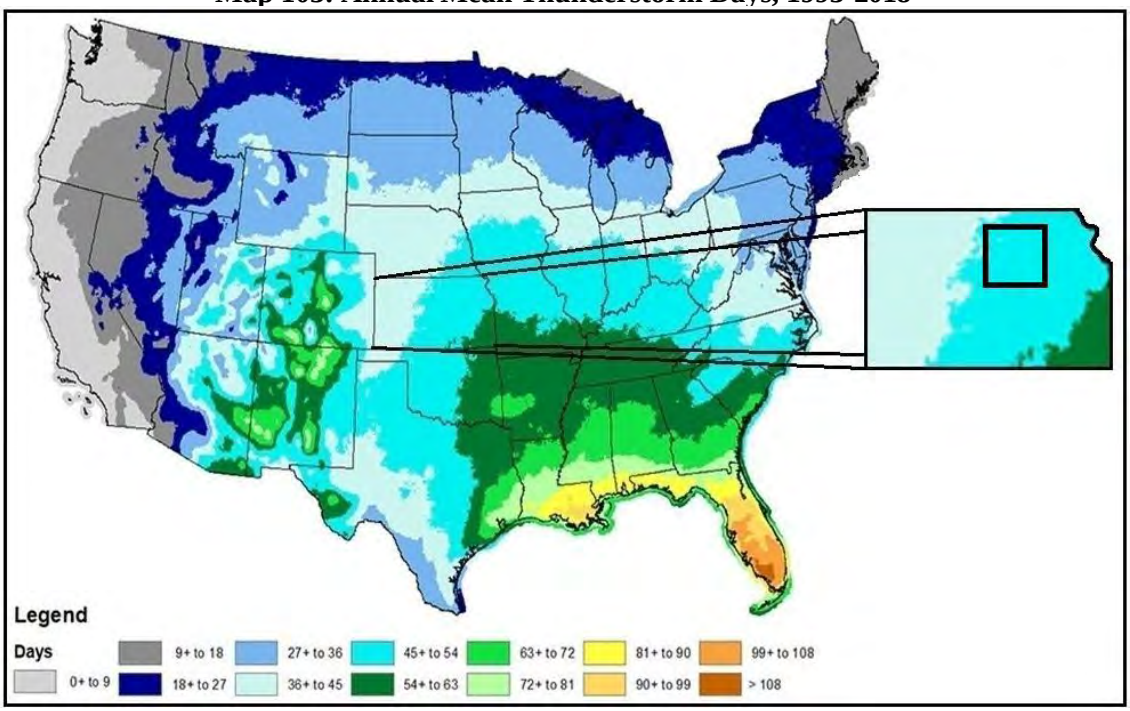
Table 109: Beaufort Scale

Beaufort Number	Wind Speed (mph)	Effects on Land
0	Under 1	Calm, smoke rises vertically
1	1-3	Smoke drift indicates wind direction, vanes do not move
2	4-7	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Leaves, small twigs in constant motion. Light flags extended.
4	13-18	Dust, leaves and loose paper raised up; small branches move
5	19-24	Small trees begin to sway
6	25-31	Large branches of trees in motion, whistling heard in wires
7	32-38	While trees in motion, resistance felt in walking against the wind
8	39-46	Twigs and small branches broken off trees
9	47-54	Slight structural damage occurs, slate blown from roofs
10	55-63	Seldom experienced on land, trees broken, structural damage occurs
11	64-72	Very rarely experienced on land, usually with widespread damage
12	73 or higher	Violence and destruction

Source: NOAA

The infrequent nature of thunderstorms makes hail, lightning, and high wind a relatively common occurrence for Kansas Region I. The following map, from NOAA, indicates annual mean thunderstorm days from 1993 to 2018.

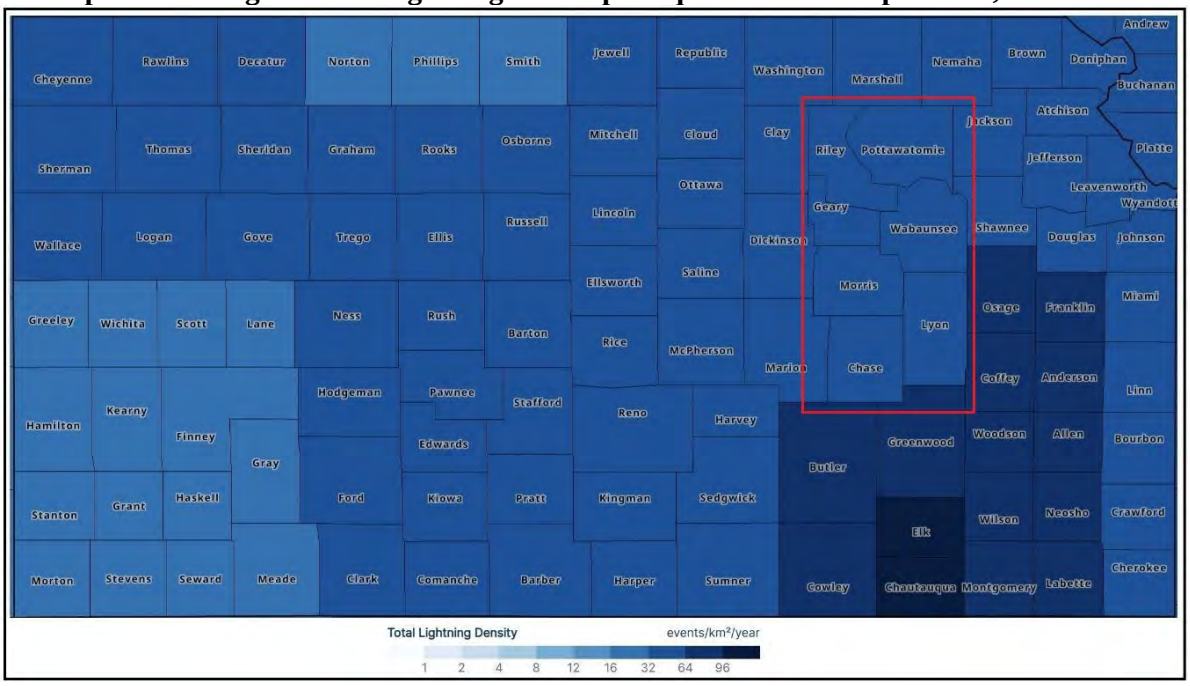
Map 103: Annual Mean Thunderstorm Days, 1993-2018



Source: NOAA

The following map, from Vaisala, indicates the average annual light events per square kilometer per year for Kansas Region I:

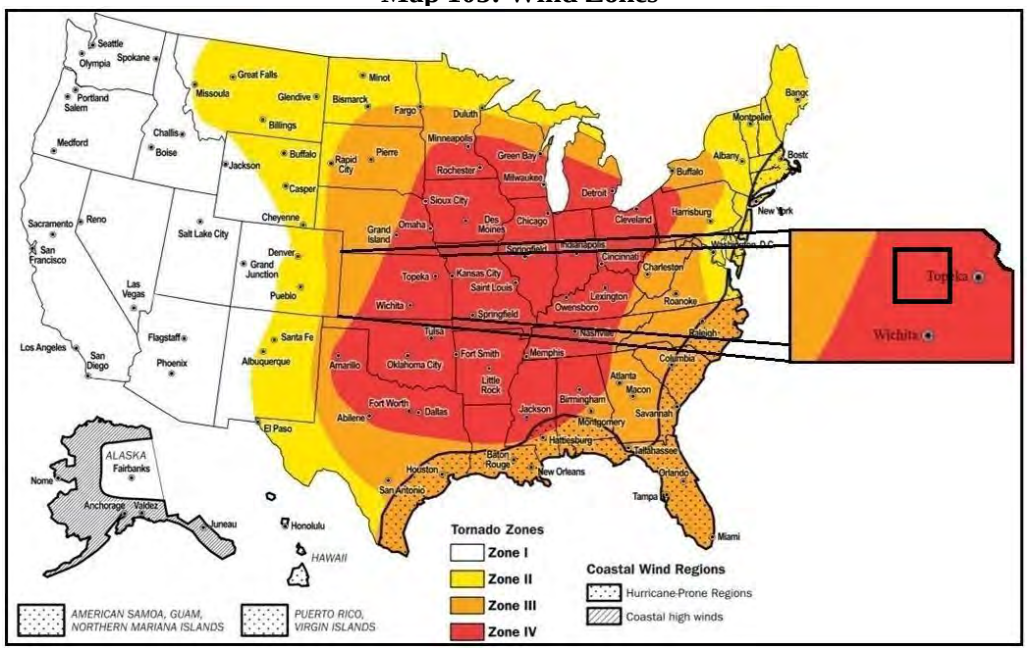
Map 104: Average Annual Lightning Events per Square Kilometer per Year, 2016 - 2023



Source: Vaisala

The following map from FEMA indicates the highest possible expected wind speeds for Kansas Region I.

Map 105: Wind Zones



Source: FEMA

The MPC views severe weather as a local, county-wide, and regional hazard. Discussions with the MPC and a review of all available data indicated severe weather is a community concern for all participating jurisdictions. The following provides a narrative of the level of jurisdictional concern:

- **Chase County** Severe weather identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Geary County:** Severe weather identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Lyon County:** Severe weather identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Morris County:** Severe weather identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Pottawatomie County:** Severe weather identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Riley County:** Severe weather identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Wabaunsee County:** Severe weather identified as a community concern as citizens, structures, and infrastructure are vulnerable.

5.13.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. Kansas Region I has experienced the following Presidential Disaster Declarations related to severe weather events:

Table 110: Kansas Region I Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Individual and Public Assistance	Mitigation Grants
DR-4824-KS	9/24/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Chase, Geary, Wabaunsee	-	-

Table 110: Kansas Region I Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Individual and Public Assistance	Mitigation Grants
DR-4811-KS	8/20/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Morris, Wabaunsee	-	-
DR-4800-KS	7/15/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Morris, Pottawatomie	-	-
DR-4640-KS	3/22/2022	Severe Storms and Straight-Line Winds	Geary, Morris, Riley, Wabaunsee	$12,159,785	$79,818
DR-4449-KS	8/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Chase, Geary, Lyon, Morris, Pottawatomie, Wabaunsee	$51,157,548	$3,331,442
DR-4403-KS	10/19/2018	Severe Storms, Straight-Line Winds, and Flooding	Riley	$4,545,539	$614,317
DR-4230-KS	7/20/2015	Severe Storms, Tornadoes, Straight-Line Winds and Flooding	Chase, Lyon, Morris, Pottawatomie, Wabaunsee	$11,018,053	-
DR-4150-KS	10/22/2013	Severe Storms, Straight-Line Winds, Tornadoes	Chase, Geary, Lyon, Morris, Pottawatomie	$10,135,201	-
DR-4010-KS	7/29/2011	Severe Storms, Straight-Line Winds, Tornadoes and Flooding	Lyon, Pottawatomie, Riley	$7,283,729	-
DR-1932-KS	8/10/2010	Severe Storms, Flooding and Tornadoes	Chase, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$7,384,786	-
DR-1849-KS	6/25/2009	Severe Storms, Flooding, Straight-Line Winds, and Tornadoes	Chase, Lyon, Morris, Wabaunsee	$11,534,818	-
DR-1808-KS	10/31/2008	Severe Storms, Flooding, and Tornadoes	Chase	$3,364,325	-
DR-1776-KS	7/9/2008	Severe Storms, Flooding, and Tornadoes	Riley	$55,300,511	-
DR-1699-KS	5/6/2007	Severe Storms, Tornadoes, and Flooding	Chase, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$98,286,095	-
DR-1535-KS	8/3/2004	Severe Storms, Flooding, and Tornadoes	Geary, Lyon, Morris, Wabaunsee	$10,223,840	-
DR-1258-KS	11/5/1998	Severe Storms and Flooding	Chase, Lyon	$9,574,047	-
DR-1000-KS	7/22/1993	Flooding, Severe Storms	Chase, Geary, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	-	-
DR-442-KS	6/10/1974	Severe Storms, Flooding	Lyon	-	-
DR-378-KS	5/2/1973	Severe Storms, Flooding	Lyon, Morris, Pottawatomie, Wabaunsee	-	-
DR-267-KS	7/15/1969	Tornadoes, Severe Storms, Flooding	Lyon, Morris	-	-
DR-229-KS	7/18/1967	Tornadoes, Severe Storms, Flooding	Chase, Lyon, Pottawatomie, Wabaunsee	-	-
DR-219-KS	6/10/1966	Tornadoes, Severe Storms	Riley	-	-

Source: FEMA
-: Not reported

The President can declare an emergency for any occasion or instance when the President determines federal assistance is needed. Kansas Region I has experienced no Emergency Declarations related to severe weather or severe winter weather events.

The Governor of the State of Kansas has declared two Kansas Disaster Declarations during the past five years for Region I:

- July 17, 2025: A severe storm declaration was issued for Morris Counties.
- June 3, 2025: A severe storm declaration was issued for Lyon and Morris Counties.

Additionally, the following table presents NCEI identifies severe weather events and the resulting damage totals in Kansas Region I from 1950 to 2024:

Table 111: NCEI Kansas Region I Severe Weather Events, 1950 - 2024

County	Event Type	Number of Days with Events	Property Damage	Deaths and Injuries
Chase	Hail	112	$10,000	0
	Lightning	2	$15,000	3
	Thunderstorm Winds	84	$694,100	6
Geary	Hail	120	$270,000	1
	Lightning	9	$96,200	0
	Thunderstorm Winds	12	$107,500	12
Lyon	Hail	183	$50,500	0
	Lightning	6	$27,600	0
	Thunderstorm Winds	219	$234,500	7
Morris	Hail	150	$909,000	0
	Lightning	1	$500	0
	Thunderstorm Winds	84	$194,000	1
Pottawatomie	Hail	179	$66,000	0
	Lightning	7	$272,800	0
	Thunderstorm Winds	137	$5,545,000	3
Riley	Hail	170	$5,400,000	0
	Lightning	18	$861,950	2
	Thunderstorm Winds	164	$6,777,000	2
Wabaunsee	Hail	155	$402,000	0
	Lightning	3	$0	0
	Thunderstorm Winds	125	$1,002,000	4

Source: NCEI

It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or NWS office. When reporting an event, the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages. Additionally, deaths and injuries may be underreported as they may be a result of a concurrent event, such as a person driving unsafely during heavy rain and passing away.

Recent notable NCEI listed events include:

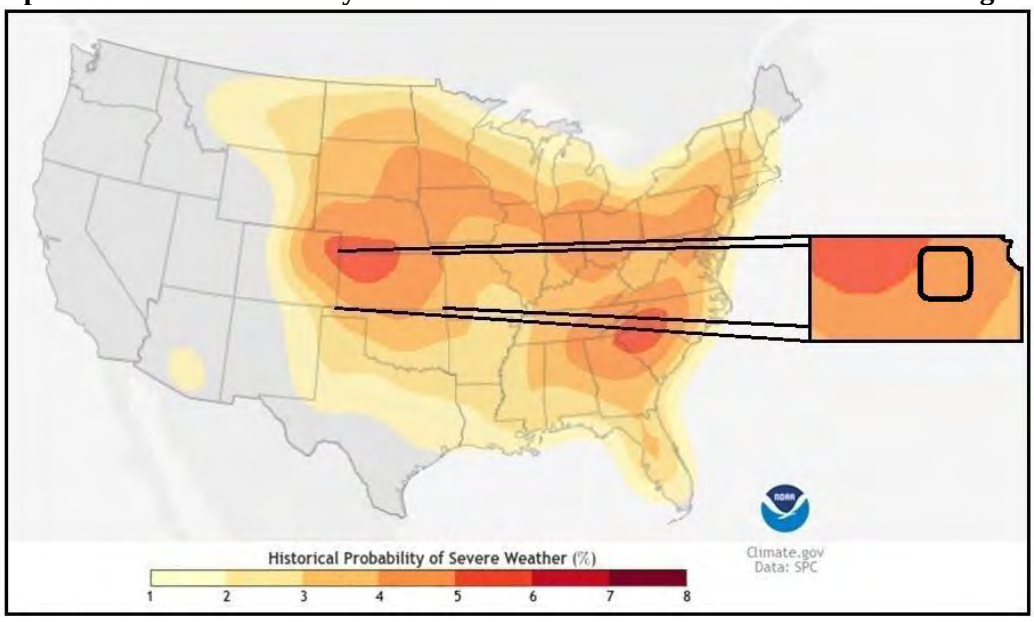
- **July 2019, Strong City, Chase County:** The Symphony in the Flint Hills concert and festival was canceled for the first time in 14 years due to high winds and storm damages. The economic impact was unrecorded, but lost sales and lodging impacted the community.
- **October 9, 2017, Chase County:** Three state transportation workers were injured while working along the Kansas Turnpike when their vehicle was struck by lightning. One worker was inside the vehicle, while two others were nearby. All three of the employees were taken to the hospital, two were treated and released, while the other was hospitalized in fair condition. Property damages were reported at $15,000.

- **May 18, 2013: Milford, Geary County:** One camper flipped over with 2 minor injuries and another camper flipped. Most of the area without power. Two people were reported as injured.
- **August 13, 2010: Ogden, Riley County:** A wind measuring instrument mounted to the roof of the Air Traffic Control tower at Manhattan Regional Airport measured a 93-mph wind gust. The ASOS station at Manhattan Regional Airport also reported a strong wind gust of 68 mph. In the town of Ogden the windows of a residence were cracked by the force of the wind. No estimation of the wind speed was given by this resident. Kansas State University also sustained some significant damage, as wind damage to Anderson Hall's roof resulted in over a quarter million dollars in repairs. In and around Manhattan, numerous outbuildings were damaged and destroyed. Widespread power line and tree damage was also noted across the city, resulting in many damaged roofs and widespread power outages. Property damage was recorded at $400,000.
- **June 19, 2010: Junction City, Geary County:** Trained spotters, law enforcement officers, and emergency management reported 60 to 70 mph wind gusts near Milford Lake in Geary County. In Junction City power lines and transformers were damaged. Five people were reported injured.
- **June 6, 2008, Riley County:** Softball size hail demolished 98% of the cars parked at the Manhattan Regional Airport. Dents were also noted in the terminal building, and a stone hangar had it's windows blown out. Car dealerships and car rental facilities near the airport also report extreme damage to nearly every vehicle on the lot. Several hundred vehicles in the Manhattan Corporate Technology Park were severely dented by the large hail stones, and nary a car was left without having at least one window smashed. At the Auth-Florence Manufacturing Co. approximately 250 employee cars were deemed total losses as a result of the hail. The hail between the size of baseballs, near Keats, and softballs, across the southwestern portion of Manhattan fell for nearly twenty minutes. Hail up to one and a quarter inches in diameter was reported across portions of the west side of the city of Manhattan. The homes in Random Woods looked to have suffered the most damage. It was reported by the local newspaper that several motorists were injured on K-18. These motorist had glass fly into their eyes when their windshields shattered as the hail fell.
- **May 8, 2003, Chase County:** Severe thunderstorm winds derailed 38 cars of a 118-car Burlington Northern Santa Fe freight train. One of the derailed freight cars, a unibody tank car filled with sulfur dioxide, forced the evacuation of an estimated 250 residents. Six firemen and law enforcement officers, exact number of each unknown, were treated at the scene for respiratory ailments. Preliminary damage estimates were around $5,000,000- most of which was damage to vehicles.
- **April 19, 2004, Riley County:** A bow echo moved east across Riley county producing strong winds and large hail. Winds reached a speed of 82 mph at the Manhattan airport. The strong winds knocked out power and did widespread damage in Manhattan to many homes and businesses. The Walmart store had severe roof damage that resulted in store closure for several days until repairs could be made. Total damage estimates from Riley county officials were 5 million dollars.
- **July 7, 1994, Pottawatomie County:** Winds clocked to 99 mph at the Jeffrey Power Plant near Emmett, and estimated to between 65 and 100 mph elsewhere caused widespread and severe damage across the entire county. Numerous trees, roofs, windows and power lines were damaged or destroyed from the high wind. Power was out in many areas for more than 48 hours. At the Jeffrey Power Plant, 33 empty rail cars were blown from off the track with coal loading machinery and buildings damaged. The plant had to briefly shut down. Damage to the plant was estimated at $2 to $2.5 million. Heavy rain accompanied the storm and flooded some areas. Cleanup continued for days. Total dollar loss for the county, including the Jeffrey Plant, was $4 to $5 million.

5.13.4 Probability of Future Events

Predicting the probability of severe weather occurrences is tremendously changing due to the large number of factors involved and the random nature of formation. Data and mapping from NOAA indicate that Kansas Region I can expect between 27 - 36 severe weather events per year. Additionally, the following map from NOAA provides a snapshot for the probability of a severe weather event on a summer day.

Map 106: Historic Probability of a Severe Weather Summer Event in Kansas Region I



Source: NOAA

Based on historical occurrences, Kansas Region I will continue to experience severe weather events on an annual basis. The following tables, using data from the NCEI, indicate the yearly probability of a severe weather component event, the number of deaths or injuries, and estimated property damage for each county in Kansas Region I:

Table 112: Kansas Region I NCEI Hail Event Probability Summary

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Chase	112	1.5	0	0	$10,000	$133
Geary	120	1.6	1	<1	$270,000	$3,600
Lyon	183	2.4	0	0	$50,500	$673
Morris	150	2.0	0	0	$909,000	$12,120
Pottawatomie	179	2.4	0	0	$66,000	$880
Riley	170	2.3	0	0	$5,400,000	$72,000
Wabaunsee	155	2.1	0	0	$402,000	$5,360

Source: NCEI

Table 113: Kansas Region I NCEI Lightning Event Probability Summary

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Chase	2	0.0	3	<1	$15,000	$200
Geary	9	0.1	0	0	$96,200	$1,283
Lyon	6	0.1	0	0	$27,600	$368
Morris	1	0.0	0	0	$500	$7
Pottawatomie	7	0.1	0	0	$272,800	$3,637
Riley	18	0.2	2	<1	$861,950	$11,493
Wabaunsee	3	0.0	0	0	$0	$0

Source: NCEI

Table 114: Kansas Region I NCEI Strong Wind Event Probability Summary

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Chase	84	1.1	6	<1	$694,100	$9,255
Geary	12	0.2	12	<1	$107,500	$1,433
Lyon	219	2.9	7	<1	$234,500	$3,127
Morris	84	1.1	1	<1	$194,000	$2,587
Pottawatomie	137	1.8	3	<1	$5,545,000	$73,933
Riley	164	2.2	2	<1	$6,777,000	$90,360
Wabaunsee	125	1.7	4	<1	$1,002,000	$13,360

Source: NCEI

5.13.5 Projected Changes in Location, Intensity, Frequency, and Duration

Kansas Region I already sits in an area known for severe convective storms, but the latest high-resolution modeling suggests subtle shifts in where the worst hail and wind cores are likely to track over the next few decades. Ensemble studies that diagnose future storm-supportive environments project a slight eastward migration of peak spring, summer thunderstorm activity from the southern High Plains toward the Flint Hills and the I-70 corridor. For the Kansas Region I planning area, that means a larger share of golf-ball-plus hail days and more frequent straight-line-wind events. Overall thunderstorm hot spots remain broadly regional, so any one county's response resources may be overwhelmed when multiple jurisdictions are hit on the same evening.

When storms do form, they are expected to pack a bigger punch. Convection-permitting simulations indicate that small hailstones will likely decrease, but the largest stones may become 15 %–75 % more common, longer residence times in updrafts let stones grow before falling. Field campaigns such as Project ICECHIP are already documenting more frequent softball-size stones across Kansas, underscoring this trend. At the same time, derecho-class windstorms generated by long-lived mesoscale convective systems are projected to be longer-lasting, cover larger swaths, and produce higher peak gusts under both mid- and late-century scenarios.

Changes in frequency and duration are more nuanced. Model ensembles show a modest decline in the total number of thunderstorm days across the central Plains, yet the storms that do occur are forecast to persist later into the night and extend the severe-weather season deeper into early autumn. In practical terms, Kansas Region I jurisdictions should expect fewer pop-up storms but a higher proportion of high-impact, long-track events that cross multiple county lines.

5.13.6 Vulnerability and Impact

FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the first table was created indicating the potential risk to Kansas Region I and all participating jurisdictions from severe weather. In order to gain an understanding of vulnerability, the second table details the estimated annual loss data for Kansas Region I and participating jurisdictions. To help understand the risk and vulnerability participating jurisdictions data from the FEMA NRI was run on a census tract level. As the NRI does not generate data for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Table 115: Kansas Region I Participating Jurisdiction Hail Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Chase County	**All**	76.8	Relatively Low	9.8
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	99.0	Very High	9.8
Geary County	**All**	53.3	Relatively Low	9.5
Junction City	20061000100	77.1	Relatively Moderate	9.5

Table 115: Kansas Region I Participating Jurisdiction Hail Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Junction City	20061000200	71.2	Relatively Low	9.5
Junction City	20061000300	76.2	Relatively Moderate	9.5
Junction City	20061000401	75.1	Relatively Moderate	9.5
Junction City	20061000402	57.5	Relatively Low	9.5
Junction City	20061000500	72.5	Relatively Low	9.5
Junction City	20061000601	70.9	Relatively Low	9.5
Grandview Plaza	20061000700	80.5	Relatively Moderate	9.5
Junction City	20061000801	62.0	Relatively Low	9.5
Milford	20061000802	79.6	Relatively Moderate	9.5
Lyon County	**All**	36.6	Very Low	9.4
Emporia	20111000101	62.5	Relatively Low	9.6
Emporia	20111000102	30.4	Very Low	9.6
Emporia	20111000103	45.8	Relatively Low	9.6
Emporia	20111000201	59.3	Relatively Low	9.6
Emporia	20111000202	50.7	Relatively Low	9.6
Emporia	20111000203	40.3	Very Low	9.6
Emporia	20111000300	65.2	Relatively Low	9.6
Emporia	20111000400	58.6	Relatively Low	9.6
Emporia	20111000500	66.6	Relatively Low	9.6
Allen, Admire, Bushong, Reading	20111000600	70.5	Relatively Low	9.4
Americus	20111000700	69.5	Relatively Low	9.4
Hartford, Olpe, Neosho Rapids	20111000800	77.3	Relatively Moderate	9.4
Morris County	**All**	80.2	Relatively Low	9.2
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	99.3	Very High	9.2
Council Grove	20127963700	83.8	Relatively Moderate	9.2
Pottawatomie County	All	33.8	Very Low	9.4
Louisville	20149000101	69.5	Relatively Low	9.7
St. George	20149000102	71.9	Relatively Low	9.8
Wamego	20149000200	69.3	Relatively Low	9.8
Belvue, Emmett, St. Marys	20149000300	73.6	Relatively Moderate	9.7
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	76.4	Relatively Moderate	9.2
Riley County	**All**	95.5	Relatively Moderate	9.3
Manhattan	20161000201	91.7	Relatively High	9.6
Manhattan	20161000202	94.8	Relatively High	9.8
Manhattan	20161000303	79.4	Relatively Moderate	9.5
Manhattan	20161000304	93.2	Relatively High	9.5
Manhattan	20161000500	90.8	Relatively High	9.7
Manhattan	20161000601	91.3	Relatively High	9.5
Manhattan	20161000602	94.6	Relatively High	9.5
Manhattan	20161000700	95.3	Relatively High	9.5
Manhattan	20161000801	93.1	Relatively High	9.6
Manhattan	20161000802	93.4	Relatively High	9.7
Ogden	20161000900	98.8	Very High	9.7
Manhattan	20161001101	98.3	Very High	9.5
Manhattan	20161001102	90.3	Relatively High	9.5
Manhattan	20161001301	91.7	Relatively High	9.5
Leonardville, Randloph, Riley	20161001302	98.7	Very High	9.1
Wabaunsee County	**All**	19.2	Very Low	9.7
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	75.4	Relatively Moderate	9.7

Table 115: Kansas Region I Participating Jurisdiction Hail Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Eskridge, Harveyville,	20197483200	70.2	Relatively Low	9.6

Source: FEMA NRI

In order to gain an understanding of vulnerability, the following table details the estimated FEMA EAL data for Kansas Region I counties and participating jurisdictions (by census tract):

Table 116: Participating Jurisdiction Hail Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Chase County	**All**	77.7	Relatively Low	$350,081
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	98.9	Very High	$350,081
Geary County	**All**	54.8	Relatively Low	$107,716
Junction City	20061000100	73.6	Relatively Moderate	$9,724
Junction City	20061000200	68.0	Relatively Low	$6,000
Junction City	20061000300	75.1	Relatively Moderate	$11,065
Junction City	20061000401	74.4	Relatively Moderate	$10,470
Junction City	20061000402	61.7	Relatively Low	$3,561
Junction City	20061000500	72.5	Relatively Low	$8,847
Junction City	20061000601	72.4	Relatively Low	$8,768
Grandview Plaza	20061000700	79.7	Relatively Moderate	$16,985
Junction City	20061000801	65.7	Relatively Low	$4,957
Milford	20061000802	80.9	Relatively Moderate	$19,115
Lyon County	**All**	41.6	Very Low	$58,161
Emporia	20111000101	59.7	Relatively Low	$3,044
Emporia	20111000102	28.8	Very Low	$263
Emporia	20111000103	47.6	Relatively Low	$1,367
Emporia	20111000201	60.1	Relatively Low	$3,148
Emporia	20111000202	55.0	Relatively Low	$2,196
Emporia	20111000203	40.7	Very Low	$831
Emporia	20111000300	65.1	Relatively Low	$4,687
Emporia	20111000400	57.3	Relatively Low	$2,566
Emporia	20111000500	63.2	Relatively Low	$4,006
Allen, Admire, Bushong, Reading	20111000600	75.1	Relatively Moderate	$11,027
Americus	20111000700	71.1	Relatively Low	$7,855
Hartford, Olpe, Neosho Rapids	20111000800	79.8	Relatively Moderate	$17,172
Morris County	**All**	82.6	Relatively Moderate	$535,155
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	99.5	Very High	$509,764
Council Grove	20127963700	83.5	Relatively Moderate	$25,391
Pottawatomie County	**All**	39.6	Very Low	$52,573
Louisville	20149000101	72.5	Relatively Low	$8,855
St. George	20149000102	74.6	Relatively Moderate	$10,597
Wamego	20149000200	71.0	Relatively Low	$7,769
Belvue, Emmett, St. Marys	20149000300	75.2	Relatively Moderate	$11,221
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	77.8	Relatively Moderate	$14,132
Riley County	**All**	95.5	Relatively High	$2,164,181
Manhattan	20161000201	89.6	Relatively High	$54,948
Manhattan	20161000202	94.4	Relatively High	$117,187
Manhattan	20161000303	80.2	Relatively Moderate	$17,837
Manhattan	20161000304	93.7	Relatively High	$105,034
Manhattan	20161000500	91.1	Relatively High	$69,352

Table 116: Participating Jurisdiction Hail Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Manhattan	20161000601	92.2	Relatively High	$82,086
Manhattan	20161000602	94.7	Relatively High	$125,055
Manhattan	20161000700	94.8	Relatively High	$125,935
Manhattan	20161000801	92.5	Relatively High	$85,914
Manhattan	20161000802	92.6	Relatively High	$87,180
Ogden	20161000900	98.4	Very High	$290,104
Manhattan	20161001101	98.0	Very High	$253,510
Manhattan	20161001102	89.3	Relatively High	$53,009
Manhattan	20161001301	92.9	Relatively High	$92,432
Leonardville, Randloph, Riley	20161001302	99.1	Very High	$393,000
Wabaunsee County	**All**	22.8	Very Low	$21,316
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	76.4	Relatively Moderate	$12,486
Eskridge, Harveyville,	20197483200	72.5	Relatively Low	$8,829

Source: FEMA NRI

Table 117: Kansas Region I Participating Jurisdiction Lightning Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Chase County	**All**	11.3	Very Low	87.8
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	83.3	Relatively High	87.8
Geary County	**All**	64.3	Relatively Low	89.9
Junction City	20061000100	74.5	Relatively Moderate	87.2
Junction City	20061000200	77.1	Relatively High	84.5
Junction City	20061000300	87.2	Relatively High	86.4
Junction City	20061000401	82.7	Relatively High	84.1
Junction City	20061000402	45.8	Relatively Low	84.3
Junction City	20061000500	70.9	Relatively Moderate	84.4
Junction City	20061000601	86.7	Relatively High	93.3
Grandview Plaza	20061000700	74.4	Relatively Moderate	92.2
Junction City	20061000801	57.4	Relatively Moderate	87.7
Milford	20061000802	82.9	Relatively High	85.2
Lyon County	**All**	59.2	Relatively Low	90.0
Emporia	20111000101	81.5	Relatively High	89.1
Emporia	20111000102	23.4	Relatively Low	89.1
Emporia	20111000103	47.2	Relatively Low	88.9
Emporia	20111000201	75.1	Relatively Moderate	89.1
Emporia	20111000202	58.5	Relatively Moderate	89.3
Emporia	20111000203	38.4	Relatively Low	88.6
Emporia	20111000300	85.5	Relatively High	88.7
Emporia	20111000400	73.7	Relatively Moderate	89.1
Emporia	20111000500	88.4	Relatively High	90.0
Allen, Admire, Bushong, Reading	20111000600	53.1	Relatively Moderate	89.1
Americus	20111000700	62.9	Relatively Moderate	91.2
Hartford, Olpe, Neosho Rapids	20111000800	70.0	Relatively Moderate	90.4
Morris County	**All**	11.3	Very Low	86.1
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	63.4	Relatively Moderate	85.9
Council Grove	20127963700	65.9	Relatively Moderate	90.6
Pottawatomie County	All	29.4	Relatively Low	89.3
Louisville	20149000101	45.0	Relatively Low	93.2

Table 117: Kansas Region I Participating Jurisdiction Lightning Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
St. George	20149000102	78.9	Relatively High	95.5
Wamego	20149000200	71.8	Relatively Moderate	92.5
Belvue, Emmett, St. Marys	20149000300	66.8	Relatively Moderate	92.3
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	66.6	Relatively Moderate	87.0
Riley County	**All**	90.0	Relatively Moderate	92.9
Manhattan	20161000201	94.3	Very High	96.0
Manhattan	20161000202	98.4	Very High	95.0
Manhattan	20161000303	84.7	Relatively High	92.3
Manhattan	20161000304	94.1	Very High	94.4
Manhattan	20161000500	93.1	Relatively High	93.8
Manhattan	20161000601	90.7	Relatively High	94.5
Manhattan	20161000602	97.5	Very High	93.3
Manhattan	20161000700	95.0	Very High	92.0
Manhattan	20161000801	94.0	Very High	92.0
Manhattan	20161000802	87.0	Relatively High	92.0
Ogden	20161000900	97.9	Very High	93.4
Manhattan	20161001101	97.5	Very High	96.6
Manhattan	20161001102	94.4	Very High	98.2
Manhattan	20161001301	91.5	Relatively High	97.6
Leonardville, Randloph, Riley	20161001302	95.3	Very High	90.7
Wabaunsee County	**All**	16.3	Very Low	92.2
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	82.7	Relatively High	93.0
Eskridge, Harveyville,	20197483200	61.8	Relatively Moderate	91.4

Source: FEMA NRI

In order to gain an understanding of vulnerability, the following table details the estimated FEMA EAL data for Kansas Region I counties and participating jurisdictions (by census tract):

Table 118: Participating Jurisdiction Lightning Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Chase County	**All**	11.4	Very Low	$17,259
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	83.1	Relatively High	$17,259
Geary County	**All**	65.5	Relatively Moderate	$145,621
Junction City	20061000100	64.2	Relatively Moderate	$9,012
Junction City	20061000200	67.7	Relatively Moderate	$10,066
Junction City	20061000300	85.1	Relatively High	$18,701
Junction City	20061000401	81.1	Relatively High	$15,919
Junction City	20061000402	52.5	Relatively Moderate	$6,155
Junction City	20061000500	69.3	Relatively Moderate	$10,582
Junction City	20061000601	89.3	Relatively High	$22,651
Grandview Plaza	20061000700	71.0	Relatively Moderate	$11,215
Junction City	20061000801	64.9	Relatively Moderate	$9,212
Milford	20061000802	85.8	Relatively High	$19,350
Lyon County	**All**	60.8	Relatively Low	$122,533
Emporia	20111000101	75.1	Relatively High	$12,851
Emporia	20111000102	19.8	Relatively Low	$1,264
Emporia	20111000103	48.6	Relatively Moderate	$5,363
Emporia	20111000201	76.1	Relatively High	$13,297
Emporia	20111000202	65.3	Relatively Moderate	$9,322

Table 118: Participating Jurisdiction Lightning Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Emporia	20111000203	37.7	Relatively Low	$3,505
Emporia	20111000300	85.2	Relatively High	$18,799
Emporia	20111000400	70.1	Relatively Moderate	$10,865
Emporia	20111000500	81.6	Relatively High	$16,275
Allen, Admire, Bushong, Reading	20111000600	62.6	Relatively Moderate	$8,541
Americus	20111000700	64.9	Relatively Moderate	$9,224
Hartford, Olpe, Neosho Rapids	20111000800	75.9	Relatively High	$13,226
Morris County	**All**	12.9	Very Low	$19,126
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	68.7	Relatively Moderate	$10,410
Council Grove	20127963700	63.2	Relatively Moderate	$8,716
Pottawatomie County	**All**	36.6	Relatively Low	$57,385
Louisville	20149000101	49.7	Relatively Moderate	$5,576
St. George	20149000102	84.3	Relatively High	$18,126
Wamego	20149000200	74.4	Relatively High	$12,574
Belvue, Emmett, St. Marys	20149000300	69.4	Relatively Moderate	$10,611
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	69.0	Relatively Moderate	$10,498
Riley County	**All**	90.2	Relatively High	$583,945
Manhattan	20161000201	90.4	Relatively High	$24,156
Manhattan	20161000202	98.6	Very High	$52,389
Manhattan	20161000303	86.7	Relatively High	$20,030
Manhattan	20161000304	95.9	Very High	$35,479
Manhattan	20161000500	94.7	Very High	$31,712
Manhattan	20161000601	93.9	Very High	$29,872
Manhattan	20161000602	98.2	Very High	$48,430
Manhattan	20161000700	94.8	Very High	$31,987
Manhattan	20161000801	93.6	Very High	$29,341
Manhattan	20161000802	84.8	Relatively High	$18,494
Ogden	20161000900	97.6	Very High	$43,593
Manhattan	20161001101	97.6	Very High	$43,241
Manhattan	20161001102	93.4	Very High	$28,891
Manhattan	20161001301	95.3	Very High	$33,353
Leonardville, Randloph, Riley	20161001302	97.8	Very High	$45,000
Wabaunsee County	**All**	18.5	Very Low	$27,858
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	84.7	Relatively High	$18,400
Eskridge, Harveyville,	20197483200	65.7	Relatively Moderate	$9,458

Source: FEMA NRI

Table 119: Kansas Region I Participating Jurisdiction Strong Wind Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Chase County	**All**	58.6	Relatively Low	6.8
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	99.8	Very High	6.8
Geary County	**All**	80.8	Relatively Moderate	5.9
Junction City	20061000100	91.3	Relatively High	5.8
Junction City	20061000200	93.4	Relatively High	5.8
Junction City	20061000300	96.7	Very High	5.8
Junction City	20061000401	95.3	Relatively High	5.8
Junction City	20061000402	76.9	Relatively Moderate	5.8

Table 119: Kansas Region I Participating Jurisdiction Strong Wind Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Junction City	20061000500	90.5	Relatively High	5.8
Junction City	20061000601	96.0	Very High	5.8
Grandview Plaza	20061000700	91.7	Relatively High	5.9
Junction City	20061000801	84.1	Relatively High	5.8
Milford	20061000802	94.9	Relatively High	5.8
Lyon County	**All**	20.4	Very Low	6.6
Emporia	20111000101	44.1	Relatively Low	6.6
Emporia	20111000102	32.3	Relatively Low	6.6
Emporia	20111000103	26.6	Relatively Low	6.6
Emporia	20111000201	41.9	Relatively Low	6.6
Emporia	20111000202	37.1	Relatively Low	6.6
Emporia	20111000203	24.8	Very Low	6.6
Emporia	20111000300	53.8	Relatively Low	6.6
Emporia	20111000400	40.3	Relatively Low	6.6
Emporia	20111000500	55.7	Relatively Moderate	6.6
Allen, Admire, Bushong, Reading	20111000600	55.5	Relatively Moderate	6.6
Americus	20111000700	54.3	Relatively Low	6.5
Hartford, Olpe, Neosho Rapids	20111000800	69.0	Relatively Moderate	6.5
Morris County	**All**	41.1	Relatively Low	6.3
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	98.3	Very High	6.3
Council Grove	20127963700	90.1	Relatively High	6.5
Pottawatomie County	All	46.7	Relatively Low	5.9
Louisville	20149000101	73.9	Relatively Moderate	6.3
St. George	20149000102	93.4	Relatively High	6.3
Wamego	20149000200	90.2	Relatively High	6.3
Belvue, Emmett, St. Marys	20149000300	88.0	Relatively High	6.2
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	90.2	Relatively High	5.7
Riley County	**All**	93.8	Relatively High	5.6
Manhattan	20161000201	92.6	Relatively High	5.9
Manhattan	20161000202	97.4	Very High	6.3
Manhattan	20161000303	74.2	Relatively Moderate	5.8
Manhattan	20161000304	95.3	Relatively High	5.8
Manhattan	20161000500	92.8	Relatively High	6.2
Manhattan	20161000601	92.7	Relatively High	5.8
Manhattan	20161000602	96.8	Very High	5.8
Manhattan	20161000700	97.3	Very High	5.8
Manhattan	20161000801	95.5	Relatively High	6.0
Manhattan	20161000802	95.6	Relatively High	6.1
Ogden	20161000900	99.0	Very High	6.1
Manhattan	20161001101	99.4	Very High	5.8
Manhattan	20161001102	91.7	Relatively High	5.8
Manhattan	20161001301	93.1	Relatively High	5.8
Leonardville, Randloph, Riley	20161001302	98.1	Very High	5.3
Wabaunsee County	**All**	42.8	Relatively Low	6.5
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	97.6	Very High	6.4
Eskridge, Harveyville,	20197483200	94.9	Relatively High	6.6

Source: FEMA NRI

In order to gain an understanding of vulnerability, the following table details the estimated FEMA EAL data for Kansas Region I counties and participating jurisdictions (by census tract):

Table 120: Participating Jurisdiction Strong Wind Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Chase County	**All**	59.7	Relatively Moderate	$426,933
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	99.8	Very High	$426,933
Geary County	**All**	80.8	Relatively Moderate	$911,221
Junction City	20061000100	87.1	Relatively High	$53,666
Junction City	20061000200	90.0	Relatively High	$66,359
Junction City	20061000300	95.9	Very High	$122,504
Junction City	20061000401	94.7	Relatively High	$104,276
Junction City	20061000402	82.7	Relatively High	$40,806
Junction City	20061000500	90.1	Relatively High	$66,897
Junction City	20061000601	96.6	Very High	$137,852
Grandview Plaza	20061000700	90.6	Relatively High	$69,514
Junction City	20061000801	88.5	Relatively High	$59,347
Milford	20061000802	95.7	Very High	$118,761
Lyon County	**All**	24.6	Relatively Low	$104,077
Emporia	20111000101	39.7	Relatively Low	$5,265
Emporia	20111000102	29.6	Relatively Low	$2,622
Emporia	20111000103	28.4	Relatively Low	$2,374
Emporia	20111000201	42.5	Relatively Low	$6,221
Emporia	20111000202	41.6	Relatively Low	$5,883
Emporia	20111000203	25.8	Relatively Low	$1,857
Emporia	20111000300	52.9	Relatively Low	$10,502
Emporia	20111000400	38.5	Relatively Low	$4,887
Emporia	20111000500	48.7	Relatively Low	$8,602
Allen, Admire, Bushong, Reading	20111000600	63.6	Relatively Moderate	$16,887
Americus	20111000700	56.4	Relatively Moderate	$12,380
Hartford, Olpe, Neosho Rapids	20111000800	74.1	Relatively Moderate	$26,595
Morris County	**All**	49.5	Relatively Low	$301,259
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	98.9	Very High	$238,297
Council Grove	20127963700	89.3	Relatively High	$62,962
Pottawatomie County	**All**	54.6	Relatively Low	$357,775
Louisville	20149000101	78.8	Relatively Moderate	$33,196
St. George	20149000102	95.2	Relatively High	$110,919
Wamego	20149000200	91.5	Relatively High	$75,104
Belvue, Emmett, St. Marys	20149000300	89.4	Relatively High	$63,691
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	91.5	Relatively High	$74,865
Riley County	**All**	93.9	Relatively High	$2,193,778
Manhattan	20161000201	89.0	Relatively High	$61,608
Manhattan	20161000202	97.2	Very High	$151,331
Manhattan	20161000303	75.6	Relatively Moderate	$28,560
Manhattan	20161000304	96.0	Very High	$124,634
Manhattan	20161000500	93.5	Relatively High	$90,515
Manhattan	20161000601	94.2	Relatively High	$98,437
Manhattan	20161000602	97.0	Very High	$146,156
Manhattan	20161000700	96.9	Very High	$144,367
Manhattan	20161000801	94.9	Relatively High	$106,494
Manhattan	20161000802	94.6	Relatively High	$102,995
Ogden	20161000900	98.6	Very High	$212,169

Table 120: Participating Jurisdiction Strong Wind Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Manhattan	20161001101	99.2	Very High	$275,452
Manhattan	20161001102	90.2	Relatively High	$67,639
Manhattan	20161001301	95.0	Relatively High	$108,918
Leonardville, Randloph, Riley	20161001302	98.8	Very High	$233,000
Wabaunsee County	**All**	49.7	Relatively Low	$302,603
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	97.9	Very High	$175,945
Eskridge, Harveyville,	20197483200	96.1	Very High	$126,658

Source: FEMA NRI

Population

Severe weather can have a wide range of effects on all jurisdictional citizens, often posing significant risks to life, property, and general well-being. In the absence of proper shelter, hail, lightning, and high winds can cause serious injury. In general, if potentially exposed persons take shelter in a solid, well-constructed structure protection from these severe weather components would be provided. However, old or poorly constructed facilities may be more prone to damage, potentially increasing the impact on economically disadvantaged populations. Some of the potential effects of severe weather on people may include:

- **Death and Injury:** Severe weather can produce lightning and strong winds driving debris. Both of these elements can cause injuries or fatalities.
- **Power Outages:** Lightning strikes, strong winds, and falling trees can lead to power outages, disrupting daily life, and potentially affecting essential services, such as medical equipment and refrigeration.
- **Mental Health Impact:** Severe weather can be frightening and stressful, leading to anxiety and post-traumatic stress disorder in some individuals. The emotional toll of property damage and loss can also be significant.
- **Displacement:** People may need to evacuate their homes or be temporarily displaced due to storm damage, requiring emergency shelter and support.
- **Economic Costs:** Severe weather results in economic costs, including repair and recovery expenses, insurance claims, and potential loss of income due to property damage or work disruptions.
- **Public Safety Response:** Severe weather can strain public safety resources, including emergency services, law enforcement, and medical facilities.

At greater risk may be the vulnerable populations, including the especially young, the elderly, and those below the poverty level. Hazard occurrences can exacerbate existing vulnerabilities and create new challenges.

Kansas Region I and all participating jurisdiction populations are vulnerable to the impacts of severe weather. Please see Section 3.3: Population Data and Section 3.4: Socially Vulnerable and At-Risk Populations for data concerning jurisdictional populations.

Buildings and Structures

All buildings and structures within Kansas Region I and all participating jurisdictions, including historic buildings, can be impacted by severe weather. However, the location and construction of the facility will have a significant impact on the vulnerability. In general, older structures would be at higher risk of negative impacts. Some of the potential impacts include:

- **Electrical Infrastructure Damage:** Severe weather can damage electrical infrastructure, including power lines, transformers, and substations. This can result in widespread power outages, affecting homes, businesses, hospitals, and other critical facilities.
- **Communication Disruptions:** Severe weather can disrupt telecommunications infrastructure, including cell towers, data centers, and communication networks. This can impact emergency communication and coordination efforts.

- **Safety Risks:** Damage to infrastructure can pose safety risks to workers and the public. Fallen power lines, damaged buildings, and debris can be hazardous.
- **Building Damage:** Heavy snow or ice loads can cause damage to the building.

Governmental Operations
Severe weather can pose various risks to government operations. These risks can have significant economic and operational consequences, and can include:

- **Power Outages:** Severe weather can lead to power outages by damaging electrical infrastructure such as power lines and substations. Government buildings may lose power, affecting critical operations and services.
- **Flooding:** Heavy rainfall during severe weather can lead to flooding, which can damage government buildings and disrupt operations. Flood damage may require extensive repairs and cleanup.
- **Communication Disruptions:** Severe weather can damage communication equipment, including telephone lines and computer systems. This can hinder communication between government agencies and the public.
- **Transportation Disruptions:** Severe weather can make roads impassable due to flooding or debris. This can impact the ability of government employees to commute to work.
- **Budgetary Impact:** The costs associated with repairing and restoring government buildings and infrastructure after severe weather can strain budgets.

Transportation and Electrical Infrastructure
In general, severe weather components do not have a large impact on transportation infrastructure, with the exception of power loss disrupting signaling and poor conditions impacting driving conditions.

Severe weather can have significant impacts on electrical utilities, leading to disruptions in power supply and potential damage to infrastructure. Severe weather can affect electrical utilities in the following ways:

- **Lightning Strikes:** Lightning is a common occurrence during severe weather and poses a substantial risk to electrical infrastructure. Lightning strikes can damage power lines, transformers, substations, and other critical components, leading to power outages.
- **Wind Damage:** High winds associated with severe weather can cause trees, branches, and other debris to fall onto power lines. This can result in downed power lines, structural damage to utility poles, and disruptions in electrical service.
- **Hailstorms:** Severe weather may produce hail, which can damage power lines, transformers, and other equipment. Hailstones can also lead to short circuits and insulation damage on electrical components.
- **Power Surges:** Lightning strikes, strong winds, and other storm-related events can lead to power surges in the electrical grid. These surges can damage electronic devices, appliances, and utility equipment connected to the power supply.

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- **Lightning Strikes:** Lightning is a common occurrence during severe weather and poses a substantial risk to electrical infrastructure. Lightning strikes can damage power lines, transformers, substations, and other critical components, leading to power outages.
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- **Power Surges:** Lightning strikes, strong winds, and other storm-related events can lead to power surges in the electrical grid. These surges can damage electronic devices, appliances, and utility equipment connected to the power supply.

Mapping concerning electrical infrastructure may be found in Section 3.9: Critical Infrastructure. Information concerning the costs to repair or reconstruct transportation and electrical infrastructure may be found in Section 5.9.6.

Water and Wastewater Utilities
In general, severe weather components do not have a large impact on water and wastewater infrastructure and operations. However, the cascading impacts from an event such as power loss disrupting pumping and treatment capabilities, localized flooding from heavy overwhelming drainage systems, or frozen pipes in water distribution systems may cause system disruptions.

Medical and Response Facilities
Severe weather can significantly impact emergency response infrastructure, creating challenges for first responders and organizations involved in managing and mitigating the effects of severe weather events. Severe weather can impact emergency response through:

- **Transportation Disruptions:** Debris accumulation on roads can hinder the ability of emergency vehicles to navigate and reach affected areas promptly. Hazardous road conditions may result in delays in response times.
- **Communication Disruptions:** Severe weather can disrupt communication networks, affecting the ability of emergency responders to coordinate and communicate effectively. Downed power lines and damage to communication infrastructure contribute to these disruptions.
- **Power Outages:** Severe weather can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.
- **Exposure:** Emergency responders face increased health and safety risks in severe weather conditions. Exposure to hail and high winds can impact the well-being of responders and affect their ability to provide effective assistance.
- **Resource Allocation Challenges:** Severe weather often requires the allocation of additional resources, including personnel, equipment, and supplies, to address immediate needs. This can strain emergency response organizations and impact their ability to respond to other concurrent incidents.
- **Increased Demand for Services:** Severe weather can result in an increased demand for emergency services, including medical assistance, search and rescue operations, and responses to accidents. Emergency response organizations may need to manage a higher volume of incidents simultaneously. Setting up and managing these shelters can strain resources.

Educational Facilities
Depending on the educational facility capability and location, severe weather may necessitate the closure of the facility for the duration of the event due to damages or lack of access. These closures are expected to have additional economic consequences as caregivers may be required to miss or modify work.

- **School Closures:** Severe weather can lead to the closure of schools due to hazardous conditions. This can strain caregivers and result in lower work attendance.

Communication Systems
All communication systems within Kansas Region I and all participating jurisdictions are at risk to severe weather. Severe weather can disrupt vital communications system, affecting reliability and functionality. Some of the key vulnerabilities include:

- **Physical Infrastructure Damage:** High winds, heavy rainfall, and other severe weather conditions can cause physical damage to communication infrastructure such as cell towers, antennas, cables, and data centers. This damage can result in network outages and disruptions.

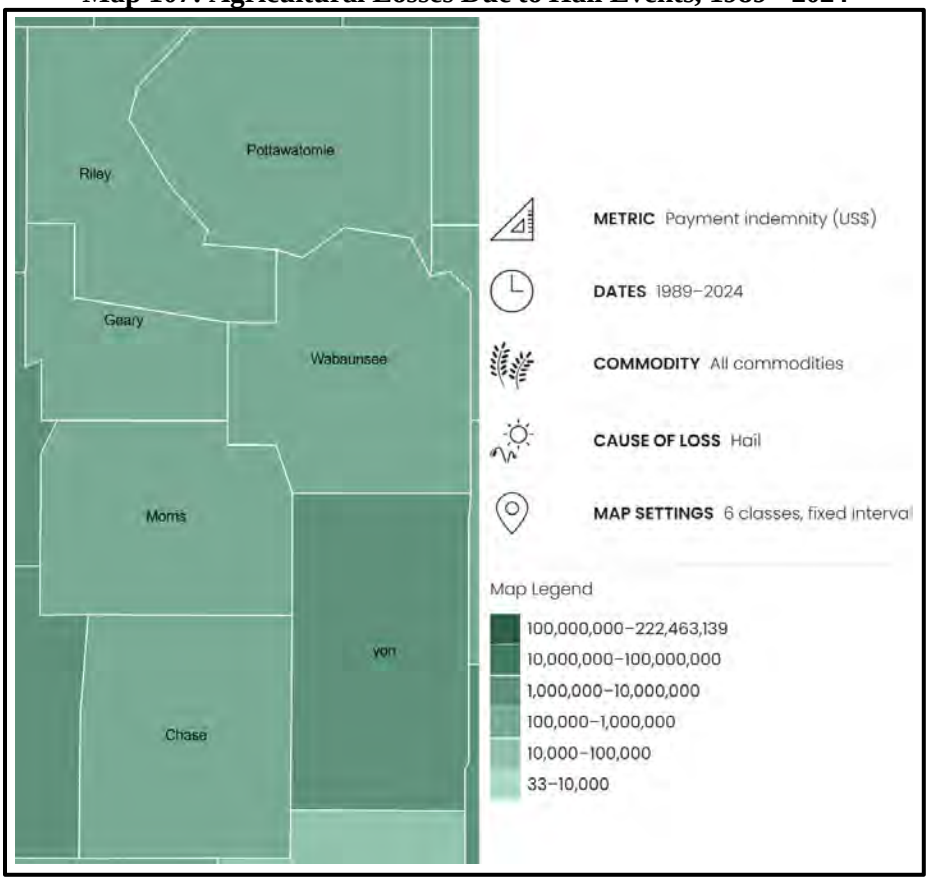
- **Power Outages:** Severe storms often lead to power outages, which can affect the operation of communication networks. Without a stable power supply, cell towers, data centers, and other critical components may become non-functional, leading to service interruptions.
- **Lightning Strikes:** Lightning poses a threat to communication infrastructure. Direct strikes or induced surges can damage electronic equipment, leading to the need for repairs or replacements and causing downtime.
- **Signal Interference:** Severe storms can create electromagnetic interference that disrupts radio signals used in wireless communication. This interference can lead to poor signal quality, dropped calls, and slower data speeds.
- **Communication Tower Instability:** High winds and extreme weather conditions can compromise the stability of communication towers. If towers are not designed to withstand severe weather, they may collapse, leading to network outages.
- **Network Congestion:** In the event of a disaster, communication networks may experience a surge in usage as people attempt to contact emergency services, friends, and family. This increased demand can lead to network congestion, making it difficult for users to connect.

The cost to repair communications networks can vary widely depending on the extent of the damage, the size of the network, and the specific technologies involved. Repair costs may include expenses for labor, equipment replacement or repair, materials, and any additional resources required to restore the network to full functionality. Estimated repair cost from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency may be found in Section 5.11.6.

Environmental and Agricultural Impacts

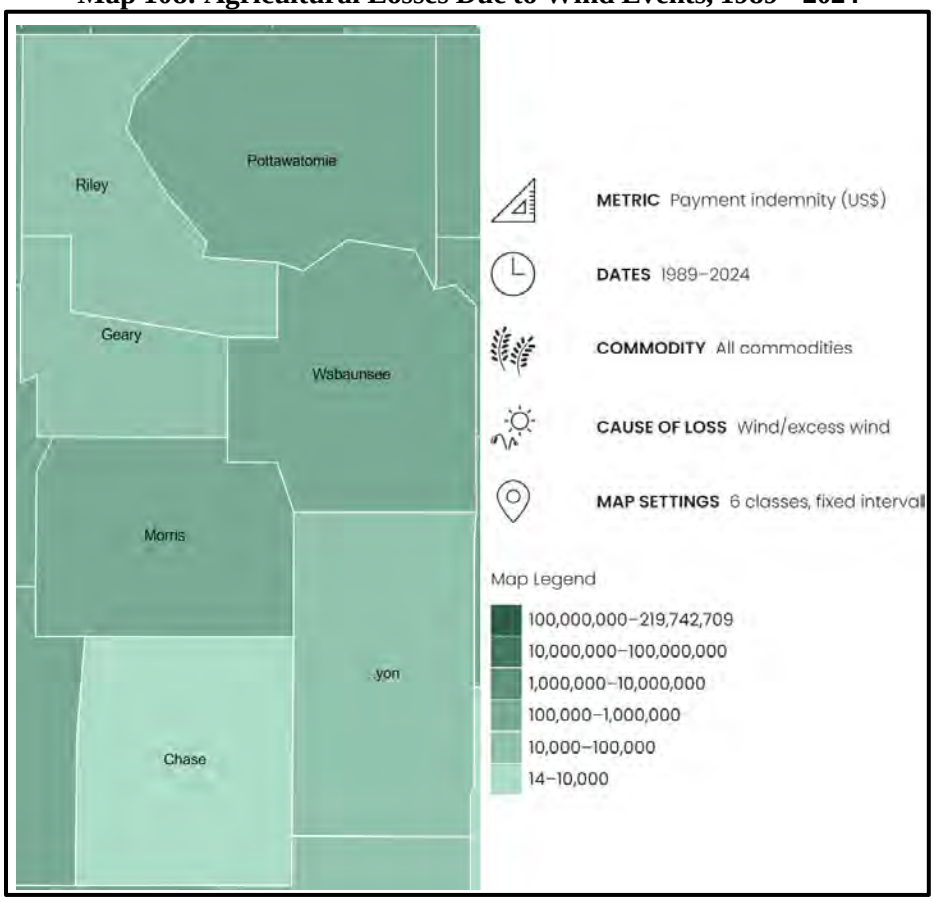
Hail events can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total county-wide agricultural losses, by county, due to hail events from 1989 - 2024:

Map 107: Agricultural Losses Due to Hail Events, 1989 - 2024



Source: USDA

Map 108: Agricultural Losses Due to Wind Events, 1989 - 2024



Source: USDA

Severe weather can pose various risks to the environment. These risks can have both short-term and long-term impacts on natural ecosystems. Severe weather can produce heavy rainfall over a short period of time, leading to flash floods and riverine flooding. This can result in soil erosion, damage to aquatic habitats, and the displacement of aquatic organisms. Large hailstones can damage crops, vegetation, and natural habitats. Hail can strip leaves from trees and plants, reducing their ability to photosynthesize and grow. It can also damage wildlife habitats. Severe weather often produces strong straight-line winds. These winds can uproot trees, damage forests, and disrupt animal habitats. They can also scatter debris and cause structural damage to buildings, which can lead to further environmental issues if hazardous materials are released. Lightning is a common occurrence during severe weather and can spark wildfires. These wildfires can have significant ecological impacts, including habitat destruction, loss of wildlife, and changes in the local ecosystem.

Jurisdictional Concerns:

As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts. The following initial vulnerabilities and potential impacts have been identified on a jurisdictional level:

Across Kansas Region I, severe-thunderstorm hazards share a common DNA, with large hailstones that shred crops and roofs, prolific cloud-to-ground lightning that ignites prairie grass and over-taxed transformers, and straight-line winds that routinely meet or exceed the 80-mph design threshold for many older structures. Current county-level worries differ mainly in scale. Urbanizing counties such as Pottawatomie and Riley see a rising inventory of vinyl-sided subdivisions, big-box stores, and solar arrays whose vulnerability compounds as roof density increases; yet their larger tax bases also mean more resources for siren upgrades, hard-wired generators, and fortified safe rooms. In contrast, agrarian counties like Chase and Morris still rely heavily on volunteer fire districts and tin-roofed outbuildings that crumple under wind-borne debris, but their open landscapes reduce exposure and provide natural firebreaks when lightning sparks grassfires.

With a number of citizens living in poverty, severe weather is a concern as many citizens may not have adequate insurance coverage to rebuild or repair damaged structures or to seek needed medical attention. Additionally, with a high percentage of the population being elderly and/or identified as having a disability, evacuation and after-event care challenges are a concern. Limited emergency response capabilities and medical facilities are also a major jurisdictional concern. Additionally, due to the large agricultural base of all participating jurisdictions, crop hail damage is a very large community concern.

At the jurisdictional level, the picture fragments even further. Manhattan, Junction City, and Emporia each host universities, hospitals, or military facilities with robust emergency-power redundancy and on-site meteorological monitoring, clear positives that can serve as regional hubs during extended outages. The flip side is that these campuses pack thousands of students or soldiers into tight clusters of aging dormitories, mobile homes, and motor pools, escalating shelter-in-place and debris-management challenges. Smaller towns such as Council Grove, Alma, and Cottonwood Falls boast lower population densities, but they struggle to finance compliant storm shelters, lightning arrestors for water-towers, or UL-rated impact-resistant roofing for public buildings.

Looking ahead, the region's demographic divergence will amplify both strengths and weaknesses. Continued suburban growth along the K-18 and US-24 corridors will invite stricter wind-load provisions in new construction and create economies of scale for underground utilities, yet it will also place ever-more rooftops and vehicles in the path of hail cores that climatology shows are drifting slightly northward each decade. Meanwhile, depopulating rural townships may see fewer claims overall, but an aging housing stock clad in 26-gauge metal and unreinforced masonry will deteriorate further, making each storm loss proportionally more severe for remaining residents. Lightning-induced wildfires are also expected to rise modestly as warmer springs extend the June and September shoulder seasons, stretching already thin volunteer resources.

Cascading Impacts

Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with severe weather may include:

- Direct physical damage to buildings and structures:
- Power outages and electrical grid disruption
- Transportation and supply chain disruptions
- Environmental and ecological damage
- Economic impacts and business closures
- Emergency services overload

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of a community. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 121: Severe Weather Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Severe weather can cause extensive property damage, loss of utility service, and injury to the public. Those most at-risk are low-income and homeless individuals without shelter.
Impact on Responders	First responders may be unable to access roadways due to flooding, trees, or debris. Exposure to lightning, flooding, and high winds may cause injuries to first responders. Vehicles and resources may be damaged, leading to impaired response activities. In addition, road conditions may become hazardous as a result of the by-products
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Severe Weather may impact an agency's ability to maintain \ operations due to power outages, flooding, and wind damage. \

Table 121: Severe Weather Consequence Analysis

Subject	Potential Impacts
Delivery of Services	Delivery of services may be impaired by flooding, obstruction, and damage to roadways and resources. The ability to deliver goods and services will be impacted locally, regionally, or statewide depending on the magnitude of the event.
Property, Facilities, and Infrastructure	Severe weather can result in power outages. Building and vehicle damage can occur from hail. Properties and critical facilities also may face physical damage due to flooding, lightning strike, or excessive winds, delaying response and recovery operations.
Impact on Environment	Debris can impact and contaminate wildlife and natural areas. Lightning strikes may also ignite fires, leading to destruction of crops, ecosystems, and habitats.
Economic Conditions	Severe weather can stress local resources. Even if some of the costs can be recouped through federal reimbursements, there is a fiscal impact on the local government.
Public Confidence in Governance	Ineffective response can decrease the public's confidence in the ability to respond and govern. Governmental response across local, state, regional, and federal levels require direct actions that must be immediate and effective to maintain public confidence.

5.13.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

5.13.8 Mitigation Opportunities

The following table presents examples of potential actions that can be instituted for mitigating the extreme heat hazard.

Table 122: Example Severe Weather Mitigation Actions

Category	Example Action
Planning and Regulation	Review building codes and structural policies to ensure they are adequate to protect older structures from wind damage.
	Require tie-downs with anchors and ground anchors appropriate for the soil type for manufactured homes.
	Incorporate passive ventilation in the site design to minimize high wind impacts.
	Establish standards for all utilities regarding tree pruning around lines.
	Inspect utility poles to ensure they meet specifications and are wind resistant.
	Ensure the development and enforcement of building codes for roof snow loads.

Table 122: Example Severe Weather Mitigation Actions

Infrastructure	Install lightning protection devices and methods, such as lightning rods and grounding, on communications infrastructure and other critical facilities.
	Install and maintain surge protection on critical electronic equipment.
	Retrofit buildings with load-path connectors to strengthen the structural frames.
	Avoid placing flag poles or antennas near buildings.
	Protect traffic lights and other traffic controls from high winds.
	Add building insulation to walls and attics.
Natural Systems	Properly maintain stream and river channels to ensure flow.
	Use living fences to limit dust over critical roadway segments.
Education	Develop a lightning brochure for distribution by recreation equipment retailers or outfitters.
	Educate design professionals to include wind mitigation during building design.
	Instruct property owners on how to properly install temporary window coverings before a storm.
	Produce and distribute family and traveler emergency preparedness information.

5.14 Severe Winter Weather



5.14.1 Hazard Description

Severe winter weather encompasses multiple effects caused by winter storms and conditions. Included are strong winds, ice storms, heavy or prolonged snow, sleet, and extreme temperatures. Winter storms can be increasingly hazardous in areas and regions that only see winter storms intermittently.

This plan defines severe winter weather as a combination of the following effects as defined by NOAA and the NWS.

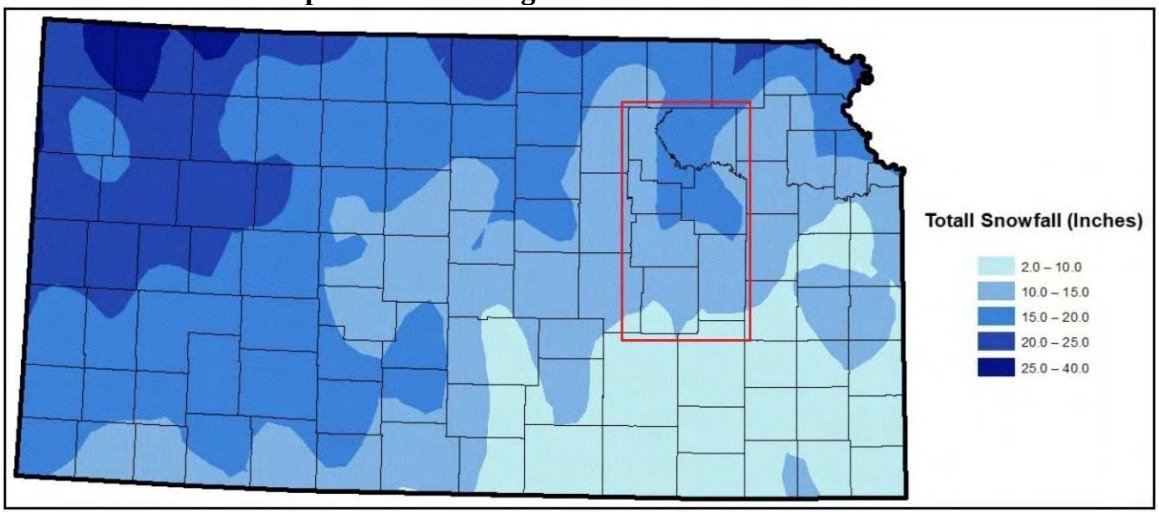
- **Ice Storm:** An ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication and can make travel extremely dangerous. Significant ice accumulations are usually accumulations of ¼" or greater.
- **Heavy Snow:** This generally means snowfall accumulating to 4" or more in depth in 12 hours or less; or snowfall accumulating to 6" or more in depth in 24 hours or less.
- **Winter Storm:** Hazardous winter weather in the form of heavy snow, freezing rain, or heavy sleet. It may also include extremely low temperatures and increased wind.
- **Cold Wave/Extreme Cold:** As described by NWS, a cold wave is a rapid fall in temperature within a 24-hour period requiring substantially increased protection to agriculture, industry, commerce, and social activities. As evidenced by past incidents across the U.S., extreme cold can cause impact to human life and property.

5.14.2 – Location and Extent

All of Kansas Region I is vulnerable to winter and ice storms. Based on the non-geographic specific aspect of this hazard, i.e., no one area is at a greater risk, all of the planning area's structural inventory and population is vulnerable. Severe winter weather occurs regularly throughout Kansas Region I. These events occur on a large geographic scale, often affecting multiple counties, regions, and states. Winter storms typically form with some warning and are often anticipated. Like other large storm fronts, the severity of a storm is not as easily predicted due to myriad factors that can influence its impact. Although meteorologists estimate the amount of snowfall a winter storm will drop, it is not known exactly how much snow will fall, whether or not it will form an ice storm, or how powerful the winds will be until the storm is already affecting a community.

The following map from NOAA indicates the average annual snowfall for Kansas Region I:

Map 109: Kansas Region I Normal Annual Snowfall



Source: NOAA

The Northeast Snowfall Impact Scale is a scale used to assess and rank the impact of snowfall events in the northeastern United States, but allows for an idea of intensity for Kansas Region I. It was developed by NOAA to provide a standardized way of measuring the societal and economic impacts of snowstorms. The scale takes into account factors such as snowfall amount, population density, and the area affected by the storm to determine its impact. The scale has five categories, each with its own associated impacts:

Table 123: Snowfall Impact Scale

Category	Description	Impacts
1	Notable	Light to moderate snowfall. Limited impacts on transportation and daily life. Typically localized to small areas.
2	Significant	Moderate to heavy snowfall. Widespread impacts on transportation, including delays and disruptions. Some school and business closures. Widespread power outages are rare.
3	Major	Heavy snowfall, often exceeding one foot or more. Significant transportation disruptions, including major highway closures. Widespread school and business closures. Power outages may occur, especially in areas with wet, heavy snow.
4	Crippling	Extreme snowfall, often exceeding two feet or more. Severe and prolonged transportation disruptions, including highway closures. Widespread school and business closures for an extended period. Widespread and prolonged power outages, especially in areas with ice accumulation.
5	Extreme	Exceptional snowfall, often exceeding three feet or more. Complete paralysis of transportation systems, including major highways and airports. Extended school and business closures. Widespread and prolonged power outages with significant damage to the electrical infrastructure.

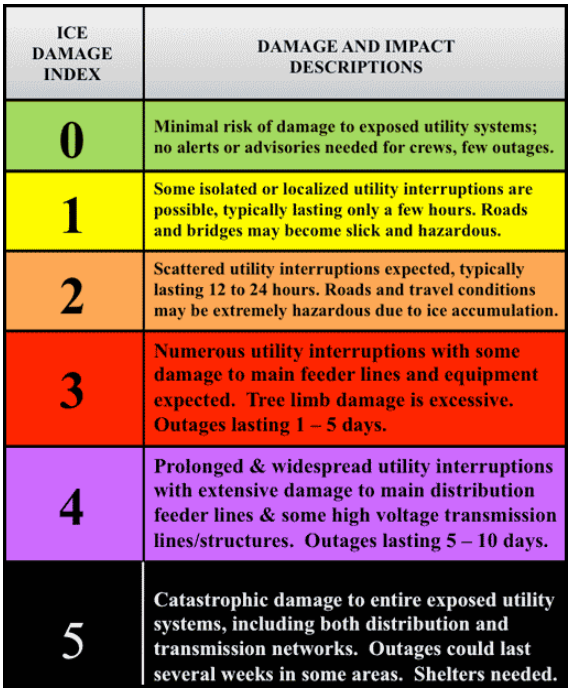
Source: NOAA

The scale provides information for emergency management, public safety agencies, and the public to understand the potential impacts of a snowstorm and to prepare accordingly. It helps to quantify and communicate the severity of winter weather events, especially where snowfall can have a major impact on daily life and the economy.

Ice storms are characterized by the accumulation of freezing rain or freezing drizzle, which coats surfaces with a layer of ice. These storms can have significant impacts on transportation, infrastructure, and the environment. Ice storms occur when there's a layer of warm air above a layer of cold air near the surface. Precipitation falls as rain in the warm layer and then freezes upon contact with surfaces at or below freezing temperatures in the cold layer. The most common type of precipitation during an ice storm is freezing rain. This is rain that falls as a liquid but freezes upon contact with cold surfaces, forming a layer of ice.

The Sperry–Piltz Ice Accumulation Index is an ice accumulation and ice damage prediction index that, when combined with NWS data, predicts the projected footprint, total ice accumulation, and resulting potential damage from approaching ice storms.

Figure 11: Sperry–Piltz Ice Accumulation Index



ICE DAMAGE INDEX	DAMAGE AND IMPACT DESCRIPTIONS
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

Source: Sperry–Piltz Ice Accumulation Index

The MPC views severe winter weather as a local, county-wide, and regional hazard. Discussions with the MPC and a review of all available data indicated severe winter weather is a community concern for all participating jurisdictions. The following provides a narrative of the level of jurisdictional concern:

- **Chase County** Severe winter weather identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Geary County:** Severe winter weather identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Lyon County:** Severe winter weather identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Morris County:** Severe winter weather identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Pottawatomie County:** Severe winter weather identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Riley County:** Severe winter weather identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Wabaunsee County:** Severe winter weather identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.

5.14.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. Kansas Region I has experienced the following Presidential Disaster Declaration related to severe winter weather events:

Table 124: Kansas Region I Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Individual and Public Assistance	Mitigation Grants
DR-4774-KS	4/28/2024	Winter Storm	Chase, Geary, Morris, Wabaunsee	-	-

Table 124: Kansas Region I Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Individual and Public Assistance	Mitigation Grants
DR-1885-KS	3/9/2010	Severe Winter Storms and Snowstorm	Geary, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$15,069,228	-
DR-1848-KS	6/24/2009	Severe Winter Storm and Record and Near Record Snow	Chase, Lyon, Morris	$12,436,207	-
DR-1741-KS	2/1/2008	Severe Winter Storms	Chase, Geary, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$227,086,533	-
DR-1579-KS	2/8/2005	Severe Winter Storm, Heavy Rains, and Flooding	Chase, Lyon, Morris, Pottawatomie, Wabaunsee	$82,381,461	-
DR-1402-KS	2/6/2002	Ice Storm	Lyon	$45,020,240	-

Source: FEMA
-: Not reported

The Governor of the State of Kansas has declared one Kansas Disaster Declarations during the past five years for Region I for severe winter weather:

- **January 18, 2019:** A declaration was issued for a major winter storm system.

Additionally, the following table presents NCEI identifies severe winter weather events and the resulting damage totals in Kansas Region I from 1950 to 2024:

Table 125: Kansas Region I NCEI Severe Winter Weather Events. 1950 - 2024

Region	Event Type	Number of Days with Events	Property Damage	Deaths and Injuries
Kansas Region I	Blizzard	6	$0	0
	Ice Storm	5	$2,016,000	11
	Winter Storm	64	$1,038,000	1

Source: NCEI

Recent notable events include:

- **December 10, 2007, Regional:** A devastating freezing rain event unfolded across parts of Southern and Central Kansas from December 10th through the 11th. At the same time an Arctic air mass was moving south into the Central Plains, a mid and upper level storm system was spinning in the Four Corners area. This storm system allowed for very warm and very moist conditions to override the Arctic air. The result was a very large swath of freezing rain that in some areas approached two inches thick. The weight of the ice encrusting everything, which adds nearly 2 tons of weight to a typical line span, resulted in thousands of downed power poles and tens of thousands of downed power lines. This naturally resulted in tens of thousands of Central and Southern Kansas residents losing power, some for more than a week. Some estimates place the number without power at one point was nearly 200 thousand across the state. An unknown number of trees were damaged or destroyed in the ice storm with some cities reporting more than 80% of trees sustaining some form of damage.

It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or NWS office. When reporting an event, the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages. Additionally, deaths and injuries may be underreported as they may be a result of a concurrent event, such as a person driving unsafely during heavy rain and passing away.

5.14.4 Probability of Future Events

Predicting the probability of severe weather occurrences is tremendously changing due to the large number of factors involved and the random nature of formation. Data and mapping from NOAA indicate that Kansas Region I can expect 10" – 20" of snow per year.

Based on historical occurrences, Kansas Region I will continue to experience severe winter storm events on an annual basis. The following table, using data from the NCEI, indicates the yearly probability of a severe winter storm event, the number of deaths or injuries, and estimated property damage for each county in Kansas Region I:

Table 126: Kansas Region I NCEI Severe Winter Storm Event Probability Summary

Event Type	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Blizzard	6	<1	0	<1	$0	$0
Ice Storm	5	<1	11	<1	$2,016,000	$26,880
Winter Storm	54	1	1	<1	$1,038,000	$13,840

Source: NCEI

5.14.5 Projected Changes in Location, Intensity, Frequency, and Duration

Recent storm records underscore that severe winter weather remains a high-impact hazard for Kansas Region I even as individual seasons vary widely. Annual climate reviews by the Wichita NWS office show that 2024 brought both above-average liquid winter precipitation and pockets of record-low snowfall within the same three-month span, illustrating a fewer but bigger snowfall pattern that leaves long quiet stretches punctuated by one or two headline storms. weather.gov

Seasonal forecasts from the Climate Prediction Center tie most year-to-year swings to El Niño/La Niña cycles; neutral to weak La Niña conditions favored for 2025-26 typically steer the heaviest snow bands just north of the Flint Hills, while marginal-temperature icing events clip the southern portion of Kansas Region I. Model experiments published this spring on Midwest storm types suggest that when winter systems do form, their liquid-equivalent payload is rising roughly 5-10%, meaning heavier, wetter snow or thicker glaze even if storm counts do not increase.

The 2022 Kansas State Climate Summary projects a modest uptick in total cold-season precipitation and a gradual northward migration of the rain-snow transition zone.

5.14.6 Vulnerability and Impact

FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the first table was created indicating the potential risk to Kansas Region I and all participating jurisdictions from severe winter weather. In order to gain an understanding of vulnerability, the second table details the estimated annual loss data for Kansas Region I and participating jurisdictions. To help understand the risk and vulnerability participating jurisdictions data from the FEMA NRI was run on a census tract level. As the NRI does not generate data for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Table 127: Kansas Region I Participating Jurisdiction Ice Storm Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Chase County	**All**	71.8	Relatively Moderate	0.8
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	99.2	Very High	0.8
Geary County	**All**	41.6	Relatively Low	1.0
Junction City	20061000100	57.3	Relatively Low	1.0
Junction City	20061000200	61.1	Relatively Low	1.0
Junction City	20061000300	69.5	Relatively Low	1.0

Table 127: Kansas Region I Participating Jurisdiction Ice Storm Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Junction City	20061000401	65.7	Relatively Low	1.0
Junction City	20061000402	34.2	Relatively Low	1.0
Junction City	20061000500	55.2	Relatively Low	1.0
Junction City	20061000601	67.5	Relatively Low	1.0
Grandview Plaza	20061000700	57.4	Relatively Low	1.0
Junction City	20061000801	43.7	Relatively Low	1.0
Milford	20061000802	64.7	Relatively Low	1.0
Lyon County	**All**	88.9	Relatively High	0.8
Emporia	20111000101	96.4	Relatively High	0.6
Emporia	20111000102	68.1	Relatively Low	0.6
Emporia	20111000103	86.5	Relatively Moderate	0.6
Emporia	20111000201	95.1	Relatively High	0.6
Emporia	20111000202	90.3	Relatively High	0.6
Emporia	20111000203	82.4	Relatively Moderate	0.6
Emporia	20111000300	97.1	Relatively High	0.6
Emporia	20111000400	94.8	Relatively High	0.6
Emporia	20111000500	97.6	Very High	0.6
Allen, Admire, Bushong, Reading	20111000600	92.6	Relatively High	0.9
Americus	20111000700	93.7	Relatively High	0.7
Hartford, Olpe, Neosho Rapids	20111000800	94.2	Relatively High	0.6
Morris County	**All**	31.9	Relatively Low	0.9
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	79.3	Relatively Moderate	0.9
Council Grove	20127963700	80.8	Relatively Moderate	0.9
Pottawatomie County	All	60.2	Relatively Moderate	0.9
Louisville	20149000101	77.0	Relatively Moderate	0.9
St. George	20149000102	91.1	Relatively High	0.9
Wamego	20149000200	89.4	Relatively High	0.9
Belvue, Emmett, St. Marys	20149000300	87.0	Relatively Moderate	0.9
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	85.3	Relatively Moderate	0.9
Riley County	**All**	36.3	Relatively Low	1.0
Manhattan	20161000201	41.6	Relatively Low	1.0
Manhattan	20161000202	52.8	Relatively Low	0.9
Manhattan	20161000303	31.5	Very Low	1.0
Manhattan	20161000304	41.1	Relatively Low	1.0
Manhattan	20161000500	39.4	Relatively Low	0.9
Manhattan	20161000601	35.4	Relatively Low	1.0
Manhattan	20161000602	52.0	Relatively Low	1.0
Manhattan	20161000700	42.1	Relatively Low	1.0
Manhattan	20161000801	39.8	Relatively Low	1.0
Manhattan	20161000802	27.6	Very Low	0.9
Ogden	20161000900	50.2	Relatively Low	0.9
Manhattan	20161001101	45.5	Relatively Low	1.0
Manhattan	20161001102	42.3	Relatively Low	1.0
Manhattan	20161001301	35.6	Relatively Low	1.0
Leonardville, Randloph, Riley	20161001302	41.2	Relatively Low	1.0
Wabaunsee County	**All**	52.9	Relatively Low	0.9
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	94.7	Relatively High	0.9
Eskridge, Harveyville,	20197483200	88.5	Relatively High	0.9

Source: FEMA NRI

In order to gain an understanding of vulnerability, the following table details the estimated FEMA EAL data for Kansas Region I counties and participating jurisdictions (by census tract):

Table 128: Participating Jurisdiction Ice Storm Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Chase County	**All**	72.2	Relatively Moderate	$163,100
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	99.3	Very High	$163,100
Geary County	**All**	42.4	Relatively Low	$37,362
Junction City	20061000100	48.8	Relatively Low	$2,257
Junction City	20061000200	52.9	Relatively Low	$2,713
Junction City	20061000300	66.6	Relatively Low	$5,007
Junction City	20061000401	63.3	Relatively Low	$4,277
Junction City	20061000402	41.4	Relatively Low	$1,666
Junction City	20061000500	53.5	Relatively Low	$2,772
Junction City	20061000601	68.7	Relatively Low	$5,585
Grandview Plaza	20061000700	53.9	Relatively Low	$2,820
Junction City	20061000801	50.4	Relatively Low	$2,420
Milford	20061000802	66.2	Relatively Low	$4,910
Lyon County	**All**	88.7	Relatively High	$494,288
Emporia	20111000101	94.9	Relatively High	$49,128
Emporia	20111000102	62.5	Relatively Low	$4,107
Emporia	20111000103	87.1	Relatively Moderate	$20,504
Emporia	20111000201	95.0	Relatively High	$50,590
Emporia	20111000202	92.2	Relatively High	$34,781
Emporia	20111000203	82.2	Relatively Moderate	$13,389
Emporia	20111000300	96.9	Relatively High	$71,423
Emporia	20111000400	93.6	Relatively High	$41,386
Emporia	20111000500	96.2	Relatively High	$61,624
Allen, Admire, Bushong, Reading	20111000600	94.9	Relatively High	$49,803
Americus	20111000700	94.2	Relatively High	$44,602
Hartford, Olpe, Neosho Rapids	20111000800	95.3	Relatively High	$52,953
Morris County	**All**	34.1	Relatively Low	$23,812
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	81.7	Relatively Moderate	$12,881
Council Grove	20127963700	79.5	Relatively Moderate	$10,932
Pottawatomie County	**All**	64.1	Relatively Moderate	$114,257
Louisville	20149000101	80.0	Relatively Moderate	$11,282
St. George	20149000102	92.5	Relatively High	$35,978
Wamego	20149000200	89.8	Relatively High	$27,065
Belvue, Emmett, St. Marys	20149000300	87.6	Relatively Moderate	$21,439
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	86.0	Relatively Moderate	$18,494
Riley County	**All**	37.3	Relatively Low	$28,672
Manhattan	20161000201	34.0	Very Low	$1,229
Manhattan	20161000202	50.7	Relatively Low	$2,450
Manhattan	20161000303	33.0	Very Low	$1,180
Manhattan	20161000304	43.5	Relatively Low	$1,807
Manhattan	20161000500	40.7	Relatively Low	$1,623
Manhattan	20161000601	39.4	Relatively Low	$1,534
Manhattan	20161000602	52.0	Relatively Low	$2,609
Manhattan	20161000700	39.9	Relatively Low	$1,568
Manhattan	20161000801	37.6	Relatively Low	$1,433
Manhattan	20161000802	24.7	Very Low	$814
Ogden	20161000900	46.6	Relatively Low	$2,053

Table 128: Participating Jurisdiction Ice Storm Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Manhattan	20161001101	43.4	Relatively Low	$1,803
Manhattan	20161001102	38.9	Relatively Low	$1,506
Manhattan	20161001301	41.0	Relatively Low	$1,643
Leonardville, Randloph, Riley	20161001302	46.5	Relatively Low	$2,000
Wabaunsee County	**All**	55.2	Relatively Low	$75,104
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	94.8	Relatively High	$48,892
Eskridge, Harveyville,	20197483200	89.5	Relatively High	$26,211

Source: FEMA NRI

Table 129: Kansas Region I Participating Jurisdiction Winter Weather Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Chase County	**All**	35.5	Relatively Low	3.0
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	96.2	Relatively High	3.0
Geary County	**All**	90.5	Relatively High	2.4
Junction City	20061000100	96.5	Relatively High	2.4
Junction City	20061000200	97.4	Relatively High	2.4
Junction City	20061000300	98.6	Very High	2.4
Junction City	20061000401	98.1	Very High	2.4
Junction City	20061000402	90.3	Relatively High	2.4
Junction City	20061000500	96.3	Relatively High	2.4
Junction City	20061000601	98.4	Very High	2.4
Grandview Plaza	20061000700	96.7	Relatively High	2.4
Junction City	20061000801	93.7	Relatively High	2.4
Milford	20061000802	97.9	Very High	2.4
Lyon County	**All**	85.7	Relatively Moderate	2.6
Emporia	20111000101	95.8	Relatively High	2.6
Emporia	20111000102	89.1	Relatively High	2.6
Emporia	20111000103	84.4	Relatively Moderate	2.6
Emporia	20111000201	95.1	Relatively High	2.6
Emporia	20111000202	92.8	Relatively High	2.6
Emporia	20111000203	82.3	Relatively Moderate	2.6
Emporia	20111000300	97.6	Very High	2.6
Emporia	20111000400	94.6	Relatively High	2.6
Emporia	20111000500	97.9	Very High	2.6
Allen, Admire, Bushong, Reading	20111000600	90.4	Relatively High	2.6
Americus	20111000700	92.8	Relatively High	2.6
Hartford, Olpe, Neosho Rapids	20111000800	95.6	Relatively High	2.6
Morris County	**All**	25.0	Relatively Low	2.5
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	85.5	Relatively Moderate	2.5
Council Grove	20127963700	86.1	Relatively High	2.5
Pottawatomie County	All	28.6	Relatively Low	2.1
Louisville	20149000101	57.9	Relatively Low	2.1
St. George	20149000102	80.5	Relatively Moderate	2.1
Wamego	20149000200	77.0	Relatively Moderate	2.1
Belvue, Emmett, St. Marys	20149000300	73.0	Relatively Moderate	2.1
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	71.4	Relatively Moderate	2.1
Riley County	**All**	27.1	Relatively Low	2.2

Table 129: Kansas Region I Participating Jurisdiction Winter Weather Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Manhattan	20161000201	47.9	Relatively Low	2.2
Manhattan	20161000202	57.9	Relatively Low	2.2
Manhattan	20161000303	39.8	Relatively Low	2.2
Manhattan	20161000304	46.8	Relatively Low	2.2
Manhattan	20161000500	46.6	Relatively Low	2.2
Manhattan	20161000601	42.6	Relatively Low	2.2
Manhattan	20161000602	55.0	Relatively Low	2.2
Manhattan	20161000700	47.7	Relatively Low	2.2
Manhattan	20161000801	47.2	Relatively Low	2.2
Manhattan	20161000802	38.4	Relatively Low	2.2
Ogden	20161000900	54.6	Relatively Low	2.2
Manhattan	20161001101	50.5	Relatively Low	2.2
Manhattan	20161001102	47.5	Relatively Low	2.2
Manhattan	20161001301	42.8	Relatively Low	2.2
Leonardville, Randloph, Riley	20161001302	47.9	Relatively Low	2.2
Wabaunsee County	**All**	25.2	Relatively Low	2.2
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	89.6	Relatively High	2.2
Eskridge, Harveyville,	20197483200	79.2	Relatively Moderate	2.2

Source: FEMA NRI

Table 130: Participating Jurisdiction Winter Weather Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Chase County	**All**	38.5	Relatively Low	$28,458
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	96.2	Relatively High	$28,458
Geary County	**All**	90.7	Relatively High	$390,469
Junction City	20061000100	94.9	Relatively High	$22,486
Junction City	20061000200	96.2	Relatively High	$28,576
Junction City	20061000300	98.4	Very High	$52,761
Junction City	20061000401	97.9	Very High	$44,767
Junction City	20061000402	93.2	Relatively High	$17,589
Junction City	20061000500	96.2	Relatively High	$28,441
Junction City	20061000601	98.7	Very High	$59,860
Grandview Plaza	20061000700	96.4	Relatively High	$29,420
Junction City	20061000801	95.6	Relatively High	$25,617
Milford	20061000802	98.3	Very High	$50,496
Lyon County	**All**	86.3	Relatively High	$254,394
Emporia	20111000101	94.5	Relatively High	$21,174
Emporia	20111000102	86.2	Relatively High	$9,170
Emporia	20111000103	85.9	Relatively High	$9,024
Emporia	20111000201	95.4	Relatively High	$24,471
Emporia	20111000202	94.8	Relatively High	$22,160
Emporia	20111000203	82.6	Relatively Moderate	$7,202
Emporia	20111000300	97.5	Very High	$39,352
Emporia	20111000400	93.9	Relatively High	$19,368
Emporia	20111000500	96.8	Relatively High	$32,555
Allen, Admire, Bushong, Reading	20111000600	93.7	Relatively High	$19,013
Americus	20111000700	93.7	Relatively High	$18,979
Hartford, Olpe, Neosho Rapids	20111000800	96.7	Relatively High	$31,926
Morris County	**All**	29.7	Relatively Low	$19,602

Table 130: Participating Jurisdiction Winter Weather Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	88.3	Relatively High	$10,825
Council Grove	20127963700	85.6	Relatively Moderate	$8,777
Pottawatomie County	**All**	35.3	Relatively Low	$24,867
Louisville	20149000101	62.4	Relatively Moderate	$2,469
St. George	20149000102	83.7	Relatively Moderate	$7,733
Wamego	20149000200	78.9	Relatively Moderate	$5,779
Belvue, Emmett, St. Marys	20149000300	74.7	Relatively Moderate	$4,645
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	73.0	Relatively Moderate	$4,241
Riley County	**All**	30.3	Relatively Low	$20,204
Manhattan	20161000201	42.6	Relatively Low	$875
Manhattan	20161000202	56.7	Relatively Low	$1,872
Manhattan	20161000303	41.1	Relatively Low	$794
Manhattan	20161000304	48.5	Relatively Low	$1,236
Manhattan	20161000500	47.6	Relatively Low	$1,174
Manhattan	20161000601	45.6	Relatively Low	$1,047
Manhattan	20161000602	55.6	Relatively Low	$1,778
Manhattan	20161000700	46.1	Relatively Low	$1,081
Manhattan	20161000801	45.6	Relatively Low	$1,052
Manhattan	20161000802	37.2	Relatively Low	$600
Ogden	20161000900	52.1	Relatively Low	$1,487
Manhattan	20161001101	49.0	Relatively Low	$1,272
Manhattan	20161001102	45.1	Relatively Low	$1,021
Manhattan	20161001301	46.8	Relatively Low	$1,123
Leonardville, Randloph, Riley	20161001302	52.0	Relatively Low	$1,500
Wabaunsee County	**All**	30.1	Relatively Low	$20,043
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	90.5	Relatively High	$13,138
Eskridge, Harveyville,	20197483200	81.9	Relatively Moderate	$6,905

Source: FEMA NRI

Population

Severe winter weather, and the extremely cold temperatures that often accompany it, is a threat to anyone exposed to them. Extreme cold can cause frostbite and hypothermia. Bitterly cold temperatures can also burst water and create an excessive demand on providers to deliver energy for household heating. There are also fire dangers associated with home heating. Heavy snow and/or ice can paralyze communities. Roads can become hazardous which may cause accidents, disrupted flow of supplies, and challenges in the delivery of emergency and medical services. Additional impacts on people and the community may include:

- **Injuries and Fatalities:** Slippery sidewalks, roads, and driveways can lead to slip and fall accidents, vehicle crashes, and pedestrian injuries. Exposure to extreme cold temperatures can cause frostbite, hypothermia, and cold-related illnesses, which can be life-threatening.
- **Power Outages:** Heavy snow, ice, and freezing rain can bring down power lines and disrupt electricity supply. Power outages can lead to heating and lighting challenges, particularly in extreme cold conditions.
- **Transportation Disruptions:** Winter storms can make roads and highways treacherous, leading to travel delays, accidents, and stranded motorists. Public transportation services may be disrupted, affecting commuters and essential travel.
- **Stranded or Isolated Communities:** Severe winter weather can leave communities isolated and cut off from emergency services and supplies. Residents may need to shelter in place or rely on local resources until conditions improve.

- **Health Risks:** Exposure to extreme cold can lead to a range of health risks, including frostbite, hypothermia, and cold-related illnesses. Individuals with pre-existing health conditions may face exacerbated risks.
- **Increased Heating Costs:** Cold weather can result in higher heating costs, which can be a financial burden for many households. Low-income individuals and families may struggle to afford adequate heating.
- **Disruption of Essential Services:** Severe winter weather can disrupt essential services such as healthcare, emergency response, and utilities. Hospitals may face increased patient volumes due to weather-related injuries and illnesses.

When extremely cold temperatures are accompanied by strong winds the result can be potentially lethal wind chills. Wind chill is the temperature your body feels when the air temperature is combined with the wind speed and is based on the rate of heat loss from exposed skin caused by the effects of wind and cold. As the speed of the wind increases, it can carry heat away from your body much more quickly, causing skin temperature to drop.

All Kansas Region I and participating jurisdiction populations are vulnerable to the impacts of severe winter weather. Please see Section 3.3: Population Data and Section 3.4: Socially Vulnerable and At-Risk Populations for data concerning jurisdictional populations.

Buildings and Structures

All buildings and structures within Kansas Region I and participating jurisdictions can be impacted by severe winter weather. However, the location and construction of the facility will have a significant impact on the vulnerability. In general, older structures would be at higher risk of negative impacts. Some of the potential impacts include:

- **Electrical Infrastructure Damage:** Severe winter weather can damage electrical infrastructure, including power lines, transformers, and substations. This can result in widespread power outages, affecting homes, businesses, hospitals, and other critical facilities.
- **Communication Disruptions:** Severe winter weather can disrupt telecommunications infrastructure, including cell towers, data centers, and communication networks. This can impact emergency communication and coordination efforts.
- **Safety Risks:** Damage to infrastructure can pose safety risks to workers and the public. Fallen power lines, damaged buildings, and debris can be hazardous.
- **Building Damage:** Heavy snow or ice loads can cause damage to the building.

Governmental Operations

Severe winter weather can pose various risks to government operations. These risks can have significant economic and operational consequences, and can include:

- **Power Outages:** Severe winter weather can lead to power outages by damaging electrical infrastructure such as power lines and substations. Government buildings may lose power, affecting critical operations and services.
- **Flooding:** Heavy snow, or rapid melting of snow during severe winter weather can lead to flooding, which can damage government buildings and disrupt operations. Flood damage may require extensive repairs and cleanup.
- **Communication Disruptions:** Severe winter weather can damage communication equipment, including telephone lines and computer systems. This can hinder communication between government agencies and the public.
- **Transportation Disruptions:** Severe winter weather can make roads impassable due to snow or ice. This can impact the ability of government employees to commute to work.
- **Budgetary Impact:** The costs associated with repairing and restoring government buildings and infrastructure after severe winter weather can strain budgets.

Transportation and Electrical Infrastructure

Severe winter weather can have significant impacts on road infrastructure, creating changing conditions for transportation and necessitating proactive measures for maintenance and safety. Winter storms can impact road infrastructure through:

- **Snow Accumulation:** Snowfall can accumulate on road surfaces, creating slippery and hazardous conditions for drivers. Accumulated snow can reduce road visibility and make travel difficult.
- **Ice Formation:** Freezing temperatures can lead to the formation of ice on roadways, increasing the risk of accidents and making roads slippery. Black ice, which is nearly invisible, poses a particular hazard.
- **Snowdrifts:** Strong winds during winter storms can lead to the formation of snowdrifts on roads, especially in open areas. These drifts can obstruct visibility and impede traffic flow.
- **Road Surface Damage:** The freeze-thaw cycle, where melted snow refreezes, can lead to the formation of ice patches and potholes on road surfaces. This cycle can contribute to the deterioration of road infrastructure over time.
- **Freeze-Thaw Cycling:** Alternating freezing and thawing can cause the expansion and contraction of water within pavement cracks, leading to the formation and enlargement of potholes.
- **Snowplow and Deicing Operations:** Snowplows and deicing operations are necessary to clear roads and improve driving conditions. However, the use of salt and chemicals for deicing can contribute to corrosion and deterioration of road surfaces and infrastructure.
- **Infrastructure Stress:** Bridges and overpasses are particularly susceptible to ice formation due to the lack of ground contact. Winter storms can stress these structures, potentially leading to structural issues over time.

Significant cost can be incurred for snow removal from transportation routes. In smaller jurisdictions with fewer resources and equipment, the cost may be on the lower end of the spectrum, ranging from a few thousand dollars to around $10,000 per snow event. In larger counties or urban areas with extensive road networks and higher population densities, the cost can be much higher, potentially ranging from $10,000 to $50,000 or more per snow event.

In general, the priority for snow removal is based on traffic volume, speed limits and road surface types. Preference is generally given in the following order:

- State trunklines
- Primary roads
- Major local roads
- Residential / subdivision streets

Severe winter weather can impact electrical utilities in various ways, potentially leading to disruptions in service. These impacts include:

- **Power Outages:** Low temperatures can strain electrical systems, leading to increased demand for heating systems. This heightened demand can overload power grids, resulting in power outages.
- **Equipment Failure:** Electrical equipment, such as cables and switches, may experience higher stress during extremely cold weather, increasing the likelihood of equipment failures.
- **Icing on Power Lines:** Ice accumulation on power lines can lead to increased weight, potentially causing lines to sag or break. This can result in power outages and safety hazards.

Water and Wastewater Utilities

In general, severe winter weather components do not have a large impact on water and wastewater infrastructure and operations. However, the cascading impacts from an event such as power loss disrupting pumping and treatment capabilities, localized flooding from heavy overwhelming drainage systems, or frozen pipes in water distribution systems, can cause system disruptions.

Medical and Response Facilities

Severe winter weather can significantly impact emergency response infrastructure, creating challenges for first responders and organizations involved in managing and mitigating the effects of severe winter weather events. Winter storms can impact emergency response through:

- **Transportation Disruptions:** Snow and ice accumulation on roads can hinder the ability of emergency vehicles to navigate and reach affected areas promptly. Hazardous road conditions may result in delays in response times.
- **Communication Disruptions:** Severe winter weather can disrupt communication networks, affecting the ability of emergency responders to coordinate and communicate effectively. Downed power lines and damage to communication infrastructure contribute to these disruptions.
- **Power Outages:** Severe winter weather can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.
- **Exposure:** Emergency responders face increased health and safety risks in severe winter weather conditions. Exposure to hail, high winds, extreme cold, snow, and ice can impact the well-being of responders and affect their ability to provide effective assistance.
- **Resource Allocation Challenges:** Severe winter weather often requires the allocation of additional resources, including personnel, equipment, and supplies, to address immediate needs. This can strain emergency response organizations and impact their ability to respond to other concurrent incidents.
- **Increased Demand for Services:** Severe winter weather can result in an increased demand for emergency services, including medical assistance, search and rescue operations, and responses to accidents. Emergency response organizations may need to manage a higher volume of incidents simultaneously. Severe winter weather can increase the demand for emergency shelters, particularly in cases of widespread power outages. Setting up and managing these shelters can strain resources.

Educational Facilities

Severe winter weather can significantly impact school operations. Impacts may include:

- **Transportation Disruptions:** Snow and ice accumulation on roads can hinder the ability of school vehicles to navigate and reach both students and facilities. Hazardous road conditions may result in delays or closures.
- **School Closures:** Severe winter weather can lead to the closure of schools due to hazardous conditions. This can strain caregivers and result in lower work attendance.

Communication Systems

All communication systems within Kansas Region I and all participating jurisdictions are at risk to severe winter weather. Severe winter weather can disrupt vital communications system, affecting reliability and functionality. Some of the key vulnerabilities include:

- **Physical Infrastructure Damage:** Heavy snow or ice conditions can cause physical damage to communication infrastructure such as cell towers, antennas, cables, and data centers. This damage can result in network outages and disruptions.
- **Power Outages:** Severe winter storms often lead to power outages, which can affect the operation of communication networks. Without a stable power supply, cell towers, data centers, and other critical components may become non-functional, leading to service interruptions.
- **Signal Interference:** Severe winter storms can create electromagnetic interference that disrupts radio signals used in wireless communication. This interference can lead to poor signal quality, dropped calls, and slower data speeds.
- **Loss of Backhaul Connectivity:** Severe winter weather events can damage the backhaul infrastructure that connects various communication nodes. This backbone infrastructure is crucial for transmitting data between local and regional networks, and any disruption can impact overall network performance.

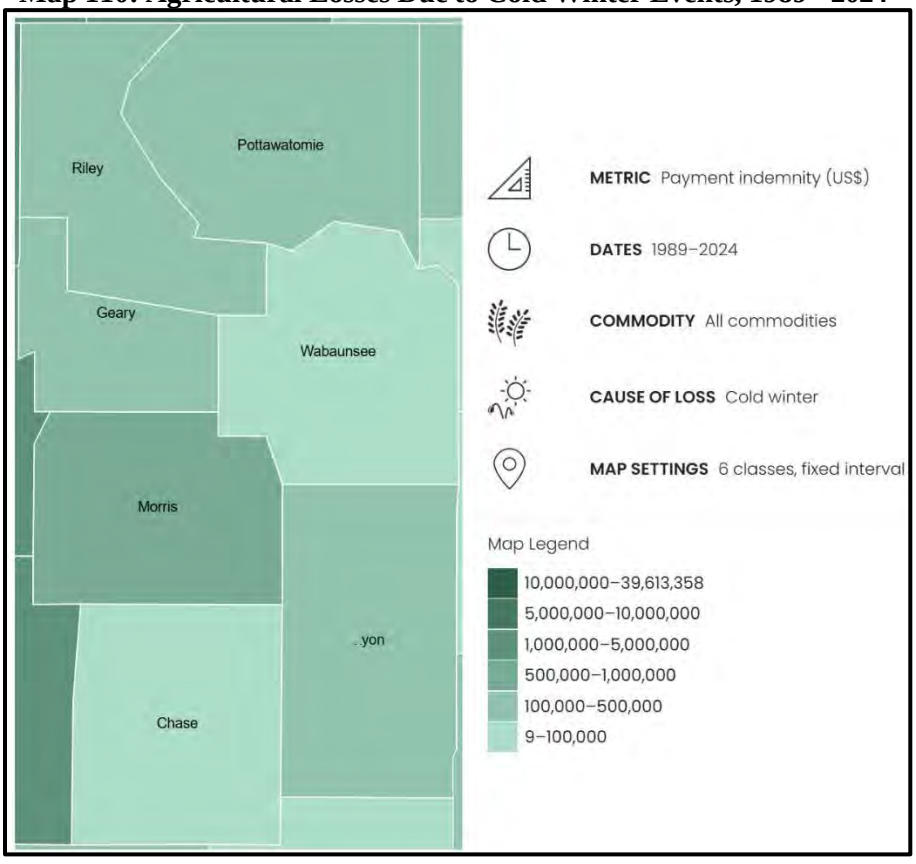
- **Communication Tower Instability:** Heany snow and ice loads can compromise the stability of communication towers. If towers are not designed to withstand severe weather, they may collapse, leading to network outages.
- **Network Congestion:** In the event of a disaster, communication networks may experience a surge in usage as people attempt to contact emergency services, friends, and family. This increased demand can lead to network congestion, making it difficult for users to connect.

The cost to repair communications networks can vary widely depending on the extent of the damage, the size of the network, and the specific technologies involved. Repair costs may include expenses for labor, equipment replacement or repair, materials, and any additional resources required to restore the network to full functionality. Estimated repair cost from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency may be found in Section 5.11.6.

Environmental and Agricultural Impacts

Severe Winter Weather events can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total county-wide agricultural losses, by county, due to cold winter events from 1989 - 2024:

Map 110: Agricultural Losses Due to Cold Winter Events, 1989 - 2024



Source: USDA

Severe winter weather can have various impacts on the environment, particularly in regions prone to cold and snowy winters. These impacts can affect ecosystems, wildlife, and natural resources and can include habitat disruption, reduction of food sources, changes in migration patterns, and damage to foliage (especially if a spring storm). Additionally, the use of salt and de-icing chemicals on roads and sidewalks can have negative environmental impacts. These chemicals can find their way into nearby water bodies, leading to water pollution and harm to aquatic ecosystems. Snowmelt can also introduce pollutants from roadways and urban areas into rivers and streams, leading to reduced water quality. Elevated sediment levels and changes in water temperature can also affect aquatic life.

Jurisdictional Concerns:

As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts.

Severe winter weather continues to affect Kansas Region I in ways that vary noticeably by county size and community character. Larger, faster-growing counties such as Geary, Lyon, Pottawatomie, and Riley cluster their people, hospitals, campuses, and commerce along major highways and river valleys. Their chief concern is keeping dense infrastructure running when a blizzard or ice storm drops heavy, wet snow on flat roofs, coats overhead power lines, and clogs multilane arterials. Fortunately, these cities and suburbs also hold the region's biggest advantages, larger tax bases, full-time public-works fleets, and engineering staff who can upgrade building permits, bury critical feeders, and stage de-icing equipment in advance.

Smaller, more rural Chase, Morris, and Wabaunsee counties present a different picture. Long stretches of open prairie mean fewer downed tree limbs, but fierce winds drift snow across gravel section roads, isolating scattered ranch houses for days. Volunteer fire and EMS crews, often aging and thinly staffed, must cover large areas with limited plows and a single road grader. On the upside, low population density reduces the absolute number of roofs, vehicles, and pedestrians at risk, and fewer new structures are being added to hazard-prone landscapes.

Looking ahead, both groups expect quieter winters punctuated by bigger hits. Forecasts point to longer-duration icing and heavier, wetter snow when storms do form. Large jurisdictions will need to harden flat-roofed public buildings, consider burying distribution lines, and refine traffic-management plans for arterial streets. Rural counties will focus on mutual-aid pumper agreements, shared salt and fuel depots, and ready-to-deploy warming shelters to serve widely dispersed residents during extended outages.

The region's overarching challenge is to leverage the strengths of its larger cities (equipment, technical capacity, revenue) to support resource-lean neighbor counties, while smaller jurisdictions contribute flexible volunteer networks and open staging areas. A coordinated approach to load-resistant construction, power-grid hardening, and cross-county emergency support will help all seven counties manage future blizzards, ice storms, and winter storms more effectively.

Cascading Impacts

Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with severe weather may include:

- Direct physical damage to buildings and structures:
- Transportation infrastructure disruption
- Power outages and electrical grid disruption
- Communication system disruption
- Transportation and supply chain disruptions
- Environmental and ecological damage
- Economic impacts and business closures
- Emergency services overload

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of a community. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 131: Severe Winter Weather Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Freezing temperatures coupled with heavy snow accumulation can cause dangerous travel conditions, leading to accidents and road closures. Downed power lines can lead to a loss of electricity and heat, with the young and the elderly especially vulnerable. Extremely cold temperatures may lead to hypothermia and death.
Impact on Responders	Dangerous road conditions create transportation challenges for first responders. First responders will need to control their own exposure to the elements for prolonged periods of time and will need to continuously seek heat and shelter to stay warm. Equipment may also be damaged or destroyed due to cold temperatures, heavy wind, ice, and heavy snowfall, which may lead to a decrease in response capabilities.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary. Severe winter weather may impact an agency's ability to maintain operations due to power outages and transportation difficulties. If the activation of alternate facilities was required, travel may be difficult. Additionally, computer/network and other communication access may be impacted due to power outages.
Delivery of Services	The ability to deliver services can be impacted locally, regionally, or statewide depending on the severity of the severe winter weather event. Dangerous road conditions may lead to roadway and bridge closures, as well as transit service disruptions. Businesses and places of commerce may completely shut down, which leads to the disruption of goods and services.
Property, Facilities, and Infrastructure	Transportation, governmental operations, and communications may be heavily disrupted. Roads and bridges may be heavily impacted by severe winter weather, and may be completely obstructed by downed trees, powerlines, and snow accumulation. Snow and ice can impact access to homes and critical facilities such as hospitals, schools, and supermarkets. Power loss can lead to disruption of critical infrastructure and technology.
Impact on Environment	Heavy snow and ice accumulation can weigh down and damage vegetation, tree limbs, and power lines. Flooding may also occur after the rapid melting of a heavy snowfall, causing bodies of water to flood, damaging the surrounding areas. Exposure to extreme winter weather may result in animal death. Chemicals used to treat roadways may contaminate natural environments and water reservoirs if used in large quantities.
Economic Conditions	Severe winter weather poses a fiscal impact on the governments, even if some of those costs can be recouped through federal grant reimbursements. Local, county, and state resources may be drained by a severe winter weather event.
Public Confidence in Governance	The public's confidence in governance is affected by immediate local and state response through direct and effective actions. Efficiency in response and recovery operations is critical in keeping public confidence high.

5.14.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make

it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

5.14.8 Mitigation Opportunities

The following table presents examples of potential actions that can be instituted for mitigating the extreme heat hazard.

Table 132: Example Severe Winter Weather Mitigation Actions

Category	Example Action
Planning and Regulation	Review building codes and structural policies to ensure they are adequate to protect older structures from snow loads.
	Require tie-downs with anchors and ground anchors appropriate for the soil type for manufactured homes.
	Incorporate passive ventilation in the site design to allow outdoor air to enter the home in a controlled way.
	Establish standards for all utilities regarding tree pruning around lines.
	Inspect utility poles to ensure they meet specifications and are ice resistant.
	Ensure the development and enforcement of building codes for roof snow loads.
Infrastructure	Protect traffic lights and other traffic controls from ice.
	Add building insulation to walls and attics.
Natural Systems	Property maintain stream and river channels to ensure flow.
	Use snow fences or "living snow fences" (e.g., rows of trees or other vegetation) to limit blowing and drifting of snow over critical roadway segments.
Education	Develop a winter weather brochure for distribution by recreation equipment retailers.
	Educate design professionals to include snow mitigation during building design.
	Instruct property owners on how to properly install temporary window coverings before a storm.
	Produce and distribute family and traveler emergency preparedness information about severe winter weather hazards.
	Organize outreach to vulnerable populations, including establishing and promoting accessible heating centers in the community.

5.15 Tornadoes



5.15.1 Hazard Description

A tornado is a violent, dangerous, rotating column of air that is in contact with both the surface of the earth and a cumulonimbus Barton or, in rare cases, the base of a cumulus Barton. Tornadoes come in many shapes and sizes but are typically in the form of a visible condensation funnel, whose narrow end touches the earth and is often encircled by a Barton of debris and dust.

Tornadoes can cause several kinds of damage to buildings. Tornadoes have been known to lift and move objects weighing more than three tons, toss homes more than 300 feet from their foundations, and siphon millions of tons of water. However, less spectacular damage is much more common. Houses and other obstructions in the path of the wind cause the wind to change direction. This change in wind direction increases pressure on parts of the building. The combination of increased pressures and fluctuating wind speeds creates stress on the building that frequently causes connections between building components, roofing, siding, and windows to fail. Tornadoes can also generate a tremendous amount of flying debris. If wind speeds are high enough, airborne debris can be thrown at buildings with enough force to penetrate windows, roofs, and walls.

5.15.2 – Location and Extent

All of Kansas Region I is vulnerable to tornadoes. Based on the non-geographic specific aspect of this hazard, i.e., no one area is at a greater risk, all of the planning area's structural inventory and population is vulnerable. Tornadoes can strike anywhere in Kansas Region I. A tornado may arrive with a squall line or cold front and touch down quickly. Smaller tornadoes can strike without warning. Other times tornado watches and sirens will alert communities of high potential tornado producing weather or an already formed tornado and its likely path.

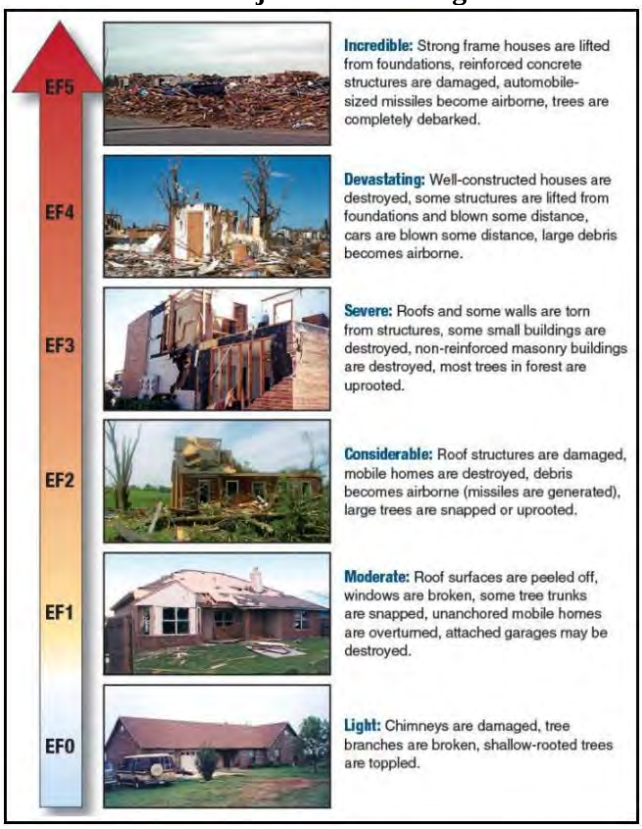
Since 2007, the United States uses the Enhanced Fujita (EF) Scale to categorize tornadoes. The scale correlates wind speed values per F level and provides a rubric for estimating damage.

Table 133: Enhanced Fujita Scale

Scale	Wind Speed (mph)	Relative Frequency	Potential Damage
EF0	65-85	53.5%	Light. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.
EF1	86-110	31.6%	Moderate. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	10.7%	Considerable. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes complete destroyed; large trees snapped or uprooted; light object missiles generated; cars lifted off ground.
EF3	136-165	3.4%	Severe. Entire stores of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	0.7%	Devastating. Well-constructed houses and whole frame houses completely leveled; cars thrown, and small missiles generated.
EF5	>200	<0.1%	Explosive. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 300 ft.; steel reinforced concrete structure badly damaged; high rise buildings have significant structural deformation; incredible phenomena will occur.

Source: NOAA Storm Prediction Center

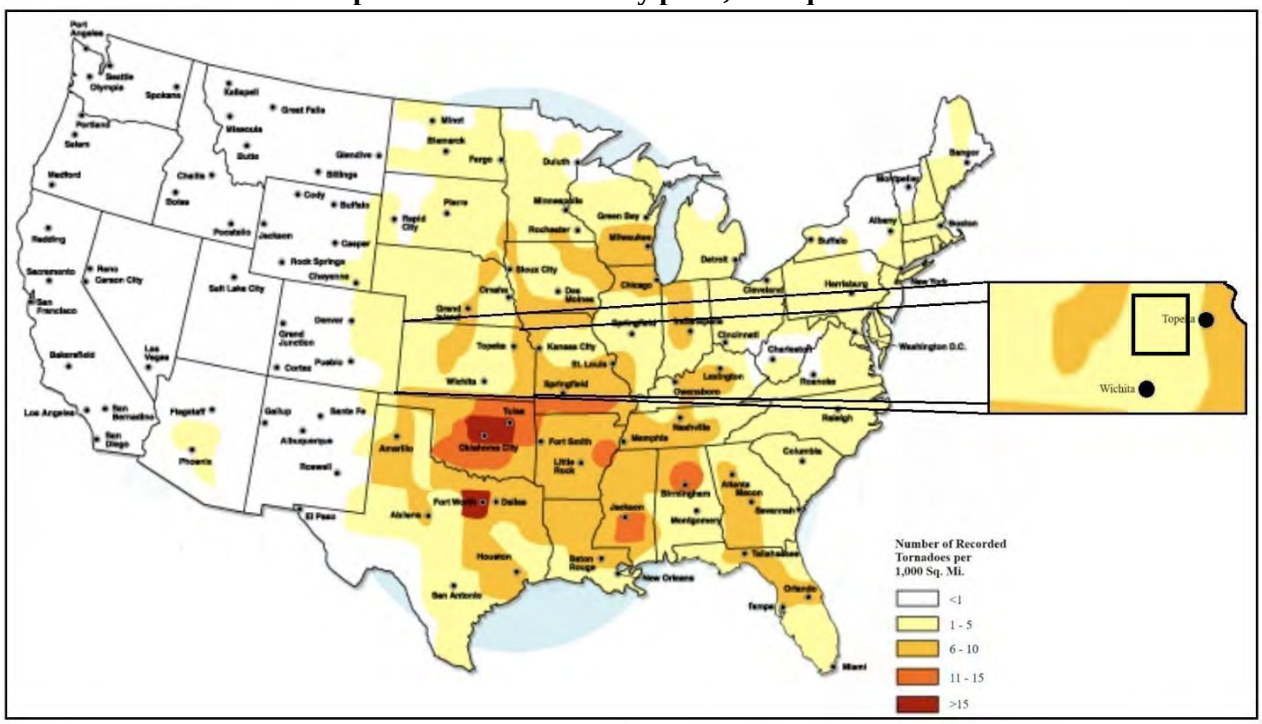
12: Enhanced Fujita Scale Damage Estimates



Source: FEMA

The following map, from FEMA, indicates tornado activity per 1,000 square miles for Kansas Region I

Map 111: Tornado Activity per 1,000 Square Miles



Source: FEMA

The MPC views tornadoes as a local, county-wide, and regional hazard. Discussions with the MPC and a review of all available data indicated tornadoes are a community concern for all participating jurisdictions. The following provides a narrative of the level of jurisdictional concern:

- **Chase County** Tornadoes identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Geary County:** Tornadoes identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Lyon County:** Tornadoes identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Morris County:** Tornadoes identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Pottawatomie County:** Tornadoes identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Riley County:** Tornadoes identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.
- **Wabaunsee County:** Tornadoes identified as a community concern for all participating jurisdictions as citizens, structures, and infrastructure are vulnerable.

5.15.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. Kansas Region I has experienced the following Presidential Disaster Declaration related to tornado events:

Table 134: Kansas Region I Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Individual and Public Assistance	Mitigation Grants
DR-4824-KS	9/24/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Chase, Geary, Wabaunsee	-	-
DR-4811-KS	8/20/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Morris, Wabaunsee	-	-
DR-4800-KS	7/15/2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Morris, Pottawatomie	-	-
DR-4449-KS	8/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Chase, Geary, Lyon, Morris, Pottawatomie, Wabaunsee	$51,157,548	$3,331,442
DR-4230-KS	7/20/2015	Severe Storms, Tornadoes, Straight-Line Winds and Flooding	Chase, Lyon, Morris, Pottawatomie, Wabaunsee	$11,018,053	-
DR-4150-KS	10/22/2013	Severe Storms, Straight-Line Winds, Tornadoes	Chase, Geary, Lyon, Morris, Pottawatomie	$10,135,201	-
DR-4010-KS	7/29/2011	Severe Storms, Straight-Line Winds, Tornadoes and Flooding	Lyon, Pottawatomie, Riley	$7,283,729	-
DR-1932-KS	8/10/2010	Severe Storms, Flooding and Tornadoes	Chase, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$7,384,786	-
DR-1849-KS	6/25/2009	Severe Storms, Flooding, Straight-Line Winds, and Tornadoes	Chase, Lyon, Morris, Wabaunsee	$11,534,818	-

Table 134: Kansas Region I Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Individual and Public Assistance	Mitigation Grants
DR-1808-KS	10/31/2008	Severe Storms, Flooding, and Tornadoes	Chase	$3,364,325	-
DR-1776-KS	7/9/2008	Severe Storms, Flooding, and Tornadoes	Riley	$55,300,511	-
DR-1699-KS	5/6/2007	Severe Storms, Tornadoes, and Flooding	Chase, Lyon, Morris, Pottawatomie, Riley, Wabaunsee	$98,286,095	-
DR-1535-KS	8/3/2004	Severe Storms, Flooding, and Tornadoes	Geary, Lyon, Morris, Wabaunsee	$10,223,840	-
DR-267-KS	7/15/1969	Tornadoes, Severe Storms, Flooding	Lyon, Morris	-	-
DR-229-KS	7/18/1967	Tornadoes, Severe Storms, Flooding	Chase, Lyon, Pottawatomie, Wabaunsee	-	-
DR-219-KS	6/10/1966	Tornadoes, Severe Storms	Riley	-	-

Source: FEMA
-: Not reported

The following table presents NCEI identified tornado events and the resulting damage totals in Kansas Region I from 1950 to 2023.

Table 135: Kansas Region I Tornado Events

County	Number of Events	Property Damage	Deaths or Injuries	Highest Rated Tornados	Number of EF2 or Greater Tornadoes
Chase	28	$5,423,000	4	F3	8
Geary	16	$3,246,000	3	F2	3
Lyon	39	$53,191,000	206	F4	11
Morris	30	$6,569,000	7	F3	6
Pottawatomie	31	$2,333,000	5	F3	4
Riley	25	$79,469,000	51	EF4	3
Wabaunsee	32	$29,398,000	25	F4	10

Source: NCEI

It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or NWS office. When reporting an event oftentimes the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages. Additionally, deaths and injuries may be underreported as they may be a result of a concurrent event, such as a person driving unsafely during heavy rain and passing away.

Recent notable events include:

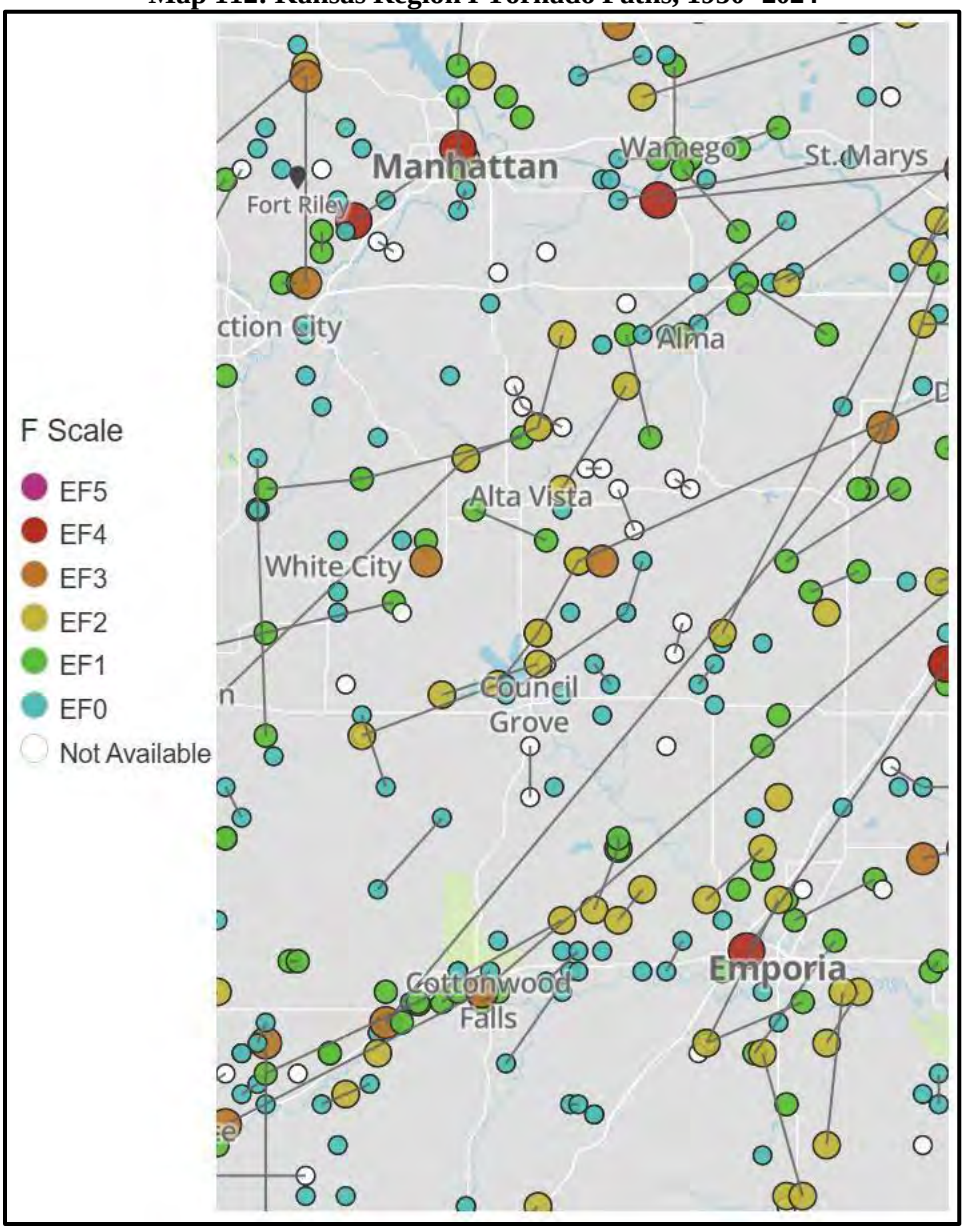
- **April 19, 2023, Chase County:** A lone supercell thunderstorm moved from south central Kansas into central Kansas during the afternoon and evening of April 19th, 2023. The cyclic storm produced very large hail up to 4 inches in diameter and numerous tornadoes across Chase county, Kansas. Eight tornadoes formed from the supercell with the strongest producing EF2 damage. Damages were reported at $20,000.
- **June 11, 2022, Manhattan, Riley County:** Two surveys were done by NWS for this damage. It appears that a very short path narrow tornado occurred embedded on the northeast flank of small enhanced downburst that created widespread damaging north to northwest winds. Several homes were heavily damaged with the debris

field blown to the northeast or approximately perpendicular to the movement. It appears the tornado was narrow and only 25-50 yards at the widest. Damages were reported at $10,000,000.

- **February 28, 2012, Harveyville, Wabaunsee County:** As the line of thunderstorms moved eastward across northeast Kansas on of the strongest storms spawned a brief, but very strong tornado, which impacted the town of Harveyville, Kansas. The tornado was short-lived, but was able to destroy a large portion of the town. Several houses were completely destroyed, as was a church in the center of town. A National Weather Service survey team determined that the tornado rated an EF-2 on the Enhanced Fujita Scale. At least a dozen injuries occurred with this storm, one of which became fatal after a day in the hospital. The tornado continued into Osage County and weakened.
- **March 21, 2011, Reading, Lyon County: A** tornado developed 3 miles southwest of Reading. This tornado proceeded to hit the town of Reading producing EF3 damage in the city. The tornado continued on a path that took it into Osage County Kansas where it produced additional damage before lifting approximately 4 miles south of Osage City. A single story home in Reading was swept off its foundation. There were several two story homes with significant damage to the second story or completely removed. A well anchored mobile home was lofted and thrown 50 yards into a tree. Vehicles were rolled and large chemical tank was thrown 100 yards. Winds estimated at 140 mph. Damages reported at $2,280,000.
- **June 11, 2008, Ogden and Manhattan, Riley County:** The tornado touched down to the southwest of Manhattan on a farm, and first destroyed a large machine shed, and threw a grain cart into an adjacent field. The tornado tracked to the northeast and destroyed several homes that were in the process of being built. Then, the tornado entered the Miller Ranch area of Manhattan, where the EF-4 damage was observed. Fifteen well built homes were completely destroyed. Nearby in the Amherst residential area, approximately thirty homes were damaged. A local newspaper reported that 45 residences in Manhattan were destroyed, 142 were damaged, and 637 were affected by the tornado. Ninety three apartments or duplexes, twenty mobile homes, and ten total businesses were impacted. Thereafter, the windows at the Little Apple Honda/Toyota car dealership were blown out, and several cars on the lots were tossed. A nearby hardware store and several self-storage units were demolished. Other nearby businesses were also damaged. The Lee Elementary School was then damaged. The tornado continued toward the Kansas State University campus. There, the roof was blown off a fraternity house, windows were blown out of buildings, the USDA Wind Erosion Laboratory roof was damaged, and debris from damage to the southwest was blown across the campus. Summer classes at the University were shuffled around to find appropriate, undamaged buildings to hold summer students. New student orientation was also going on the week the tornado struck. It was reported that $37 million dollars in damage was done to the KSU campus alone. The total preliminary damage estimate from the Manhattan tornado was approximately $71 million. Off-campus, $22 million in structural damage was reported, as was $7 million in vehicle damage.
- **June 4, 2005, Pottawatomie County:** A tornado occurred at the Elbo lake community east of Manhattan. Many large trees were damaged or blown over, powerlines were downed, a boat blown across the lake, and at least four buildings sustained damage, primarily from trees falling on them. Damages were reported at $250,000.
- **April 26, 1991, Council Grove, Morris County:** An F2 tornado caused damages reported at $2,500,000.
- **March 13, 1990, Geary County:** An F2 tornado caused damages reported at $2,500,000.
- **May 19, 1987, Chase County:** An F2 tornado caused damages reported at $2,500,000.
- **June 8, 1974, Emporia, Chase County:** An F4 tornado caused damages reported at $25,000,000 and 177 injuries and six deaths.

NOAA has been tracking tornadoes in Kansas for decades. This following map, which contains data from 1950 to 2023, pinpoints tornado tracts:

Map 112: Kansas Region I Tornado Paths, 1950 -2024



Source: NOAA

5.15.4 Probability of Future Events

Predicting the probability of tornado occurrences is tremendously changing due to the large number of factors involved and the random nature of formation. Based on historical occurrences, Kansas Region I will continue to experience tornado events on an annual basis. The following tables, using data from the NCEI, indicate the yearly probability of a tornado event, the number of deaths or injuries, and estimated property damage for each county in Kansas Region I:

Table 136: Kansas Region I NCEI Tornado Event Probability Summary

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Chase	28	<1	4	<1	$5,423,000	$72,307
Geary	16	<1	3	<1	$3,246,000	$43,280
Lyon	39	<1	206	3	$53,191,000	$709,213

Table 136: Kansas Region I NCEI Tornado Event Probability Summary

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Morris	30	<1	7	<1	$6,569,000	$87,587
Pottawatomie	31	<1	5	<1	$2,333,000	$31,107
Riley	25	<1	51	1	$79,469,000	$1,059,587
Wabaunsee	32	<1	25	<1	$29,398,000	$391,973

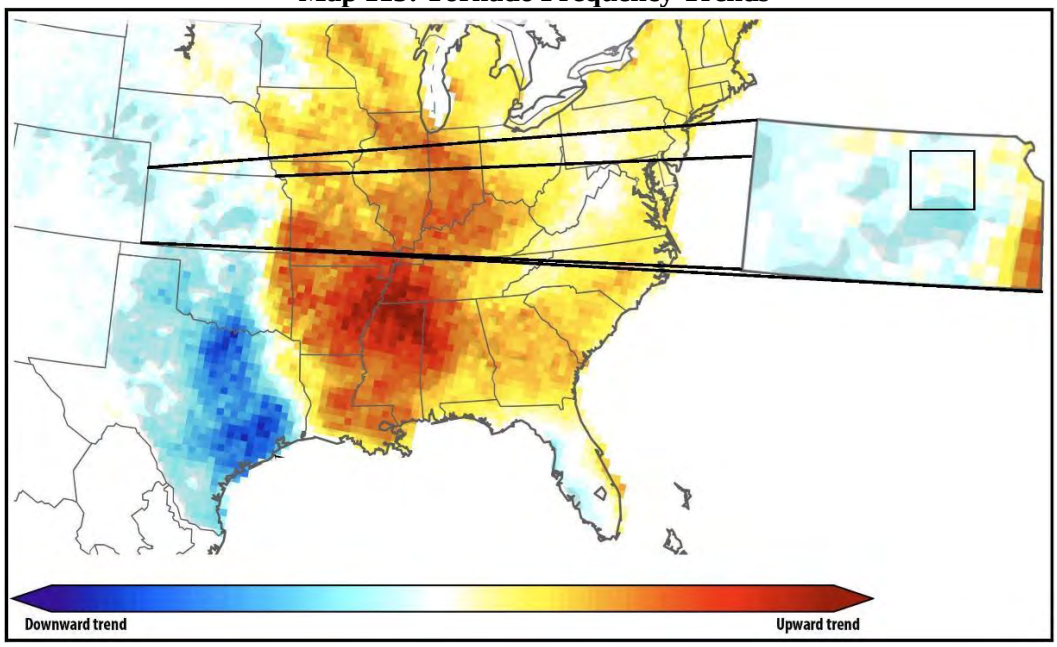
Source: NCEI

5.15.5 Projected Changes in Location, Intensity, Frequency, and Duration

Tornadoes are small-scale, short-lived weather phenomena that can be influenced by a variety of atmospheric factors, including temperature, humidity, wind patterns, and atmospheric instability. Changes in these factors may affect tornado activity. Tornadoes typically form when warm, moist air near the surface clashes with cooler, drier air aloft, creating atmospheric instability. Any alteration in temperature and humidity patterns can potentially affect the conditions necessary for tornado formation. Some research suggests that atmospheric changes could lead to longer tornado seasons, with tornadoes occurring outside of their typical timeframes.

Research conducted by the National Severe Storms Lab looked at Significant Tornado Parameters to help determine future tornado probability. Significant Tornado Parameters are a measurement of the major parameters of tornado conditions, including wind speed and direction, wind at differing altitudes, unstable air patterns, and humidity. The following map, generated by Northern Illinois University and compiled from Significant Tornado Parameter data, indicates that Kansas Region I and all participating jurisdictions may see a slight decrease in the number of tornados:

Map 113: Tornado Frequency Trends



Source: Northern Illinois University

5.15.6 Vulnerability and Impact

FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the first table was created indicating the potential risk to Kansas Region I and all participating jurisdictions from tornadoes. In order to gain an understanding of vulnerability, the second table details the estimated annual loss data for Kansas Region I and participating jurisdictions. To help understand the risk and vulnerability participating jurisdictions data from the FEMA NRI was run on a census tract level. As the NRI does not generate data

for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Table 137: Kansas Region I Participating Jurisdiction Tornado Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Chase County	**All**	33.7	Relatively Low	0.6
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	97.1	Very High	0.6
Geary County	**All**	87.3	Relatively Moderate	0.3
Junction City	20061000100	96.6	Very High	0.0
Junction City	20061000200	96.3	Very High	0.0
Junction City	20061000300	99.0	Very High	0.0
Junction City	20061000401	98.2	Very High	0.0
Junction City	20061000402	73.4	Relatively Moderate	0.0
Junction City	20061000500	94.4	Very High	0.0
Junction City	20061000601	98.1	Very High	0.0
Grandview Plaza	20061000700	95.6	Very High	0.2
Junction City	20061000801	82.6	Relatively High	0.0
Milford	20061000802	98.3	Very High	0.1
Lyon County	**All**	74.4	Relatively Moderate	0.6
Emporia	20111000101	85.0	Relatively High	0.0
Emporia	20111000102	69.3	Relatively Moderate	0.0
Emporia	20111000103	57.5	Relatively Moderate	0.0
Emporia	20111000201	82.2	Relatively High	0.0
Emporia	20111000202	75.6	Relatively High	0.0
Emporia	20111000203	55.8	Relatively Moderate	0.0
Emporia	20111000300	94.2	Very High	0.0
Emporia	20111000400	80.0	Relatively High	0.0
Emporia	20111000500	95.4	Very High	0.0
Allen, Admire, Bushong, Reading	20111000600	69.0	Relatively Moderate	0.3
Americus	20111000700	75.0	Relatively Moderate	0.1
Hartford, Olpe, Neosho Rapids	20111000800	86.1	Relatively High	0.2
Morris County	**All**	43.8	Relatively Low	0.6
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	93.9	Very High	0.6
Council Grove	20127963700	95.2	Very High	0.0
Pottawatomie County	All	67.1	Relatively Low	0.7
Louisville	20149000101	73.7	Relatively Moderate	0.1
St. George	20149000102	97.4	Very High	0.0
Wamego	20149000200	94.5	Very High	0.0
Belvue, Emmett, St. Marys	20149000300	91.6	Relatively High	0.1
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	93.8	Very High	0.4
Riley County	**All**	90.1	Relatively Moderate	0.5
Manhattan	20161000201	89.9	Relatively High	0.0
Manhattan	20161000202	97.9	Very High	0.0
Manhattan	20161000303	73.6	Relatively Moderate	0.0
Manhattan	20161000304	91.0	Relatively High	0.0
Manhattan	20161000500	89.6	Relatively High	0.0
Manhattan	20161000601	85.5	Relatively High	0.0
Manhattan	20161000602	96.0	Very High	0.0
Manhattan	20161000700	93.9	Very High	0.0
Manhattan	20161000801	92.3	Relatively High	0.0

Table 137: Kansas Region I Participating Jurisdiction Tornado Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Manhattan	20161000802	86.7	Relatively High	0.0
Ogden	20161000900	97.7	Very High	0.1
Manhattan	20161001101	98.1	Very High	0.0
Manhattan	20161001102	88.5	Relatively High	0.0
Manhattan	20161001301	86.0	Relatively High	0.0
Leonardville, Randloph, Riley	20161001302	94.9	Very High	0.1
Wabaunsee County	**All**	34.9	Relatively Low	0.7
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	92.5	Relatively High	0.3
Eskridge, Harveyville,	20197483200	79.2	Relatively High	0.3

Source: FEMA NRI

In order to gain an understanding of vulnerability, the following table details the estimated FEMA EAL data for Kansas Region I counties and participating jurisdictions (by census tract):

Table 138: Participating Jurisdiction Tornado Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Chase County	**All**	35.9	Relatively Low	$517,879
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	97.3	Very High	$517,879
Geary County	**All**	87.5	Relatively Moderate	$5,076,881
Junction City	20061000100	92.9	Relatively High	$362,733
Junction City	20061000200	92.6	Relatively High	$354,609
Junction City	20061000300	98.7	Very High	$653,733
Junction City	20061000401	98.1	Very High	$573,898
Junction City	20061000402	80.6	Relatively High	$216,010
Junction City	20061000500	94.6	Very High	$402,063
Junction City	20061000601	98.9	Very High	$676,174
Grandview Plaza	20061000700	94.8	Very High	$409,474
Junction City	20061000801	89.8	Relatively High	$309,749
Milford	20061000802	99.0	Very High	$710,947
Lyon County	**All**	76.1	Relatively Moderate	$2,558,714
Emporia	20111000101	78.6	Relatively High	$200,334
Emporia	20111000102	63.6	Relatively Moderate	$107,005
Emporia	20111000103	59.3	Relatively Moderate	$85,908
Emporia	20111000201	83.4	Relatively High	$238,821
Emporia	20111000202	82.3	Relatively High	$229,271
Emporia	20111000203	55.9	Relatively Moderate	$72,060
Emporia	20111000300	94.3	Very High	$395,857
Emporia	20111000400	76.8	Relatively High	$187,431
Emporia	20111000500	90.8	Relatively High	$324,422
Allen, Admire, Bushong, Reading	20111000600	77.6	Relatively High	$193,233
Americus	20111000700	77.3	Relatively High	$190,660
Hartford, Olpe, Neosho Rapids	20111000800	91.4	Relatively High	$333,712
Morris County	**All**	48.6	Relatively Low	$912,080
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	96.9	Very High	$493,883
Council Grove	20127963700	95.1	Very High	$418,197
Pottawatomie County	**All**	72.3	Relatively Moderate	$2,179,042
Louisville	20149000101	79.0	Relatively High	$203,828
St. George	20149000102	98.9	Very High	$673,485
Wamego	20149000200	96.4	Very High	$466,541

Table 138: Participating Jurisdiction Tornado Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Belvue, Emmett, St. Marys	20149000300	94.1	Very High	$390,229
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	95.9	Very High	$444,960
Riley County	**All**	90.2	Relatively Moderate	$6,337,581
Manhattan	20161000201	83.1	Relatively High	$236,247
Manhattan	20161000202	98.0	Very High	$563,749
Manhattan	20161000303	74.7	Relatively High	$172,973
Manhattan	20161000304	93.4	Relatively High	$371,949
Manhattan	20161000500	91.4	Relatively High	$334,770
Manhattan	20161000601	89.6	Relatively High	$306,022
Manhattan	20161000602	96.9	Very High	$490,933
Manhattan	20161000700	93.3	Relatively High	$370,695
Manhattan	20161000801	91.4	Relatively High	$334,599
Manhattan	20161000802	83.9	Relatively High	$243,183
Ogden	20161000900	97.1	Very High	$505,088
Manhattan	20161001101	98.1	Very High	$570,391
Manhattan	20161001102	85.8	Relatively High	$261,930
Manhattan	20161001301	91.3	Relatively High	$332,081
Leonardville, Randloph, Riley	20161001302	97.6	Very High	$537,000
Wabaunsee County	**All**	39.6	Relatively Low	$629,345
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	94.1	Very High	$390,327
Eskridge, Harveyville,	20197483200	83.4	Relatively High	$239,018

Source: FEMA NRI

Population

Tornadoes can have a wide range of effects on people, often posing significant risks to life, property, and general well-being. In the absence of proper shelter, tornadoes can cause serious injury. In general, if potentially exposed persons take shelter in a solid, well-constructed structure protection from would be provided. However, old or poorly constructed facilities may be more prone to damage, potentially increasing the impact on economically disadvantaged populations. Some of the potential effects of tornadoes on people may include:

- **Death and Injury:** Tornadoes can produce wind driven debris, causing injuries or fatalities.
- **Power Outages:** Strong tornadic winds can lead to power outages, disrupting daily life, and potentially affecting essential services, such as medical equipment and refrigeration.
- **Mental Health Impact:** Tornadoes can be frightening and stressful, leading to anxiety and post-traumatic stress disorder in some individuals. The emotional toll of property damage and loss can also be significant.
- **Displacement:** People may need to evacuate their homes or be temporarily displaced due to storm damage, requiring emergency shelter and support.
- **Economic Costs:** Tornadoes often result in high economic costs, including repair and recovery expenses, insurance claims, and potential loss of income due to property damage or work disruptions.
- **Public Safety Response:** Tornadoes can strain public safety resources, including emergency services, law enforcement, and medical facilities.

All Kansas Region I and participating jurisdiction populations are vulnerable to the impacts of tornadoes. Please see Section 3.3: Population Data. At greater risk may be the vulnerable populations, including those with disabilities and the elderly due to evacuation concerns, and those below the poverty level due to underinsurance and relocation concerns. Vulnerable population information may be found in Section 3.4: Socially Vulnerable and At-Risk Populations.

Buildings and Structures
All buildings and structures within Kansas Region I and participating jurisdictions can be impacted by tornadoes. However, the location and construction of the facility will have a significant impact on the vulnerability. In general, older structures would be at higher risk of negative impacts. Some of the potential impacts include:

- **Electrical Infrastructure Damage:** Tornadoes can damage electrical infrastructure, including power lines, transformers, and substations. This can result in widespread power outages, affecting homes, businesses, hospitals, and other critical facilities.
- **Communication Disruptions:** Tornadoes can disrupt telecommunications infrastructure, including cell towers, data centers, and communication networks. This can impact emergency communication and coordination efforts.
- **Safety Risks:** Damage to infrastructure can pose safety risks to workers and the public. Fallen power lines, damaged buildings, and debris can be hazardous.
- **Building Damage:** Very high winds and blown debris can cause damage to the building.

Governmental Operations
Tornadoes can pose various risks to government operations. These risks can have significant economic and operational consequences, and can include:

- **Power Outages:** Tornadoes can lead to power outages by damaging electrical infrastructure such as power lines and substations. Government buildings may lose power, affecting critical operations and services.
- **Flooding:** Heavy rainfall during tornadoes can lead to flooding, which can damage government buildings and disrupt operations. Flood damage may require extensive repairs and cleanup.
- **Communication Disruptions:** Tornadoes can damage communication equipment, including telephone lines and computer systems. This can hinder communication between government agencies and the public.
- **Transportation Disruptions:** Tornadoes can make roads impassable due to flooding or debris. This can impact the ability of government employees to commute to work.
- **Budgetary Impact:** The costs associated with repairing and restoring government buildings and infrastructure after tornadoes can strain budgets.

Transportation and Electrical Infrastructure
In general, tornadoes do not have a large impact on transportation infrastructure, with the exception of power loss disrupting signaling and poor conditions and debris impacting driving conditions.

Tornadoes can have significant impacts on electrical utilities, leading to disruptions in power supply and potential damage to infrastructure. Tornadoes can affect electrical utilities in the following ways:

- **Lightning Strikes:** Lightning is a common occurrence during tornado events and poses a substantial risk to electrical infrastructure. Lightning strikes can damage power lines, transformers, substations, and other critical components, leading to power outages.
- **Wind Damage:** High winds associated with tornadoes can cause trees, branches, and other debris to fall onto power lines. This can result in downed power lines, structural damage to utility poles, and disruptions in electrical service.
- **Hailstorms:** Tornadoes may produce hail, which can damage power lines, transformers, and other equipment. Hailstones can also lead to short circuits and insulation damage on electrical components.
- **Power Surges:** Lightning strikes, strong winds, and other tornado-related events can lead to power surges in the electrical grid. These surges can damage electronic devices, appliances, and utility equipment connected to the power supply.

Water and Wastewater Utilities
In general, tornadoes do not have a large impact on water and wastewater infrastructure and operations unless directly struck. However, the cascading impacts from an event such as power loss disrupting pumping and treatment capabilities or localized flooding from heavy overwhelming drainage systems may cause disruptions to operations.

Medical and Response Facilities
Tornadoes can significantly impact emergency response infrastructure, creating challenges for first responders and organizations involved in managing and mitigating the effects of tornado events. Tornadoes can impact emergency response through:

- **Transportation Disruptions:** Debris accumulation on roads can hinder the ability of emergency vehicles to navigate and reach affected areas promptly. Hazardous road conditions may result in delays in response times.
- **Communication Disruptions:** Tornadoes can disrupt communication networks, affecting the ability of emergency responders to coordinate and communicate effectively. Downed power lines and damage to communication infrastructure contribute to these disruptions.
- **Power Outages:** Tornadoes can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.
- **Exposure:** Emergency responders face increased health and safety risks in tornado conditions. Exposure to hail and high winds can impact the well-being of responders and affect their ability to provide effective assistance.
- **Resource Allocation Challenges:** Tornadoes often require the allocation of additional resources, including personnel, equipment, and supplies, to address immediate needs. This can strain emergency response organizations and impact their ability to respond to other concurrent incidents.
- **Increased Demand for Services:** Tornadoes can result in an increased demand for emergency services, including medical assistance, search and rescue operations, and responses to accidents. Emergency response organizations may need to manage a higher volume of incidents simultaneously. Setting up and managing these shelters can strain resources.

Educational Facilities
Depending on the educational facility capability and location, tornadoes may necessitate the closure of the facility for the duration of the event due to damages or lack of access. These closures are expected to have additional economic consequences as caregivers may be required to miss or modify work.

- **School Closures:** Tornadoes can lead to the closure of schools due to hazardous conditions. This can strain caregivers and result in lower work attendance.

Communication Systems
All communication systems within Kansas Region I are at risk to tornadoes, which can disrupt vital communications system affecting reliability and functionality. Some of the key vulnerabilities include:

- **Physical Infrastructure Damage:** High winds and tornadoes can cause physical damage to communication infrastructure such as cell towers, antennas, cables, and data centers. This damage can result in network outages and disruptions.
- **Power Outages:** Tornadoes often lead to power outages, which can affect the operation of communication networks. Without a stable power supply, cell towers, data centers, and other critical components may become non-functional, leading to service interruptions.
- **Signal Interference:** Tornadoes can create electromagnetic interference that disrupts radio signals used in wireless communication. This interference can lead to poor signal quality, dropped calls, and slower data speeds.
- **Loss of Backhaul Connectivity:** Tornadoes can damage the backhaul infrastructure that connects various communication nodes. This backbone infrastructure is crucial for transmitting data between local and regional networks, and any disruption can impact overall network performance.

- **Communication Tower Instability:** High winds and extreme weather conditions can compromise the stability of communication towers. If towers are not designed to withstand tornadoes, they may collapse, leading to network outages.
- **Network Congestion:** In the event of a disaster, communication networks may experience a surge in usage as people attempt to contact emergency services, friends, and family. This increased demand can lead to network congestion, making it difficult for users to connect.

The cost to repair communications networks can vary widely depending on the extent of the damage, the size of the network, and the specific technologies involved. Repair costs may include expenses for labor, equipment replacement or repair, materials, and any additional resources required to restore the network to full functionality. Estimated repair cost from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency may be found in Section 5.11.6.

Environmental and Agricultural Impacts

Mapping from the United States Department of Agriculture details total county-wide agricultural losses due to tornado events from 1989 – 2023 indicates only minor impacts on regional agriculture.

Tornadoes can pose various risks to the environment. These risks can have both short-term and long-term impacts on natural ecosystems. Tornadic weather can produce heavy rainfall over a short period of time, leading to flash floods and riverine flooding. This can result in soil erosion, damage to aquatic habitats, and the displacement of aquatic organisms. Large hailstones often associated with tornadoes can damage crops, vegetation, and natural habitats. Hail can strip leaves from trees and plants, reducing their ability to photosynthesize and grow. It can also damage wildlife habitats. Strong winds associated with tornadoes can uproot trees, damage forests, and disrupt animal habitats. They can also scatter debris and cause structural damage to buildings, which can lead to further environmental issues if hazardous materials are released. Downed power lines are a common occurrence during tornadoes and can spark wildfires. These wildfires can have significant ecological impacts, including habitat destruction, loss of wildlife, and changes in the local ecosystem.

Jurisdictional Concerns:

As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts.

Tornado risk touches every county in Kansas Region I, yet the nature of that risk looks different depending on where you stand. In the urbanized corridor larger cities such as Manhattan (Riley–Pottawatomie), Junction City (Geary), and Emporia (Lyon) concern centers on the sheer concentration of people and critical facilities. A single long-track tornado could cross multiple schools, hospitals, and high-density housing complexes in minutes, creating high-impact, multi-site response needs. The upside is capacity, full-time response staff, larger tax bases, and newer construction give these jurisdictions the leverage to require safe rooms in public projects, upgrade siren networks, and bury portions of the distribution grid as development spreads.

Smaller counties such as Chase, Morris, Wabaunsee, and the rural townships of Lyon confront a different mix of challenges. Structural density is low, so the odds that any given funnel hits a building are reduced, but the housing stock skews older, lighter, and often lacks basements or storm shelters. Warning systems may rely on volunteer activation, and long travel distances mean first responders can take precious minutes to arrive. On the plus side, open terrain provides excellent visibility for storm spotters, and tight-knit volunteer fire districts offer a ready framework for mutual-aid debris clearance and wellness checks after a storm.

Looking to the future, exposure rather than climatology is the shared worry. Fast-growing suburbs along key highways are putting new rooftops into areas with documented tornado history, while aging populations in rural townships will need more shelter-in-place assistance. Large jurisdictions can mitigate by baking stronger wind-resistance and shelter requirements into building codes and by hardening power and communications hubs. Rural areas, meanwhile, can prioritize redundant warning channels (sirens, NOAA radio, text alerts), countywide safe-room grant programs, and

pre-arranged heavy-equipment sharing agreements. A coordinated regional approach that pairs urban resources with rural agility will position all seven counties, large or small, to respond effectively when the next tornado strikes.

Cascading Impacts

Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with severe weather may include:

- Direct physical damage to buildings and structures:
- Transportation infrastructure disruption
- Power outages and electrical grid disruption
- Communication system disruption
- Transportation and supply chain disruptions
- Environmental and ecological damage
- Economic impacts and business closures
- Emergency services overload

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of a community. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 139: Tornado Consequence Analysis

Subject	Potential Impacts
Impact on the Public	High wind speeds can cause automobiles to become airborne, destroy homes, and turn debris into projectiles, which may cause injury or death. An increased demand for medical treatment for traumatic injuries caused by the tornado would be anticipated. Significant portions of the population may be displaced by the destruction and those individuals may not have access to personal documents or medical records.
Impact on Responders	First responders may be injured as the tornado passes, resulting in employee absenteeism that impacts the overall capacity to respond to the event. The deposit of debris on major roadways, the location of the event, and/or damage to equipment or facilities may increase the response times. Exposed wires or hazardous materials may cause injury to first responders during search and rescue operations.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Tornadoes may impact an agency's ability to maintain operations due to power or communications infrastructure impacts.
Delivery of Services	Delivery of services may be impacted by dangerous conditions or disruption to transportation systems, causing food, water, and resource systems to be delayed or halted. Waterway infrastructure may be damaged or malfunction, stopping barge and ship traffic. Goods may be damaged, destroyed, or carried off by high winds.
Property, Facilities, and Infrastructure	Damages from lower intensity tornadoes can range from chimney damage to uprooted shallow trees. A significant tornado (EF-2) would cause damage to roofs on frame houses, complete destruction of mobile homes and large trees and utility lines snapping. A devastating tornado (EF-4) would result in well-constructed houses being leveled, weak foundations blown away, and cars thrown away. Communications or power infrastructure may be damaged or destroyed.
Impact on Environment	Tornadoes may cause significant damage to the environment by exposing hazardous materials, causing contamination of water or food sources, or uprooting vegetation. Animals may be injured by flying debris or being lifted by the tornado. Agricultural crops may be lost due to contamination or being uprooted.

Table 139: Tornado Consequence Analysis

Subject	Potential Impacts
Economic Conditions	Tornadoes pose a fiscal impact on the local governments, even if some of those costs can be recouped through federal grant reimbursements. Fiscal resources may be drained by the occurrence of a tornado.
Public Confidence in Governance	The public's confidence in governance is affected by immediate local and state response through direct and effective actions. Efficiency in response and recovery operations is critical in keeping public confidence high.

5.15.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

5.15.8 Mitigation Opportunities

The following table presents examples of potential actions that can be instituted for mitigating the extreme heat hazard.

Table 140: Example Tornado Mitigation Actions

Category	Example Action
Planning and Regulation	Requiring construction of safe rooms in new schools, daycares, and nursing homes.
	Encouraging the construction and use of safe rooms in homes and shelter areas of manufactured home parks, fairgrounds, shopping malls, or other vulnerable public structures.
	Developing a local grant program to assist homeowners who wish to construct a new safe room.
	Require or encourage wind engineering measures and construction techniques.
Infrastructure	Retrofit buildings with load-path connectors to strengthen the structural frames.
	Tie-down all modular homes and facilities.
	Retrofit all exterior windows with shatter resistant film
	Build safe rooms in jurisdictional facilities, including schools and government buildings.
Natural Systems	Properly maintain trees near facilities and power lines.
Education	Conduct tornado drills in schools and public buildings.
	Distribute tornado shelter location information.

Table 140: Example Tornado Mitigation Actions

Category	Example Action
	Promote use of National Oceanic and Atmospheric Administration weather radios.
	Educate citizens through media outlets.
	Organize outreach to vulnerable populations, including establishing and promoting accessible shelters in the community.

5.16 Wildfire

5.16.1 Hazard Description



The National Weather Service defines a wildfire as any free burning uncontainable wildland fire not prescribed for the area which consumes the natural fuels and spreads in response to its environment. They can occur naturally and through human action. Population de-concentration in the U.S. has resulted in rapid development in the outlying fringe of urban areas and in rural areas with attractive recreational and aesthetic amenities, especially forests. This expansion has increased the likelihood that wildfires will threaten life and property.

According to the National Park Service there are three classifications of wildfires:

- **Surface Fire:** Burning which may spread rapidly and ignite leaf litter, fallen branches and other fuels located at ground level.
- **Ground Fire:** Burning of organic matter in the soil beneath the surface.
- **Crown Fire:** Burning through the top layer (canopy) of trees and shrubs. Crown fires, which can be very intense and difficult to contain, require strong winds, steep slopes, and large amounts of fuel to burn.

Wildfires are strongly influenced by multiple factors, including:

- **Weather:** Factors such as relative humidity, wind speed, ambient temperature and precipitation all influence the formation and growth of wildfires.
- **Topography:** Natural features, such as canyons or ridges, can increase the spread rate of a fire by funneling or drawing heated air and fire.
- **Fuel Type, Distribution and Moisture:** Available fuels, the spacing and density of available fuels, and fuel moisture content can determine spread rates and intensity of wildfires.
- **Drought Conditions:** Drought tends to increase both the likelihood and severity of wildfires.

Fire science distinguishes between wildland fires and wildland urban interface (WUI) fires**.** The primary difference between a wildland fire and a WUI fire lies in their location and the type of areas they impact:

- **Wildland Fire:**
    - Definition: A wildland fire occurs in undeveloped, natural areas such as forests, grasslands, and shrublands. It is driven by natural fuels like trees, grass, brush, and dead vegetation.
    - Characteristics: These fires are often started by natural causes (lightning) or human activity (campfires, equipment use). They can spread rapidly depending on fuel, weather conditions (wind and temperature), and topography.
    - Impact Area: Wildland fires primarily affect forests and other natural ecosystems, causing habitat loss, ecosystem changes, and environmental damage, though they can also impact air quality over a large region.
- **WUI Fire:**
    - Definition: A WUI fire occurs where wildland areas meet or intermingle with human development. It involves not only natural vegetation but also structures (homes, businesses, infrastructure).
    - Characteristics: These fires are especially dangerous because they can ignite homes, buildings, and other man-made structures, often in suburban or rural areas where homes are built near forests or brush.
    - Impact Area: WUI fires are particularly destructive to property and can result in large-scale evacuations and property loss. They are challenging for firefighters because of the dual threat to both natural landscapes and human communities.

5.16.2 – Location and Extent

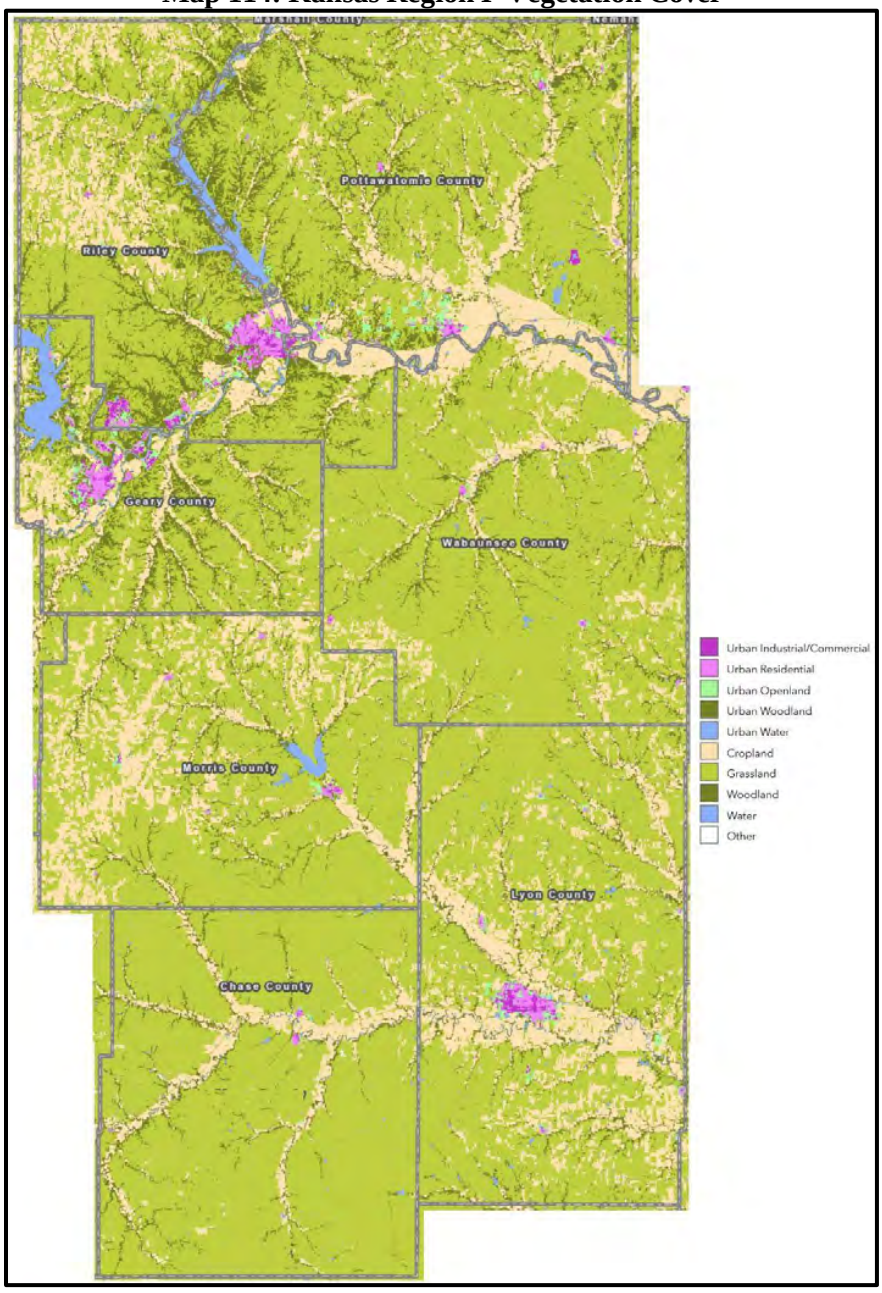
All of Kansas Region I is vulnerable to wildfires. Based on the non-geographic specific aspect of this hazard, i.e., no one area is at a greater risk, all of the planning area's structural inventory and population is vulnerable.

According to the Office of the State Fire Marshal, in 2021 Kansas fire departments responded to close to 5,000, vegetation-related fires that burned over 185,000 acres. Over 900 of these fires required counties to seek mutual-aid assistance to bring them under control.

According to fire officials, nearly ninety-five percent of all wildfires result from the activity of people and, subsequently, a significant number could be prevented through taking proper actions towards fire safety.

The following map, from the University of Kansas, indicates vegetation types within Kansas Region I, with areas of grasses and crops more likely to experience a wild or brush fire:

Map 114: Kansas Region I Vegetation Cover

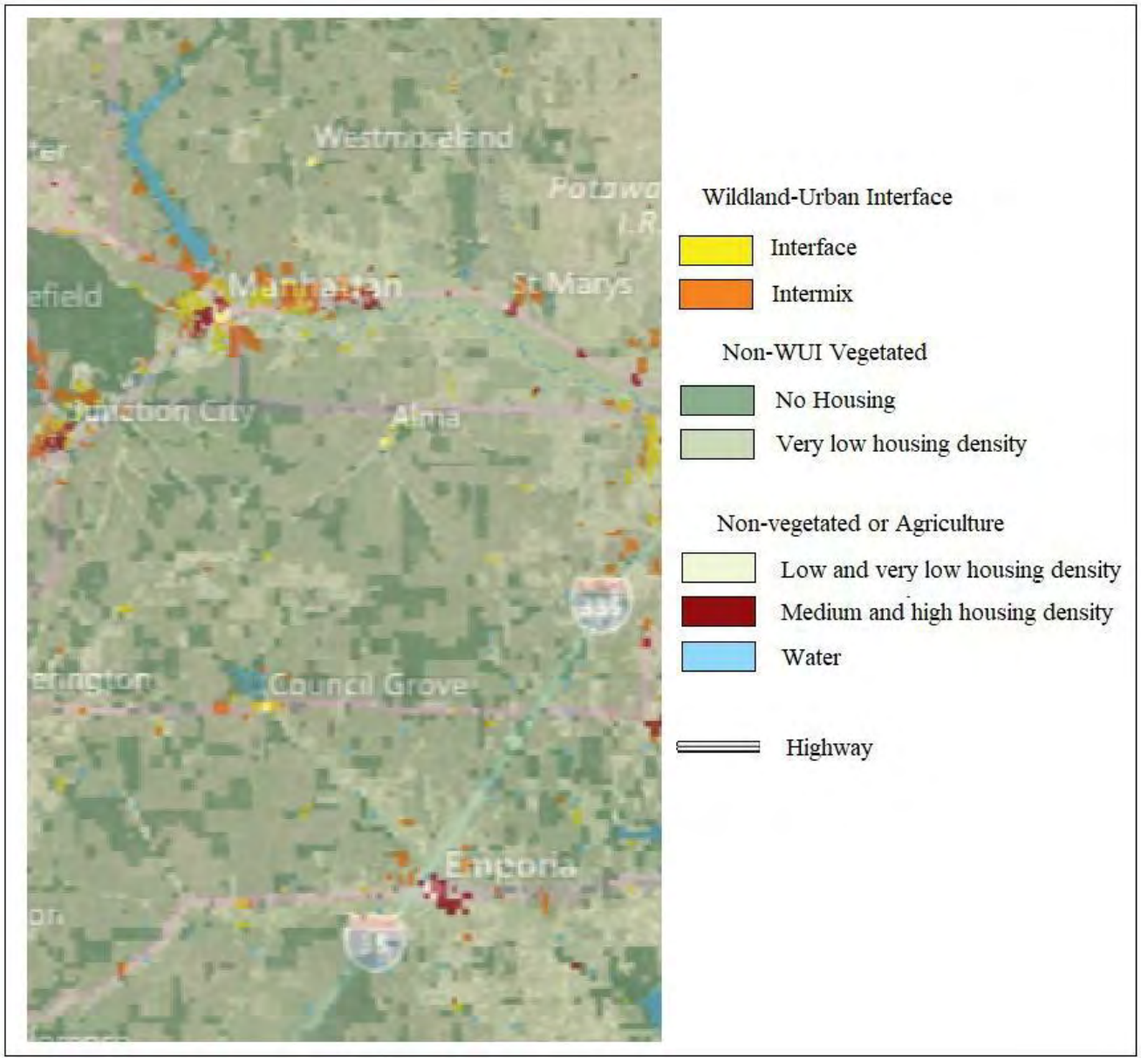


Source: University of Kansas

The wildland/urban interface (WUI) is the area where human improvements such as homes, ranches and farms come in contact with the wildlands. The WUI creates an environment in which fire can move readily between structure and vegetation fuels, often resulting in massive fires, or conflagrations, that may lead to widespread evacuations. The expansion of the WUI in recent decades has significant implications for wildfire management and its impact. There are two types of WUI, intermixed and interface. Intermix WUI are areas where housing and vegetation intermingle, and interface WUI are areas with housing in the vicinity of dense, contiguous wildland vegetation.

The following map, from the University of Wisconsin SILVIS Labs, illustrates WUI areas throughout the Kansas Region I:

Map 115: Kansas Region I WUI Areas

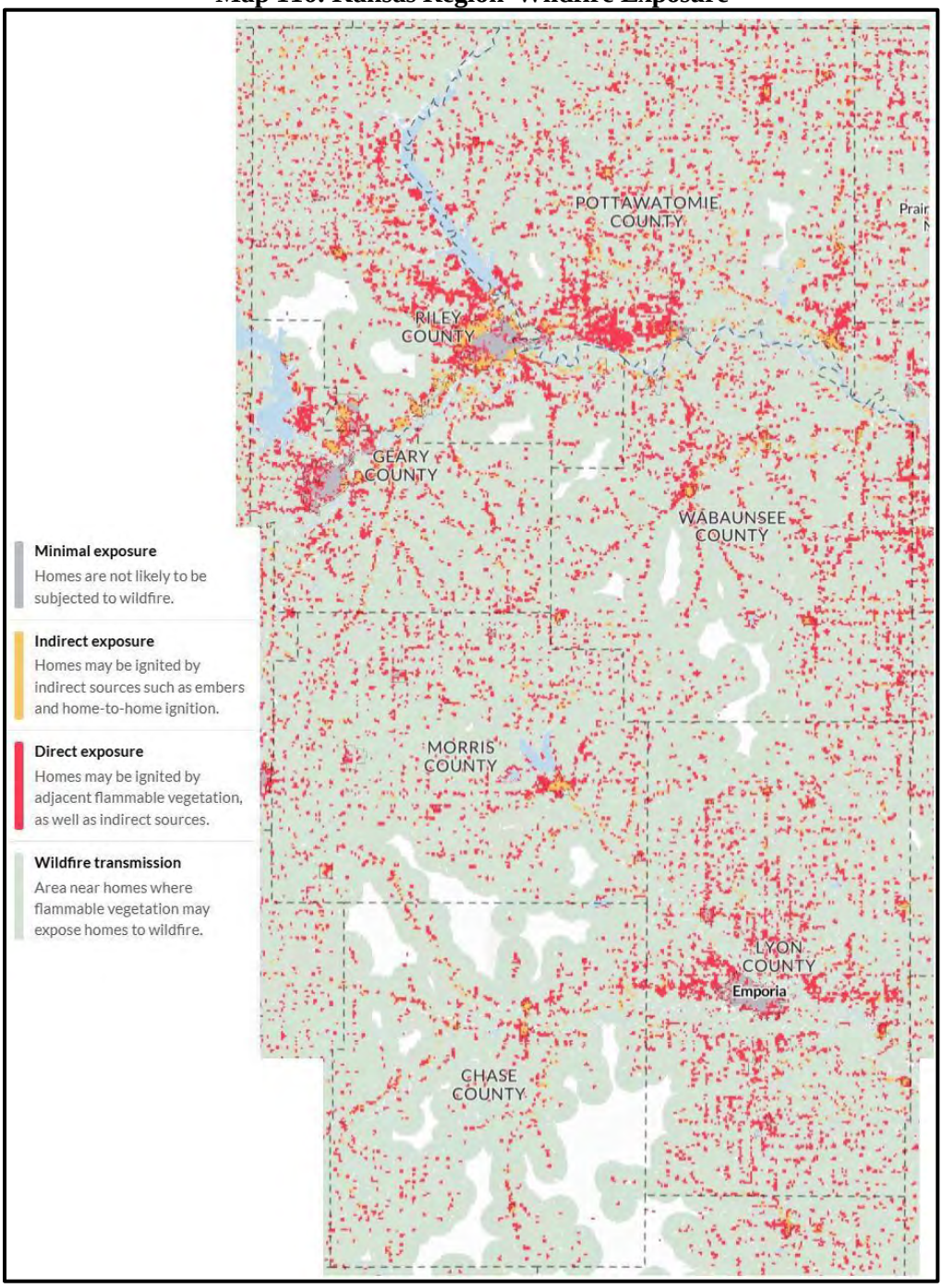


Source: University of Wisconsin SILVIS Labs

Exposure is the intersection of wildfire likelihood and intensity with communities. Communities can be directly exposed to wildfire from adjacent wildland vegetation, or indirectly exposed to wildfire from embers and home-to-home ignition. Communities that are not exposed are not likely to be subjected to wildfire from either direct or indirect sources. Wildfire exposure is calculated based on wildfire likelihood and proximity to large areas of flammable wildland

vegetation. Any community that is located where there is a chance wildfire could occur (in other words, where wildfire likelihood is greater than zero) is exposed to wildfire. Directly exposed homes are located in an area considered to be covered by flammable wildland vegetation. Indirectly exposed homes are located within one mile of a large area considered to be covered by flammable wildland vegetation. Non-exposed homes are located more than one mile from a large area considered to be covered by flammable wildland vegetation. The following map, from NOAA's Wildfire Risk to Communities, indicates the wildfire exposure for Kansas Region I:

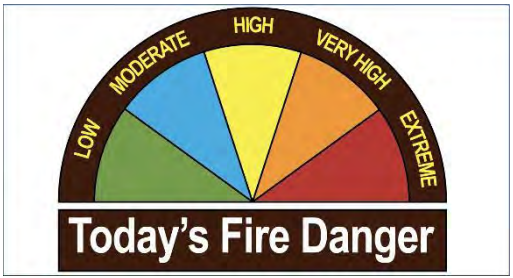
Map 116: Kansas Region Wildfire Exposure



Source: NOAA's Wildfire Risk to Communities

The duration of a wildfire depends on the weather conditions, how dry it is, the availability of fuel to spread, and the ability of responders to contain and extinguish the fire. Historically, some wildfires have lasted only hours, while other fires have continued to spread and grow for an entire season. They spread quickly and often begin unnoticed until they

have grown large enough to signal by dense smoke. If fuel is available, and high wind speeds hit, a wildfire can spread over a large area in a very short amount of time. These factors make the difference between small upstart fires easily controlled by local fire services to fires destroying thousands of acres requiring multiple state and federal assets for containment and suppression.



The National Fire Danger Rating System allows fire managers to estimate today's or tomorrow's fire danger for a given area. It combines the effects of existing and expected states of selected fire danger factors into one or more qualitative or numeric indices that reflect an area's fire protection needs. It links an organization's readiness level (or pre-planned fire suppression actions) to the potential fire problems of the day. The following is a brief explanation of the different fire danger levels based on criteria established by the National Fire Danger Rating System.

Table 141: National Fire Danger Rating System

Rating	Description
Low	Fuels do not ignite easily from small embers, but a more intense heat source, such as lightning, may start fires in duff or dry rotten wood. Fires in open, dry grasslands may burn easily a few hours after a rain, but most wood fires will spread slowly, creeping or smoldering. Control of fires is generally easy.
Moderate	Fires can start from most accidental causes, but the number of fire starts is usually pretty low. If a fire does start in an open, dry grassland, it will burn and spread quickly on windy days. Most wood fires will spread slowly to moderately. Average fire intensity will be moderate except in heavy concentrations of fuel, which may burn hot. Fires are still not likely to become serious and are often easy to control.
High	Fires can start easily from most causes and small fuels (such as grasses and needles) will ignite readily. Unattended campfires and brush fires are likely to escape. Fires will spread easily, with some areas of high intensity burning on slopes or concentrated fuels. Fires can become serious and difficult to control unless they are put out while they are still small.
Very High	Fires will start easily from most causes. The fires will spread rapidly and have a quick increase in intensity, right after ignition. Small fires can quickly become large fires and exhibit extreme fire intensity, such as long-distance spotting and fire whirls. These fires can be difficult to control and will often become much larger and longer-lasting fires.
Extreme	Fires of all types start quickly and burn intensely. All fires are potentially serious and can spread very quickly with intense burning. Small fires become big fires much faster than at the "very high" level. Spot fires are probable, with long-distance spotting likely. These fires are very difficult to fight and may become very dangerous and often last for several days.

Source: Wildfire Fire Assessment System

The severity of wildfire depends on several quickly changing environmental factors. It is impossible to strategically estimate the severity of a wildfire as these factors, including drought conditions and wind speed, have such a great influence on the wildfire conditions. The Characteristic Fire Intensity Scale within identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on a weighted average of four percentile weather categories. The following table details the range of wildfire intensity:

Table 142: Characteristic Fire Intensity Scale

Class	Description
Class 1- Very Low	Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.

Table 142: Characteristic Fire Intensity Scale

Class	Description
Class 2-Low	Small flames, usually less than two feet long; small amount of very short-range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.
Class 3-Moderate	Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.
Class 4 - High	Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers are generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property
Class 5-Very High	Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

Source: Southern Wildfire Risk Assessment Summary Report

A Red Flag Warning is an alert issued by the National Weather Service to indicate that critical fire weather conditions are either occurring or expected shortly. A Red Flag Warning is typically issued when the following conditions are met:

- **Low relative humidity (often below 15%):** Dry air makes vegetation more likely to ignite and sustain fire.
- **High winds (usually sustained winds above 25 mph):** Winds can quickly spread embers and flames, helping fires move faster and become more intense.
- **Dry vegetation:** Vegetation such as grass, shrubs, and trees become highly flammable when moisture levels are low, creating ideal conditions for fires to ignite and spread.
- **High temperatures:** Hot weather exacerbates dryness and lowers fuel moisture, increasing fire potential.

When a Red Flag Warning is issued, it means that the potential for wildfire ignition and rapid spread is extremely high. The warning often leads to heightened preparedness among firefighting agencies and advisories for the public to avoid activities that could spark fires, such as outdoor burning or using machinery that could create sparks.

The MPC views wildfire as a local, county-wide, and regional hazard. Discussions with the MPC and a review of all available data indicated wildfire is a community concern for all participating jurisdictions. The following provides a narrative of the level of jurisdictional concern:

- **Chase County:** Wildfire identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Geary County:** Wildfire identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Lyon County:** Wildfire identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Morris County:** Wildfire identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Pottawatomie County:** Wildfire identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Riley County:** Wildfire identified as a community concern as citizens, structures, and infrastructure are vulnerable.
- **Wabaunsee County:** Wildfire identified as a community concern as citizens, structures, and infrastructure are vulnerable.

5.16.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. Kansas Region I has experienced no Presidential Disaster Declarations related to wildfire events.

The Governor, or the Governor's Authorized Representative, may submit a request for a fire management assistance declaration as required. FEMA will approve declarations for fire management assistance when it is determined that a fire or fire complex on public or private forest land or grassland threatens such destruction as would constitute a major disaster. Research indicates no fire management declarations for Kansas Region I since 1950:
Wildfires are a frequent occurrence in both Kansas and Kansas Region I with over 35,000 incidents reported from 2018 to 2023. The majority of these are generally small and quickly contained with recent fire occurrences burning a smaller acreage due to quicker response times, better spotting practices, and stronger management policies. The following table details recent Kansas Region I wildfires that burned over 500 acres, caused damages greater than $100,000, and/or caused injuries or fatalities:

Table 143: Kansas Region I Wildfires 2018- 2023

County	Date	Jurisdiction	Buildings Burned	Total Dollar Loss	Injuries and Fatalities	Acres Burned
Chase	10/12/2022	Cedar Point	0	$0	0	1,500
Riley	04/17/2018	Manhattan	0	$0	0	500
Riley	2021	Blue River Hills	0	$0	0	800
Riley	2022	Baldwin Fire	0	$0	0	2,000
Riley	2022	Carlson Fire	0	$0	0	1,473
Riley	2023	Tabor Valley	0	$0	0	2,000
Riley	2023	Halls Ravine	0	$0	0	1,500
Wabaunsee	04/20/2018	Eskridge	0	$0	0	1,500
Wabaunsee	04/05/2018	Eskridge	0	$0	0	1,000
Wabaunsee	03/30/2018	Eskridge	0	$0	0	800
Wabaunsee	03/20/2022	Harveyville	0	$0	0	750
Wabaunsee	03/06/2018	St Marys	0	$15,000	0	562

Source: KDEM

5.16.4 Probability of Future Events

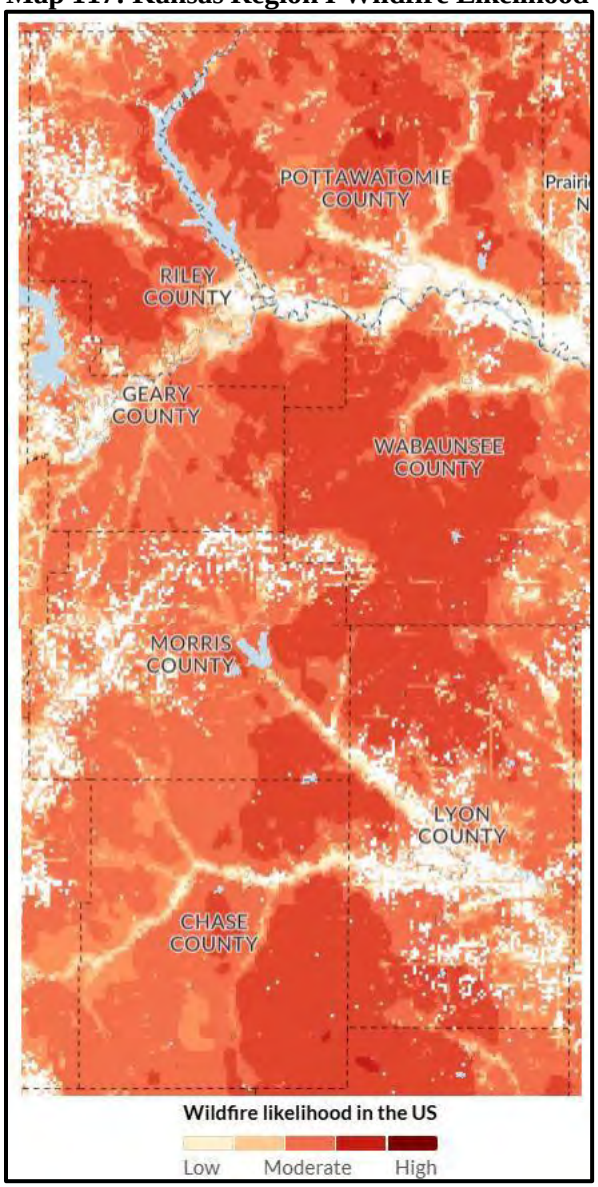
Predicting the probability of wildfire occurrences is tremendously changing due to the large number of factors involved and the random nature of formation. Available data from KDEM indicates that Kansas Region I has had seven wildfire events over 500 acres, burning 4,430 acres and no buildings during the six year period of 2018 to 2023. This equates to an average of one wildfire over 500 acres per year, burning 1,100 acres per year.

NOAA's Wildfire Risk to Communities mapping, which uses the best available science to identify risk, was used to help determine the probability of future wildfires within Kansas Region I. Wildfire likelihood is the probability of a wildfire occurring based on fire behavior modeling across thousands of simulations of possible fire seasons. In each simulation, factors contributing to the probability of a fire occurring, including weather, topography, and ignitions, are varied based on patterns derived from observations in recent decades. Wildfire likelihood is not predictive and does not reflect any currently forecasted weather or fire danger conditions. For communities, tribal areas, and counties, Wildfire Likelihood is summarized and ranked for the risk calculation area. This includes a 2.4 km buffer around populated areas to incorporate the risk of embers. Wildfire likelihood classification is based on the following national percentile rank:

- **Low:** <40th percentile
- **Medium:** >40th and <70th percentile
- **High:** >70th and <90th percentile
- **Very High:** >90th percentile

According to NOAA's Wildfire Risk to Communities Kansas Region I has, on average, greater wildfire likelihood than 97% of counties in the US. The following map indicates the likelihood of a wildfire within Kansas Region I:

Map 117: Kansas Region I Wildfire Likelihood



Source: NOAA's Wildfire Risk to Communities

5.16.5 Projected Changes in Location, Intensity, Frequency, and Duration

The occurrence of more frequent and longer lasting droughts can increase the availability of fuels for wildfires through the drying of vegetation. Additionally, both the increased occurrence and continued decline of native species due to lack of precipitation can cause the proliferation of invasive species which can provide quick-burning fuels that contribute to the start and spread of fire.

Additionally, projected higher than average temperatures may impact the frequency and magnitude of wildfire in the following ways:

- **Increased Frequency:** Warmer temperatures and prolonged periods of drought associated with climate change create conditions that favor more frequent wildfires. Extended fire seasons are becoming the new norm in many regions.
- **Greater Intensity:** Higher temperatures and drier conditions can lead to more intense wildfires. These fires burn hotter and spread more rapidly, making them more challenging to control and extinguish.

- **Longer Fire Seasons:** Higer temperatures are extending the length of fire seasons, leading to earlier starts and later endings. This puts additional stress on firefighting resources and increases the risk of wildfires overlapping with other disasters.
- **Altered Precipitation Patterns:** Changes in precipitation patterns, including more intense rainfall events followed by extended dry periods, can promote the growth of vegetation, which can then become fuel for wildfires during subsequent dry periods.
- **Drought Conditions:** Prolonged droughts can reduce soil moisture levels and the availability of water sources. Dry conditions increase the susceptibility of vegetation to ignition.
- **Vegetation Changes:** Higher temparatures can alter the distribution and composition of vegetation, such as the expansion of drought-tolerant species. This can change fuel availability and make ecosystems more fire prone.
- **Insect Infestations:** Warmer temperatures can lead to increased insect infestations in forests. Infested and dead trees provide additional fuel for wildfires.
- **Wildfire Behavior**: Higher tempeartures can lead to changes in wildfire behavior, including the development of fire whirls, more extreme fire behavior events, and increased spotting (the spread of embers ahead of the main fire).

While both population and housing levels have remained static, or slightly decreased, in Kansas Region I any continued expansion into WUI areas significantly increases the risk and potential damage from wildfires for several reasons, including:

- **Proximity to Natural Fuels:** As development spreads into previously undeveloped wildland areas, homes and infrastructure are built in close proximity to natural fuels which can ignite during a wildfire. Natural landscapes in WUI zones are often dense with vegetation, providing a continuous fuel source that allows fires to spread quickly from wildland areas to residential zones. This increases the likelihood of structure ignition, as homes are surrounded by flammable vegetation.
- **Increased Human Activity:** Human activities, such as outdoor recreation, construction, and the use of equipment, are more common in WUI areas, and these activities can inadvertently start fires
- **Difficulty in Fire Suppression:** WUI fires are harder to control because firefighting efforts must focus on both the natural landscape and protecting homes and infrastructure. Firefighters face the dual challenge of containing the wildfire and defending structures, which can divert resources and increase the complexity of suppression efforts. Narrow or inaccessible roads in WUI areas can make it difficult for firefighting equipment and personnel to reach homes at risk, delaying response times.

5.16.6 Vulnerability and Impact

FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the first table was created indicating the potential risk to Kansas Region I and all participating jurisdictions from wildfire. In order to gain an understanding of vulnerability, the second table details the estimated annual loss data for Kansas Region I and participating jurisdictions. To help understand the risk and vulnerability participating jurisdictions data from the FEMA NRI was run on a census tract level. As the NRI does not generate data for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Table 144: Kansas Region I Participating Jurisdiction Wildfire Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Chase County	**All**	76.7	Relatively Low	0.1
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	97.6	Relatively High	0.1
Geary County	**All**	80.1	Relatively Low	0.1
Junction City	20061000100	33.5	Very Low	0.1
Junction City	20061000200	67.5	Relatively Low	0.1
Junction City	20061000300	86.0	Relatively Moderate	0.1

Table 144: Kansas Region I Participating Jurisdiction Wildfire Hazard Risk Index

Jurisdiction	Census Tract	National Percentile	Risk Index	Frequency (per year)
Junction City	20061000401	65.8	Relatively Low	0.1
Junction City	20061000402	0.0	No Rating	0.1
Junction City	20061000500	0.0	No Rating	0.1
Junction City	20061000601	89.0	Relatively Moderate	0.1
Grandview Plaza	20061000700	96.2	Relatively High	0.1
Junction City	20061000801	86.6	Relatively Moderate	0.1
Milford	20061000802	96.1	Relatively High	0.1
Lyon County	**All**	81.5	Relatively Low	0.1
Emporia	20111000101	0.0	No Rating	0.1
Emporia	20111000102	0.0	No Rating	0.1
Emporia	20111000103	63.4	Relatively Low	0.1
Emporia	20111000201	51.3	Relatively Low	0.1
Emporia	20111000202	78.3	Relatively Low	0.1
Emporia	20111000203	0.0	No Rating	0.1
Emporia	20111000300	60.9	Relatively Low	0.1
Emporia	20111000400	0.0	No Rating	0.1
Emporia	20111000500	89.7	Relatively Moderate	0.1
Allen, Admire, Bushong, Reading	20111000600	95.3	Relatively High	0.1
Americus	20111000700	95.5	Relatively High	0.1
Hartford, Olpe, Neosho Rapids	20111000800	96.2	Relatively High	0.1
Morris County	**All**	77.0	Relatively Low	0.1
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	96.6	Relatively High	0.1
Council Grove	20127963700	94.7	Relatively Moderate	0.1
Pottawatomie County	All	87.4	Relatively Moderate	0.1
Louisville	20149000101	95.7	Relatively High	0.1
St. George	20149000102	95.3	Relatively High	0.1
Wamego	20149000200	93.1	Relatively Moderate	0.1
Belvue, Emmett, St. Marys	20149000300	94.5	Relatively Moderate	0.1
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	98.8	Relatively High	0.1
Riley County	**All**	85.7	Relatively Low	0.1
Manhattan	20161000201	87.8	Relatively Moderate	0.1
Manhattan	20161000202	46.7	Very Low	0.1
Manhattan	20161000303	0.0	No Rating	0.1
Manhattan	20161000304	0.0	No Rating	0.1
Manhattan	20161000500	0.0	No Rating	0.1
Manhattan	20161000601	76.7	Relatively Low	0.1
Manhattan	20161000602	93.6	Relatively Moderate	0.1
Manhattan	20161000700	30.7	Very Low	0.1
Manhattan	20161000801	0.0	No Rating	0.1
Manhattan	20161000802	0.0	No Rating	0.1
Ogden	20161000900	94.9	Relatively Moderate	0.1
Manhattan	20161001101	34.5	Very Low	0.1
Manhattan	20161001102	34.4	Very Low	0.1
Manhattan	20161001301	92.5	Relatively Moderate	0.1
Leonardville, Randloph, Riley	20161001302	97.6	Relatively High	0.1
Wabaunsee County	**All**	83.3	Relatively Low	0.1
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	96.9	Relatively High	0.1
Eskridge, Harveyville,	20197483200	97.8	Relatively High	0.1

Source: FEMA NRI

Table 145: Participating Jurisdiction Wildfire Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Chase County	**All**	77.3	Relatively Low	$322,525
Cedar Point, Cottonwood Falls, Elmdale, Matfield Green, Strong City	20017960600	97.4	Relatively High	$322,525
Geary County	**All**	81.0	Relatively Low	$465,816
Junction City	20061000100	31.3	Very Low	$46
Junction City	20061000200	61.9	Relatively Low	$768
Junction City	20061000300	85.4	Relatively Moderate	$12,421
Junction City	20061000401	63.6	Relatively Low	$859
Junction City	20061000402	0.0	No Expected Annual Losses	$0
Junction City	20061000500	0.0	No Expected Annual Losses	$0
Junction City	20061000601	89.3	Relatively Moderate	$29,066
Grandview Plaza	20061000700	95.8	Relatively High	$170,447
Junction City	20061000801	87.9	Relatively Moderate	$21,360
Milford	20061000802	96.2	Relatively High	$199,257
Lyon County	**All**	83.6	Relatively Low	$618,106
Emporia	20111000101	0.0	No Expected Annual Losses	$0
Emporia	20111000102	0.0	No Expected Annual Losses	$0
Emporia	20111000103	63.9	Relatively Low	$876
Emporia	20111000201	51.4	Relatively Low	$351
Emporia	20111000202	79.5	Relatively Low	$3,779
Emporia	20111000203	0.0	No Expected Annual Losses	$0
Emporia	20111000300	59.4	Relatively Low	$642
Emporia	20111000400	0.0	No Expected Annual Losses	$0
Emporia	20111000500	88.2	Relatively Moderate	$22,669
Allen, Admire, Bushong, Reading	20111000600	96.2	Relatively High	$195,673
Americus	20111000700	95.7	Relatively High	$160,960
Hartford, Olpe, Neosho Rapids	20111000800	96.7	Relatively High	$233,155
Morris County	**All**	79.0	Relatively Low	$381,483
Dunlap, Dwight, Latimer, Parkerville, White City, Wilsey	20127963600	97.0	Relatively High	$273,016
Council Grove	20127963700	94.5	Relatively Moderate	$108,468
Pottawatomie County	**All**	89.0	Relatively Moderate	$1,301,409
Louisville	20149000101	96.2	Relatively High	$194,200
St. George	20149000102	95.8	Relatively High	$170,224
Wamego	20149000200	93.5	Relatively Moderate	$80,524
Belvue, Emmett, St. Marys	20149000300	94.8	Relatively Moderate	$120,024
Havensville, Olsburg, Onaga, Westmoreland, Wheaton	20149000400	98.9	Relatively High	$736,437
Riley County	**All**	86.3	Relatively Moderate	$941,595
Manhattan	20161000201	86.2	Relatively Moderate	$15,083
Manhattan	20161000202	45.7	Very Low	$222
Manhattan	20161000303	0.0	No Expected Annual Losses	$0
Manhattan	20161000304	0.0	No Expected Annual Losses	$0
Manhattan	20161000500	0.0	No Expected Annual Losses	$0
Manhattan	20161000601	77.4	Relatively Low	$2,737
Manhattan	20161000602	93.7	Relatively Moderate	$86,807
Manhattan	20161000700	30.3	Very Low	$38
Manhattan	20161000801	0.0	No Expected Annual Losses	$0
Manhattan	20161000802	0.0	No Expected Annual Losses	$0
Ogden	20161000900	94.4	Relatively Moderate	$105,629
Manhattan	20161001101	33.9	Very Low	$68
Manhattan	20161001102	33.4	Very Low	$64
Manhattan	20161001301	93.3	Relatively Moderate	$77,458

Table 145: Participating Jurisdiction Wildfire Hazard EAL

Jurisdiction	Census Tract	EAL Rating	National Percentile	EAL $
Leonardville, Randloph, Riley	20161001302	97.9	Relatively High	$409,000
Wabaunsee County	**All**	84.4	Relatively Low	$691,085
Alma, Alta Vista, Maple Hill, McFarland, Paxico	20197483100	96.9	Relatively High	$260,567
Eskridge, Harveyville,	20197483200	98.0	Relatively High	$430,518

Source: FEMA NRI

Population

Wildfires have profound and far-reaching impacts on all jurisdictional citizens, affecting physical health, mental well-being, and socio-economic conditions. These impacts can vary depending on the severity, location, and preparedness of the communities affected. Key wildfire impacts include:

- **Health Impacts**
  - Smoke inhalation: Wildfire smoke contains fine particulate matter that can penetrate deep into the lungs and exacerbate respiratory and cardiovascular problems. It is especially dangerous for people with pre-existing conditions like asthma, COPD, or heart disease. Exposure to smoke can cause short-term issues like coughing, throat irritation, and difficulty breathing, as well as long-term health effects from prolonged exposure.
  - Burn injuries: Direct exposure to flames or heat during evacuations or firefighting efforts can result in serious burn injuries.
  - Mental health: Survivors of wildfires often experience stress, anxiety, depression, and post-traumatic stress disorder, especially those who have lost homes, loved ones, or livelihoods.
- **Economic and Financial Impacts**
  - Property damage: Wildfires can destroy homes, businesses, and infrastructure, leading to significant financial losses. Insurance premiums in wildfire-prone areas often increase, and many homeowners struggle to rebuild after losing their property.
  - Loss of livelihoods: Wildfires can disrupt local economies, particularly in recreation and tourism, agricultural, and forestry-based communities. Employment in affected areas may decline, and businesses may close either temporarily or permanently.
  - Cost of relocation: In cases of long-term displacement, families must bear the costs of relocation, housing, and rebuilding, which can be a financial burden, especially for low-income households.
- **Evacuations and Displacement**
  - Evacuations: Wildfires often force mass evacuations, leaving people displaced from their homes for extended periods. Evacuations can be stressful, especially if there is little warning, leading to rushed departures where families leave behind essential belongings or pets. Additionally, their can be challenge sin reaching remote communities with information concerning evacuations.
  - Long-term displacement: In severe cases, entire communities may be permanently displaced if homes are destroyed or if areas are deemed too hazardous to return to, leading to loss of community and social networks.
- **Social and Community Disruption**
  - Community dislocation: Wildfires can cause permanent damage to communities, forcing people to relocate and resulting in the breakdown of social networks and support systems.
  - Loss of heritage: In some cases, wildfires destroy culturally significant sites, landmarks, and natural heritage, such as forests and ecosystems that communities may depend on or cherish.

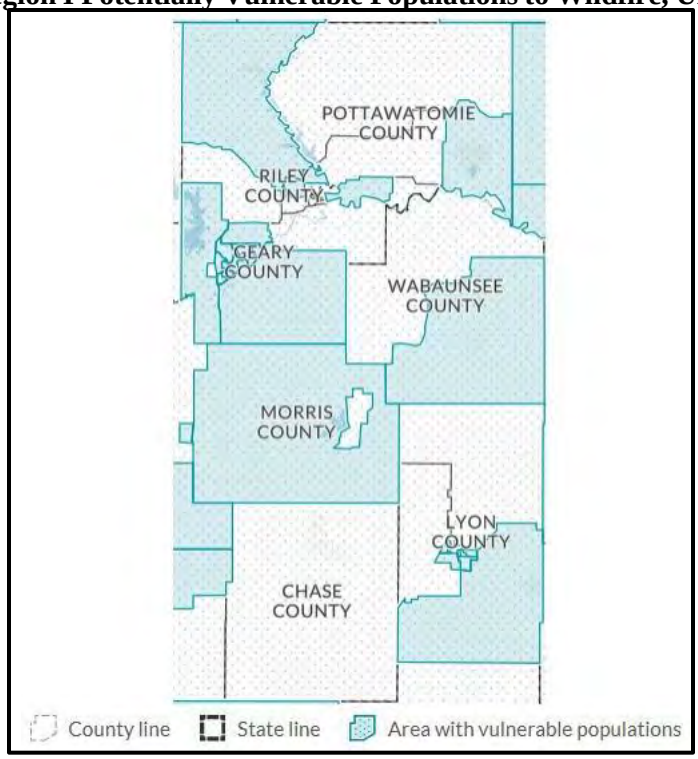
Wildfires can disproportionately affect vulnerable populations due to their limited resources, reduced mobility, and pre-existing health or socio-economic challenges. These groups often include the elderly, disabled individuals, low-income

households, children, and those with chronic health conditions. Ways that wildfires may have a greater impact on these populations include:

- **Health Vulnerabilities**
  - Respiratory and cardiovascular risks: Vulnerable populations, such as the elderly, children, and those with pre-existing respiratory or heart conditions, are more susceptible to the harmful effects of wildfire smoke. The fine particulate matter from the smoke can exacerbate asthma, bronchitis, and heart disease, leading to increased hospitalizations and, in severe cases, mortality.
  - Limited healthcare access: Vulnerable groups often have less access to healthcare services, which can delay critical treatment during or after wildfire exposure. Health facilities may be overwhelmed during wildfire events, and transportation to care facilities may be hindered by road closures or evacuations.
- **Challenges with Evacuation**
  - Mobility issues: Elderly individuals, people with disabilities, and those without access to vehicles may struggle to evacuate quickly. They may depend on public transportation, community aid, or emergency services, which can be delayed or overburdened during a wildfire emergency.
  - Language barriers: Immigrant communities or non-English speakers may not fully understand emergency alerts or evacuation instructions, making it harder for them to react swiftly. This can increase the risk of delayed evacuation, which is particularly dangerous in fast-moving wildfires.
  - Poverty and housing instability: Low-income families are less likely to have the means to evacuate, such as access to a car or money for temporary shelter. They may also live in less resilient housing, which is more vulnerable to wildfire damage.
- **Economic Disparities**
  - Loss of homes and belongings: Vulnerable populations are often more likely to live in fire-prone or poorly constructed homes that are less resistant to wildfires. They may lack adequate insurance coverage to rebuild or replace what is lost, which can lead to long-term displacement and financial hardship.
  - Job loss and economic disruption: After a wildfire, vulnerable populations are more likely to experience prolonged economic disruption. Many people in low-wage jobs or agriculture may face unemployment if the local economy is disrupted, or if their place of work is destroyed. Recovery can take months or years, leaving them with few financial safety nets.
- **Increased Long-Term Vulnerability**
  - Difficulty in recovery: Vulnerable populations often face more significant challenges during the recovery phase of wildfires. They may lack insurance, savings, or government support to rebuild homes, replace belongings, or relocate. This can lead to prolonged displacement or homelessness, further exacerbating their vulnerabilities.
  - Disruption of social networks: Vulnerable groups rely heavily on community networks for support during and after disasters. Wildfires may displace communities, breaking apart these networks and leaving people isolated during their recovery process.
- **Disparities in Resource Allocation**
  - Limited access to relief aid: Vulnerable populations may struggle to access emergency relief services due to logistical, language, or bureaucratic barriers. They may not be prioritized for resource distribution, further exacerbating their difficulties in recovering from wildfire impacts.

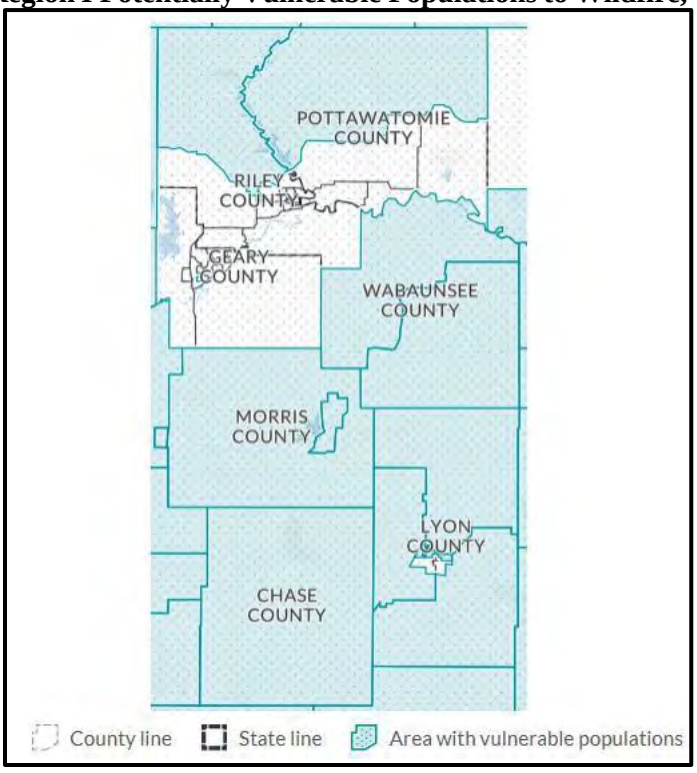
The following maps show the location of vulnerable populations compared to wildfire risk. Census tracts are highlighted that have values equal to or greater than the community median:

Map 118: Kansas Region I Potentially Vulnerable Populations to Wildfire, Under the Age of Five



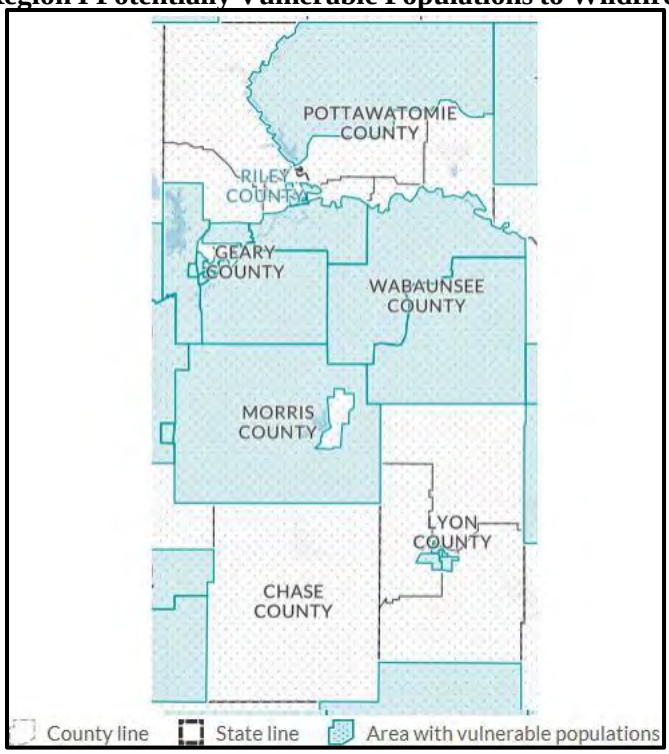
Source: NOAA's Wildfire Risk to Communities

Map 119: Kansas Region I Potentially Vulnerable Populations to Wildfire, Over the Age of 65



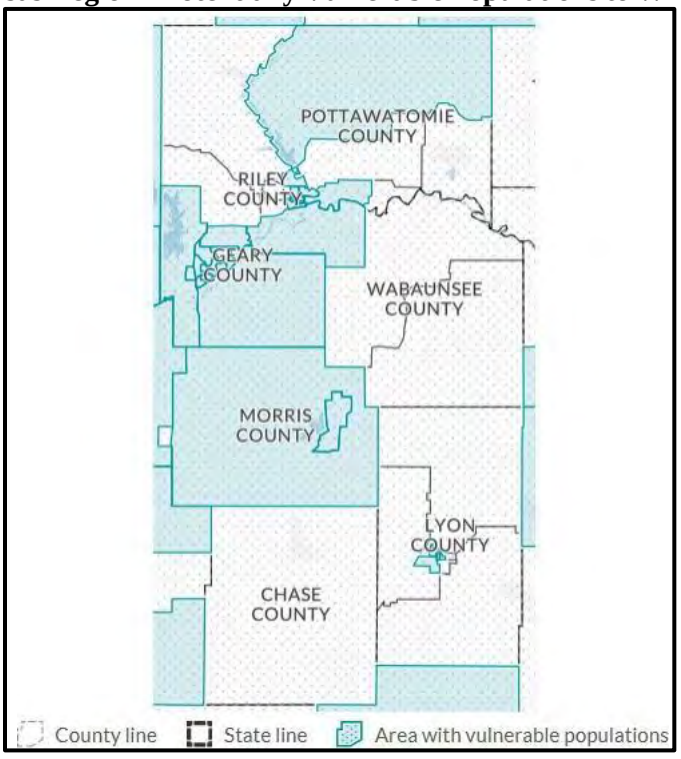
Source: NOAA's Wildfire Risk to Communities

Map 120: Kansas Region I Potentially Vulnerable Populations to Wildfire, With a Disability



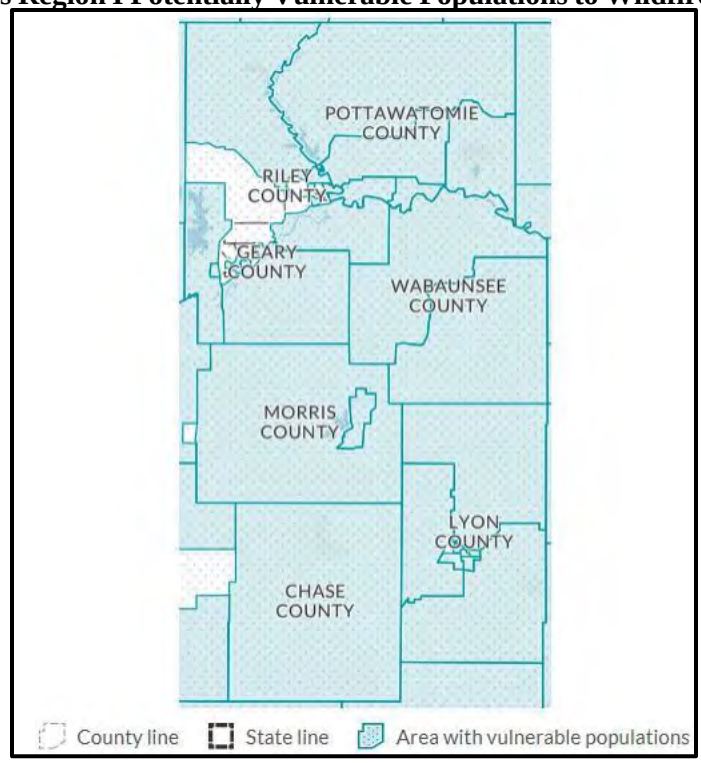
Source: NOAA's Wildfire Risk to Communities

Map 121: Kansas Region I Potentially Vulnerable Populations to Wildfire, Poverty



Source: NOAA's Wildfire Risk to Communities

Map 122: Kansas Region I Potentially Vulnerable Populations to Wildfire, Mobile Homes



Source: NOAA's Wildfire Risk to Communities

All Kansas Region I and participating jurisdiction populations are vulnerable to the impacts of wildfires. Please see Section 3.3: Population Data and Section 3.4: Socially Vulnerable and At-Risk Populations for data concerning jurisdictional populations.

Buildings and Structures

All jurisdictional buildings and structures are vulnerable to wildfires due to their location, materials, and surrounding environment. These factors determine how easily a structure may ignite, sustain damage, or be destroyed by fire. Here's how these vulnerabilities manifest:

- **Proximity to Vegetation:** Homes located in the WUI are particularly vulnerable as they are closer to dense vegetation that serves as fuel for wildfires. If the vegetation (trees, shrubs, dry grasses) is not properly managed around the property, fire can easily spread to homes.
- **Flammable roofing materials:** Roofs made from materials like wood shingles are highly flammable and can easily ignite from embers. Non-flammable materials like metal, tile, or asphalt are more resistant to fire.
- **Siding and exterior walls:** Homes with wood siding or other combustible materials are more vulnerable to fire than homes built with fire-resistant materials like stucco, brick, or concrete.
- **Windows:** Single-pane windows are more likely to break during a wildfire due to heat exposure, allowing embers and flames to enter the building. Double-pane or tempered glass windows offer more protection.
- **Eaves and vents:** Eaves and vents can allow embers to enter the attic or other vulnerable spaces in the home. If they are not properly screened or fireproofed, they become entry points for embers to ignite the structure.
- **Decks and porches:** Wooden decks and porches are highly susceptible to wildfire if they are not made from fire-resistant materials or if they have combustible items stored underneath them.
- **Lack of defensible space:** Defensible space is the buffer zone between a building and surrounding vegetation. If this space is not cleared of flammable materials (like dry leaves, dead trees, or fire-prone plants), a wildfire can spread rapidly to a home. Homes without sufficient defensible space are much more likely to ignite during a fire.

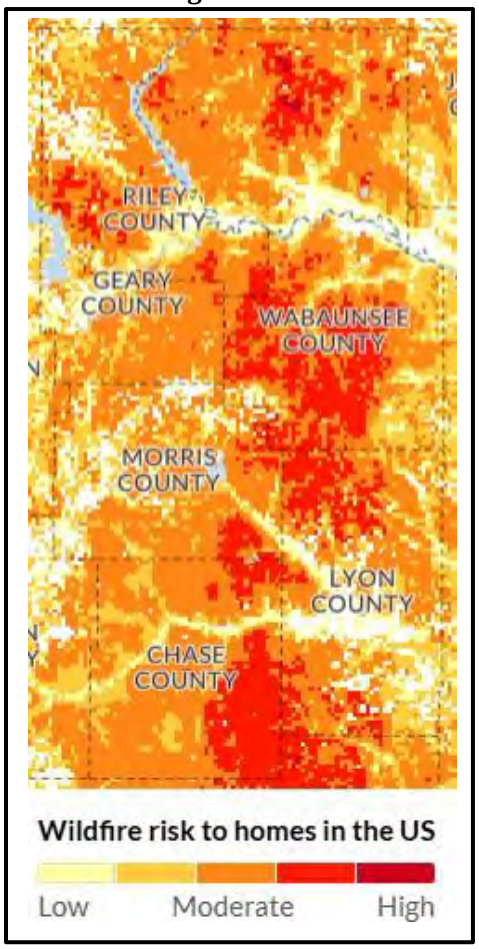
- **Combustible materials near the home:** Storing firewood, propane tanks, or other flammable items near the structure increases vulnerability, as these materials can easily catch fire and ignite the building.
- **Distance from fire services:** Homes located far from fire stations or without adequate road access may experience delayed emergency response times, leaving them more vulnerable to destruction.
- **Neglected maintenance**: Homes that are not well-maintained, such as those with clogged gutters full of leaves or overgrown vegetation, are more likely to catch fire. Regular maintenance, such as clearing gutters and removing dead vegetation, is essential to reducing wildfire vulnerability.

When homes and buildings ignite in a wildfire, the damage can be severe. Wildfire impacts on structures typically include:

- **Complete destruction:** Buildings can be completely consumed by flames, leaving nothing but the foundation.
- Partial damage: Fire can damage parts of the building, such as roofs, walls, or outdoor structures, necessitating costly repairs.
- **Smoke damage:** Even if a structure does not burn down, smoke can infiltrate the building, causing significant damage to the interior, furniture, and electronics.
- **Water damage:** In the process of firefighting, water can cause additional damage to structures, particularly if fire suppression efforts are extensive.

According to NOAA's Wildfire Risk to Communities 99% of Kansas Region I's buildings are exposed to wildfires:

Map 123: Kansas Region I Wildfire Risk to Homes



Source: NOAA's Wildfire Risk to Communities

Governmental Operations

Wildfires can pose various risks to government operations. These risks can have significant economic and operational consequences, and can include:

- **Power Outages:** Wildfires can lead to power outages by damaging electrical infrastructure such as power lines and substations. Government buildings may lose power, affecting critical operations and services.
- **Flooding:** Heavy rainfall after a wildfire can lead to flooding, which can damage government buildings and disrupt operations. Flood damage may require extensive repairs and cleanup.
- **Communication Disruptions:** Wildfires can damage communication equipment, including telephone lines and computer systems. This can hinder communication between government agencies and the public.
- **Transportation Disruptions:** Wildfires can make roads impassable due to debris, smoke, heat, and potentially after event flooding or landslides. This can impact the ability of government employees to commute to work.
- **Budgetary Impact:** The costs associated with repairing and restoring government buildings and infrastructure after a wildfire can strain budgets.

Transportation and Electrical Infrastructure

In general, wildfires do not have a large impact on transportation infrastructure, with the exception of power loss disrupting signaling, road closures due to events, and poor conditions impacting driving conditions.

Wildfires can have severe and widespread impacts on electric infrastructure, disrupting power distribution and causing long-term damage. Here are some key ways wildfires affect electric infrastructure:

- **Damage to Transmission Lines and Power Poles**
  - Direct fire damage: Wildfires can burn through wooden power poles and even damage steel or aluminum transmission towers due to extreme heat. Transmission lines are especially vulnerable in heavily forested or remote areas where wildfires tend to occur.
  - Melting of cables and equipment: High temperatures can cause transmission lines and electrical equipment to melt or warp, leading to failures or shutdowns.
  - Power outages: Wildfires can lead to widespread power outages by directly damaging transmission lines or transformers. In some cases, utilities may also proactively shut off power (public safety power shutoffs, or PSPS) to prevent the ignition of fires by downed or sparking power lines.
- **Smoke and Soot Contamination**
  - Conductivity of smoke: Smoke and ash from wildfires can increase the conductivity of the air, leading to short circuits or arcing in power lines, especially in high-voltage systems.
  - Soot buildup: Wildfire soot can accumulate on insulators and electrical equipment, reducing efficiency and causing potential equipment failures if not cleaned.
- **Substation and Equipment Vulnerability**
  - Heat and embers: Substations, transformers, and electrical panels can be damaged by heat or flying embers. Damage to substations can have a particularly large impact since they are key distribution points for electricity.
  - Component failures: Equipment such as switches, transformers, and circuit breakers may suffer from thermal stress or fire-related damage, leading to breakdowns and costly repairs.
- **Challenges for Utility Workers**
  - Delayed repairs: Repair crews face significant challenges during and after wildfires. Access to damaged areas can be restricted due to ongoing fires, road closures, or unsafe conditions, delaying repairs.
  - Safety hazards: Workers may be exposed to unsafe conditions, including the risk of encountering smoldering areas or downed power lines.
- **Disruptions to Power Generation Facilities**
  - Hydroelectric plants: Wildfires in watersheds that supply hydroelectric plants can disrupt water flow, reducing power generation capacity.

- Thermal power plants: Plants using coal, natural gas, or other fuel sources may also face interruptions if transportation of fuel is hindered due to wildfires or if nearby infrastructure is damaged.

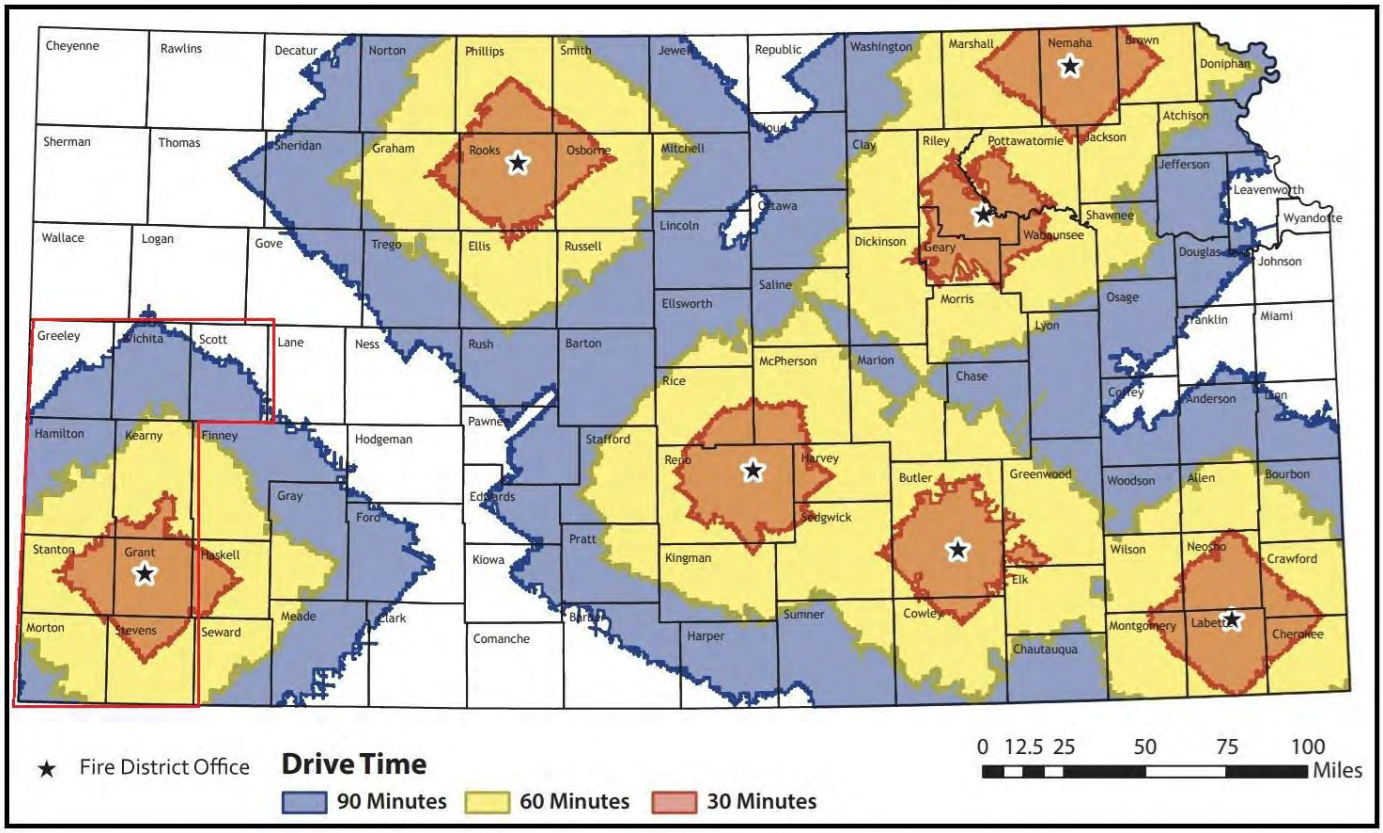
Water and Wastewater Utilities
In general, wildfires and severe winter weather components do not have a large impact on water and wastewater infrastructure and operations. However, the cascading impacts from an event such as power loss disrupting pumping and treatment capabilities, localized flooding from heavy overwhelming drainage systems, or frozen pipes in water distribution systems, causing water outages and expensive repairs when pipes burst.

Medical and Response Facilities
Wildfires can significantly impact emergency response infrastructure, creating challenges for first responders and organizations involved in managing and mitigating the effects of wildfires events. Wildfires can impact emergency response through:

- **Transportation Disruptions:** Debris on roads and road closures can hinder the ability of emergency vehicles to navigate and reach affected areas promptly. Hazardous road conditions may result in delays in response times.
- **Communication Disruptions:** Wildfires can disrupt communication networks, affecting the ability of emergency responders to coordinate and communicate effectively. Downed power lines and damage to communication infrastructure contribute to these disruptions.
- **Power Outages:** Wildfires can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.
- **Exposure:** Emergency responders face increased health and safety risks during wildfire events. Exposure to fire, ash, particulate matter, and high temperatures can impact the well-being of responders and affect their ability to provide effective assistance.
- **Resource Allocation Challenges:** Wildfires often requires the allocation of additional resources, including personnel, equipment, and supplies, to address immediate needs. This can strain emergency response organizations and impact their ability to respond to other concurrent incidents.
- **Increased Demand for Services:** Wildfires can result in an increased demand for emergency services, including medical assistance, and search and rescue operations. Emergency response organizations may need to manage a higher volume of incidents simultaneously. Wildfires can also increase the demand for emergency shelters, particularly in cases of widespread evacuations.

The Kansas Forest Service operates seven full-time district offices with fire staff to serve firefighters and communities in wildland fire efforts. The following map illustrates the anticipated response time for these staff to reach Kansas Region I communities when requested by local resources:

Map 124: Kansas Forest Service Response Time



Source: Kansas Forest Service

Educational Facilities

Depending on the educational facility capability and location, wildfires may necessitate the closure of the facility for the duration of the event due to damages or lack of access. These closures are expected to have additional economic consequences as caregivers may be required to miss or modify work.

- **School Closures:** Wildfires can lead to the closure of schools due to hazardous conditions. This can strain caregivers and result in lower work attendance.

Communication Systems

All communication systems within Kansas Region I are at risk to wildfire events. Wildfires can disrupt vital communications system affecting reliability and functionality. Some of the key vulnerabilities include:

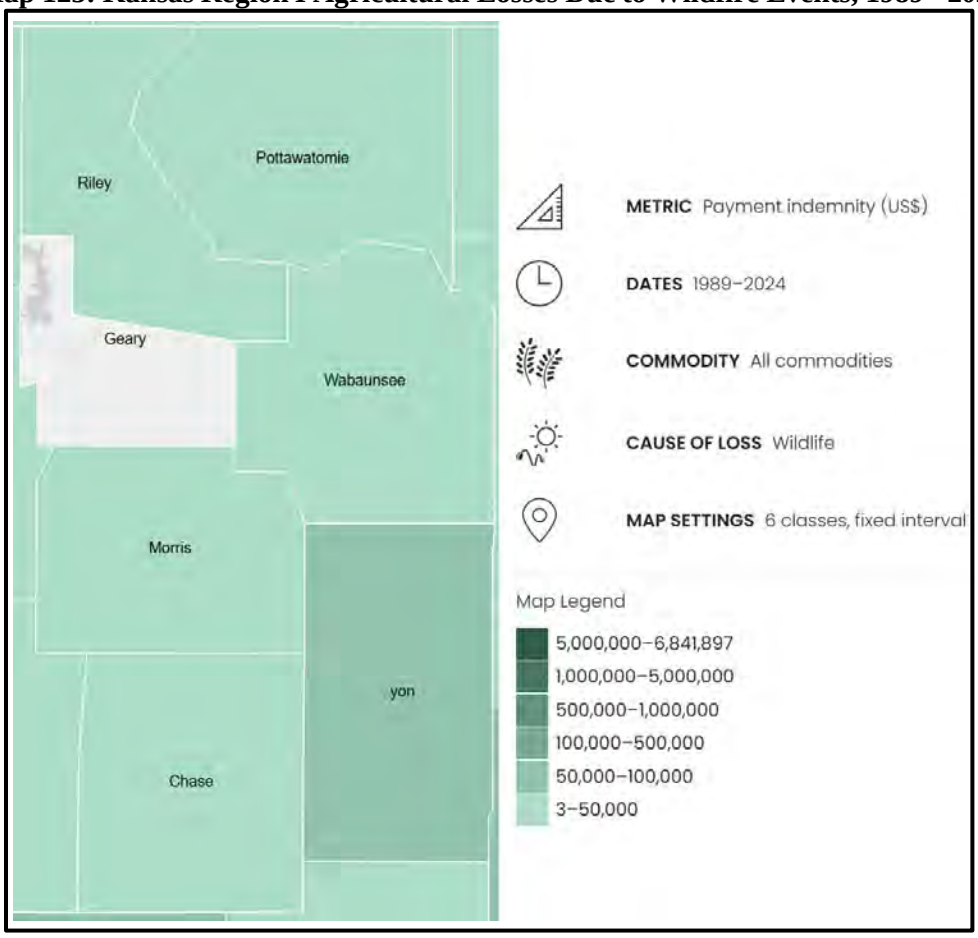
- **Physical Infrastructure Damage:** Wildfires can cause physical damage to communication infrastructure such as cell towers, antennas, cables, mountain top antennas, and data centers. This damage can result in network outages and disruptions.
- **Power Outages:** Wildfires often lead to power outages, which can affect the operation of communication networks. Without a stable power supply, cell towers, data centers, and other critical components may become non-functional, leading to service interruptions.
- **Communication Tower Instability:** Wildfires can compromise the stability of communication towers. If towers are not designed to withstand wildfires, they may collapse, leading to network outages.
- **Network Congestion:** In the event of a disaster, communication networks may experience a surge in usage as people attempt to contact emergency services, friends, and family. This increased demand can lead to network congestion, making it difficult for users to connect.

The cost to repair communications networks can vary widely depending on the extent of the damage, the size of the network, and the specific technologies involved. Repair costs may include expenses for labor, equipment replacement or repair, materials, and any additional resources required to restore the network to full functionality. Estimated repair cost from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency may be found in Section 5.11.6.

Environmental and Agricultural Impacts

Wildfire events can cause significant agricultural impacts The following map from the United States Department of Agriculture details total county-wide agricultural losses, by county, due to wildfire events from 1989 - 2024:

Map 125: Kansas Region I Agricultural Losses Due to Wildfire Events, 1989 - 2024



Source: USDA

Wildfires have significant and often devastating effects on the environment. These impacts can be both immediate and long-lasting, affecting air quality, ecosystems, water resources, soil stability, and wildlife. Wildfires release large quantities of smoke, which contains fine particulate matter, carbon monoxide, and other harmful pollutants. These particles can travel long distances, reducing air quality far from the fire itself, and can cause respiratory issues, especially for vulnerable populations.

Fires can decimate forests, grasslands, and other plant ecosystems. The loss of vegetation can result in habitat destruction for countless species, reducing biodiversity and altering the structure of the ecosystem. Recovery can take decades, depending on the severity of the fire and the resilience of the vegetation. Wildfires can degrade soil by burning away organic matter, making it less fertile. Intense heat can also cause soil to become hydrophobic (water-repellent), increasing the risk of erosion and reducing water infiltration, which impacts plant regrowth.

After a wildfire, ash, debris, and eroded soil can be washed into rivers and streams during rainstorms, contaminating water supplies. This can affect both aquatic ecosystems and human water sources, requiring extensive treatment. The

destruction of vegetation disrupts the local hydrological cycle by reducing transpiration (the release of water vapor from plants). This can result in lower humidity levels, reduced rainfall, and potentially, longer drought periods.

Animals are often killed directly by fire, especially those that are less mobile (like reptiles, amphibians, and small mammals) or those caught in fast-moving fires. Wildfires destroy habitats, which can lead to displacement, loss of food sources, and increased competition for remaining resources. This can cause population declines in already vulnerable species. Wildfires can disrupt key ecosystem services such as pollination, seed dispersal, and predator-prey relationships, affecting the balance of the ecosystem.

With the loss of vegetation, the soil becomes more susceptible to erosion. Without plants to stabilize the soil, rain and wind can easily carry away topsoil, which is crucial for plant regrowth and nutrient cycling. In steep areas, the loss of vegetation can lead to landslides during subsequent rain events. These slides can cause further destruction to the landscape, waterways, and infrastructure.

Wildfires can create opportunities for invasive species to take hold. Invasive plants, often better adapted to disturbed environments, may outcompete native species in the post-fire landscape, leading to long-term changes in ecosystem composition and reducing biodiversity. Some ecosystems, like certain forests and grasslands, are adapted to periodic fire and even rely on it for regeneration. However, the increasing intensity and frequency of wildfires can overwhelm these ecosystems, preventing recovery and pushing them beyond their adaptive capacity.

Jurisdictional Concerns:
As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts.

Wildfire risk is a shared, but uneven, concern across Kansas Region I. All jurisdictions sit within the nation's largest remaining tall-grass-prairie landscape, where annual prescribed burns, prolonged spring winds, and periodic summer droughts create the ingredients for fast-moving grassfires. Yet county-level exposure varies. Chase, Morris, and Wabaunsee remain predominantly ranchland, and vast pastures mean plenty of fine fuels but few structures in a fire's path. In contrast, Riley and Pottawatomie are watching prairie give way to housing along the K-18/US-24 corridor, putting more structires and critical utilities in the WUI. Geary County's Fort Riley training ranges add a unique wrinkle, and live-fire exercises spark dozens of small starts each year, and when gusty southerlies line up with dry grasses, fires can escape onto county roads and nearby subdivisions.

Jurisdictional size also shapes wildfire challenges. Larger cities worry most about protecting edge-of-town neighborhoods where cedar windbreaks, ornamental pine, and backyard sheds create ladder fuels that a grassfire can quickly ignite. They do, however, field career fire departments, mutual-aid compacts, and water-supply grids that support sustained attack. Small townships and unincorporated areas depend on volunteer crews who juggle farm chores and daytime jobs and response times lengthen when a weekday ignition occurs, and tanker fill-sites may be a 20-mile round-trip. Conversely, those rural jurisdictions benefit from lower structure density and a ranching culture accustomed to creating and defending firebreaks around hay yards and homesteads.

Looking ahead, planners across the region foresee two diverging trends. Urbanized counties expect a longer burn season and more accidental ignitions, backyard burn barrels, power-line faults, and discarded cigarettes along ever-busier highways, which means stricter WUI codes, vegetation setbacks, and public-education campaigns will pay dividends. Rural counties, meanwhile, anticipate workforce constraints as populations age and volunteer rosters shrink.

Cascading Impacts
Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with wildfires may include:

- Direct physical damage to buildings and structures:
- Transportation infrastructure disruption

- Power outages and electrical grid disruption
- Communication system disruption
- Transportation and supply chain disruptions
- Environmental and ecological damage
- Economic impacts and business closures
- Emergency services overload

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of a community. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 146: Wildfire Consequence Analysis

Subject	Potential Impacts
Impact on the Public	People located in the immediate area of the fire face the risk injury or death if not evacuated in time. Once evacuated, they may face a lengthy period of relocation. Fires can release toxic components which can cause adverse health effects including respiratory and cardiovascular system impacts. Psychological and psychiatric concerns may arise due to exposure to the traumatic event. Young children and the elderly are especially vulnerable to health issues stemming from fire and smoke exposure.
Impact on Responders	Fire, police, and emergency responders may be called to evacuate people from the fire area, close roads, create fire breaks, attend to the injured, and direct traffic. Firefighters are at a higher risk of smoke inhalation, burns, and health problems due to working in close proximity to fires and the subsequent smoke.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Wildfires may impact an agency's ability to maintain continuity of operations due to impacts on critical infrastructure.
Delivery of Services	Fires can cause disruption of services, including the ability to deliver goods and services. Impacts on operations could lead to a reduction or cessation of services. Goods and facilities may be damaged or destroyed by fire, smoke, or extremely high temperatures.
Property, Facilities, and Infrastructure	Fire can damage or completely destroy property and critical facilities, as well as lead to interruption of the power supply system. A fire of significant strength can cause major damage to buildings or farmland. Large fires may also interrupt transportation systems such as train and bus lines, creating a challenge for public transit and evacuation.
Impact on Environment	Fires can have significant impact to the environment by spreading pollution, damaging agricultural crops, and disturbing the wildlife and natural areas. Water and soil pollution caused by fire can cause longer term threats to ecosystem health. Fire damage may also affect soil formation, nutrient cycling, and carbon sequestration and storage.
Economic Conditions	Fires can cause a fiscal impact on the local government, even if costs can be recouped by federal grants. Agriculture is a major component of the local, county and local economy, and major fires could cause significant impact. Costs may be associated with loss of income, damage to property, and firefighting can be significant.
Public Confidence in Governance	Governmental response, on all levels, state and local, would require direct action that must be immediate and effective to maintain public confidence.

5.16.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-

safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

5.16.8 Mitigation Opportunities

The following table presents examples of potential actions that can be instituted for mitigating the wildfire hazard.

Table 147: Example Wildfire Mitigation Actions

Category	Example Action
Planning and Regulation	Use GIS mapping of wildfire hazard areas to facilitate analysis and planning decisions through comparison with zoning, development, infrastructure, etc.
	Use zoning and/or a special wildfire overlay district to designate high-risk areas and specify the conditions for the use and development of specific areas.
	Promote conservation of open space or wildland-urban boundary zones to separate developed areas from high-hazard areas.
	Set guidelines for annexation and service extensions in high-risk areas
	Address fire mitigation through access, signage, fire hydrants, water availability, vegetation management, and special building construction standards.
	Establish wildfire mitigation planning requirements for large scale developments.
	Enclose the foundations of homes and other buildings in wildfire-prone areas.
	Encourage the use of functional shutters on windows
	Use fire resistant roofing and building materials in remodels and new construction.
Infrastructure	Install roof coverings, sheathing, flashing, skylights, roof and attic vents, eaves, and gutters that conform to ignition-resistant construction standards.
	Protect propane tanks or other external fuel sources.
	Create buffers around residential and non-residential structures through the removal or reduction of flammable vegetation, including vertical clearance of tree branches.
	Perform arson prevention cleanup activities in areas of abandoned or collapsed structures, accumulated trash or debris, and with a history of storing flammable materials.
	Prevent or alleviate wildfires by proper maintenance and separation of power lines.
	Require and maintain safe access for fire apparatus to neighborhoods and properties.
Natural Systems	Perform maintenance including fuel management techniques such as pruning and clearing dead vegetation, selective logging, cutting high grass and creating fuel/fire breaks.
	Use prescribed burning to reduce fuel loads that threaten public safety and property.
	Cut firebreaks into public wooded areas in the wildland-urban interface.
	Develop a vegetation management plan

Table 147: Example Wildfire Mitigation Actions

Category	Example Action
Education	Join the "Firewise Communities/USA" recognition program.
	Offer GIS hazard mapping online for residents and design professionals.
	Sponsor awareness workshops for local officials, developers, and civic groups.
	Organize a local fire department tour to show local elected officials the most vulnerable areas of the community's wildland-urban interface and increase their understanding of risks.
	Work with insurance companies, utility providers, and others to include wildfire safety information in materials provided to area residents.
	Develop partnerships with neighborhood groups to conduct outreach activities.
	Create a defensible space or buffer zone cleared of combustible materials around property.

5.17 Cybersecurity Event

5.17.1 Hazard Description



Cybersecurity attack refers to a deliberate and malicious attempt to compromise the security of computer systems, networks, devices, or data. The primary objectives of cyberattacks can vary widely and may include gaining unauthorized access, stealing sensitive information, disrupting operations, or extorting payment. Cybersecurity threat actors can be classified as:

- **Hacktivists:** Loosely organized groups known for conducting distributed denial-of-service attacks and defacing websites to promote political or social causes.
- **Ransomware Operators:** Criminal groups use ransomware to encrypt victims' data and demand ransoms for decryption keys.
- **Malware Developers:** Individuals or groups create and distribute malicious software (malware) for profit.
- **Organized Crime:** Criminal organizations may engage in various forms of cybercrime, such as identity theft, credit card fraud, and hacking for profit.
- **Advanced Persistent Threat Groups:** Nation-state-sponsored groups are among the most sophisticated threat actors. They conduct long-term, highly targeted cyber espionage campaigns.

5.17.2 – Location and Extent

The entire region and all participating jurisdictions are vulnerable to cybersecurity incidents. As most day-to-day activities rely on the internet in one aspect or another, any person or infrastructure is susceptible to cybersecurity threats. Cyber-attacks can take various forms, each with its own tactics and techniques, and include:

- **Malware Attacks:** Malicious software, such as viruses, worms, Trojans, ransomware, and spyware, is used to infect and compromise a computer or network. Malware can cause damage, steal information, or provide unauthorized access.
- **Phishing Attacks:** Phishing attacks involve tricking individuals into revealing sensitive information, such as passwords or financial details, by posing as a legitimate entity. Phishing emails, websites, and messages are common tools for attackers.
- **Denial-of-Service Attack:** An attack that overwhelms a target system or network with traffic, rendering it inaccessible.
- **Distributed Denial-of-Service Attack:** An attack that involves multiple compromised devices (a botnet) flooding a target with traffic, making it impossible to function effectively.
- **Man-in-the-Middle Attacks:** In these attacks, an attacker intercepts and possibly alters communications between two parties without their knowledge. This can lead to data interception, eavesdropping, or impersonation.
- **SQL Injection Attacks:** Attackers inject malicious SQL code into input fields of a web application to manipulate a database, potentially gaining unauthorized access or extracting data.
- **Zero-Day Vulnerabilities:** Attackers leverage security vulnerabilities in software or hardware that are not yet known to the vendor or public. These vulnerabilities are known as "zero-days."
- **Brute Force:** Attackers attempt to gain access to an account or system by trying all possible password combinations until the correct one is found.
- **Dictionary Attacks:** Attackers use precompiled lists of common passwords to guess login credentials.
- **Social Engineering Attacks:** This involves manipulating individuals into divulging confidential information or performing actions that compromise security. It often relies on psychological manipulation.
- **Ransomware Attacks:** Attackers encrypt a victim's data and demand a ransom in exchange for the decryption key. Payment does not guarantee data recovery, and it encourages further attacks.

- **Insider Attacks:** Malicious or negligent actions by individuals within an organization can pose significant cybersecurity risks, as they may have access to sensitive information and systems.
- **Supply Chain Attacks:** Attackers target suppliers, vendors, or partners to compromise the security of products or services, which can affect downstream organizations and consumers.
- **Internet of Things Attacks:** Devices connected to the internet, such as smart appliances and sensors, can be targeted to gain unauthorized access or control.

The MPC views cyberattack as a local concern. Discussions with the MPC and a review of all available data indicated cyberattack a community concern for all participating jurisdictions. The following provides a narrative of the level of jurisdictional concern:

- **Chase County:** Cyberattack identified as a concern for all participating jurisdictions as all systems are vulnerable. Additionally, continuing reliance on the internet is likely to exacerbate this concern.
- **Geary County:** Cyberattack identified as a concern for all participating jurisdictions as all systems are vulnerable. Additionally, continuing reliance on the internet is likely to exacerbate this concern.
- **Lyon County:** Cyberattack identified as a concern for all participating jurisdictions as all systems are vulnerable. Additionally, continuing reliance on the internet is likely to exacerbate this concern.
- **Morris County:** Cyberattack identified as a concern for all participating jurisdictions as all systems are vulnerable. Additionally, continuing reliance on the internet is likely to exacerbate this concern.
- **Pottawatomie County:** Cyberattack identified as a concern for all participating jurisdictions as all systems are vulnerable. Additionally, continuing reliance on the internet is likely to exacerbate this concern.
- **Riley County:** Cyberattack identified as a concern for all participating jurisdictions as all systems are vulnerable. Additionally, continuing reliance on the internet is likely to exacerbate this concern.
- **Wabaunsee County:** Cyberattack identified as a concern for all participating jurisdictions as all systems are vulnerable. Additionally, continuing reliance on the internet is likely to exacerbate this concern.

5.17.3 Previous Occurrences

Kansas Region I has experienced numerous cyber-attacks over the past few years. In general, jurisdictions impacted by cyber-attacks have elected not to publicize these events as part of this HMP.

5.17.4 Probability of Future Events

The continued evolution of cyber criminals and nation sponsored groups indicates that the probability of future events is significant. Although the Kansas Region I has not experienced a large-scale cybersecurity incident, large-scale attacks occur worldwide on a regular basis. The number of attacks is projected to increase, especially on critical infrastructure. Additionally, due to the widespread use of computers, email, and the internet, and the reliance on technology to support daily functions, the risks of cybersecurity incidents will continue to grow.

5.17.5 Projected Changes in Location, Intensity, Frequency, and Duration

Predicting the exact future changes in the frequency and intensity of cyber-attacks is changing due to the rapidly evolving nature of threats, the expanding diversity of attack vectors, and the dynamic landscape of technology. Cyber criminals are likely to continue evolving their tactics, techniques, and procedures to become more sophisticated. This includes the use of advanced malware, ransomware, and targeted attacks that exploit vulnerabilities in both technology and human behavior.

Future geopolitical landscape conditions can influence the location and targeting of cyber-attacks. Nation-state actors may shift their focus based on political tensions, economic interests, or strategic objectives. Critical infrastructure, government entities, and corporations may be primary targets.

5.17.6 Vulnerability and Impact

FEMA NRI

The FEMA NRI does not provide a rating for the cybersecurity hazard.

Population
Cybersecurity attacks can have a range of potential impacts on individuals, both direct and indirect, often affecting their finances and privacy. Some of the potential impacts of a cybersecurity attack may include:

- **Theft of Funds:** Attackers may steal money from victims' bank accounts or cryptocurrency wallets.
- **Credit Card Fraud:** Stolen credit card information can be used for unauthorized purchases.
- **Identity Theft:** Attackers may steal personal data, such as Social Security numbers, addresses, and dates of birth, to commit identity theft.
- **Opening Fraudulent Accounts:** Cybercriminals can use stolen information to open credit cards, loans, or other financial accounts in the victim's name.
- **Data Exposure:** Personal or sensitive information may be exposed, leading to loss of privacy and potential embarrassment or harm.
- **Blackmail or Extortion:** Attackers may use compromising information to blackmail or extort victims.

The impact of a cybersecurity attack on people can be far-reaching, affecting various aspects of their lives. Timely detection, response, and preventive measures, such as strong passwords, cybersecurity awareness, and software updates, are essential to mitigate these risks.

Buildings and Structures
Cybersecurity attacks can have wide-ranging impacts on facilities, including critical infrastructure, industrial facilities, government buildings, and data centers. The extent of these impacts depends on the type and sophistication of the attack, the facility's level of cybersecurity preparedness, and the criticality of the systems and operations involved. Potential impacts may include:

- **Disruption of Operations:** Cyberattacks can lead to the disruption of facility operations, causing downtime that can be costly and disruptive.
- **Production Delays:** Manufacturing and industrial facilities may experience delays in production processes, affecting supply chains and delivery schedules.
- **Revenue Loss:** Downtime and operational disruptions can result in financial losses due to lost sales, contracts, or customer trust.
- **Remediation Costs:** Facilities must invest in cybersecurity measures and incident response efforts, incurring additional costs.
- **Data Breach:** Facilities that store sensitive data, such as customer information or proprietary research, may suffer data breaches, leading to data loss or theft.
- **Regulatory Penalties:** Compliance violations and regulatory fines may be imposed for failing to protect sensitive data.
- **Physical Safety Risks:** Attacks on critical infrastructure facilities, such as power plants or water treatment plants, can pose physical safety risks to the public and the environment.
- **Industrial Accidents:** Industrial control systems attacks can lead to accidents or malfunctions with serious safety implications.
- **Loss of Control:** Cyberattacks targeting operational technology systems can lead to a loss of control over critical processes, affecting safety and efficiency.

Attacks on facilities with environmental controls can lead to environmental damage, such as chemical spills or pollution which can affect the surrounding ecosystem and wildlife.

Governmental Operations
Cyberattacks on government operations can have wide-ranging impacts on the services provided to citizens. The effects of these attacks can vary depending on factors like the type of attack, the target's level of cybersecurity readiness, and the criticality of the systems involved, and may include:

- **Disruption of Government Services:** Cyberattacks can disrupt government services, leading to delays in processing applications, issuing licenses, or providing essential public services.
- **Website Downtime:** Government websites may become inaccessible, hindering access to information and online services.
- **Financial Costs:** Jurisdictions may incur significant expenses related to incident response, system recovery, and cybersecurity improvements.
- **Loss of Revenue:** Disrupted services can lead to revenue losses, impacting budgets and financial stability.
- **Confidential Data Exposure:** Cyberattacks can result in the exposure of sensitive citizen and employee data, including Social Security numbers, health records, and financial information.
- **Regulatory Penalties:** Non-compliance with data protection regulations can lead to penalties and legal consequences.
- **Election Integrity:** Attacks on election systems can compromise the integrity of elections, eroding trust in the democratic process.
- **Emergency Response:** Cyberattacks on public safety and emergency response systems can hinder responses to disasters or crises.
- **Reputation Damage:** Publicized cyberattacks can damage citizens' trust in government agencies and institutions.
- **Legal and Regulatory Consequences:** Jurisdictions may face legal liability for cybersecurity incidents, leading to lawsuits, fines, and settlements.

Transportation and Electrical Infrastructure
In general, cyberattacks do not have a large impact on transportation infrastructure, with the exception of power loss disrupting signaling and poor conditions.

Cyberattacks can have significant impacts on electrical utilities, leading to disruptions in power supply and potential damage to infrastructure.

Water and Wastewater Utilities
In general, cyberattacks do not have a large impact on water and wastewater infrastructure and operations unless directly struck. However, the cascading impacts from an event such as power loss disrupting pumping and treatment capabilities may cause disruptions to operations.

Medical and Response Facilities
Cyberattacks can significantly impact emergency response infrastructure, creating challenges for first responders and organizations. Cyberattacks can impact emergency response through:

- **Communication Disruptions:** Cyberattacks can disrupt communication networks, affecting the ability of emergency responders to coordinate and communicate effectively.
- **Power Outages:** Cyberattacks can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.

Educational Facilities
Depending on the educational facility capability and location, cyberattacks may necessitate the closure of the facility for the duration of the event. These closures are expected to have additional economic consequences as caregivers may be required to miss or modify work.

- **School Closures:** Cyberattacks can lead to the closure of schools due to hazardous conditions. This can strain caregivers and result in lower work attendance.

Communication Systems
All communication systems within Kansas Region I are at risk to cyberattacks, which can disrupt vital communications system affecting reliability and functionality. Some of the key vulnerabilities include:

- **Power and System Outages:** Cyberattacks often lead to power and system outages, which can affect the operation of communication networks. Without a stable power supply, cell towers, data centers, and other critical components may become non-functional, leading to service interruptions.
- **Network Congestion:** In the event of a cyberattack, communication networks may experience a surge in usage as people attempt to contact emergency services, friends, and family. This increased demand can lead to network congestion, making it difficult for users to connect.

The cost to repair communications networks can vary widely depending on the extent of the damage, the size of the network, and the specific technologies involved. Repair costs may include expenses for labor, equipment replacement or repair, materials, and any additional resources required to restore the network to full functionality. Estimated repair cost from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency may be found in Section 5.11.6.

Environmental and Agricultural Impacts
No impacts are expected.

Jurisdictional Concerns:
As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts.

Across Kansas Region I every county now treats cybersecurity as an essential-services hazard, yet the specific worries shift with each county's size, digital footprint, and budget capacity. Riley, Pottawatomie, Geary, and Lyon Counties anchor the region's population centers and therefore carry the heaviest exposure. Their largest cities (Manhattan, Junction City/Fort Riley, Emporia) run enterprise-scale networks for utilities, 9-1-1 dispatch, and hospital systems. On the upside, these counties maintain full-time IT staff, cyber-insurance policies, and SCADA specialists who can segment water-plant and power-substation controls from public-facing networks, resources rarely available in smaller counties.

Chase, Morris, and Wabaunsee Counties confront a different profile. Their governments operate lean, often with a single part-time network administrator and a handful of cloud subscriptions for tax, court, and payroll software. That simplicity limits attack surface, but it also leaves gaps. Backups may sit on the same network they're meant to protect, multi-factor authentication is harder to enforce when volunteers log in from home, and legacy Windows machines still run courthouse printers. Once infected, smaller counties have fewer spare devices and no in-house digital forensics, so even a low-tier ransomware attack can halt property-tax processing, ambulance dispatch mapping, or rural-water billing for days.

Cascading Impacts
Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with severe weather may include:

- Transportation infrastructure disruption
- Power outages and electrical grid disruption
- Communication system disruption
- Transportation and supply chain disruptions
- Economic impacts and business closures

This consequence analysis lists the potential impacts of a hazard on various elements of community and jurisdictional infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 148: Cybersecurity Incident Consequence Analysis

Subject	Potential Impacts
Impact on the Public	The public is heavily reliant on technology. Any disruption caused by a cyber incident could impair activities such as communications and mobile banking. Although mostly indirect, public health impacts may include loss of access of important medical information and services, personal information, and unwanted sharing of information.
Impact on Responders	If a cybersecurity incident were to directly impact the communications infrastructure relied upon by first responders, it would create severe disruptions in the ability to provide response services. If a cybersecurity event were to affect the 911 operations, response capabilities would be impacted significantly increasing critical response times.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. A cybersecurity event may impact an agency's ability to maintain continuity of operations based on the hazard's potential to impact power or communications infrastructure. Specifically, agencies that rely on electronic backup of critical files are vulnerable to cyber incidents. A cyber incident that disrupts access to technology at both the primary and alternative facilities would be catastrophic.
Delivery of Services	The delivery of goods and services is heavily reliant on technology for the facilitation of transactions. A cyber incident could significantly disrupt the delivery of goods and services for businesses that rely on technology for the delivery of their materials.
Property, Facilities, and Infrastructure	Property and facilities may become unusable as a result of a cyber incident, particularly if their infrastructure is reliant on technology for sustainability. In addition, a significant majority of critical infrastructure systems are tied to technology through virtual operations and supervisory control and data acquisition systems. A cyber incident could disable the majority of systems which control critical infrastructure, as well as traffic control, dispatch, utility, and response systems.
Impact on Environment	Targeted cyber incidents can impact water or wastewater treatment facilities. The disruption of the systems tied to this infrastructure could cause water pollution or contamination. In addition, a cyber incident could impact the environment if a release of a hazardous material was triggered as a cascading effect of the incident.
Economic Conditions	A significant cyber incident could have ramifications on the economy. Society is heavily reliant on electronic-based commerce through mobile banking, automated teller machines, and electronic trading. Any disruption to daily activities by a cyber incident could effectively halt the ability to conduct transactions electronically.
Public Confidence in Governance	In the case of a cyber incident in which significant amounts of data is stolen, the government's inability to protect confidential personal data would impact confidence. Such an incident would also subsequently cause pause regarding the security of using electronic systems for government services.

5.17.7 Future Development

A continued and growing reliance on the internet, online software and applications, and electronic systems by all participating jurisdictions will see this hazard be a continuing, and potentially growing concern.

5.17.8 Hazard Planning Significance

Utilizing the above detailed formula for calculating the hazard planning significance for human caused and technological hazards, the following table details the rating of each criterion along with a composite rating:

Table 149: Cyber Security Incident Planning Significance

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Chase County	4	3	3	3	3.5	High
Geary County	4	3	3	3	3.5	High
Lyon County	4	3	3	3	3.5	High
Morris County	4	3	3	3	3.5	High
Pottawatomie County	4	3	3	3	3.5	High
Riley County	4	3	3	3	3.5	High
Wabaunsee County	4	3	3	3	3.5	High

5.18 Hazardous Material Incident

5.18.1 Hazard Description



Hazardous materials are any substances that pose a risk to health, life, or property when released or improperly handled. Generally, the term refers to materials with hazardous chemical or physical properties, though sometimes biological agents can fall under this category. The basic types of hazardous materials may be categorized according to more than six different systems; but the categories of U.S. Emergency Planning and Community Right-to-Know Act (42 U.S.C. 11002) provide a general guide to hazardous materials:

- **Extremely Hazardous Substances:** Materials that have acutely toxic chemical or physical properties and may cause irreversible damage or death to people or harm the environment if released or used outside their intended use.
- **Hazardous Substances:** Materials posing a threat to human health and/or the environment, or any substance designated by the EPA to be reported if a designated quantity of the substance is spilled into waterways, aquifers, or water supplies or is otherwise released into the environment.

5.18.2 – Location and Extent

All of Kansas Region I is vulnerable to hazardous materials incidents. Hazardous materials incidents are generally classified as:

- **Fixed Facility Incidents:** Commercial Facilities and Superfund Sites
- **Transportation Incidents:** Highway, Railway, Pipeline, Air, and Water

Tier II facilities, also known as Tier II Reporting facilities, refer to certain types of industrial or commercial establishments that are required to report information about the hazardous chemicals they store or use. This reporting is mandated under the Emergency Planning and Community Right-to-Know Act under Section 312. Key factors in Tier II reporting include:

- **Hazardous Chemicals:** Tier II facilities are those that store or use hazardous chemicals in quantities that meet or exceed specific thresholds established by EPCRA. Hazardous chemicals can include substances such as flammable liquids, toxic gases, and corrosive materials.
- **Reporting Thresholds:** Facilities must report if they have a quantity of any hazardous chemical at the facility that equals or exceeds established thresholds. These thresholds can vary depending on the specific chemical and are typically set in terms of pounds (or a lower threshold for Extremely Hazardous Substances).
- **Reporting Frequency:** Tier II reports must be submitted annually to the State Emergency Response Commission, the Local Emergency Planning Committee, and local fire department.
- **Information Required:** Tier II reports must include detailed information about the hazardous chemicals stored or used at the facility, including the chemical name, location on the site, quantities, and specific health and physical hazards.
- **Community Right-to-Know:** In addition to assisting emergency responders, Tier II reporting also serves the "Community Right-to-Know" aspect of EPCRA, allowing the public to access information about hazardous chemicals in their communities. This information is typically made available through public databases.
- **Enforcement:** Non-compliance with Tier II reporting requirements can result in penalties and fines. Facilities are responsible for ensuring accurate and timely reporting.

Transportation-related hazardous materials incidents can encompass a wide range of scenarios involving the transportation of hazardous materials, including chemicals, flammable substances, radioactive materials, and other

dangerous goods. These incidents can occur during the movement of these materials by road, rail, or air. These transportation-related hazardous materials incidents can include:

- **Chemical Spills on Highways:** Accidents involving trucks carrying hazardous chemicals can result in spills on highways. This can lead to the release of toxic, flammable, or corrosive substances, posing risks to people, the environment, and emergency responders.
- **Train Derailments:** Train derailments can result in the release of hazardous materials from tanker cars. These incidents can occur on both freight and passenger rail lines and may involve chemicals, fuels, or other hazardous substances.
- **Aircraft Hazmat Incidents:** Cargo planes and commercial aircraft can carry hazardous materials as cargo. Incidents may involve leaks, fires, or other issues related to hazardous materials on board.
- **Pipeline Leaks:** Pipelines transport hazardous liquids and gases over long distances. Leaks or ruptures in pipelines can result in the release of hazardous materials into the environment.
- **Radiological Transport Incidents:** The transport of radioactive materials, including medical isotopes and nuclear fuel, carries the risk of accidents that can result in the release of radioactive substances. These incidents can have serious health and environmental consequences.
- **Chemical Fires in Transit:** Fires in transit vehicles carrying hazardous chemicals can be particularly changing to control. The fire may cause chemical reactions, leading to toxic smoke or explosions.
- **Cargo Container Incidents:** Shipping containers transported by truck or rail can contain hazardous materials. Incidents involving these containers may include leaks, fires, or chemical reactions.
- **Intermodal Transport Incidents:** When goods are transferred between different modes of transportation (e.g., ship to truck), there is the potential for mishandling or spills during these transfers.

Counties with multiple chemical facilities experience a greater risk of a chemical incident than other locations. However, almost every community in Kansas Region I has at least one fixed facility that stores, produces, or utilizes hazardous material. Hazardous materials shipments move through Kansas Region I annually. These shipments can occur at any time, day or night, and by means of road, rail, or air, and often through areas with urbanized, high volume traffic routes.

Discussions with the MPC and a review of all available data indicated a hazardous materials event is a community concern for all participating jurisdictions. The following provides a narrative of the level of jurisdictional concern:

- **Chase County:** As hazardous materials are utilized for a wide variety of activities throughout all jurisdictions, an accidental release is a concern for all jurisdictions.
- **Geary County:** As hazardous materials are utilized for a wide variety of activities throughout all jurisdictions, an accidental release is a concern for all jurisdictions.
- **Lyon County:** As hazardous materials are utilized for a wide variety of activities throughout all jurisdictions, an accidental release is a concern for all jurisdictions.
- **Morris County:** As hazardous materials are utilized for a wide variety of activities throughout all jurisdictions, an accidental release is a concern for all jurisdictions.
- **Pottawatomie County:** As hazardous materials are utilized for a wide variety of activities throughout all jurisdictions, an accidental release is a concern for all jurisdictions.
- **Riley County:** As hazardous materials are utilized for a wide variety of activities throughout all jurisdictions, an accidental release is a concern for all jurisdictions.
- **Wabaunsee County:** As hazardous materials are utilized for a wide variety of activities throughout all jurisdictions, an accidental release is a concern for all jurisdictions.

5.18.3 Previous Occurrences

The United States Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) is a federal agency responsible for regulating the safe and secure transportation of hazardous materials by all modes of transportation, including pipelines, trucks, trains, and aircraft. PHMSA's primary mission is to protect people and the

environment from the risks associated with the transportation of hazardous materials. PHMSA plays a crucial role in safeguarding public safety, protecting the environment, and ensuring the integrity of the nation's hazmat transportation infrastructure. Its work encompasses a wide range of hazardous materials, including chemicals, radioactive materials, explosives, and more. The agency collaborates with industry stakeholders, state and local governments, and other federal agencies to achieve its safety and security objectives.

For the five-year period from 2018 to 2023, PHMSA has reported over 2,300 hazardous materials incidents in Kansas. Of these incidents, no events in Kansas Region I resulted in a serious evacuation, a major artery closure, fatalities, or injuries.

5.18.4 Probability of Future Events

Data from PHSMA indicates that the probability of a hazardous material incident during any given year is 100%. However, data indicates that the large majority of these incidents will be small in scale and cause no evacuation, injuries, or deaths,

5.18.5 Projected Changes in Location, Intensity, Frequency, and Duration

Projecting specific changes in the location, intensity, and frequency of hazardous materials events involves numerous variables, including future industrial activities, changes in transportation systems, and more stringent regulatory measures. The location of hazardous materials events is often influenced by urbanization and industrialization. The vulnerability of communities to hazardous materials incidents may change based on demographic shifts, land-use changes, and socioeconomic factors. Population density and proximity to industrial sites influence the potential impact of such incidents.

The continued transportation of hazardous materials by road, rail, and air poses inherent risks. Changes in transportation patterns, such as increased volumes or altered routes, can impact the potential for accidents and spills. However, the adoption of new technological solutions, such as sensor technologies, remote monitoring, and safety measures, can contribute to the mitigation of hazardous materials risks.

Changes in climate patterns, such as extreme weather events, floods, or wildfires, can influence the frequency and intensity of hazardous materials incidents. Events like floods or wildfires may impact facilities handling hazardous materials.

As previously noted, Kansas Region I facilities have seen no major changes in the past five years, with only modest repairs and upgrades being conducted and no major rehabilitation or construction projects completed. As such, the risk to jurisdictional facilities has remained static since the completion of the 2019 HMP.

5.18.6 Vulnerability and Impact

FEMA NRI

The FEMA NRI does not provide a rating for the hazardous materials hazard.

Population

Kansas Region I's first line of defense in protecting public health, safety, and welfare in a hazardous materials event are trained local responders and the Office of the State Fire Marshal. The Office of the State Fire Marshal Hazardous Materials Division was developed in 1999 to enhance the safety of Kansans by making trained, equipped hazardous materials teams available throughout the state. These teams support local first responders in hazardous materials incidents, accidents, weapons of mass destruction and acts of terrorism.

Hazardous materials teams exist through contracts between individual local fire departments and the Office of the State Fire Marshal. The fire departments agree to provide team members and regional response outside their local jurisdiction and the Office of the State Fire Marshal provides training and supplements equipment at no cost to the department. The ten regional response teams, consisting of nationally accredited hazardous materials technicians, are fully equipped to enter the area immediately surrounding the hazardous material in order to monitor the environment and mitigate the incident. The regional response teams comprise a network and are able to support each other with personnel and or equipment when needed.

These teams can respond to most areas in Kansas within an hour or less in order to address hazardous materials incidents. The regional response teams are located in the following areas:

- Coffeyville
- Colby
- Emporia
- Ford County
- Manhattan
- Overland Park
- Salina
- Sedgwick County
- Topeka

A hazardous materials release can have serious and immediate impacts on human health and safety, as well as long-term effects depending on the nature of the hazardous materials involved, the release's magnitude, and the proximity of individuals to the incident. Acute health effects from a hazardous materials release can include:

- **Chemical Exposure:** Depending on the type of hazardous material, exposure can lead to symptoms such as respiratory distress, skin burns, eye irritation, nausea, vomiting, and headaches.
- **Toxicity:** Exposure to highly toxic substances can cause severe poisoning, organ damage, and even death.
- **Asphyxiation:** Some hazardous materials, like certain gases, can displace oxygen and lead to asphyxiation when inhaled in high concentrations.
- **Physical Injuries:** Explosive releases or fires involving hazardous materials can cause physical injuries such as burns, cuts, and blunt force trauma.
- **Psychological Trauma:** Witnessing or being affected by a hazardous materials incident can lead to psychological trauma, including post-traumatic stress disorder (PTSD) and anxiety.

Long-term health effects from a hazardous materials release can include:

- **Chronic Illnesses:** Exposure to hazardous materials may lead to chronic health conditions, including cancer, respiratory diseases, neurological disorders, and reproductive problems.
- **Delayed Effects:** Some hazardous substances have delayed health effects, with symptoms appearing days, months, or even years after exposure.

Additionally, a hazardous material release can result in impacted populations requiring:

- **Evacuation:** To protect public safety, authorities may order evacuations of affected areas, displacing residents from their homes.
- **Temporary Shelter:** Evacuated individuals may require temporary shelter, food, and medical care.

Buildings and Structures

The direct risk or vulnerability to property and facilities from a hazardous materials incident is generally limited. Impacts include restricting access to a facility or potential damage to the facility from corrosive agents. Direct risk and vulnerability to actual structures is limited due to the characteristics of a hazardous materials incident.

Critical facilities and infrastructure may suffer secondary impacts from a hazardous materials incident. Access may be restricted due to closures, causing employee absenteeism which could indirectly impact the ability for a critical facility to operate. Without necessary operators, critical infrastructure may be susceptible to indirect failure.

Governmental Operations
A hazardous materials incident can have wide-ranging impacts on local operations. These impacts can disrupt government operations, strain resources, and pose challenges to maintaining public order. Some of the impacts of a hazardous materials release on operations may include:

- **Emergency Response and Healthcare:** Local agencies must rapidly mobilize emergency response teams, medical personnel, and healthcare facilities to address a release. The surge in demand for medical resources can strain healthcare systems, including hospitals, clinics, and emergency services.
- **Resource Allocation:** Local agencies may need to allocate resources to respond to the incident. This includes personnel, equipment, and facilities.
- **Transportation and Supply Chain Disruption:** Transportation infrastructure closures can affect the movement of essential goods and services, including medical supplies, food, and fuel.
- **Economic Impact:** The economic consequences of a hazardous materials incident can be severe. Business closures, reduced consumer confidence, and trade disruptions can lead to financial losses, unemployment, and economic instability.
- **Public Services:** Essential public services, such as law enforcement, fire services, and sanitation, may be stretched thin due to the demands of responding to an incident.
- **Agency Coordination:** Coordination and communication among various agencies and with federal authorities will be tested during a hazardous materials incident. Local emergency management agencies will activate emergency response plans and incident command structures.

Transportation and Electrical Infrastructure
Hazardous material events can result in the temporary, or long-term, closure of both transportation and electrical systems.

Water and Wastewater Utilities
In general, hazardous materials events do not have a large impact on water and wastewater infrastructure and operations unless the release occurs directly at the facility, or the release enters the facility lines or systems.

Medical and Response Facilities
A hazardous materials release, depending on the size and scope, could overwhelm healthcare systems. Additionally, the nature of the response could overwhelm response agencies.

Educational Facilities
Depending on the educational facility capability and location, a hazardous materials release may necessitate the closure of the facility for the duration of the event. These closures are expected to have additional economic consequences as caregivers may be required to miss or modify work.

- **School Closures:** Hazardous materials events can lead to the closure of schools due to hazardous conditions. This can strain caregivers and result in lower work attendance.

Communication Systems
In general, communications systems would not be vulnerable to a hazardous materials event unless it required the shutdown of a communication node at the release location.

Environmental and Agricultural Impacts
A hazardous materials release can have significant and lasting impacts on the environment, depending on the type and quantity of hazardous materials involved, the location of the release, and the effectiveness of response and cleanup efforts. Environmental impacts can range from immediate and localized effects to long-term ecological damage and may include:

- **Soil Contamination:** Hazardous materials can seep into the soil, contaminating it with toxic substances. This can affect soil quality and fertility.
- **Agricultural Damage:** Contaminated soil may harm crops, leading to reduced agricultural yields or the need to abandon affected fields.
- **Surface Water Contamination:** Hazardous materials can enter rivers, lakes, and streams, leading to water pollution. This can harm aquatic ecosystems, fish, and wildlife.
- **Groundwater Contamination:** Contaminants can infiltrate underground aquifers, potentially affecting drinking water supplies and requiring costly remediation efforts.
- **Habitat Destruction:** Contamination can harm natural habitats, disrupt ecosystems, and threaten the survival of plant and animal species.
- **Bioaccumulation:** Toxic substances can accumulate in the food chain, leading to health issues for wildlife and potentially impacting humans who consume contaminated organisms.

Some hazardous materials are persistent and can remain in the environment for extended periods, causing ongoing harm. Environmental recovery from hazardous materials releases can be slow and changing, requiring extensive remediation efforts.

Jurisdictional Concerns:
As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts.

Hazardous-materials concerns are woven into the daily logistics of Kansas Region I, yet the nature of that risk shifts from county to county. At a regional scale, two continuous corridors dominate exposure: I-70/US-40 and the Union Pacific–BNSF rail main line running east-west through Geary, Riley, and Lyon, plus the Kansas Turnpike crossing Chase and Morris. These routes move bulk commodities every day, so even counties with few stationary chemical plants face transportation-related spill potential. Fixed-site risks, by contrast, cluster around the four more urbanized counties:

- **Riley–Pottawatomie:** Manhattan's research laboratories, light-industrial parks, and the water-treatment complex at Tuttle Creek all store reportable quantities of corrosives and oxidizers.
- **Geary:** Fort Riley's training ranges stock military fuels and munitions, while Junction City hosts bulk propane yards tied to the farm-supply market.
- **Lyon:** Emporia's food-processing plants, rail yard, and a regional fuel-distribution terminal give the county the highest aggregate Tier II inventory in the planning area.

These larger jurisdictions enjoy clear strengths, with full-time fire departments with trained haz-mat technicians, mutual-aid agreements spanning the I-70 corridor, and ready access to specialized equipment such as Level-A suits and mobile decontamination trailers. Their greatest challenge is scale, and one derailment or tank-farm fire could trigger mass evacuations that strain shelter capacity and arterial traffic control.

In the more rural counties of Chase, Morris, and Wabaunsee, and the outlying townships of Lyon, hazardous-materials exposure is dominated by what moves rather than what sits still. Two-lane highways carry nurse tanks of anhydrous ammonia each spring, while unit trains of ethanol and crude oil roll through. Most fixed-site storage is agricultural, grain-elevator fumigants, pesticide sheds, and small community propane banks. Volunteer fire departments handle initial response, and mutual aid is reliable but distant, leading to longer times under shelter-in-place orders if a release occurs. On the upside, lower population density limits the number of people in the immediate impact zone, and many small towns are surrounded by open pasture that provides natural buffer space.

Cascading Impacts
Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with severe weather may include:

- Transportation infrastructure disruption
- Power outages and electrical grid disruption
- Transportation and supply chain disruptions
- Economic impacts and business closures

Consequence Analysis
This consequence analysis lists the potential impacts of a hazard on various elements of community and jurisdictional infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 150: Hazardous Materials Incident Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Cities along major travel routes are the most vulnerable (with an emphasis on any particularly vulnerable groups, such as infants and young children in day-care centers, children in schools, the elderly in residential facilities, hospital patients, etc.). Varying materials will have different effects on the population as well as environmental effects which will dilute or increase potency. Protective measures will need to be taken particularly for vulnerable communities.
Impact on Responders	Hazardous material incidents can create a dangerous environment and significant challenges for first responders. First responders may have to manage the evacuation of people from the area impacted by an incident, as well as direct traffic, close roads, operate shelters, and take care of the injured and sick. First responders must control their own exposure to the incident and ensure the correct PPE is utilized. Equipment may also be damaged or destroyed due to the impact of the incident, which may lead to a decrease in response capabilities.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. A hazardous materials incident may impact an agency's ability to maintain operations based on the incident's potential to cause contamination or facility destruction.
Delivery of Services	The ability to deliver services can be impacted locally, regionally, or statewide depending on the characteristics of the incident. To reduce the public's potential exposure to dangerous materials, roadway and bridge closures may be required, as well as transit service disruptions. Businesses and places of commerce may completely shut down due to chemical incidents, which leads to the disruption of goods and services.
Property, Facilities, and Infrastructure	Transportation, governmental operations, and infrastructure facilities may be disrupted during a significant incident. Roads and bridges can be completely obstructed and require cleanup. Incidents can impact access to homes and critical entities such as hospitals, schools, and supermarkets, as well as other critical facilities. Safe access to homes, vehicles, structures, and resources may adversely affect response activities. Power loss can lead to disruption of critical infrastructure and technology.
Impact on Environment	Agriculture crops and livestock are extremely susceptible to the adverse effects of biological incidents that may cause contamination of a large area of land livestock. biological incidents may impact the environment long-term by disturbing or killing wildlife and adversely affecting nature preserves.
Economic Conditions	Hazardous materials incidents pose a fiscal impact on the local governments. Local, county, and state resources may be required during a large incident therefore reducing their availability for future events. Additionally, private businesses may not be able to maintain operations during or after an incident if they are impacted, which would impact the economy.

Table 150: Hazardous Materials Incident Consequence Analysis

Subject	Potential Impacts
Public Confidence in Governance	The public's confidence in governance is affected by immediate local and state response through direct and effective actions. Efficiency in response and recovery operations is critical in keeping public confidence high.

5.18.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

5.18.8 Hazard Planning Significance

Utilizing the above detailed formula for calculating the hazard planning significance for human caused and technological hazards, the following table details the rating of each criterion along with a composite rating:

Table 151: Hazardous Materials Incident Planning Significance

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Chase County	1.5	1.5	4.0	1.0	1.9	Low
Geary County	1.5	1.5	4.0	1.0	1.9	Low
Lyon County	1.5	1.5	4.0	1.0	1.9	Low
Morris County	1.5	1.5	4.0	1.0	1.9	Low
Pottawatomie County	1.5	1.5	4.0	1.0	1.9	Low
Riley County	1.5	1.5	4.0	1.0	1.9	Low
Wabaunsee County	1.5	1.5	4.0	1.0	1.9	Low

5.19 Infrastructure Failure

5.19.1 Hazard Description



Infrastructure failure refers to the malfunction, breakdown, or collapse of critical infrastructure systems or components that are essential for the functioning of the region. These failures can disrupt essential services, impact public safety, and lead to economic losses. There are many potential causes of infrastructure failure, including:

- **Aging Infrastructure:** Many infrastructure systems, such as bridges, roads, and water pipelines, have exceeded their designed lifespan. Over time, the materials degrade, and the risk of failure increases.
- **Earthquakes:** Seismic events can damage or destroy buildings, bridges, dams, and utility systems.
- **Floods:** Flooding can damage electrical systems, disrupt transportation, and contaminate water supplies.
- **Severe Weather:** High winds and heavy rainfall can damage infrastructure.
- **Extreme Heat:** Prolonged periods of extreme heat can cause roads to buckle, power lines to sag, and strain electrical grids.
- **Freezing Temperatures:** Cold weather can lead to frozen water pipes, which can burst and disrupt the water supply.
- **Design Flaws and Poor Maintenance:** Inadequate design, construction, or maintenance practices can result in structural weaknesses or deteriorating infrastructure.
- **Corrosion and Erosion:** Infrastructure components, particularly those involving metals, can deteriorate due to corrosion over time. Erosion of natural landscapes can damage infrastructure.
- **Material Failures:** Inadequate materials or the use of substandard materials during construction can lead to premature infrastructure failure.
- **Overloading and Overuse:** Bridges, roads, and other structures can fail if they are subjected to loads beyond their designed capacity. Water and wastewater systems can fail if they are overwhelmed by excessive demand.
- **Cyberattacks:** Critical infrastructure systems, such as power grids, water treatment plants, and transportation systems, can be vulnerable to cyberattacks, which can disrupt operations and compromise safety.
- **Terrorism and Sabotage:** Deliberate acts of terrorism or sabotage can target critical infrastructure, leading to failures and disruptions.

Infrastructure failures can have significant consequences, including economic losses, public safety risks, and disruptions to daily life. Preventing such failures and ensuring the resilience of critical infrastructure often require proactive measures such as regular maintenance, improvements in design and construction practices, disaster preparedness, and investments in modernization and upgrades.

5.19.2 – Location and Extent

Details concerning Kansas Region I's infrastructure were sourced from the 2020 Report Card for Kansas's Infrastructure from the American Society of Civil Engineers (ASCE). The report provides information on infrastructure components and provides a letter grade to indicate condition. Grades are issued based on the following scale:

Table 152: ASCE Infrastructure Grade System

Grade	Description
A: Exceptional	The infrastructure in the system or network is generally in excellent condition, typically new or recently rehabilitated, and meets capacity needs for the future. A few elements show signs of general deterioration that require attention. Facilities meet modern standards for functionality and are resilient to withstand most disasters and severe weather events.

Table 152: ASCE Infrastructure Grade System

Grade	Description
B: Adequate for Now	The infrastructure in the system or network is in good to excellent condition; some elements show signs of general deterioration that require attention. A few elements exhibit significant deficiencies. Safe and reliable with minimal capacity issues and minimal risk.
C: Mediocre, Requires Attention	The infrastructure in the system or network is in fair to good condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, with increasing vulnerability to risk.
D: Poor, At Risk	The infrastructure is in poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of significant concern with strong risk of failure.
F: Failing/Critical, Unfit for Purpose	The infrastructure in the system is in unacceptable condition with widespread advanced signs of deterioration. Many of the components of the system exhibit signs of imminent failure.

Source: ASCE

The following table indicates the grades by the State of Kansas received for infrastructure components:

Table 153: ASCE Kansas Infrastructure Grades

Infrastructure Component	Grade
Aviation	C-
Bridges	C
Dams	C-
Drinking Water	C
Energy	C
Levees	C
Rail	C
Roads	C-
Stormwater	C-
Overall Grade	**C**

Source: ASCE

The Aviation Division of the Kansas Department of Transportation supports airfield pavement management programs and calculates pavement condition for all airports within its system apart from Dwight D. Eisenhower National airport in Wichita, which is required to perform the program as a small hub airport. The most recent state-wide pavement management report indicated pavement on 79 of 80 airports examined as having a condition of fair or less than fair on 51% of the pavement area, and a condition of satisfactory or good on the remaining 49% of the pavement. Runway pavement condition, of critical importance to operations, is reported as 50% of the runways available fall below a fair condition.

Kansas ranks fifth in the nation for total number of bridges with approximately 5,000 state-owned, 19,500 locally owned, and 400 Kansas Turnpike Authority owned structures, making up the 25,001 Kansas bridge inventory. The majority of local bridges are owned by counties. The average age of a Kansas bridge is 48 years, with over 20% of the bridges exceeding the modern 75-year design life
Railroads in Kansas consist of 4,700 miles of track which transport approximately 340,000,000 tons of freight per year. While the 2,800 miles of track owned by the major rail companies is typically well maintained, short line tracks that carry lower traffic volumes may not have adequate funding in place for necessary maintenance and upgrades.

Kansas has over 140,000 miles of public roadways. The two agencies responsible for the major highways and interstates are the Kansas Department of Transportation and the Kansas Turnpike Authority, who maintain 10,300 miles (7.4%)

and 236 miles (less than 0.2%) of the state's total public road miles, The remainder of road network is maintained by cities and counties.

In general, electricity in Kansas Region I is provided by either investor-owned utilities or rural electric cooperatives (RECs). RECs are not-for-profit, member-owned electric utilities. Kansas RECs are governed by a board of trustees elected from the membership. Most Kansas RECs were set up under the Kansas Electric Cooperative Act, which, together with the federal Rural Electrification Act of 1934, made electric power available to rural customers. Information on regional electrical suppliers may be found online.

Discussions with the MPC and a review of all available data indicated a utility failure is a community concern for all participating jurisdictions. The following provides a narrative of the level of jurisdictional concern:

- **Chase County:** Infrastructure failure identified as a community concern for all participating jurisdictions.
- **Geary County:** Infrastructure failure identified as a community concern for all participating jurisdictions.
- **Lyon County:** Infrastructure failure identified as a community concern for all participating jurisdictions.
- **Morris County:** Infrastructure failure identified as a community concern for all participating jurisdictions.
- **Pottawatomie County:** Infrastructure failure identified as a community concern for all participating jurisdictions.
- **Riley County:** Infrastructure failure identified as a community concern for all participating jurisdictions.
- **Wabaunsee County:** Infrastructure failure identified as a community concern for all participating jurisdictions.

5.19.3 Previous Occurrences

Small scale infrastructure failures occur as a secondary impact from a natural disaster, such as a temporary power outage due to a thunderstorm or a communications outage from downed lines following a severe storm. Kansas Region I experiences these minor disruptions routinely and manages them through coordination across agencies and with the private sector. Specifically, when utility and/or infrastructure failure does occur, utility providers generally respond quickly to restore service. However, depending on the cause of the utility disruption, events of prolonged outages do occur.

5.19.4 Probability of Future Events

The probability of a utility failure can vary depending on a range of factors, including the type of utility, the condition of the infrastructure, weather conditions, and maintenance practices. Utility providers typically have systems and protocols in place to minimize the risk of utility failures, and they work to respond quickly to any outages or disruptions. The probability of a failure may also vary seasonally or during extreme weather events.

5.19.5 Projected Changes in Location, Intensity, Frequency, and Duration

Any increase in severe weather events can cause a commensurate increase in infrastructure failures. It is expected that an increased frequency of severe weather and/or extreme temperatures will impact infrastructure in the following ways:

- **Heatwaves and Electrical Grids:** Rising temperatures can lead to more frequent and prolonged heatwaves. High temperatures can strain electrical grids, leading to increased demand for electricity for cooling and potentially causing power outages.
- **Increased Storm Intensity and Utility Damage:** Stronger storms can damage power lines, transformers, and other electrical infrastructure, resulting in widespread electricity outages.
- **Flooding and Water Utilities:** More frequent and severe flooding events can impact water supply and wastewater treatment facilities, causing contamination and disruptions in water services.
- **Wildfires and Power Lines:** In regions prone to wildfires, power lines and electrical equipment are at risk of igniting fires, leading to power outages and infrastructure damage.
- **Extreme Weather and Gas Pipelines:** Extreme weather events, including extreme cold or heat, can impact natural gas pipelines. Cold temperatures can freeze pipelines, while heatwaves can affect gas compressors and transmission systems.

As previously noted, Kansas Region I facilities have seen no major changes in the past five years, with only modest repairs and upgrades being conducted and no major rehabilitation or construction projects completed. As such, the risk to jurisdictional facilities has remained static since the completion of the 2020 HMP.

5.19.6 Vulnerability and Impact

FEMA NRI

The FEMA NRI does not provide a rating for the utility failure hazard.

Population

Infrastructure failure can have significant and immediate impacts on people. The specific impacts can vary depending on the type of utility that fails (electricity, water, gas) and the duration of the outage, and may include:

- **Disruption of Daily Life:** Utility failures can disrupt daily routines, including cooking, bathing, heating or cooling homes, and using electronic devices. Lack of electricity can also disrupt businesses, schools, and healthcare facilities.
- **Safety Concerns:** Utility failures, particularly in electrical and gas systems, can pose safety risks such as fires, electrical hazards, and gas leaks. Lack of electricity can result in the loss of lighting, increasing the risk of accidents and falls.
- **Health Implications:** Medical equipment that relies on electricity can become non-functional, posing risks to individuals with medical conditions. Lack of access to clean water can impact hygiene and health. Utility failures in healthcare facilities can impact the ability to provide medical care and support for patients. Prolonged utility failures, especially during extreme weather events, can lead to stress, anxiety, and discomfort. Vulnerable populations, such as the elderly, children, and those with special needs, may be particularly affected.

Buildings and Structures

Utility failures can have significant impacts on critical infrastructure and facilities. The specific impacts can vary depending on the type of utility affected, the duration of the outage, and the criticality of the infrastructure, and may include:

- **Disruption of Operations:** Utility failures can disrupt the normal operations of critical facilities, including hospitals, emergency response centers, data centers, and transportation hubs.
- **Compromised Safety and Security:** Loss of electricity can impact security systems, including surveillance cameras and alarm systems. Critical facilities may rely on backup power sources to maintain safety and security.
- **Loss of Communication:** Utility failures can disrupt communication systems, affecting the ability of critical facilities to coordinate responses and communicate with staff and the public.
- **Healthcare Impacts:** Hospitals and healthcare facilities may experience disruptions in patient care due to power outages, affecting the health and safety of patients. Medical equipment may require backup power to continue functioning.
- **Water and Sanitation Services:** Water utility failures can disrupt water supply to critical facilities, impacting sanitation services, firefighting capabilities, and patient care. Wastewater treatment plants may be affected, posing environmental and health risks.
- **Transportation Disruptions:** Transportation infrastructure, including airports, train stations, and traffic management systems, may be impacted by utility failures, leading to travel disruptions.
- **Safety Hazards:** Gas utility failures can result in gas leaks, posing fire and explosion hazards to critical infrastructure and nearby areas. Electrical failures may lead to equipment malfunctions, increasing the risk of accidents and safety incidents.

Governmental Operations

Infrastructure failure can have significant impacts on governmental operations, affecting the ability to provide essential services, respond to emergencies, and maintain critical infrastructure. The specific impacts can vary depending on the type of utility affected and the duration of the outage, and may include:

- **Disruption of Emergency Services:** Failures can disrupt the operations of emergency response agencies, including police, fire departments, and medical services. This can impede their ability to respond to accidents, fires, and medical emergencies.
- **Communication Challenges:** Failures, particularly in telecommunications and internet infrastructure, can hinder communication between government agencies, first responders, and the public. This can impact coordination during emergencies.
- **Data Loss and Information Technology Disruptions:** Electrical outages and information technology infrastructure failures can result in data loss and disrupt government operations that rely on digital records and systems.
- **Transportation Disruptions:** Transportation infrastructure, such as traffic management systems and public transit, may be impacted by utility failures, leading to travel disruptions and challenges in managing traffic flow.
- **Public Health Services:** Healthcare facilities and public health agencies may experience disruptions in patient care, vaccination programs, and disease surveillance during utility failures.
- **Safety Risks:** Failures can pose safety risks to government employees and the public, particularly when they result in electrical hazards, gas leaks, or water contamination.
- **Economic Consequences:** The economic impact of infrastructure failures can extend to governmental operations, affecting budgets and resources available for public programs and services.
- **Disaster Response and Recovery:** Failures may occur during natural disasters, adding complexity to response and recovery efforts. Coordination among agencies becomes crucial.

Transportation and Electrical Infrastructure
Utility failures can have significant impacts on transportation and electrical infrastructure and facilities. The specific impacts can vary depending on the type of utility affected, the duration of the outage, and the criticality of the infrastructure, and may include:

- **Disruption of Operations:** Utility failures can disrupt the normal operations of critical facilities, including hospitals, emergency response centers, data centers, and transportation hubs.
- **Compromised Safety and Security:** Loss of electricity can impact security systems, including surveillance cameras and alarm systems. Critical facilities may rely on backup power sources to maintain safety and security.
- **Loss of Communication:** Utility failures can disrupt communication systems, affecting the ability of critical facilities to coordinate responses and communicate with staff and the public.
- **Transportation Disruptions:** Transportation infrastructure, including airports, train stations, and traffic management systems, may be impacted by utility failures, leading to travel disruptions.
- **Safety Hazards:** Gas utility failures can result in gas leaks, posing fire and explosion hazards to critical infrastructure and nearby areas. Electrical failures may lead to equipment malfunctions, increasing the risk of accidents and safety incidents.

Water and Wastewater Utilities
Utility failures can have significant impacts on water and wastewater systems. The specific impacts can vary depending on the type of utility affected, the duration of the outage, and the criticality of the infrastructure, and may include:

- **Disruption of Operations:** Utility failures can disrupt the normal operations of critical facilities, including hospitals, emergency response centers, data centers, and transportation hubs.
- **Compromised Safety and Security:** Loss of electricity can impact security systems, including surveillance cameras and alarm systems. Critical facilities may rely on backup power sources to maintain safety and security.
- **Water and Sanitation Services:** Water utility failures can disrupt water supply to critical facilities, impacting sanitation services, firefighting capabilities, and patient care. Wastewater treatment plants may be affected, posing environmental and health risks.

- **Safety Hazards:** Gas utility failures can result in gas leaks, posing fire and explosion hazards to critical infrastructure and nearby areas. Electrical failures may lead to equipment malfunctions, increasing the risk of accidents and safety incidents.

Medical and Response Facilities

Utility failures can have significant impacts on medical and response facilities. The specific impacts can vary depending on the type of utility affected, the duration of the outage, and the criticality of the infrastructure, and may include:

- **Disruption of Operations:** Utility failures can disrupt the normal operations of critical facilities, including hospitals, emergency response centers, data centers, and transportation hubs.
- **Compromised Safety and Security:** Loss of electricity can impact security systems, including surveillance cameras and alarm systems. Critical facilities may rely on backup power sources to maintain safety and security.
- **Loss of Communication:** Utility failures can disrupt communication systems, affecting the ability of critical facilities to coordinate responses and communicate with staff and the public.
- **Healthcare Impacts:** Hospitals and healthcare facilities may experience disruptions in patient care due to power outages, affecting the health and safety of patients. Medical equipment may require backup power to continue functioning.
- **Safety Hazards:** Gas utility failures can result in gas leaks, posing fire and explosion hazards to critical infrastructure and nearby areas. Electrical failures may lead to equipment malfunctions, increasing the risk of accidents and safety incidents.

Educational Facilities

Depending on the educational facility capability and location, a utility failure may necessitate the closure of the facility for the duration of the event. These closures are expected to have additional economic consequences as caregivers may be required to miss or modify work.

- **School Closures:** Utility failure events can lead to the closure of schools due to hazardous conditions. This can strain caregivers and result in lower work attendance.

Communication Systems

Utility failures can have significant impacts on communication systems. The specific impacts can vary depending on the type of utility affected, the duration of the outage, and the criticality of the infrastructure, and may include:

- **Loss of Communication:** Utility failures can disrupt communication systems, affecting the ability of critical facilities to coordinate responses and communicate with staff and the public.

Environmental and Agricultural Impacts

In general, a utility failure would have little effect on the environment. However, specific circumstances of the failure, such as a chemical leak, a downed power line in a fire prone area, or loss of wastewater containment could pose a concern. The impacts from those type of events can range from relatively minor and localized effects to more significant and widespread environmental consequences, and may include:

- **Wildfires:** Electrical utility failures, such as downed power lines or equipment malfunctions, can trigger wildfires. Wildfires can have devastating effects on natural landscapes and ecosystems.
- **Water Pollution:** Water utility failures, such as sewage system overflows or treatment plant malfunctions, can lead to the release of untreated wastewater into rivers, lakes, or oceans. This can result in water pollution, harm aquatic ecosystems, and affect drinking water quality downstream.
- **Chemical Spills:** Utility failures, particularly in industrial settings, can result in chemical spills and releases. These spills can harm the environment, contaminate soil and water, and endanger wildlife.

Jurisdictional Concerns:
As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts.

Across Kansas Region I every county depends on a web of roads, bridges, power lines, water plants, and digital networks that is aging in place even as demands rise. Yet the shape of infrastructure failure varies by county. Riley, Pottawatomie, Geary, and Lyon anchor the region's traffic, commerce, and population growth. They shoulder I-70 or the Kansas Turnpike, high-voltage transmission corridors, and multiple surface-water treatment plants. These larger counties do, however, hold clear advantages with full-time public-works staffs, redundant power feeds, and capital-improvement programs that can finance multi-million-dollar replacements before systems collapse.

Smaller and more rural Chase, Morris, and Wabaunsee counties confront a different profile. Most residents rely on two-lane state highways, single-span truss bridges, and modest rural-water districts that pull groundwater from a handful of shared wells. Volunteer crews, limited tax bases, and deferred maintenance amplify the risk, the failure of one key asset can shut down an entire township's mobility or water supply. On the other hand, low population density means fewer people are affected at once, and mutual-aid pacts among county road departments often restore passability within days, not hours, easing the fiscal strain.

At the jurisdictional level, the divide is equally stark. Manhattan, Junction City, and Emporia must protect clusters of critical facilities, universities, VA clinics, military housing, where any power or water interruption triggers cascading consequences. They plan around peak-load redundancy, cyber-secure SCADA systems, and alternate traffic routing for arterials adjoining major highways. Conversely, small towns worry most about single-point failures, the lone lift station that serves every business, the only sub-megawatt substation feeding downtown, or a century-old brick sewer that collapses under spring floodwater. Because personnel and equipment are scarce, these towns depend on county-level emergency contracts for portable generators, vacuum trucks, and bridge inspection teams to keep essential services viable until permanent repairs arrive.

Cascading Impacts
Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with severe weather may include:

- Transportation infrastructure disruption
- Power outages and electrical grid disruption
- Transportation and supply chain disruptions
- Economic impacts and business closures

Consequence Analysis
This consequence analysis lists the potential impacts of a hazard on various elements of community and jurisdictional infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 154: Infrastructure Failure Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Critical infrastructure failures can lead to heavy flooding, power loss, property damage, injury, and even death. Roadways may be obstructed or inaccessible to the public, changing transport and resource acquirement activities. A failure of critical infrastructure would have a direct impact on public health. Power outages, transit failures, access to clean water would create severe and immediate public health impacts.
Impact on Responders	Infrastructure failure would have a direct and immediate impact on first responder's ability to respond effectively. Critical infrastructure failure may cause inaccessibility of roadways.

Table 154: Infrastructure Failure Consequence Analysis

Subject	Potential Impacts
	Communications system failure would impact the responders' ability to communicate their status or response capability.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. An infrastructure failure may impact an agency's ability to maintain operations based on the incidents impact, including access to facility by transportation systems, and the availability of utilities, communications, energy, and water and wastewater systems.
Delivery of Services	Delivery of services will be disrupted due to critical infrastructure failure. Transit systems may face closures due to public safety concerns. The ability to deliver food, drinking-water, and services will be impacted due to problems with accessibility and transport abilities. Communications, transportation, and governmental services operations would be impacted due to power failure and accessibility challenges.
Property, Facilities, and Infrastructure	Roads and bridges may be impacted, water and sewer systems may be damaged, leading to the issue of sanitation and waste collection. Property of homes and businesses may be completely destroyed if situated close to the failure point.
Impact on Environment	The impacts on the environment of critical infrastructure would vary based on the event. Failure of wastewater plants would result in spreading pollution and hazardous materials throughout the environment including large bodies of water. Ecosystems and natural habitats may be destroyed, causing migration or death of wildlife.
Economic Conditions	Critical infrastructure failure would have a direct and considerable fiscal impact on the local government, however through federal disaster may be offset. Additionally, infrastructure failure in every sector has the potential to impact the ability of businesses to operate. If the private sector was not able to maintain operability, there would be continued revenue loss until operability was restored.
Public Confidence in Governance	Critical infrastructure failure would have a direct and immediate impact on the ability to provide governance, maintain order, and ensure the continuity of public services. Given a prolonged failure, the public would become increasingly distrustful of the government's abilities. Direct, immediate, and effective actions must be taken in order to maintain public confidence.

5.19.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels

despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

5.19.8 Hazard Planning Significance

Utilizing the above detailed formula for calculating the hazard planning significance for human caused and technological hazards, the following table details the rating of each criterion along with a composite rating:

Table 155: Infrastructure Failure Planning Significance

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Chase County	2.5	2.0	4.0	2.5	2.6	Moderate
Geary County	2.5	2.0	4.0	2.5	2.6	Moderate
Lyon County	2.5	2.0	4.0	2.5	2.6	Moderate
Morris County	2.5	2.0	4.0	2.5	2.6	Moderate
Pottawatomie County	2.5	2.0	4.0	2.5	2.6	Moderate
Riley County	2.5	2.0	4.0	2.5	2.6	Moderate
Wabaunsee County	2.5	2.0	4.0	2.5	2.6	Moderate

5.20 Terrorism

5.20.1 Hazard Description



The United States does not have a standardized definition of terrorism that is agreed upon by all agencies. The Federal Bureau of Investigation generally defines terrorism as:

"The unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives."

Terrorism is characterized by the use of violence, intimidation, or the threat of violence to instill fear, achieve political, religious, ideological, or social objectives, and disrupt the normal functioning of a society. It often involves acts of violence deliberately targeting civilians. Key elements and characteristics of terrorism include:

- **Political or Ideological Motivation:** Terrorism is often driven by political, religious, ideological, or social goals. Perpetrators seek to advance a particular agenda or bring about change in accordance with their beliefs.
- **Use of Violence:** Terrorism involves the use of violence, which can range from bombings, shootings, and kidnappings to cyberattacks and biological threats. The intent is to cause harm and instill fear.
- **Targeting Civilians:** Terrorist acts typically target civilians or non-combatants, rather than military or government personnel. This is done to maximize the psychological impact and create a sense of vulnerability within society.
- **Psychological Impact:** The primary objective of terrorism is to create fear and anxiety within the population. The fear generated by terrorist acts can have profound psychological and societal effects.
- **Non-State Actors:** Terrorism is often associated with non-state actors, such as terrorist organizations, extremist groups, or individuals acting independently. However, some state entities have also been accused of engaging in acts that meet the criteria of terrorism.
- **Symbolism:** Terrorist acts are often symbolic in nature, targeting specific locations, landmarks, or institutions that hold significance to the perpetrators or their cause.

Terrorism in the United States can take various forms, and the nature of terrorist threats has evolved over time. Common forms of terrorism in the United States include:

- **Domestic Terrorism:** Domestic terrorism involves acts of violence or intimidation committed by individuals or groups within the United States. These acts are typically driven by extremist ideologies, such as far-right extremism, far-left extremism, or other radical beliefs. Recent examples of domestic terrorism include attacks on religious institutions, acts of violence against minority communities, and violent protests.
- **Far-Right Extremism:** Far-right extremism refers to ideologies and movements characterized by extreme nationalism, racism, and opposition to government authority. Some far-right extremists have engaged in acts of violence targeting minority communities, government officials, or perceived enemies.
- **Far-Left Extremism:** Far-left extremism encompasses a range of radical ideologies, including anarchist and socialist beliefs. While not as prevalent as far-right extremism, far-left extremists have been involved in protests, clashes with law enforcement, and acts of violence.
- **Religiously Motivated Terrorism:** Religious extremism can lead to acts of terrorism. In the United States, this has included attacks by individuals or groups inspired by extremist interpretations of Islam, Christianity, or other religions.
- **Single-Actor Terrorism:** Lone-wolf terrorism involves individuals who carry out acts of violence without direct affiliation with established terrorist organizations. These individuals are often self-radicalized and may

be inspired by online propaganda. Examples include the 1995 Oklahoma City bombing and the 2013 Boston Marathon bombing.

- **Eco-Terrorism:** Eco-terrorism refers to acts of violence or sabotage carried out in the name of environmental activism. These acts target industries or organizations perceived as harmful to the environment.
- **Cyberterrorism:** Cyberterrorism involves using computer technology to disrupt or damage critical infrastructure, institutions, or networks. While not as common as other forms of terrorism, cyberattacks pose significant risks. Cyberattacks by state-sponsored actors or independent hackers can target government agencies, corporations, and infrastructure.

The U.S. government, law enforcement agencies, and intelligence services actively monitor and address various forms of terrorism. Counterterrorism efforts include preventive measures, intelligence gathering, community engagement, and law enforcement actions. Public awareness, community outreach, and reporting suspicious activities also play a role in countering terrorism in the United States.

Whether mass shooting events (especially school shootings) are considered acts of terrorism can be a subject of debate and can vary depending on the specific circumstances and legal definitions in different jurisdictions. There is no standardized definition of a mass shooting. The United States Investigative Assistance for Violent Crimes Act defines a mass killing as three or more killings in a single incident while the Federal Bureau of Investigation defines a mass shooting as any incident in which at least four people were shot and killed. Mass shootings involve acts of violence carried out in public places, often by individuals who may have personal grievances, mental health issues, or other motivations not necessarily connected to a political or ideological agenda. While mass shootings are undoubtedly acts of violence that result in tragedy and loss of life, they may not always fit the traditional definition of terrorism, as the primary motivation is often not to advance a political or ideological cause. If the shooter's primary aim is to instill fear, advance a political agenda, or promote a particular ideology, it may be more likely to be classified as terrorism. However, if the shooter's motivation is primarily personal, such as a desire for revenge or mental health issues, the act may not be considered terrorism under many legal definitions.

5.20.2 – Location and Extent

All of Kansas Region I is vulnerable to terrorism, particularly in densely populated urban areas or crowded venues. However, it is nearly impossible to pinpoint the exact location of the next terrorist attack. Through information and intelligence sharing, public safety personnel at the local, state, and federal level help identify potential targets for terrorist activity. Although it is impossible to predict for certain where the next terrorist attack will take place, terrorists generally target large, crowded places, such as malls, parks, and other large public or social gatherings, in order to maximize damage. In addition, some acts of terror are conducted against critical infrastructure in an effort to weaken or cripple services such as transportation, communications, and electricity.

The extent of terrorism can vary significantly depending on a range of factors including the tactics, capabilities, and the effectiveness of counterterrorism efforts. Tactics employed may include bombings, firearm attacks, kidnappings, assassinations, cyberattacks, or a combination. The choice of targets, such as civilians, government institutions, religious sites, or critical infrastructure can also affect the extent of the terrorist threat. The extent of terrorism may also be influenced by public support or sympathy for extremist ideologies, as well as the recruitment and radicalization of individuals into terrorist organizations. Socio-economic factors, such as poverty, unemployment, and inequality, can contribute to the conditions conducive to terrorism.

The effectiveness of counterterrorism efforts by governments and international organizations can influence the extent of terrorism. Robust counterterrorism measures can disrupt terrorist networks and reduce the frequency and impact of attacks. Efforts to address terrorism typically involve a combination of security measures, intelligence sharing, diplomacy, counter-radicalization programs, and community engagement. Reducing the extent of terrorism often requires a multifaceted approach that addresses both the root causes and the immediate security threats associated with terrorism.

Discussions with the MPC and a review of all available data indicated a terrorism is a minor community concern for all participating jurisdictions. The following provides a narrative of the level of jurisdictional concern:

- **Chase County:** The small size and rural nature of all participating jurisdictions makes them unlikely target for a terrorism event. However, the ever-shifting nature or terrorism may change this analysis if operations and goals change.
- **Geary County:** The small size and rural nature of all participating jurisdictions makes them unlikely target for a terrorism event. However, the ever-shifting nature or terrorism may change this analysis if operations and goals change.
- **Lyon County:** The small size and rural nature of all participating jurisdictions makes them unlikely target for a terrorism event. However, the ever-shifting nature or terrorism may change this analysis if operations and goals change.
- **Morris County:** The small size and rural nature of all participating jurisdictions makes them unlikely target for a terrorism event. However, the ever-shifting nature or terrorism may change this analysis if operations and goals change.
- **Pottawatomie County:** The small size and rural nature of all participating jurisdictions makes them unlikely target for a terrorism event. However, the ever-shifting nature or terrorism may change this analysis if operations and goals change.
- **Riley County:** The small size and rural nature of many of the participating jurisdictions makes them unlikely target for a terrorism event. Manhattan, home to Kansas State University, may have an elevated concern due to the large student population making a potentially attractive target. However, the ever-shifting nature or terrorism may change this analysis if operations and goals change.
- **Wabaunsee County:** The small size and rural nature of all participating jurisdictions makes them unlikely target for a terrorism event. However, the ever-shifting nature or terrorism may change this analysis if operations and goals change.

5.20.3 Previous Occurrences

Although there has not been a terrorist attack in Kansas Region I, this does not reduce the significance of the threat. There have been numerous examples of terrorism that have occurred in the United States, and specifically terrorist events that have occurred in the region. Of note:

- Alfred P. Murrah Federal Building, Oklahoma City (1995), 168 killed.

5.20.4 Probability of Future Events

Assessing the probability of a terrorist attack in Kansas Region I involves complex analysis conducted by intelligence and law enforcement agencies such as the U.S. Department of Homeland Security, the Federal Bureau of Investigation, and the Kansas State Police. These agencies regularly provide threat assessments and security information to the public based on local, international, and geopolitical intelligence.

5.20.5 Projected Changes in Location, Intensity, Frequency, and Duration

Predicting the specific changes in the location, intensity, and frequency of terrorist events is highly changing due to the complex and dynamic nature of terrorism. Terrorism is influenced by a multitude of factors, including political, social, economic, and ideological considerations. Additionally, responses by governments, international cooperation, and evolving global dynamics contribute to the uncertainty surrounding future projections.

The increasing reliance on technology provides terrorists with new tools and methods for conducting attacks. Cyberterrorism can be used to disrupt critical infrastructure or compromise information systems may become more prevalent. Additionally, the use of online platforms for radicalization and recruitment purposes is a growing concern. Changes in the online landscape, social media platforms, and encryption methods can influence the reach and effectiveness of extremist propaganda.

As previously noted, Kansas Region I facilities have seen no major changes in the past five years, with only modest repairs and upgrades being conducted and no major rehabilitation or construction projects completed. As such, the risk to jurisdictional facilities has remained static since the completion of the last LHMP.

5.20.6 Vulnerability and Impact

FEMA NRI

The FEMA NRI does not provide a rating for the terrorism hazard.

Scenario Based Assessment

In general, it is not possible to calculate a specific vulnerability for each county or participating jurisdiction. However, because of the desire for publicity following attacks, it is more likely that counties and jurisdictions with greater population densities and /or larger evet venues have a greater risk.

It is difficult to quantify potential losses of terrorism due to the many variables and human elements. The following hypothetical scenario, using the Electronic Mass Casualty Assessment and Planning Scenarios developed by Johns Hopkins University, provides an estimated impact of a potential terrorism event.

Scenario: Improvised Explosive Device

Event: A van transported improvised explosive device utilizing an ammonium nitrate/fuel oil mixture is detonated in the parking area of a stadium as people are entering. Potential losses with this type of scenario include both human and structural assets.

Event Assumptions: The quantity of ammonium nitrate/fuel oil mixture used is 4,000 pounds. The population density of the lot is assumed to be one person per every 25 square feet for a pre-game crowd. The lethal air blast range for such a vehicle is estimated to be 50 feet, and the falling glass hazard distance is estimated at 600 feet according to the Bureau of Alcohol, Tobacco, Firearms and Explosives Standards. In this event, damage would occur to vehicles, and depending on the proximity of other structures, damage would occur to the stadium complex itself. The exact amount of these damages is difficult to predict because of the large numbers of factors, including the type of structures nearby and the amount of insurance held by vehicle owners. It is estimated that the average replacement cost for a vehicle is $20,000 and the average repair cost for damaged vehicles would be $4,000.

Results: The following table presents the estimated human impacts of the scenario.

Table 156: Estimated Impact of Scenario #3, Improvised Explosive Device

Impact	Effect
Deaths	1,391 persons
Trauma Injuries	2,438 persons
Urgent Care Injuries	11,935
Injuries not Requiring Hospitalization	4,467
Repair Costs for 100 Vehicles	$400,000
Replacement Costs for 50 Vehicles	$1,000,000

Source: Electronic Mass Casualty Assessment and Planning Scenarios by Johns Hopkins University

Population

Terrorism can have profound and far-reaching impacts on individuals and communities. These effects can be physical, psychological, social, and economic, and may include:

- **Loss of Life and Injury:** Terrorism often results in the loss of innocent lives and injuries to survivors. Victims may suffer physical trauma, disabilities, and long-term health issues.
- **Psychological Trauma:** Many survivors of terrorist attacks and witnesses may experience Post-Traumatic Stress Disorder, characterized by flashbacks, nightmares, anxiety, and emotional distress. Children and young

people may be particularly vulnerable to the psychological effects of terrorism, which can impact their emotional and cognitive development.

- **Anxiety and Depression:** Terrorism can lead to increased anxiety and depression in affected individuals and communities.
- **Grief and Loss:** Those who lose loved ones in terrorist attacks may experience profound grief and loss, which can be long-lasting.

Terrorism can disrupt social structures and community cohesion, leading to feelings of insecurity and mistrust. Fear of future attacks may limit social activities and interactions, impacting the quality of life. Some terrorist attacks, such as bombings, can result in displacement and homelessness for those affected, leading to housing instability and further psychological stress. People may alter their daily routines, travel plans, or social activities due to fear of further attacks. This can impact personal freedom and quality of life.

Buildings and Structures

Critical infrastructure is often high-value and high-impact, making it an attractive target for terrorists looking to cause disruption, economic damage, and fear. Many critical infrastructure sectors are interconnected, so an attack on one sector can have cascading effects on others. For example, an attack on the power grid can impact telecommunications and transportation. Compounding the issue, certain critical infrastructure facilities are accessible to the public or located in urban areas, making them vulnerable to physical attacks, such as bombings or shootings. Specific impacts on critical infrastructure may include:

- **Disruption of Operations:** Attacks can disrupt the normal operations of critical facilities, including hospitals, emergency response centers, data centers, and transportation hubs.
- **Economic Disruption:** Attacks can lead to significant economic disruption, including damage to facilities, loss of productivity, and increased operational costs.
- **Public Safety:** Attacks on certain critical infrastructure, such as transportation hubs or healthcare facilities, can pose immediate risks to public safety, leading to injuries and loss of life.
- **Disruption of Services:** Infrastructure attacks can result in service disruptions, including power outages, water supply interruptions, and communication breakdowns.
- **Healthcare Impact:** Attacks on healthcare infrastructure, like hospitals, can limit access to medical care during emergencies, potentially leading to higher casualties.

Governmental Operations

Terrorism can have significant impacts on governmental operations. These impacts can vary depending on the nature and scale of terrorist attacks, the level of preparedness and response, and the specific vulnerabilities, and may include:

- **Security and Law Enforcement:** An attack would lead to an increased demand on law enforcement agencies to prevent, investigate, and respond to terrorist threats and incidents. Allocation of significant resources to counterterrorism efforts would stretch resources.
- **Emergency Response:** Local emergency management agencies, in conjunction with state and federal agencies, would need to activate emergency response and management systems to coordinate response. A long-term activation could strain resources and personnel. Additionally, responders may be vulnerable to secondary devices or attacks.
- **Public Services:** An attack could lead to the disruption of public services, such as transportation, utilities, and public spaces, due to security concerns.
- **Economic Impact:** Negative economic consequences, including damage to businesses, loss of investor confidence, and reduced tourism and foreign investment can occur.
- **Surveillance and Privacy Concerns:** Expansion of surveillance capabilities may result in concerns about potential violations of privacy rights.

- **Impact on Government Operations:** An attack would likely cause the disruption of government functions, including closures of government offices and facilities.
- **Psychological Impact on Government Officials:** Psychological stress and burnout among government officials and first responders involved in counterterrorism efforts.
- **Public Opinion and Confidence:** Fluctuations in public opinion and confidence in the government's ability to provide security and protect citizens would occur.

Transportation and Electrical Infrastructure
Depending on the nature of the event, terrorism would be expected to have minimal impacts on transportation and electric systems with the exception of possible short or long-term system disruption.

Water and Wastewater Utilities
Depending on the nature of the event, terrorism would be expected to have minimal impacts on water and wastewater systems.

Medical and Response Facilities
Terrorism can have significant impacts on medical and response facilities and operations. These impacts can vary depending on the nature and scale of terrorist attacks, the level of preparedness and response, and the specific vulnerabilities, and may include:

- **Medical System Overload:** Depending on the nature of the event, an attack could quickly overwhelm response and medical operations and facilities.
- **Security and Law Enforcement:** An attack would lead to an increased demand on law enforcement agencies to prevent, investigate, and respond to terrorist threats and incidents. Allocation of significant resources to counterterrorism efforts would stretch resources.
- **Emergency Response:** Local emergency management agencies, in conjunction with state and federal agencies, would need to activate emergency response and management systems to coordinate response. A long-term activation could strain resources and personnel. Additionally, responders may be vulnerable to secondary devices or attacks.

Educational Facilities
Depending on the educational facility capability and location, a terrorism event may necessitate the closure of the facility for the duration of the event. These closures are expected to have additional economic consequences as caregivers may be required to miss or modify work.

- **School Closures:** Terrorism events can lead to the closure of schools due to hazardous conditions. This can strain caregivers and result in lower work attendance.

Communication Systems
Depending on the nature of the event, terrorism can have significant impacts on communication systems. The specific impacts can vary depending on the type of utility affected, the duration of the outage, and the criticality of the infrastructure, and may include:

- **Loss of Communication:** A terrorism event can overload or disrupt communication systems, affecting the ability of critical facilities to coordinate responses and communicate with staff and the public.

Environmental and Agricultural Impacts
Depending on the nature of the event, a terrorist attack would have little effect on the environment.

Jurisdictional Concerns:
As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to

citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts.

Riley and Pottawatomie Counties top the regional concern list because of Kansas State University, Big 12 athletic venues, the National Bio- and Agro-Defense Facility, and growing suburban commercial hubs. These assets attract large crowds and international visibility, making them potential "soft targets" for mass-casualty attacks or attention-seeking disruptions. Full-time police departments, campus police/security forces, and a fusion-center link with the Kansas Intelligence Fusion Center bolster preventive capacity, yet the very scale of these jurisdictions means any credible threat can trigger multi-agency coordination challenges and wide-area evacuations.

Geary County adds a unique military dimension. Fort Riley houses thousands of soldiers, weapons ranges, and fuel depots, prime targets for sabotage or insider threats. While the post maintains its own antiterrorism and force-protection apparatus, surrounding Junction City must plan for spillover effects (e.g., evacuation traffic, sheltering, or cyber-enabled disinformation campaigns aimed at families). Lyon County's Emporia State University, rail yard, and regional fuel-distribution terminal likewise create clusters of critical infrastructure and transient populations; the county benefits from a career fire service and regional haz-mat team but faces the operational complexity of safeguarding freight corridors that traverse several downtown blocks.

In contrast, Chase, Morris, and Wabaunsee Counties exhibit a thin target, thin shield dynamic. Few high-density venues exist, largely county courthouses, school complexes, and seasonal tourism sites, so the likelihood of a spectacular attack is lower. However, sparse law-enforcement staffing, volunteer fire departments, and limited surveillance networks slow detection and initial response. Rail lines moving hazardous commodities, remote wireless towers, and single-feed electric substations remain vulnerable to small-scale sabotage that could impose outsized economic or psychological costs on these rural communities.

At the jurisdictional level, large cities worry about coordinated multi-site attacks and cyber-physical blends, while small towns focus on single-point disruptions and the ripple effects of incidents in neighboring urban areas. Across all seven counties, emerging concerns include the spread of do-it-yourself drone technology, online radicalization that targets local officials, and supply-chain dependencies on a handful of regional data centers or fuel terminals.

Cascading Impacts
Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with severe weather may include:

- School closures
- Daily life disruptions
- Transportation infrastructure disruption
- Power outages and electrical grid disruption
- Transportation and supply chain disruptions
- Economic impacts and business closures

Consequence Analysis
This consequence analysis lists the potential impacts of a hazard on various elements of community and jurisdictional infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 157: Terrorism Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Terrorist activities including bombings, kidnappings, shootings, and hijackings could cause considerable injury and death. An attack could kill and injure hundreds to thousands of people, which could overwhelm hospitals.

Table 157: Terrorism Consequence Analysis

Subject	Potential Impacts
Impact on Responders	Attacks can create a dangerous environment and significant challenges for first responders, who may have to manage the evacuation of people, close areas, operate shelters, and take care of the injured. First responders may be a direct target of terrorism themselves from a secondary attack during response activities. Equipment may also be damaged or destroyed, which may lead to a decrease in response capabilities.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. A terrorist event may impact an agency's ability to maintain operations due to the potential to cause a significant injury to staff or impede travel.
Delivery of Services	The ability to deliver services can be impacted depending on the characteristics of the attack. Roadway and bridge closures may be required, as well as transit service disruptions. Businesses and places of commerce may completely shut down, which leads to the disruption of goods and services.
Property, Facilities, and Infrastructure	Transportation, governmental operations, and infrastructure facilities may be disrupted both directly and indirectly. Roads and bridges may be impacted if explosive devices are utilized in the attack. Access to homes and critical facilities such as hospitals, schools, and supermarkets may be impossible. If power loss occurs following an attack, it may lead to disruption of critical infrastructure and technology.
Impact on Environment	Terrorist attacks involving bombings and arson pose considerable negative impacts to the environment in the form of smoke and destruction of vegetation. A terrorist attack utilizing chemical, nuclear, and biological weapons pose a significantly higher risk to the environment by causing pollution, damaging sewer and wastewater treatment plants; or disturbing or killing wildlife, and adversely affecting nature preserves.
Economic Conditions	Local, county, and state resources may be severely depleted during a terrorist attack response. Private businesses may not be able to maintain operations during or after an incident if they are impacted, which would impact the economy.
Public Confidence in Governance	If government employees or facilities are targeted directly by terrorism, it will have a significant impact on the ability to govern. The public's confidence in governance is affected by immediate response through direct and effective actions. Efficiency in response and recovery operations is critical in keeping public confidence.

5.20.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels

despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

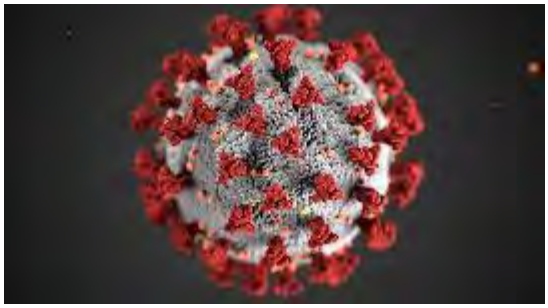
5.20.8 Hazard Planning Significance

Utilizing the above detailed formula for calculating the hazard planning significance for human caused and technological hazards, the following table details the rating of each criterion along with a composite rating:

Table 158: Terrorism Planning Significance

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Chase County	1.0	2.0	4.0	1.0	1.8	Low
Geary County	1.0	2.0	4.0	1.0	1.8	Low
Lyon County	1.0	2.0	4.0	1.0	1.8	Low
Morris County	1.0	2.0	4.0	1.0	1.8	Low
Pottawatomie County	1.0	2.0	4.0	1.0	1.8	Low
Riley County	1.0	2.0	4.0	1.0	1.8	Low
Wabaunsee County	1.0	2.0	4.0	1.0	1.8	Low

5.21 Transmissible Disease



5.21.1 Hazard Description

A transmissible disease, also known as a communicable or infectious disease, is a type of illness caused by pathogens (such as bacteria, viruses, fungi, or parasites) that can be transmitted from one person or organism to another, directly or indirectly. These diseases can spread through various means, including person-to-person contact, respiratory droplets, contaminated food or water, vectors like mosquitoes, or contact with infected animals.

Transmissible diseases are characterized by their ability to pass from an infected individual to a susceptible host, leading to new cases of the disease. The transmission can occur through various routes, depending on the specific pathogen and the mode of transmission it utilizes. Examples of transmissible diseases include:

- **Influenza:** The flu is caused by influenza viruses and can spread through respiratory droplets when an infected person coughs or sneezes.
- **West Nile Virus:** A mosquito-borne virus that can cause a range of illnesses in humans, from mild febrile symptoms to severe neurological disease. It is primarily transmitted to humans through the bite of infected mosquitoes.
- **Malaria:** Malaria is caused by Plasmodium parasites and is transmitted through the bite of infected female Anopheles mosquitoes.
- **Salmonella Infection:** This bacterial infection is often contracted through the consumption of contaminated food or water and can lead to gastrointestinal symptoms.
- **Tuberculosis:** Tuberculosis is caused by Mycobacterium tuberculosis and can be transmitted through the inhalation of respiratory droplets from an infected person with an active disease.
- **Measles:** Measles is caused by the measles virus and spreads through respiratory droplets, making it highly contagious.

Of particular concern are novel transmissible diseases. This is a disease that is caused by a pathogen (such as a virus, bacterium, or other microorganism) that is newly recognized in a human population or is increasing in incidence or geographic range. These diseases are termed novel because they have not been previously identified or have not been known to affect humans in the past. Several factors can contribute to the emergence of novel transmissible diseases, including changes in human behavior, urbanization, deforestation, global travel, and the encroachment of humans into natural habitats. Defining characteristics of novel transmissible diseases: include

- **New Pathogen or Strain:** Novel transmissible diseases often involve a pathogen or strain of a pathogen that is new to humans. This may result from genetic mutations, cross-species transmission (zoonotic diseases), or the introduction of a pathogen to a new geographic area.
- **Human Transmission:** These diseases have the potential to spread from person to person, either through direct contact, respiratory droplets, contaminated surfaces, or other modes of transmission.
- **Challenges in Control:** Because these diseases are new and may have limited prior immunity in the population, they can pose challenges for public health authorities in terms of surveillance, diagnosis, treatment, and containment.

Novel transmissible diseases can have pandemic potential, meaning they can spread globally and affect a large portion of the world's population. Dealing with novel transmissible diseases requires a multi-pronged approach, including surveillance, early detection, containment measures, public health interventions, and research to understand the pathogen and develop effective countermeasures. It also underscores the importance of preparedness and global cooperation in responding to emerging infectious diseases.

5.21.2 – Location and Extent

Kansas Region I's geographic and demographic characteristics make it vulnerable to the spread of transmissible diseases. The extent of a transmissible disease can vary widely depending on several factors, including:

- **Pathogen Characteristics:** The biological properties of the infectious agent, such as its mode of transmission, incubation period, and virulence, play a significant role. Pathogens that are highly contagious and have a short incubation period are more likely to spread rapidly.
- **Human Behavior:** Human behavior and practices, such as hygiene, travel, and social interactions, can influence the extent of disease spread. For example, frequent travel and close interpersonal contact can facilitate the rapid transmission of infectious diseases.
- **Public Health Measures:** The effectiveness of public health measures, such as quarantine, isolation, contact tracing, and vaccination, can limit the extent of disease spread. Prompt and coordinated public health responses can be crucial.
- **Geographic Factors:** The geographic spread of a disease can be influenced by factors like population density, climate, and geographic barriers. Dense urban areas may experience more rapid transmission, while isolated or remote regions may be less affected.
- **Healthcare Infrastructure:** The capacity of healthcare systems to detect, treat, and isolate cases can impact the extent of an outbreak. Overwhelmed healthcare systems can lead to a larger extent of disease.
- **Pre-Existing Immunity:** If a portion of the population has pre-existing immunity to the disease, either due to prior exposure or vaccination, this can limit the extent of disease transmission.
- **Global Travel:** In an era of global travel, novel infectious diseases can quickly cross international borders, affecting multiple countries and regions.
- **Vaccination:** The availability and coverage of vaccines against the disease can significantly reduce the extent of an outbreak. High vaccination rates create herd immunity, protecting even those who are not vaccinated.
- **Mutation and Variants:** Some infectious agents may undergo mutations that affect their transmissibility or virulence. New variants can lead to changes in the extent and severity of the disease.
- **Public Awareness and Compliance:** Public awareness of the disease, willingness to follow public health guidance, and compliance with preventive measures can affect disease transmission rates.
- **Timeliness of Response:** The speed with which authorities and healthcare systems respond to an outbreak can have a substantial impact. Rapid detection and containment efforts can limit the extent of spread.

The extent of a transmissible disease can range from localized outbreaks that are quickly contained to global pandemics that affect large populations across multiple countries. The management of such diseases requires a combination of robust surveillance, effective public health interventions, research, and international collaboration to minimize their impact on human health and society.

Discussions with the MPC and a review of all available data indicated a transmissible disease is a community concern for all participating jurisdictions. The following provides a narrative of the level of jurisdictional concern:

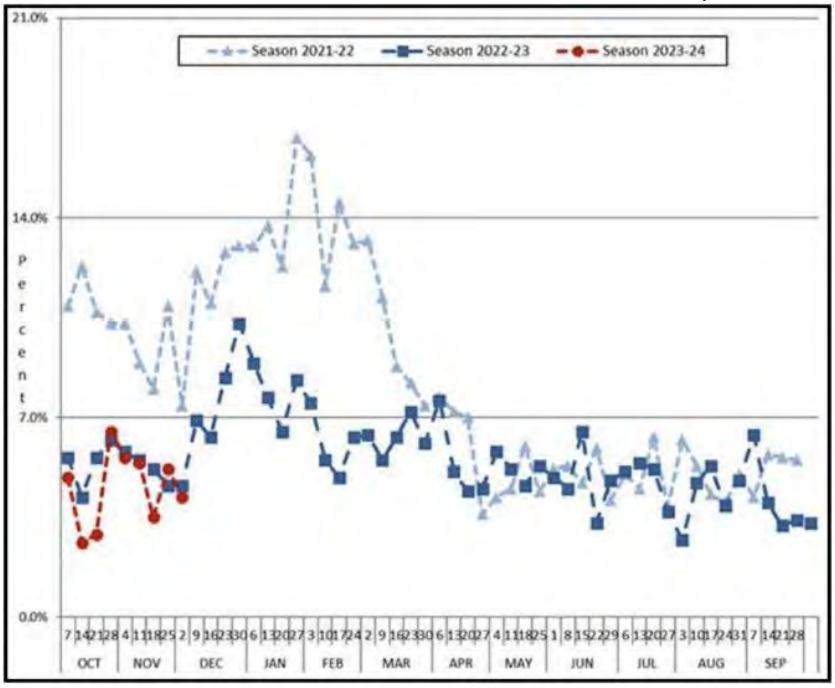
- **Chase County:** The small population and rural nature of all participating jurisdictions make the rapid spread of a transmissible disease less likely. However, limited medical facilities increase concern.
- **Geary County:** The small population and rural nature of all participating jurisdictions make the rapid spread of a transmissible disease less likely. However, a large transient military population and the I-70 corridor increase potential concerns.
- **Lyon County:** The small population and rural nature of all participating jurisdictions make the rapid spread of a transmissible disease less likely. However, limited medical facilities increase concern.
- **Morris County:** The small population and rural nature of all participating jurisdictions make the rapid spread of a transmissible disease less likely. However, limited medical facilities increase concern.
- **Pottawatomie County:** The small population and rural nature of all participating jurisdictions make the rapid spread of a transmissible disease less likely. However, limited medical facilities increase concern.

- **Riley County:** The small population and rural nature of all participating jurisdictions make the rapid spread of a transmissible disease less likely. However, a large transient KSU student population and the I-70 corridor increase potential concerns.
- **Wabaunsee County:** The small population and rural nature of all participating jurisdictions make the rapid spread of a transmissible disease less likely. However, limited medical facilities increase concern.

5.21.3 Previous Occurrences

One of the most common transmissible diseases within the Kansas Region I is Influenza. Influenza, commonly known as the flu, is a contagious respiratory illness caused by influenza viruses. It can affect humans, birds, and other animals. Influenza viruses are classified into types A, B, C, and D, with types A and B being the most common in humans and responsible for seasonal flu outbreaks. The following graph details Influenza deaths for the state:

Graph 26: Percent of Deaths Associated with Pneumonia and Influenza, October 2020 to Present



Source: Kansas Department of Health and Environment

The most notable recent novel infectious disease to strike Kansas Region I is COVID-19, also known as Coronavirus Disease 2019. Covid-19 is an infectious respiratory illness caused by a novel coronavirus known as SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). It was first identified in December 2019 in the city of Wuhan, China, and spread globally leading to a pandemic. COVID-19 primarily spreads from person to person through respiratory droplets when an infected person coughs, sneezes, talks, or breathes. It can also spread by touching surfaces contaminated with the virus and then touching the face. Symptoms can range from mild to severe and may include fever, cough, shortness of breath, fatigue, muscle aches, loss of taste or smell, sore throat, congestion, and gastrointestinal symptoms like diarrhea. Some individuals may remain asymptomatic, meaning they carry the virus without displaying symptoms. While many people with COVID-19 experience mild to moderate symptoms and recover without hospitalization, the disease can be severe, especially among older adults and individuals with underlying health conditions. Severe cases can lead to pneumonia, acute respiratory distress syndrome, organ failure, and death. Available data from the Kansas Department of Health and Environment indicates the following for COVID-19 for Kansas:

- 946,56 cases
- 10,229 deaths

COVID-19 has had a profound impact on public health, economy, and daily life across Kansas Region I. Some of the key measures taken in Kansas Region I in response to the COVID-19 pandemic include:

- **Public Health Measures:** Kansas implemented various public health measures to slow the spread of the virus. These included stay-at-home orders, mask mandates, social distancing guidelines, and limits on gathering sizes.
- **Testing and Contact Tracing:** Kansas established testing sites and conducted contact tracing to identify and isolate individuals who had been exposed to the virus. Testing was widely available to the public.
- **Vaccination Efforts:** Kansas launched vaccination campaigns to administer COVID-19 vaccines to eligible residents. Mass vaccination sites, healthcare providers, and pharmacies played a role in the distribution of vaccines.
- **School Closures and Remote Learning:** Like many other states, Kansas Region I temporarily closed schools and shifted to remote learning to minimize the risk of virus transmission among students and staff.
- **Travel and Quarantine Measures:** Kansas issued travel advisories and quarantine requirements for travelers coming into the state, especially from areas with high infection rates.
- **Mask Mandates and Social Distancing:** Face mask mandates and social distancing measures were enforced in indoor public spaces and in situations where social distancing was not possible.

Additionally, COVID-19 had numerous, and oftentimes severe impacts on Kansas Region I, including:

- **Economic Repercussion:** Job losses, business closures, and economic strain on individuals and families were common within the Kansas Region I. Kansas, like other states, implemented economic relief measures.
- **Healthcare System Overload:** Hospitals and healthcare facilities in Kansas Region I worked to increase capacity to treat COVID-19 patients. There were efforts to secure additional medical supplies and equipment.
- **Protection of Vulnerable Populations:** Efforts were made to protect vulnerable populations, including the elderly and those with underlying health conditions, who were at higher risk of severe illness from COVID-19.
- **Educational Impact:** The pandemic disrupted education, with students and teachers adapting to remote learning. Schools implemented safety measures upon reopening.

The response to COVID-19 evolved as more information became available, and measures were adjusted based on the changing circumstances of the pandemic. Kansas Region I worked to balance public health concerns with the economic and social well-being of its residents. The state and region's response were guided by recommendations from health experts from the Centers for Disease Control.

5.21.4 Probability of Future Events

While it is impossible to predict with certainty when or if a transmissible disease outbreak will occur, the probability of occurrence can be estimated based on historical patterns and current global conditions. Factors to consider include:

- **Globalization:** Increased global travel and trade can facilitate the rapid spread of infectious diseases. The interconnectedness of the world means that a disease can quickly cross borders, increasing the risk of a pandemic.
- **Vaccine Coverage:** The level of vaccination coverage against preventable diseases can impact the likelihood of pandemics. Low vaccine coverage can lead to outbreaks that have pandemic potential.
- **Public Health Preparedness:** The readiness of healthcare systems, public health agencies, and governments to respond to outbreaks is crucial. Adequate preparedness can help contain outbreaks before they become pandemics.
- **Surveillance and Early Detection:** Improved surveillance systems and early detection mechanisms can help identify and contain outbreaks before they escalate to pandemics.
- **Scientific Advancements:** Advances in science and technology, such as the rapid development of vaccines and treatments, can influence our ability to respond to emerging infectious diseases.

- **Behavioral Factors:** Human behavior, including adherence to preventive measures like handwashing, mask-wearing, and vaccination, plays a role in disease transmission. Public health campaigns can influence behavior.
- **Agriculture and Farming Practices:** The way animals are raised and farmed can impact the risk of zoonotic diseases, which are diseases transmitted from animals to humans. The probability of another pandemic is influenced by the frequency of spillover events (when a pathogen jumps from animals to humans). Factors like deforestation, urbanization, and increased contact with wildlife can contribute to these events.

Transmissible disease outbreaks can vary in their impact, and public health measures can mitigate their effects. Governments, international organizations, and scientists continuously monitor and assess the risk of transmissible diseases and work to improve preparedness and response capabilities.
In order to prevent the rapid spreads of transmissible diseases, the Kansas Department of Health and Environment tracks occurrences of the following diseases and conditions:

- Acute flaccid myelitis
- Anthrax
- Anaplasmosis
- Arboviral disease, neuroinvasive and nonneuroinvasive (including chikungunya virus, dengue virus, La Crosse, West Nile virus, and Zika virus)
- Babesiosis
- Botulism
- Brucellosis
- Campylobacteriosis
- Candida auris
- Carbapenem-resistant bacterial infection or colonization
- Chancroid
- Chickenpox (varicella)
- Chlamydia trachomatis infection
- Cholera
- Coccidioidomycosis
- Cryptosporidiosis
- Cyclosporiasis
- Diphtheria
- Ehrlichiosis
- Giardiasis
- Gonorrhea (include antibiotic susceptibility results, if performed)
- Haemophilus influenzae, invasive disease
- Hansen’s disease (leprosy)
- Hantavirus
- Hemolytic uremic syndrome, post-diarrheal
- Hepatitis, viral (A, B, C, D, and E, acute and chronic)
- Histoplasmosis
- Human Immunodeficiency Virus (HIV) (
- Leptospirosis
- Influenza, novel A virus infection
- Legionellosis
- Listeriosis
- Lyme disease
- Malaria

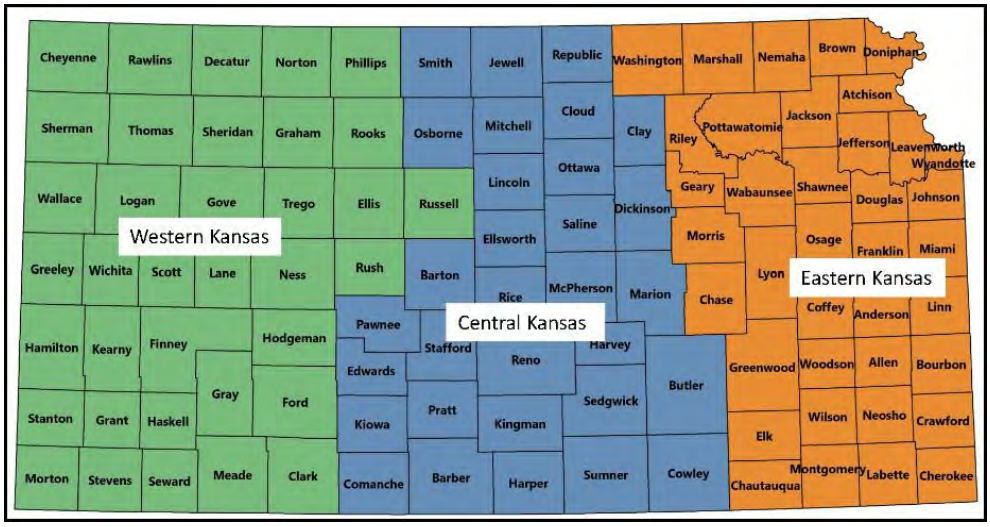
- Measles (rubeola)
- Meningococcal disease
- Mumps
- Pertussis (whooping cough)
- Plague (Yersinia pestis)
- Poliovirus
- Psittacosis
- Q Fever (Coxiella burnetii, acute and chronic)
- Rabies
- Rubella
- Salmonellosis, including typhoid fever
- Severe Acute Respiratory Syndrome-associated coronavirus (SARS-CoV)
- Shiga toxin-producing Escherichia coli
- Shigellosis
- Smallpox
- Spotted fever rickettsiosis
- Streptococcus pneumoniae, invasive disease
- Syphilis, all stages, including congenital syphilis
- Tetanus
- Toxic shock syndrome, streptococcal and other
- Transmissible spongioform encephalopathy or prion disease
- Trichinellosis or trichinosis
- Tuberculosis
- Tularemia, including laboratory exposures
- Vancomycin-intermediate and resistant Staphylococcus aureus
- Vibriosis (all cholerae and non-cholerae Vibrio species)
- Viral hemorrhagic fevers
- Yellow fever

Kansas Region I Health Departments report all nationally notifiable conditions to the Centers for Disease Control using the National Electronic Disease Surveillance System to allow for rapid and appropriate response.

The Kansas Department of Health and Environment Field Epidemiology Services Program provides trained field epidemiologists to support epidemiological activities of local health departments. Field epidemiologists are the boots on the ground regionally for the state health department and serve as a liaison between the local health departments and the Kansas Department of Health and Environment. The four primary areas of support include:

- Investigation of complex or unusual infectious disease cases and large or complicated outbreaks
- Reporting and surveillance for reportable diseases
- Data analysis and reporting
- Public health training and education

Map 126: Kansas Department of Health and Environment Field Epidemiology Services Program Regions



Source: Kansas Department of Health and Environment

5.21.5 Projected Changes in Location, Intensity, Frequency, and Duration

A continued increase in international travel, both to and from Kansas, may increase the spread of infectious disease. The movement of people across diverse geographical regions brings together individuals with different immunological profiles. This mingling creates opportunities for the emergence of novel pathogens or the introduction of diseases into populations with limited immunity.

Changing conditions can have several impacts on the emergence and spread of transmissible diseases, including:

- **Altered Disease Transmission Patterns in Vector-Borne Diseases:** Warming temperatures can affect the distribution and behavior of disease vectors (mosquitoes and ticks). This can lead to the expansion of diseases like malaria, dengue fever, and Lyme disease into new geographic areas.
- **Extended Transmission Seasons:** Rising temperatures can lengthen the transmission seasons for certain diseases, allowing them to be active for a more extended period each year.
- **Changes in Pathogen Survival:** Some pathogens can survive longer in warmer and wetter conditions. This can affect the persistence of infectious agents in the environment.
- **Increased Risk of Zoonotic Diseases:** Temperature chages can disrupt ecosystems and alter the habitats and migration patterns of wildlife. This can lead to increased interactions between humans, domestic animals, and wildlife, potentially facilitating the transmission of zoonotic diseases (diseases that originate in animals) to humans.
- **Weakened Immune Response:** Climate-related stressors, such as extreme heat events, can weaken the immune systems of vulnerable populations, making them more susceptible to infectious diseases.

To mitigate potential impacts, public health measures, adaptation strategies, and international cooperation are essential, and may include:

- Strengthening disease surveillance systems to monitor changing disease patterns.
- Implementing vector control measures in areas at risk of vector-borne diseases.
- Enhancing healthcare infrastructure resilience to climate-related disasters.
- Promoting climate-resilient agricultural practices to ensure food security.
- Raising awareness and educating communities about the risks and preventive measures.

5.21.6 Vulnerability and Impact

FEMA NRI

The FEMA NRI does not provide a rating for the transmissible disease hazard.

Population

People can be vulnerable to transmissible diseases due to various factors that influence their susceptibility to infection and the potential severity of illness. These vulnerabilities can be influenced by individual, societal, and environmental factors, and may include:

- **Lack of Immunity:** Many transmissible diseases are ones that people have little to no immunity to.
- **Vaccination Status:** Vaccination can provide immunity against certain diseases. People who are not vaccinated or have not received booster shots may be more vulnerable.
- **Age:** Infants, young children, and the elderly often have weaker immune systems, making them more susceptible to infections and complications.
- **Underlying Health Conditions:** Individuals with underlying health conditions, such as immunodeficiency disorders, chronic diseases, or respiratory conditions, may be more vulnerable to severe illness.
- **Medication and Treatment Availability:** The availability of medications or treatments specific to the disease can impact vulnerability. Rapid access to appropriate treatments can be lifesaving.
- **Population Density:** Highly populated areas can facilitate the rapid spread of diseases, making people in densely populated regions more vulnerable.
- **Sanitation and Hygiene:** Poor sanitation and hygiene practices can increase the risk of disease transmission. Access to clean water and sanitation facilities is crucial for reducing vulnerability.
- **Access to Healthcare:** The availability and accessibility of healthcare services, including diagnostic testing and medical treatment, can significantly impact the outcome of a novel transmissible disease.
- **Public Awareness:** People who are unaware of the risks associated with a novel transmissible disease or who do not know how to protect themselves may be more vulnerable.
- **Behavioral Factors:** People's behavior, such as adherence to public health guidelines (e.g., handwashing, wearing masks), can influence vulnerability.
- **Fear and Panic:** Fear and panic can hinder effective responses, potentially increasing vulnerability.
- **Access to Information:** Timely and accurate information can empower individuals to take protective measures. Lack of information or misinformation can increase vulnerability.

The spread of a transmissible disease can have severe and far-reaching impacts on human health and society, and can include:

- **Illness and Death:** The most immediate impact is the potential for widespread illness and death. Depending on the disease, the severity of illness can range from mild to life-threatening.
- **Healthcare Overload:** A rapidly spreading disease can quickly overwhelm healthcare systems, leading to shortages of medical supplies, hospital beds, and healthcare personnel. The ability to provide timely medical care may be compromised.
- **Social Disruption:** Social disruption can occur due to isolation and quarantine measures, as well as the need for social distancing. Schools, businesses, and public gatherings may be canceled or limited, affecting daily life and routines.
- **Psychological Trauma:** Survivors of a transmissible disease may experience long-lasting psychological trauma due to the fear of infection, the loss of loved ones, and the overall trauma of the event.
- **Long-Term Health Effects:** Some diseases can cause long-term health effects in survivors, including chronic illnesses and disabilities.

It is important to note that public health agencies and emergency responders work to minimize vulnerabilities by implementing preventive measures, conducting public awareness campaigns, and having response plans in place. Preparedness efforts, including vaccination programs, stockpiling of medical supplies, and coordination among healthcare providers, are critical for reducing vulnerabilities.

The direct risk or vulnerability to property and critical facilities from a transmissible disease is generally limited. While unlikely, transmissible diseases could possibly be moved through a facility's ventilation system. An incident like this would not pose a direct risk to the structure's integrity; however, considerable contamination of the facility may occur, requiring decontamination and potential loss of access to the building for a considerable length of time. Critical facilities and infrastructure generally will not suffer direct impacts from a novel transmissible disease event. Employee absenteeism could indirectly impact the ability for a critical facility to operate. Without necessary operators, critical infrastructure may be susceptible to indirect failure.

Zoonotic diseases are infections that can be transmitted between animals and humans. These diseases can have significant impacts on both human and animal populations, as well as broader environmental consequences. Some diseases have caused significant declines and extinctions in affected species and can infect domesticated animals, leading to economic losses in the agricultural sector. Diseases like avian influenza and foot-and-mouth disease can result in culling of livestock to prevent disease spread. Zoonotic diseases can also influence the health and dynamics of ecosystems. Changes in wildlife populations due to disease can have cascading effects on biodiversity and ecosystem function.

The rapid spread of a transmissible disease can have wide-ranging impacts on governmental operations, affecting functions and public safety. These impacts can disrupt government operations, strain resources, and pose challenges to maintaining public order, and can include:

- **Emergency Response and Healthcare:** Kansas Region I would need to rapidly mobilize emergency response teams, medical personnel, and healthcare facilities. The surge in demand for medical resources can strain healthcare systems, including hospitals, clinics, and emergency services.
- **Public Health Services:** County health departments would play a critical role in disease surveillance, contact tracing, and public health messaging. A transmissible disease could require additional personnel and resources to manage the outbreak.
- **Resource Allocation:** County health departments may need to help allocate resources for medical supplies, pharmaceuticals, personal protective equipment, and vaccine distribution. Competition for limited resources can lead to shortages and increased costs.
- **Transportation and Supply Chain Disruption:** Quarantine measures, travel restrictions, and supply chain disruptions can affect the movement of essential goods and services, including medical supplies, food, and fuel.
- **Economic Impact:** The economic consequences of a transmissible disease can be severe. Business closures, reduced consumer confidence, and trade disruptions can lead to financial losses, unemployment, and instability.
- **Education Disruption:** School closures and disruptions to education can affect students' learning and parental work arrangements, leading to social and economic consequences.
- **Public Services:** Essential public services, such as law enforcement, fire services, and sanitation, may be stretched thin due to the demands of responding to the outbreak.
- **Social Distancing and Isolation Measures:** Government directives for social distancing, isolation, and quarantine can impact daily life, social interactions, and public gatherings. The enforcement of such measures can be challenging.
- **Psychological and Societal Impact:** Fear and anxiety can spread rapidly during disease transmission, affecting public morale and mental health. Disinformation and rumors can compound these psychological impacts.

Buildings and Structures
Impacts would be expected to be minor, with potential facility closure or limited access.

Governmental Operations
Impacts would be expected to be minor, with closure or limited and remote operations impacting community needs. A potential loss of revenue due to decreased spending.

Transportation and Electrical Infrastructure
Depending on the nature of the event, a transmissible disease event would be expected to have minimal impacts on transportation and electric systems.

Water and Wastewater Utilities
Depending on the nature of the event, a transmissible disease event would be expected to have minimal impacts on water and wastewater systems.

Medical and Response Facilities
A transmissible disease can have significant impacts on medical and response facilities and operations. These impacts can vary depending on the nature of the event, the level of preparedness and response, and the specific vulnerabilities, and may include:

- **Medical System Overload:** Depending on the nature of the event, a transmissible could quickly overwhelm response and medical operations and facilities.
- **Medical Response:** Depending on the nature of the event, a transmissible could quickly cause the cessation of medical response due to infection concerns.
- **Mortuary System Overload:** Depending on the nature of the event, a transmissible could quickly cause the overload and cessation of all mortuary services due to infection concerns and supply chain concerns.
- **Supply Chain Disruptions:** Depending on the nature of the event, a transmissible disease could quickly cause the exhaustion of disposal medical materials (personal protective equipment) and the exhaustion of medications and supplies for both medical and medical response operations A potentially restricted supply chain would compound these issues.

Educational Facilities
Depending on the educational facility capability and location, a transmissible disease event may necessitate the closure of the facility for the duration of the event. These closures are expected to have additional economic consequences as caregivers may be required to miss or modify work.

- **School Closures:** Transmissible disease events can lead to the closure of schools due to hazardous conditions. This can strain caregivers and result in lower work attendance.

Communication Systems
Depending on the nature of the event, a transmissible disease event would be expected to have minimal impacts on communications systems.

Environmental and Agricultural Impacts
Depending on the nature of the event, a transmissible disease event would have little effect on the environment.

Jurisdictional Concerns:
As of this plan there is a deficit of community specific data to help quantify both vulnerability and historic impact. However, over the life of this plan the MPC will work to quantify the local level impacts of hazard occurrences to citizens, vulnerable populations, structures, and infrastructure to better inform both this living LHMP and future planning efforts.

Communicable-disease threats, seasonal influenza, norovirus, COVID-19 resurgences, or emerging zoonoses, touch every county in the region, but the impacts and response capacities differ markedly. Riley, Pottawatomie, Geary, and Lyon Counties carry the greatest day-to-day exposure because they host Kansas State University, Fort Riley, Emporia State University, regional hospitals, nursing-home clusters, and densely populated suburbs. Large student and military populations live in congregate housing and move frequently, accelerating disease spread. The upside is capacity, these counties maintain full-time public-health departments, infection-control teams at major hospitals, and logistical ties to the Kansas Department of Health and Environment for rapid vaccine or antiviral allocation. Their challenge is scale,

one outbreak in a residence hall, barracks, or meat-processing line can generate hundreds of contacts that strain testing sites, call centers, and isolation space within hours.

In Chase, Morris, and Wabaunsee Counties, exposure is lower because of sparse population and limited mass-gathering venues. Yet the very factors that reduce transmission also complicate response. Clinics close at 5 p.m., ambulance drives to the nearest full-service hospital can top 45 minutes, and many residents are older, medically fragile, or lack high-speed internet for telehealth. Volunteer EMS units and small staff public-health departments juggle surveillance duties with other jobs, making early case detection harder. During a regional surge, these counties depend on mutual-aid bed agreements to match urban service levels.

At the jurisdictional level, large cities such as Manhattan, Junction City, and Emporia focus on coordinated mass-prophylaxis plans, multilingual risk communication, and surge staffing for hospital emergency departments. School districts reflect the same divide, with universities running on-site labs capable of pooled testing, while rural K-12 systems may rely on county health directors for guidance and share a single school nurse across several buildings.

Cascading Impacts

Cascading impacts often result when one a hazard event triggers one or more differing hazard events or loss of community lifelines. Cascading impacts associated with severe weather may include:

- School closures
- Daily life disruptions
- Supply chain disruption
- Economic impacts and business closures

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of community and jurisdictional infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region I residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 159: Transmissible Disease Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Depending on the scale of outbreak and type of disease, residents may be at risk of illness or death. Population density may play a role in the spread of disease, with urban areas being more likely to be impacted than rural areas. Specific impacts to residents will be dependent upon the type of disease and how it is transmitted.
Impact on Responders	Epidemics pose a unique risk to first responders because they are more likely to be exposed to a transmissible disease before it has been identified. If the novel transmissible disease infects first responders and healthcare practitioners, the provision of public safety and public health services may be significantly impacted.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. A transmissible disease may impact an agency's ability to maintain operations based on the potential to create high levels of employee absenteeism.
Delivery of Services	Epidemics may cause disruption of services in the event of employee absenteeism.
Property, Facilities, and Infrastructure	It is unlikely that an epidemic would have direct effects on critical infrastructure or other facilities or structures. However, under cases of absenteeism, it is possible that regular maintenance or repairs would not be performed, resulting in disrepair.
Impact on Environment	In some cases, disease outbreaks are caused by infections spreading from animals to humans. Under these circumstances, infections may be spread as the result of normal care (proximity) to sick animals or consumption of byproducts of infected animals. Infected animals may die as a result of the disease. Timely removal of infected animal carcasses may help to reduce the spread of the disease among animals.
Economic Conditions	Depending on the scale of outbreak and type of disease, a localized infectious disease outbreak could impact Kansas Region I significantly. In the event residents and workers

Table 159: Transmissible Disease Consequence Analysis

Subject	Potential Impacts
	became infected from an epidemic, employee absenteeism would increase and the length of time necessary to recover could be significant.
Public Confidence in Governance	Governmental response requires direct actions that must be immediate and effective to maintain public confidence. If government functionality is reduced by absenteeism, the public's confidence in governance may be reduced. The ability to perform critical functions will directly impact the community's perception of government.

5.21.7 Future Development

Across Kansas Region I the demographic picture is increasingly two-track. Urban-anchored counties, including Riley, Geary, and increasingly suburban Pottawatomie, continue to attract younger households drawn by Kansas State University, Fort Riley, and spillover development from Manhattan. Jurisdictionally, this means city governments and fast-growing unincorporated subdivisions are wrestling with how to extend roads, storm-water systems, and public-safety coverage without outpacing building-code enforcement. On the plus side, a youthful workforce and expanding tax digest create capacity to finance resilient infrastructure such as safe rooms and backup power for critical facilities. The downside is that rapid population churn leaves many residents unfamiliar with local hazards, while new construction is pushing into flood-prone river terraces and steep loess bluffs.

A second, quieter trend shapes the more rural prairie counties, Chase, Morris, and Wabaunsee and, to a lesser degree, the outlying townships of Lyon. Here, population is either flat or slowly declining as younger adults leave for regional job centers. Countywide, this eases future exposure by limiting new housing in wildfire interface zones and along aging levees. At the jurisdictional level, however, shrinking volunteer rosters, older housing stock, and a tighter tax base make it harder for small towns to maintain dams, replace deficient bridges, and modernize emergency-warning systems. An aging demographic also increases the proportion of medically fragile residents who need special evacuation assistance during disasters.

Viewed together, the region's mixed growth profile offers both opportunities and challenges for hazard mitigation. Growing jurisdictions can mandate higher standards for new development and allocate revenues to retrofit schools, hospitals, and water plants before the tax base matures. Meanwhile, counties facing depopulation may prioritize strategic retreat from high-risk areas, consolidation of fire districts, and mutual-aid agreements that preserve service levels despite fewer local responders. Balancing these divergent trajectories, while maintaining a coherent regional strategy for floods, severe storms, and wildfire, will be central to crafting a resilient region.

5.21.8 Hazard Planning Significance

Utilizing the above detailed formula for calculating the hazard planning significance for human caused and technological hazards, the following table details the rating of each criterion along with a composite rating:

Table 160: Transmissible Disease Planning Significance

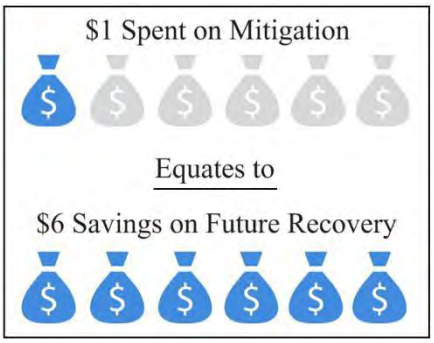
County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Chase County	3.0	3.0	1.0	4.0	2.8	Moderate
Geary County	3.0	3.0	1.0	4.0	2.8	Moderate
Lyon County	3.0	3.0	1.0	4.0	2.8	Moderate
Morris County	3.0	3.0	1.0	4.0	2.8	Moderate
Pottawatomie County	3.0	3.0	1.0	4.0	2.8	Moderate
Riley County	3.0	3.0	1.0	4.0	2.8	Moderate
Wabaunsee County	3.0	3.0	1.0	4.0	2.8	Moderate

Section 6 – Mitigation Strategy

6.1 Introduction

As part of this planning effort, Kansas Region I worked to minimize the risk of future impacts from identified hazards to all citizens of the region. In an attempt to shape future regulations, ordinances and policy decisions the MPC reviewed, revised, and developed a comprehensive hazard mitigation strategy. This comprehensive strategy includes:

- Goals to guide the selection of activities to mitigate and reduce potential loss.
- A discussion of funding capabilities for hazard mitigation projects.
- Identification, evaluation, and prioritization of mitigation actions along with potential funding sources.



Kansas Region I's mitigation strategy promotes long-term hazard resilience that will have a positive impact on quality-of-life issues. By minimizing both the exposure to, and potential impacts from, identified hazards jurisdictions can expect to minimize injuries and loss of life, reduce property damage, and minimize the day-to-day social and economic disruptions that follow hazard events.

According to an analysis by the National Institute of Building Sciences, natural hazard mitigation saves $6 on average for every $1 spent on federal mitigation grants.

6.2 Mitigation Goals

During this process, and after a thorough review and discussion with all stakeholders, it was determined that the priorities of the Kansas Region I in relation to hazard mitigation planning have not changed during the five years of the previous planning cycle. Additionally, and based on discussion with all stakeholders, it was determined that the goals identified in the previous LHMP remained viable and valid. The following represent the identified goals for the 2025 LHMP:

- **Goal 1:** Reduce the risk to the people and property from the identified hazards in this plan.
- **Goal 2:** Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards.
- **Goal 3:** Improve public outreach initiatives to include education, awareness, and partnerships with all entities in order to enhance the understanding identified hazards and hazard mitigation opportunities.
- **Goal 4:** Enhance communication and coordination among all agencies and between agencies and the public.

The Kansas Region I MPC will continuously evaluate these identified goals against current capabilities and conditions. As part of this process, the Kansas Region I MPC will utilize a monitoring and evaluation system to systematically track, assess, and measure the progress of activities and outcomes related to the goals outlined in this HMP. Key components to the monitoring and evaluation system include:

- Establishment of baseline data to quantify the starting point upon the approval of this plan. This will provide a reference against which progress can be measured.
- Enactment of a monitoring plan which outlines the specific activities, tasks, and responsibilities for regularly collecting, analyzing, and reporting data on the performance indicators.
- Identification and specification of the methods for collecting data, whether through surveys, interviews, focus groups, or observations.
- Definition of the criteria and methods for analyzing collected data. This includes determining how quantitative and qualitative data will be processed and interpreted to assess progress.
- Involvement of stakeholders to ensure that all perspectives are considered, and that feedback on the progress of achieving the delineated goals is taken into account.

Providing specific goals for each hazard type in Appendix D, the jurisdictions tailored their mitigation efforts to address the unique challenges posed by different types of hazards while still working towards the overarching goals established for the entire region.

6.3 Review and Creation of Hazard Mitigation Actions

Hazard mitigation actions are proactive measures taken to reduce or eliminate the long-term risk and impact of natural and human-made hazards. These actions are designed to minimize the damage caused by disasters and contribute to the overall resilience of communities and infrastructure.

For this plan update members of the MPC were provided with a complete list of previously identified mitigation actions and asked to review them to determine their status. Previously identified mitigation status was reported using the following definitions:

- **Completed:** The action has been fully completed.
- **Carried Over:** The action was not started and is carried over into this planning effort.
- **Modified:** Action has been revised to reflect current planning environment or identified changes.
- **Deleted:** The action has been removed from consideration due to either a lack of resources or changing mitigation priorities.
- **Ongoing:** The action is completed and has become an ongoing activity or capability.

Additionally, MPC members and stakeholders were provided with opportunities to identify and incorporate newly identified actions based on the changing hazard environment or previously unidentified needs. When considering new mitigation actions, participating jurisdictions were guided to the January 2013 FEMA publication Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards. This document offers a comprehensive collection of strategies and best practices for reducing risks associated with natural hazards. It covers various types of natural hazards, and provides practical ideas for communities, local governments, and individuals to implement.

In preparing a mitigation strategy all reasonable and obtainable mitigation actions were considered to help achieve the general goals. Priorities were developed based on past damage, existing exposure to risk, and weaknesses identified by the State and local capability assessments. In identifying mitigation actions, the following activities were considered:

- The use of applicable building construction standards.
- Hazard avoidance through appropriate land-use practices.
- Relocation, retrofitting, or removal of structures at risk.
- Removal or elimination of the hazard.
- Reduction or limitation of the amount or size of the hazard.
- Segregation of the hazard from that which is to be protected.
- Modification of the basic characteristics of the hazard.
- Control of the rate of release of the hazard.
- Provision of protective systems or equipment for both cyber and physical risks.
- Establishment of hazard warning and communication procedures.
- Redundancy or duplication of essential personnel, critical systems, equipment, and information materials.

In general, all identified mitigation actions were classified under one of the following broad categories:

- **Local plans and regulations:** Actions that create or update plans to reflect situational changes and/or actions that aid in the creation, revision, or adoption of regulations related to hazard mitigation and management.
- **Infrastructure:** Actions that the modification of existing buildings or structures or involve the construction of structures to reduce the impact of hazard.
- **Natural system protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems.

- **Public education and awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them.

6.4 Prioritization of Mitigation Actions

The MPC and subject matter experts worked together to prioritize both previously identified and newly identified hazard mitigation actions. The methodology used to determine mitigation action priorities was based upon the following:

- Review of the updated risk assessments.
- Review of revised goals and objectives.
- Review of capabilities.

A multi-pronged and flexible analysis method was used for determining and prioritizing mitigation actions. An initial review of previously identified but not completed actions was conducted to ensure that, based on current condition and capabilities, the actions were still viable. Actions that were considered viable were retained in this plan update, with minor revisions completed as necessary.

For identified actions that were retained, and for newly identified actions, the FEMA recommended Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLEE) criteria were used to assist with prioritization. The following table details the STAPLEE criteria:

Table 161: STAPLEE Review Criteria

Criteria	Discussion	Example Considerations
Social	There should be community acceptance and support for the mitigation action?	Does the action have community acceptance? Will the proposed action adversely affect one segment of the population?
Technical	The proposed mitigation action should be technically feasible and should provide a long-term reduction in losses.	How effective is the action in avoiding or reducing future losses? Does it solve a problem or only a symptom? Does the action create additional problems?
Administrative	Personnel and administrative capabilities should be available to administer all phases of the project.	Are the staffing and administrative capabilities to implement the action in place? Is there someone to coordinate and lead the effort?
Political	Political support for the mitigation action needs to be present.	Is the action politically acceptable? Have political leaders been involved in the planning process? Is there a political champion to help see the project to completion?
Legal	The legal authority to implement the actions need to be in place or possible with the passing of laws or regulations.	Does the legal authority to implement the proposed action exist? Are there potential legal repercussions?
Economic	The current budget (and/or general obligation bonds or other instruments) need to be in place to fully fund the mitigation action.	Do the potential benefits of this action exceed the potential costs? Has funding been secured for the proposed action? What are the potential funding sources (public, non-profit, and private)? How will this action affect the fiscal capability of the community(s)? Does the action contribute to other community goals, such as capital improvements or economic development?
Environmental	Actions should interface with the need for sustainable and environmentally healthy communities. Also, statutory	How will the action affect the environment? Will the action need environmental regulatory approvals?

Table 161: STAPLEE Review Criteria

Criteria	Discussion	Example Considerations
	considerations, such as the National Environmental Policy Act need to considered for federal funds.	Will it meet federal, state, and local state regulatory requirements? Are endangered or threatened species likely to be affected?

Based on the prioritization review, the MPC assigned each action the following prioritized ranking:

- **High Priority:** Actions that provide substantial progress towards improving resiliency and are determined as potentially urgent in nature by the MPC. This would include actions that strongly support the reduction of high hazard risks and meet mitigation goals. Additionally, actions in this ranking may have imminent funding availability or strong community support.
- **Medium Priority:** Actions that provide reasonable progress towards improving resiliency and are determined as moderately urgent in nature by the MPC. This would include actions that would lessen impact hazard events, but not eliminate the impact completely.
- **Low Priority:** Actions that provide incremental progress towards improving resiliency and are determined as slightly urgent in nature by the MPC. This would include actions that are generally the responsibility of the local community, actions outside the normal authority of the State, or actions whose cost/benefit analysis returns a low yield.

6.5 Mitigation Action Funding Sources

It is generally recognized that mitigation actions help realize long term savings by preventing future losses due to hazard events. However, many mitigation actions are beyond the budgetary capabilities of a single jurisdiction. This section provides a general description of some of the avenues available to defray the cost of implementing mitigation actions.

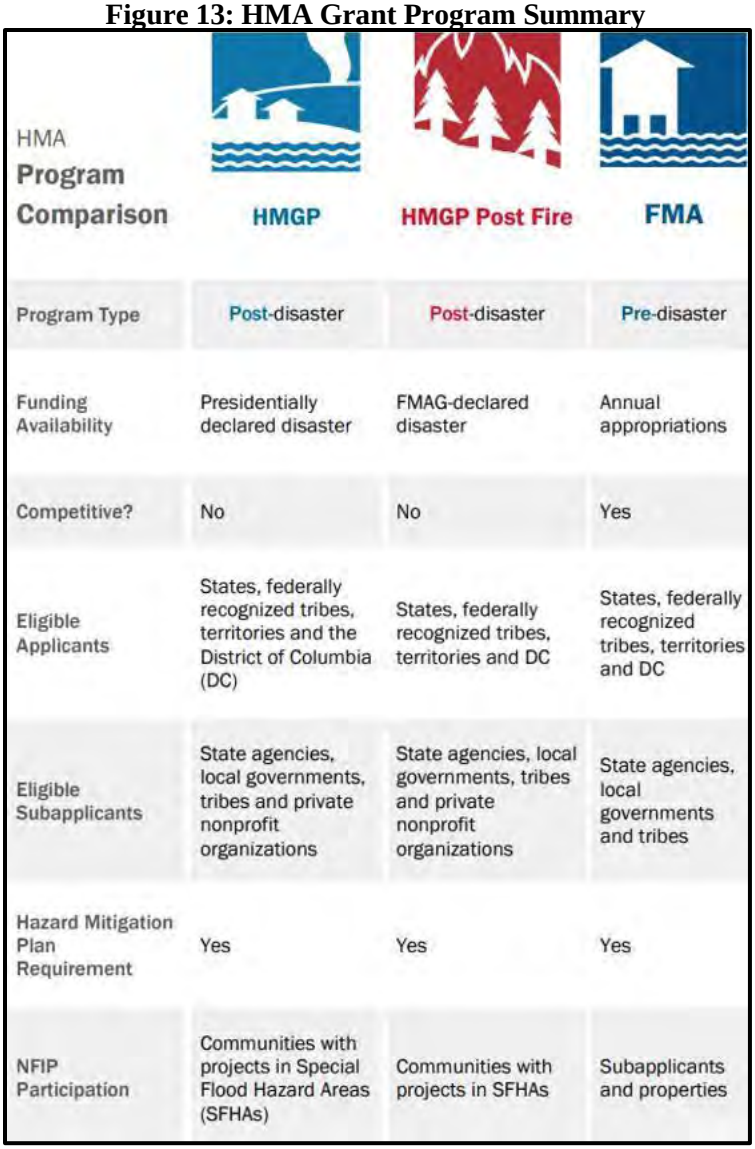
FEMA provides financial assistance to state, local, tribal, and territorial governments, as well as certain private non-profit organizations, to implement projects that help reduce the risk and impact of future disasters. These grant programs are designed to support initiatives aimed at mitigating hazards and improving resilience. The main grant program offered by FEMA for hazard mitigation is the Hazard Mitigation Assistance (HMA) program. The HMA program includes four subprograms, the Hazard Mitigation Grant Program (HMGP), the HMGP Post-Fire, and the Flood Mitigation Assistance (FMA) grant program. Applicants to these grant programs are required to submit project proposals that demonstrate the effectiveness of their proposed mitigation projects. The eligibility criteria, application process, and specific requirements for each program are outlined by FEMA in their guidelines and announcements, which are typically published on FEMA's website.

The following provides a general overview of major grant funding streams:

- **HMGP and HMGP Fire:** The HMGP grants assist in implementing long-term hazard mitigation measures following Presidential disaster declarations, including fire declarations. Funding is available to implement projects in accordance with State, Tribal, and local priorities.
- **FMA Grant Program:** FMA is a competitive grant program that provides funding to states, local communities, federally recognized tribes and territories. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the NFIP. FEMA chooses recipients based on the applicant's ranking of the project and the eligibility and cost-effectiveness of the project. FEMA requires state, local, tribal and territorial governments to develop and adopt hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance, including funding for hazard mitigation assistance projects.

The following figure summarizes HMA grants programs:

Figure 13: HMA Grant Program Summary



HMA Program Comparison	HMGP	HMGP Post Fire	FMA
Program Type	Post-disaster	Post-disaster	Pre-disaster
Funding Availability	Presidentially declared disaster	FMAG-declared disaster	Annual appropriations
Competitive?	No	No	Yes
Eligible Applicants	States, federally recognized tribes, territories and the District of Columbia (DC)	States, federally recognized tribes, territories and DC	States, federally recognized tribes, territories and DC
Eligible Subapplicants	State agencies, local governments, tribes and private nonprofit organizations	State agencies, local governments, tribes and private nonprofit organizations	State agencies, local governments and tribes
Hazard Mitigation Plan Requirement	Yes	Yes	Yes
NFIP Participation	Communities with projects in Special Flood Hazard Areas (SFHAs)	Communities with projects in SFHAs	Subapplicants and properties

Additionally, the following provide available grant funding avenues for hazard mitigation projects:

- **Rehabilitation Of High Hazard Potential Dam (HHPD) Grant Program:** HHPD awards provide technical, planning, design and construction assistance in the form of grants for rehabilitation of eligible high hazard potential dams. A state or territory with an enacted dam safety program, the State Administrative Agency, or an equivalent state agency, is eligible for the grant.
- **Emergency Management Performance Grant:** Program provides state, local, tribal and territorial emergency management agencies with the resources required for implementation of the National Preparedness System and works toward the National Preparedness Goal of a secure and resilient nation. Allowable costs support efforts to build and sustain core capabilities across the prevention, protection, mitigation, response and recovery mission areas.
- **State Homeland Security Program:** Program includes a suite of risk-based grants to assist state, local, tribal and territorial efforts in preventing, protecting against, mitigating, responding to and recovering from acts of terrorism and other threats. This grant provides grantees with the resources required for implementation of the National Preparedness System and working toward the National Preparedness Goal of a secure and resilient nation.
- **Public Assistance Program:** The mission of FEMA's Public Assistance program is to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities

can quickly respond to and recover from major disasters or emergencies declared by the President. Through the Public Assistance program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain private non-profit organizations. The Public Assistance Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. The Federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The grantee determines how the non-Federal share (up to 25%) is split with the eligible applicants.

- **Individual Assistance Program:** After a disaster, the federal government determines if any county in the state meets the criteria for individual disaster assistance. The decision is based on damage related to the severity and magnitude of the event. When a county receives an Individual Assistance declaration from the President of the United States, anyone who lives in that county can apply for assistance.
- **Small Business Administration Disaster Loans:** The Small Business Administration provides low-interest disaster loans to homeowners, renters, businesses of all sizes, and most private nonprofit organizations. Small Business Administration disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.
- **The Housing and Urban Development Agency**: Provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.
- **Community Development Block Grant Program**: This is a flexible program that provides communities with resources to address a wide range of unique community development needs. The program provides annual grants on a formula basis to general units of local government and States.
- **Individual and Households, Other Needs Assistance Program:** This program provides financial assistance to individuals or households who sustain damage or develop serious needs because of a natural or man-made disaster. The funding share is 75% federal funds and 25% state funds. The program provides grants for necessary expenses and serious needs that cannot be provided for by insurance, another federal program, or other source of assistance. The current maximum allowable amount for any one disaster to individuals or families is $25,000. The program gives funds for disaster-related necessary expenses and serious needs, including personal property, transportation, medical and dental, funeral, essential tools, flood insurance, and moving and storage.
- **WUI Grants:** The 10-Year Comprehensive Strategy focuses on assisting people and communities in the WUI to moderate the threat of catastrophic fire through the four broad goals of improving prevention and suppression, reducing hazardous fuels, restoring fire-adapted ecosystems, and promoting community assistance. The WUI Grant may be used to apply for financial assistance towards hazardous fuels and educational projects within the four goals of: improved prevention, reduction of hazardous fuels, restoration of fire-adapted ecosystems and promotion of community assistance.

Additionally, many of these programs also emphasize the protection of culturally significant sites and resources from the impacts of natural hazards.

Small and impoverished communities that receive grants may receive a federal cost share of up to 90% of the total amount approved under the grant award. As defined in 44 CFR 201.2, a small and impoverished community is:

- A community of 3,000 or fewer individuals that is identified by the State as a rural community
- Is not a remote area within the corporate boundaries of a larger city
- Is economically disadvantaged, by having an average per capita annual income of residents not exceeding 80% of national, per capita income
- The local unemployment rate exceeds by one percentage point or more, the most recently reported, average yearly national unemployment rate
- Any other factors identified in the State Plan in which the community is located

6.6 Previously Identified Jurisdictional Mitigation Actions

Previously identified hazard mitigation actions were reviewed by the relevant jurisdiction to determine the status of each action. The status of these previously identified hazard mitigation actions indicates if the action has been completed, is carried over to this version of the plan, has been modified, or is no longer being considered. Additionally, each action was assigned a new number to conform with the numbering system in this LHMP. These actions may be found under the relevant jurisdiction in Appendix D. Please note that the action description may have been updated for clarity.

6.7 Completed Mitigation Actions

Kansas Region I and all participating jurisdictions remain committed to investigating and obtaining all available grant funding for the completion of hazard mitigation projects. Any competed action is noted under the relevant jurisdictions in Appendix D.

6.8 Jurisdictional Mitigation Actions

To support the mitigation goals identified in this LHMP, all participating jurisdictions identified a comprehensive range mitigation projects and activities. The selected set of hazard mitigation actions carefully takes a holistic approach to mitigation while simultaneously addressing each of the plan's profiled hazards. The list of mitigation actions is based upon the potential to reduce risk to life and property with an emphasis on ease of implementation, community and agency support, consistency with local jurisdictions' plans and capabilities, available funding, and jurisdictional vulnerability. It is important to note that since the previous LHMP, requirements for plan approval have changed. In the previous plan, many participating jurisdictions identified only a few mitigation actions, with none that are specific to an identified hazard. As such, numerous additional actions have been identified to ensure there is at least one action per identified hazard.

Public Comment: *With diminishing federal funding many of our actions may never be possible.*

To ensure that all hazard that could potentially impact a participating jurisdiction have been assigned a mitigation action, the following table provides a cross check of action (by assigned jurisdictional action number) and identified hazards. Please see Appendix D: Jurisdictional Mitigation Actions for a full list of jurisdictional mitigation actions.

Table 162: Jurisdictional Mitigation Action Cross Check

Jurisdiction	All Hazards	Agricultural Infestation	Dam or Levee Failure	Drought	Extreme Temperatures	Flood	Severe Weather	Severe Winter Weather	Tornado	Wildfire
Chase County	**1-4**	**5**	**6, 7**	**8**	**9**	**10-14**	**15,16**	**17**	**15,16**	**18,19,20**
Cedar Point	1	-	2	3	4	5,6,7	8,9	4	8,9	10
Cottonwood Falls	1	-	2	3	4	5,6,7	8,9	4,11	8,9	8,12,13
Elmdale	1	-	2	3	4	5,6,7	8,9	4	8,9	8,10
Matfield Green	-	-	2	3	4	5,6,7	8,9	4	8,9	8,10,11
Strong City	1	-	2	3	4	5,6	7,8,9	4,10	7,8,9	7,11,12
USD #284 – Chase County	1,2	-	-	3	4	5	6	4	6	6
Public Wholesale Water Supply District #26	1,2	-	-	-	-	-	-	-	-	-
Rural Water District (RWD)	1	-	-	2	-	-	-	-	-	2,3
Flint Hills Rural Electric Cooperative	1-4	-	-	-	-	-	-	-	-	-
4 Rivers Electric	1-3	-	-	-	-	-	-	-	-	-
Geary County	**1-4**	**5**	**6**	**7**	**8**	**9-14**	**15-18**	**19**	**15-18**	**20-23**
Grandview Plaza	1	-	2	3	4	5,6	7,8,9	4,10	7,8,9	7,11,12
Junction City	1	-	2	3	4	5,6	7,8,9	4,10	7,8,9	7,11,12
Milford	1	-	2	3	4	5,6	7,8,9	4,10	7,8,9	7,11,12
Cloud County Community College		-	-	1	2	3	4	2	4	4
USD #475 – Geary County	1,2	-	-	3	4	5	6,7	4	6,7	7

Jurisdiction	All Hazards	Agricultural Infestation	Dam or Levee Failure	Drought	Extreme Temperatures	Flood	Severe Weather	Severe Winter Weather	Tornado	Wildfire
RWD #1	1	-	-	2						2,3
RWD #4	1	-	-	2	-	-	-	-	-	2,3
RWD #4 – Dwight	1	-	-	2	-	-	-	-	-	2,3
Bluestem Electrical Cooperative	1,2,3	-	-	-	-	-	-	-	-	-
DS&O Electric Cooperative	1,2,3	-	-	-	-	-	-	-	-	-
Flint Hills Rural Electric Cooperative	1-4	-	-	-	-	-	-	-	-	-
4 Rivers Electric Cooperative	1,2,3	-	-	-	-	-	-	-	-	-
Lyon County	**1-4**	**5**	**6**	**7**	**8**	**9,10,11**	**12,13**	**14**	**12,13**	**15,16,17**
Admire	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Allen	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Americus	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Bushong	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Emporia	1	-	2	3	4	5,6,7,8	9,10,11	4,12	9,10,11	9,13,14
Hartford	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Neosho Rapids	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Olpe	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	812,13
Reading	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Emporia State University		-		1	2	3	4	2	4	4
Flint Hills Technical College		-		1	2	3	4	2	4	4
USD #251 – North Lyon County	1,2	-	-	3	4	5	6,7	4	6,7	7
USD #252 – Southern Lyon County	1,2	-	-	3	4	5	6,7	4	6,7	7
USD #253 - Emporia	1,2	-	-	3	4	5	6,7	4	6,7	7
Coffey County RWD 2	1	-	-	2	-	-	-	-	-	2,3
RWD 1	1	-	-	2	-	-	-	-	-	2,3
RWD 2	1	-	-	2	-	-	-	-	-	2,3
RWD 3	1	-	-	2	-	-	-	-	-	2,3
RWD 4	1	-	-	2	-	-	-	-	-	2,3
RWD 5	1	-	-	2	-	-	-	-	-	2,3
Flint Hills Rural Electric Cooperative	1-4	-	-	-	-	-	-	-	-	-
4 Rivers Electric Cooperative	1,2,3	-	-	-	-	-	-	-	-	-
Morris County	**1-4**	**5**	**6**	**7**	**8**	**9,10,11**	**12,13**	**14**	**12,13**	**15,16,17**
Council Grove	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Dwight	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
White City	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Wilsey	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
USD #417 – Morris County	1,2	-	-	3	4	5	6,7	4	6,7	7
USD #481 – Rural Vista	1,2	-	-	3	4	5	6,7	4	6,7	7
Diamond Creek Watershed Joint District #61	1	-	2	-	-	-	-	-	-	-
Lyon Creek Watershed	1	-	2	-	-	-	-	-	-	-
Rock Creek Watershed Joint District #84	1	-	2	-	-	-	-	-	-	-
RWD	1	-	-	2	-	-	-	-	-	2,3
DS&O Electric Cooperative	1,2,3	-	-	-	-	-	-	-	-	-
Flint Hills Rural Electric Cooperative	1-4	-	-	-	-	-	-	-	-	-
4 Rivers Electric	1,2,3	-	-	-	-	-	-	-	-	-
Pottawatomie County	**1-4**	**5**	**6**	**7**	**8**	**9,10,11**	**12,13**	**14**	**12,13**	**15,16,17**
Belvue	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Emmett	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Havensville	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Louisville	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13

Jurisdiction	All Hazards	Agricultural Infestation	Dam or Levee Failure	Drought	Extreme Temperatures	Flood	Severe Weather	Severe Winter Weather	Tornado	Wildfire
Olsburg	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Onaga	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
St. George	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
St Mary's	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Wamego	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Westmoreland	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Wheaton	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
USD #320 – Wamego	1,2	-	-	3	4	5	6,7	4	6,7	7
USD #321 – Kaw Valley	1,2	-	-	3	4	5	6,7	4	6,7	7
USD #322 – Onaga / Havensville / Wheaton	1,2	-	-	3	4	5	6,7	4	6,7	7
USD #323 – Rock Creek	1,2	-	-	3	4	5	6,7	4	6,7	7
USD #384 – Blue Valley	1,2	-	-	3	4	5	6,7	4	6,7	7
RWD #2	1	-	-	2	-	-	-	-	-	2,3
RWD #3	1	-	-	2	-	-	-	-	-	2,3
RWD #4	1	-	-	2	-	-	-	-	-	2,3
Bluestem Electric COOP	1,2,3	-	-	-	-	-	-	-	-	-
Nemaha-Marshall Electric Cooperative	1,2,3	-	-	-	-	-	-	-	-	-
Riley County	**1-4**	**5**	**6**	**7**	**8**	**9-12**	**13,14**	**15**	**13,14**	**16,17,18**
Leonardville	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Manhattan	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Ogden	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Randolph	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Riley	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Kansas State University				1	2	3	4	2	4	4
USD #378 – Riley County	1,2	-	-	3	4	5	6,7	4	6,7	7
USD #383 – Manhattan / Ogden	1,2	-	-	3	4	5	6,7	4	6,7	7
USD #384 – Blue Valley	1,2	-	-	3	4	5	6,7	4	6,7	7
Bluestem Electric COOP										
Flint Hills Rural Electric Cooperative	1-4	-	-	-	-	-	-	-	-	-
Sunflower Electric	1,2,3	-	-	-	-	-	-	-	-	-
Wabaunsee County	**1-4**	**5**	**6**	**7**	**8**	**9,10,11**	**12,13**	**14**	**12,13**	**15,16,17**
Alma	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Alta Vista	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Eskridge	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Harveyville	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Maple Hill	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
McFarland	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
Paxico	1	-	2	3	4	5,6,7	8,9,10	4,11	8,9,10	8,12,13
USD #329 – Wabaunsee Schools	1,2	-	-	3	4	5	6,7	4	6,7	7
USD #330 – Mission Valley	1,2	-	-	3	4	5	6,7	4	6,7	7
RWD #1	1	-	-	2	-	-	-	-	-	2,3
RWD #2	1	-	-	2	-	-	-	-	-	2,3
Tri-County Drainage District	1	-	-	-	-	-	-	-	-	-
Bluestem Electric COOP	1,2,3	-	-	-	-	-	-	-	-	-
Flint Hills Rural Electric Cooperative	1-4	-	-	-	-	-	-	-	-	-
4 Rivers Electric Cooperative	1,2,3	-	-	-	-	-	-	-	-	-

Note: -: Jurisdiction did not consider hazard to be either a major risk to the community, provided an action for the hazard classified as all hazards, and/or the hazard to be managed by another entity.

Prior to the implementation of any action further feasibility analysis will be performed. Additionally, a Benefit-Cost Analysis that determines the future risk reduction benefits of a hazard mitigation project and compares those benefits to its costs will be conducted as required. Applicants and sub-applicants will use FEMA approved methodologies and tools, such as the Benefit-Cost Analysis Toolkit, to demonstrate the cost-effectiveness of their projects. The result of the analysis is a Benefit-Cost Ratio, and a project is considered cost-effective when the Benefit-Cost Ratio is 1.0 or greater. Depending on the project, either a full Benefit-Cost Analysis will be completed by entering documented values into the FEMA Benefit-Cost Analysis Toolkit, which calculates a benefit-cost ratio or, if the project meets specified criteria, a streamlined Benefit-Cost Analysis may be completed (FEMA's cost-effectiveness requirement is never waived).

All participating jurisdictions acknowledge that the adoption and approval of this plan does not obligate the completion of each identified action. Rather, the MPC understands that progress should be shown in mitigation efforts which may include the completion of mitigation actions or other actions or progress in achieving the goals of the LHMP.

6.9 Mitigation Action Implementation and Monitoring

Each participating jurisdiction is responsible for implementing and managing identified mitigation actions. To foster accountability and increase the likelihood that actions will be implemented, every proposed action is assigned to a specific department or position as a champion. In general:

- The identified champion will be responsible for tracking and reporting on action status.
- The identified champion should provide input on whether the action as implemented is successful in reducing vulnerability, if applicable.
- If the action is unsuccessful in reducing vulnerability, the identified champion will be tasked with identifying deficiencies and additional required actions.

Additionally, each action has been assigned a proposed completion timeframe to determine if the action is being implemented according to plan.

In general, the Kansas Region I MPC is responsible for monitoring the progress of mitigation activities and projects throughout the county in conjunction with participating jurisdictions. To facilitate the tracking of any awarded hazard mitigation grants, the Kansas Region I MPC, in conjunction with participating jurisdictions, will compile a list of projects funded throughout the calendar year, if any, and add it to an electronic database administered by KDEM. Additionally, the Kansas Region I MPC will monitor information on any other mitigation projects that were not funded through hazard mitigation grants.

To track mitigation projects from initiation to closeout, participating jurisdictions will use a project tracking spreadsheet that includes, at a minimum, the following information:

- Applicant/Subrecipient
- Grant Identifier
- Contractor
- Total Cost Estimate
- Federal/Local share
- Award Date
- Period of Performance
- Quarterly Reports
- Subrecipient Risk
- Reimbursements

Upon completion of a project, a member of the awarded jurisdiction, a member of the Kansas Region I MPC, and a State of Kansas representative will conduct a closeout site visit to:

- Review all files and documents

- Review all procurement files and contracts to third parties
- Take photos of the completed project

Project closeout packages will generally be submitted 90 days after a project has been completed, and will include the following:

- Summary of documentation
- Pictures of completed project
- Materials, labor, and equipment forms, if required
- Close-out certification

Additionally, the State of Kansas is currently working with FEMA to apply the FEMA GO system to all FEMA grants. The FEMA GO system allows users to apply, track, and manage all disaster and non-disaster grants and helps improve oversight and monitoring.

Section 7 – Plan Maintenance

7.1 Introduction

The LHMP is a living document that will be updated and submitted to FEMA for approval every five years as required by 44 CRF 201.4. During the five-year cycle, the plan will undergo continuous monitoring and evaluation to ensure that the policies, procedures, priorities, and state environment established in the plan reflect current conditions. All participating jurisdictions will utilize the MPC to provide plan updates, revisions, and data collection for future LHMP planning purposes.

7.2 Plan Maintenance Responsibilities

KDEM serves as the lead coordinating agency for plan maintenance. Additional assistance in the plan maintenance process is provided by members of the MPC, subject matter experts, and representatives of local jurisdictions.

KDEM and the MPC will facilitate the review and revision of the HMP every five years. The review and revision will be an ongoing process. This process will incorporate all of the revisions made during the life of the plan, especially new data obtained from participating jurisdictions.

7.3 Plan Review Meetings

As part the Local Emergency Planning Committee (LEPC), a Mitigation Sub-Committee will be formed from members of the MPC. The LEPC Mitigation Sub-Committee will meet annually for the first two years after plan approval. Kansas Region I LEPC Mitigation Sub-Committee members will determine the meeting dates and locations and will ensure that the meetings are open to all participating jurisdictions and the public. The elected LEPC Mitigation Sub-Committee Chair will be the main point of contact for these meetings and will maintain attendance and meeting minutes.

The purpose of these meetings is to discuss agency capability changes, the status of proposed projects, and any new studies or mapping that may inform the LHMP. Should a specific plan element or section require revision or amendment due to a state or federal legislation or policy change, the LEPC Mitigation Sub-Committee will work with the KDEM SHMO to complete a plan addendum and submit it to FEMA as quickly as is practicable.

During these meetings, and in order to monitor LHMP progress, the following information will be tracked by the LEPC Mitigation Sub-Committee:

- How the actions from the mitigation strategy are being pursued and completed
  - Are actions being prioritized
- How the plan goals and objectives are being carried out
- How mitigation funding mechanisms are being utilized
- How is technical assistance being received

Additionally, the LEPC Mitigation Sub-Committee will monitor the following elements to ensure the HMP is current and correct:

- Reviewing the hazards and determining if any of them have changed
- Determining if there are new hazards that pose a risk to the state
- Ensuring goals and objectives are still relevant
- Determining if any actions have been completed or are deemed irrelevant
- Determining if new actions should be added
- Determining if capabilities have changed

After each meeting, the LEPC Mitigation Sub-Committee will compile a meeting report for usage in future plan revisions.
In addition to these meetings, MPC members and local jurisdictional representatives will monitor and evaluate the progress of mitigation projects via quarterly reports, site visits, correspondence, and reimbursements. Completed projects will be evaluated for loss avoidance and alignment with local development plans.

KDEM may request a non-scheduled report on the monitoring, evaluation, or updating of any portion of the HMP plan due to irregular progress on mitigation actions and or projects, in the aftermath of a hazard event, or for any reason deemed appropriate.

7.4 Plan Monitoring and Situational Change

Plan monitoring can be defined as the ongoing process by which stakeholders obtain regular feedback on the progress being made towards achieving their goals and objectives. In the more limited approach, monitoring may focus on tracking projects and the use of the agency's resources. In the broader approach, monitoring also involves tracking strategies and actions being taken by partners and non-partners, and figuring out what new strategies and actions need to be taken to ensure progress towards the most important results.

The full MPC or the LEPC Mitigation Sub-Committee will track and record all substantial situational changes and will address, as appropriate, the following questions:

- Is the mitigation project under, over, or on budget?
- Is the mitigation project behind, ahead of, or on schedule?
- Are there any changes in jurisdictional capabilities which impact the plan?
- Are there any changes in jurisdictional hazard risk?
- Has the mitigation action been initiated, or its initiation planned?
- Is the current process of prioritizing mitigation actions and projects appropriate and accurate?
- Has the current method of incorporating mitigation actions and projects yielded a comprehensive action and project strategy to address seen and unforeseen hazards?
- If applicable, has participation in a mitigation action's collaboration been regular?
- Was a negative result caused directly or indirectly by insufficient levels of public outreach?
- If any, what plan updates occurred, why they occurred, and what is their impact?

7.5 Post-Disaster Review

After each Presidential disaster declaration, and in coordination with FEMA and the KDEM, the MPC will convene to document impacts on Kansas Region I and to determine if any mitigation actions should be considered to reduce future risk. This will allow for the development of hazard mitigation recommendations to FEMA during the disaster operation as well as to update the mitigation strategy as needed. The post-disaster review may coincide with established meetings or may be convened as separate events.

7.6 Plan Evaluation

A plan evaluation, conducted by the MPC, is a rigorous and independent assessment of either completed or ongoing activities to determine the extent to which they are achieving stated goals and contributing to decision making.

A plan evaluation report will be completed when the situation dictates. The following situations are typical examples of when an evaluation will be necessary:

- Post hazard event
- Post training exercise
- Post tabletop or drill exercise
- Significant change or completion of a mitigation project
- Significant change or completion of a mitigation action

An evaluation report will ask the following questions in response to the previously listed events.

- Do the mitigation objectives and goals continue to address the current hazards?
- Are there new or previously unforeseen hazards?
- Does a change in hazard vulnerability demand a change of or addition of mitigation actions or projects?

- Does a change in the mitigation strategy demand a change of or addition of mitigation actions or projects?
- Are current resources appropriate for implementing a mitigation project?
- Was the outcome of a mitigation action/project expected?
- Are there implementation problems?
- Was the public engaged to the point where they were satisfied with current engagement strategies?
- Did the public participate in a number that produced a positive yield on the plan, action, or project?
- Are there coordination problems?

7.7 Plan Updates

Typically, the updating of a LHMP is initiated upon the completion of a plan evaluation when the evaluation determines an update is appropriate. A plan update also occurs every five years per FEMA guidelines or at any time it is deemed necessary by MPC members or KDEM.

According to FEMA DMA 2000 guidelines for mitigation planning g, Kansas Region I will begin the update process three years from this plan's adoption under the direction of the LEPC Mitigation Sub-Committee. An increase in meeting tempo to twice yearly will allow the LEPC Mitigation Sub-Committee to gather relevant information needed for the next plan update. The following meeting schedule indicates the tasks to be performed during this plan update period:

- **2028 Spring Meeting:** The LEPC Mitigation Sub-Committee will begin updating the risk assessment portion of the plan. Hazards will be analyzed to determine if they are still relevant, if location should be updated, and if new hazards should be added. Previous occurrences will be reviewed to help determine the probability of future events.
- **2028 Fall Meeting:** The LEPC Mitigation Sub-Committee will begin updating the vulnerability assessment. The MPC will update the vulnerability assessment portion of the plan. Data will need to be gathered for assets, critical facilities, building stock values, jurisdictional damages, etc.
- **2029 Spring Meeting:** The LEPC Mitigation Sub-Committee will review information received and determine if the goals and objectives are still relevant and if new ones should be added. Actions will be reviewed to determine if they should remain in the plan, have been completed, or are no longer relevant. The LEPC Mitigation Sub-Committee will review the potential funding sources for each action.
- **2029 Fall Meeting:** As appropriate, a new MPC for Kansas Region I will be formed, and all participating jurisdictions will be convened, to take over the planning process. The new MPC and all participating jurisdictions will evaluate the policies, programs, capabilities, and funding sources from the previous plan to determine if they are still accurate and if any new items should be added.
- **2030 Spring Meeting:** The new MPC and all participating jurisdictions will review the draft copy of the mitigation plan and make comments and updates if necessary. Formal submittal to FEMA for re-approval will follow.

In general, the following steps will be taken to complete the next LHMP revision:

Table 163: Kansas Region I HMP Update Task List

Task	Action
1	Evaluate and update the planning process.
2	Review the stakeholder contact list and identify new stakeholders.
3	Initiate plan outreach and discussion, including a stakeholder meeting.
4	Consider the addition, removal, or modification of hazards identified in the plan.
5	Update and revise membership of the MPC.
6	Evaluate risk assessment methodologies and data sources.
7	Evaluate and update critical facility inventory information.
8	Evaluate and update the hazard profiles.
9	Evaluate and update the risk assessment summary.

Table 163: Kansas Region I HMP Update Task List

Task	Action
10	Evaluate and update the mitigation strategy, including proposed mitigation actions.
11	Evaluate and update the mitigation implementation system.
12	Integrate new and updated local plans.
13	Evaluate and update other plans sections.
14	Identify and add any additional sections or information needed.
15	Review updated plan in its entirety.
16	Conduct updated plan outreach, including public information, comment period, and meetings.
17	Integrate additional comments received.
18	Finalize plan document.
19	Complete crosswalk and submit final plan to FEMA for review and approval.
20	Make additional modifications as required.
21	Obtain jurisdictional adoption resolutions.

7.8 Continued Public Involvement

Kansas Region I and all participating jurisdictions are dedicated to involving the public in the continual shaping of the HMP and in the development of its mitigation projects and activities.

The Kansas Region I MPC, the LEPC Mitigation Sub-Committee, and all participating jurisdictions will continue to keep the public informed about hazard mitigation projects and activities through jurisdictional websites, and as appropriate, public announcements. The public will also be invited to participate in all meetings to review and discuss the mitigation-related events. Additionally, participating jurisdictions will present to public officials in a public forum concerning the progress of mitigation actions identified in this plan as progress is made.

Copies of the Kansas Region I LHMP will be distributed to all the participating jurisdictions and made available to the public. Methods of public availability may include electronically posted on a website or a hard copy kept at a jurisdictional office.

7.9 Plan Amendment

Amending the approved and adopted Kansas Region I LHMP does not necessarily result in the need to reevaluate the entire plan against all requirements. As the Kansas Region I MPC will consistently review this LHMP, FEMA Region VII expects modifications to the risk assessment or adding/removing mitigation actions, especially in preparation for submitting applications to FEMA for assistance and ensuring the project conforms with the mitigation plan. Kansas Region I and all participating jurisdictions are encouraged to keep the State of Kansas and FEMA Region VII informed, but these amendments do not need to be reviewed by either. If these changes identify new mitigation actions that might be eligible for FEMA assistance programs, then Kansas Region I and/or the participating jurisdiction will advise FEMA Region VII and the State of Kansas. FEMA will acknowledge and note the receipt of the added action(s), where appropriate, but will not need to formally review or approve the action(s).

7.10 Amendment to Include New Jurisdiction

Jurisdictions may be added to this existing and approved LHMP only if the following conditions below met:

- The jurisdiction asking to be included is within the boundaries of Kansas Region I.
- Kansas Region I agrees with adding the requesting jurisdiction(s) to the mitigation plan.
- An analysis of the natural hazards that have the potential to affect the additional jurisdiction must be completed and integrated into any current analysis within the LHMP.
- The new jurisdiction must meet all requirements of 44 CFR § 201.6, including:
    - Review the multi-jurisdictional hazard analysis and determine if any additional hazards that have not been addressed threaten the jurisdiction(s).
    - Document their agreement with the stated mitigation goals
    - Develop a list of proposed mitigation actions

- Document the involvement of both the general public and the local government in the planning process
- Submit the annex or appendix, along with the multi-jurisdictional mitigation plan and correspondence of concurrence from Kansas Region I for formal review.
- Adopt the LHMP.

7.11 Late LHMP Adoption

As per KDEM, any participating jurisdiction that did not adopt the plan within six months of the Approved Pending Adoption date must either:

- Validate that the information in the plan remains current with respect to both the risk assessment and mitigation strategy.

Or

- Make the necessary updates before submitting the adoption resolution to State of Kansas and FEMA Region VII.

This late adoption does not affect the plan expiration date, with the adopted LHMP expiring five years from the date the first adoption was received.

Appendix A – Kansas Region I Adoption Documentation and FEMA Region VII Approval Documentation

Appendix B – Community Feedback

Kickoff Survey

What is your name and title (if applicable)?

- Lisa McCue, Mayor of Paxico, Wabaunsee County
- Jennifer Millbern
- Jim Brull Assistant County Engineer
- Jude Kastens
- Curt A. Janke
- Scott Wiltse, Emergency Mgr
- Gregg Bollella, Emergency Response Chief
- Jarrod Fell Emergency Management Director
- Jennifer Merrow, Director
- Ron Nehring and Jeffrey Osif
- Michele Jones - Director of Communications, Health and Safety
- Ian Strickland OPS Chief
- Brett Samuels
- Nick Peterson Assistant Operations Manager
- Jason Lankas,,Fire Chief
- Elliot Young, AVP Risk & Compliance
- John Koelsch Undersheriff
- Travis Griffin, Member Services Manager
- Nichole Schlesener Administrative Asst
- Christopher Srackangast, Community Development Director
- Laurie Harrison, Assistant Director of Riley County Emergency Management
- Bill Clark---Superintendent
- Kalyn Ross
- Jerod Chaffee Manager of Operations
- Darrin Hobbs Planning and Development Compliance Specialist
- Janet Young City Clerk
- Kimberly Roberts, Admin
- Amy Terrapin, Wabaunsee County Emergency Management Director
- Garry Berges Director
- Rikki Blume, Director of Emergency Management, Kansas State University

Who are you here representing?

- Lyon County
- Kansas State University
- Riley County
- Chase County
- Wabaunsee County Emergency Management
- City of Paxico
- Geary County Public Works
- Kansas Biological Survey
- Pottawatomie County Emergency Management
- Lyon County Sheriff's Office
- Flint Hills Rural Electric Cooperative
- Lyon County Highway Department

- Emporia State University
- Manhattan-Ogden USD 383
- Junction City
- City of Grandview Plaza
- DSO Electric Cooperative
- Geary County EM
- Kansas State Fire Marshal
- USD 339 Mission Valley
- Geary County
- Morris County EM
- Bluestem Electric coop
- City of Mcfarland
- Geary County Emergency Management
- Junction City Fire Dept.
- Junction City Fire

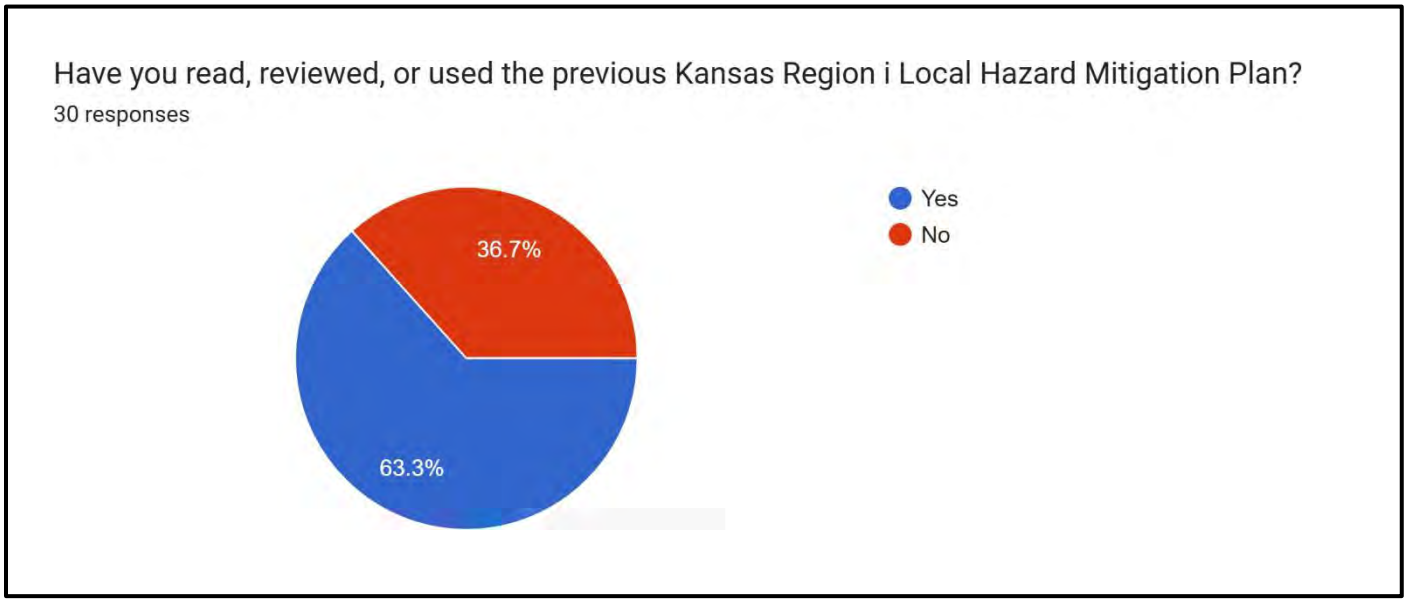
How did you hear about this meeting?

- Email: Many respondents heard about the meeting through email.
- Emergency Management: Several respondents were invited or informed by their Emergency Management Director or department.
- KDEM: Some respondents were notified via KDEM or work related to KDEM.
- Work/Job Related: A few respondents learned about the meeting through work or their supervisor.
- Teams Meeting: One respondent heard about the meeting through a Teams meeting.

What County and City do you live in (or nearest city)?

- Geary County, Junction City
- Chase County
- Lawrence, KS
- Manhattan. Riley County
- WABCO
- Pottawatomie County
- Wabaunsee County, City of Paxico
- Wabaunsee, Mcfarland
- Riley
- Lyon County, Emporia
- Council Grove, KS
- Live in Clay. Bluestem has 11 county's
- Riley County
- Pottawatomie, Wamego
- Geary Junction City
- Geary County
- Lyon County Emporia KS
- Morris County, Council Grove
- Wabaunsee County
- Morris , White City
- Dickinson County Abilene

- Lyon County Emporia
- Milford, Geary County
- Riley - Manhattan
- Geary
- Lyon / Emporia
- Geary, Junction City
- Shawnee, Jo Co
- Lyon



Are there any departments or agencies working with underserved or vulnerable (elderly , disabled, those in poverty, etc.) communities that should be included in the planning process? If yes, please provide the contact information.

- No
- NA
- no
- I am still learning, and am looking for (and gathering) these same types of data/contacts.
- not sure
- Yes, Chase County Care and Rehab Housing Authouity
- Journeys, Quest, Hetlingers
- Mcfarland Senior Center, Ron Nehring, 785-456-3017
- Morris County Public Works, Morris County Hospital, Diversicare, City of Council Grove
- na
- USD 330
- Unaware
- N/A
- our office will be compiling a list
- Community Care Ministry

Is there anyone else you know (person, department, agency) that should be included in the planning process? If yes, please provide the contact information.

- No

- no
- Ryan Theel, City of Paxico Utility Supervisor/Zoning Admin/Road & Maintenance/employee. He will be on this call or the next one. He's been an integral part of city operations and planning for over 15 years.
- Not Sure
- Elmdale, KS
- shelly lautt -- slautt@morriscountyks.org
- NA
- Cities in Lyon County
- na
- Unsure
- N/A
- Jeremy Bramwell-Fire Chief j.bramwell@gvpks.org
- our office will be compiling a list

Do you have any specific concerns about any hazard that could impact your community?

- No
- no
- Flooding (MAJOR concern), storms/tornado (MEDIUM concern), fire (MEDIUM),
- Wildfires, Flooding, Severe Weather, Cyber Security
- Flooding/Natural Disasters
- NA
- Rail accident with Hazardous materials near the center of Emporia. Adverse effect on many government services.
- Loss Of Power and Emergency Resources
- Not at this time
- aging infrastructure
- our office will be compiling a list
- Flooding
- FAD

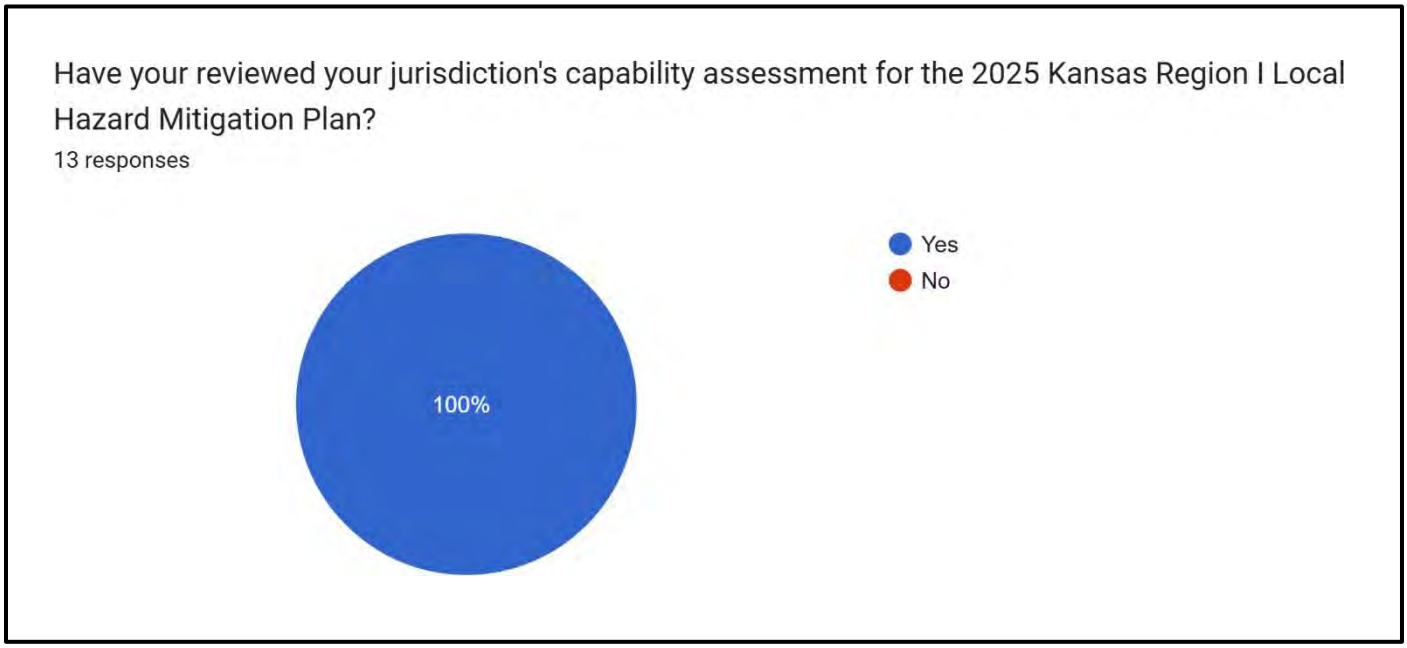
Is there anything else concerning hazard mitigation that you would like us to know?

- No
- no
- Paxico received the 2024, HB2302 (Kansas Water Office) Technical Assistance Grant. I know what I want, the engineer is supposed to make it scientific, I need your help to make it "work" for HMP and to gather state attention to receive PROJECT funding via the BIL/IJJA funding before it is gone.
- Not as of right now.
- DSO in in the process of completing a Fire Mitigation Plan. Changing out Reclosers to Electric Recloser that are faster tripping
- NA
- Not at this time
- not at this time

Mid-Term Survey

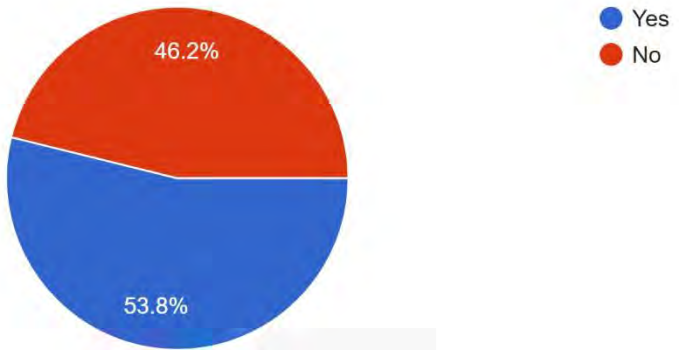
What jurisdiction are you representing?

- Geary County, Junction City, Grandview Plaza, Milford, USD 475, Cloud County Community College, Rural Water District #1, Ruyral Water District #4
- City of Belvue
- Nemaha-Marshall Electric
- McFarland
- Riley County Emergency Management
- USD 330 Mission Valley
- CITY OF HARVEYVILLE
- USD #378 Riley County
- Manhattan-Ogden USD 383
- Flint Hills Rural Electric Cooperative
- Riley County
- City of McFarland
- City of Alta Vista



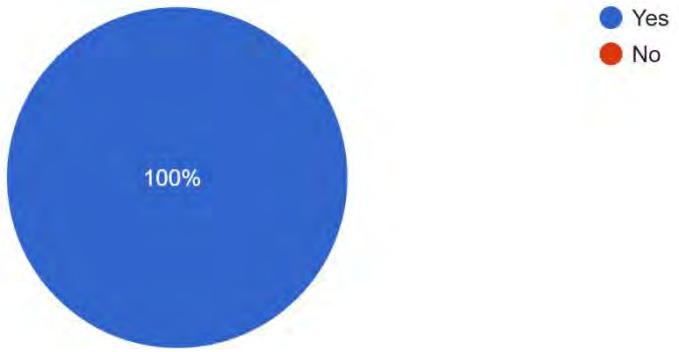
Did you note any changes in your jurisdiction's capability assessment?

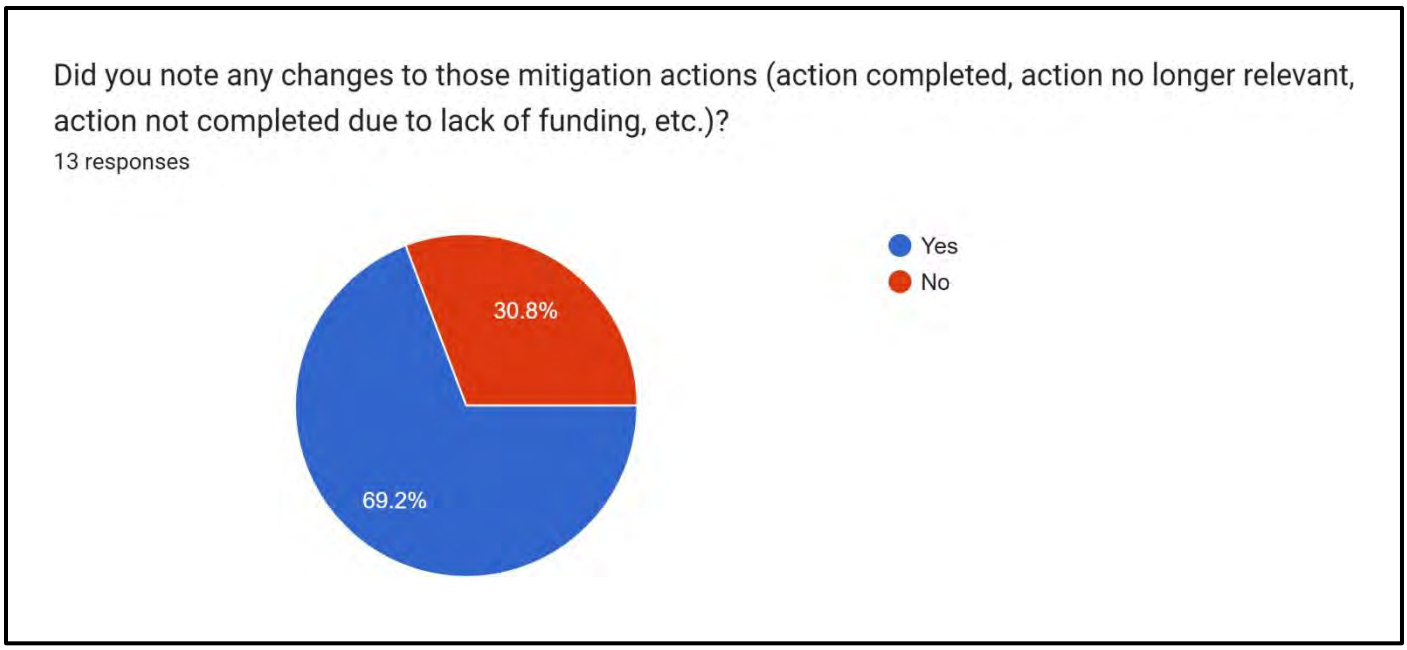
13 responses



Have your reviewed your jurisdiction's mitigation actions for the 2025 Kansas Region I Local Hazard Mitigation Plan?

13 responses





Is there anything else concerning hazard mitigation that you would like us to know?

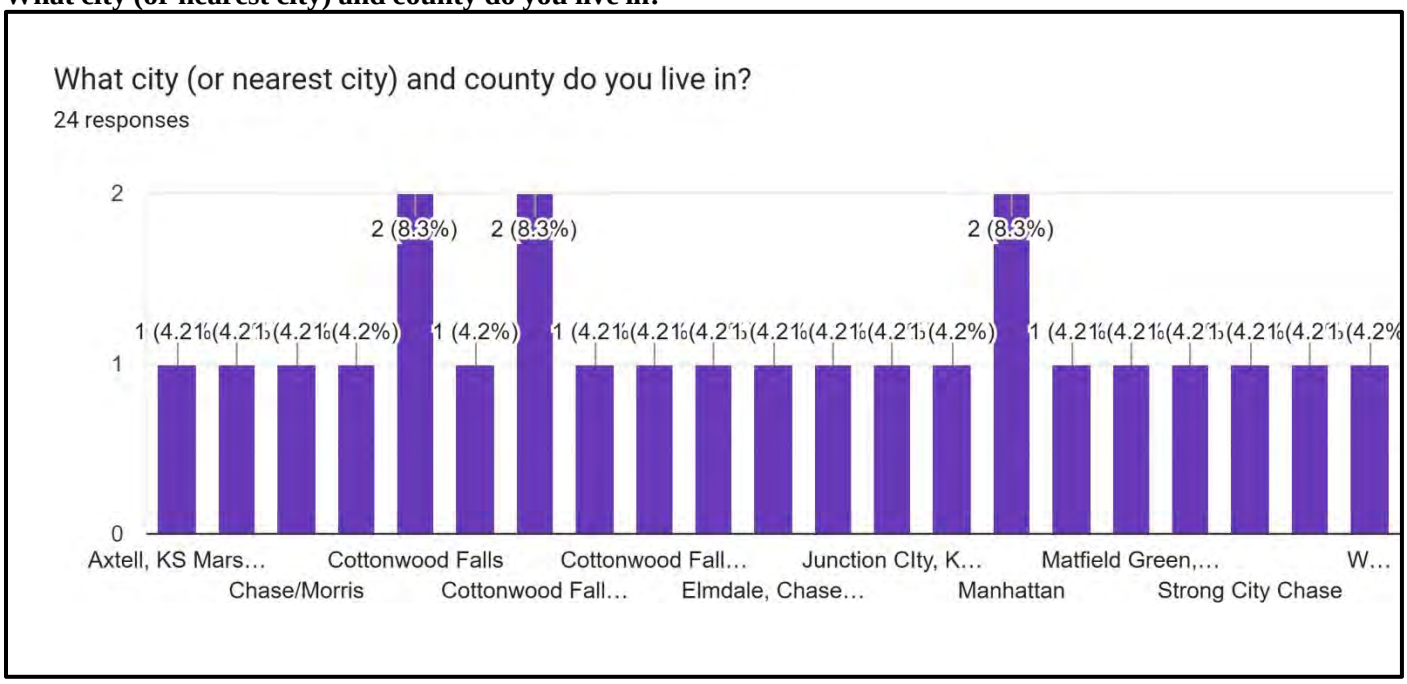
- no
- Nothing to report
- No
- Key infrastructure locations are not mentioned, but will be emailed to Contractor and State Rep.
- AV is looking to strengthen partnerships and communication with partners and neighbors
- Under the following we have some changes:
- USD378-7 All of our buildings have safe rooms now.
- USD378-8 We are getting 2 new roofs this summer. All other roofs were replaced in 2020.
- USD378-9We do safety trainings every year.
- Not at this time…

Final Survey

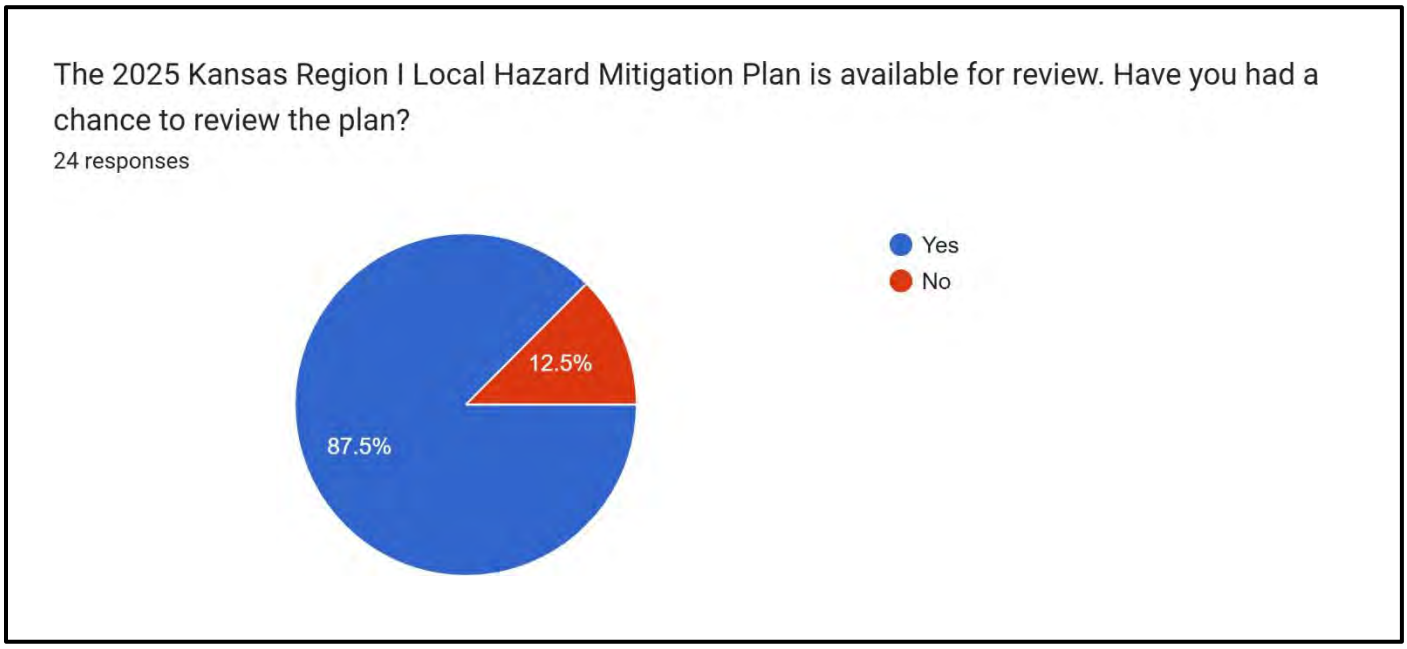
What is your name and title (if applicable)

- Richard Clute
- Bailey Betts
- Rikki Blume, Director of Emergency Management, Kansas State University
- Becca Baker
- Larry Senne
- Brett Talkington
- Heather VanDegrift
- Chir Srackangast Community Development Director
- Kyle Gallmeister
- Janell Kewley
- Janet Ayers
- Michelle Wolfe
- Jordan Knight - Stormwater & Floodplain Specialist
- Terrance Cook, Mayor
- Nemaha-Marshall Electric; Kathleen M. O'Brien; General Manager
- William Eugene (Gene) Line - Commissioner1
- Connie M. Pretzer, Chase County Clerk
- Jennifer Ebert
- Garry Berges
- Rachel Jones, LPN/OM, CCHD
- Jason Passmore
- Ryan Almes, Deputy Fire Chief
- Toni Schneider
- Matthew Markley Public Works Director

What city (or nearest city) and county do you live in?



The 2025 Kansas Region I Local Hazard Mitigation Plan is available for review. Have you had a chance to review the plan?



Are there any changes or additions you would like to see to the plan?

- No
- no
- Yes, I would like to update the K-State input, the current info is outdated.
- none
- No, had opportunity to add comments during the development of this plan. Thank you for opportunity
- none
- A bit more concise.
- No
- The plan appears to comprehensively address hazards that can impact the region.
- Not that I know yet. I plan to review
- Have already submitted mine to Matt
- The City Manager of Cottonwood Falls last name is misspelled and so is Chase Co Superintendent's
- Not sure yet.
- The recommended changes were forwarded to Robert Cox at RCEM and forwarded to plan author.

Would you like to be involved in future hazard mitigation meetings or planning sessions? If yes, please let us know how to best contact you. (note: Emails removed)

- no
- No
- No thanks
- Yes
- Yes
- Yes
- yes please
- Yes
- No
- Yes

- Yes by email
- No (Lame Duck Mayor)
- Yes
- Yes
- as necessary. Plz call the health dept.
- Potentially depending on scheduling
- Yes
- Yes

Is there anything else concerning hazard mitigation that you would like us to know?

- No
- no
- No
- No. The info collected and shared was interesting to look through. It was nice to have it in charts and graphs.
- We should focus on most probable hazard: flood, tornado, fire, ice storm/cold. Let's determine how we are going to respond and what equipment/training we have…and need. Go from there. Assign champions and develop plans by community region - drawing upon county support
- no
- Just concerned with non listed hazards that could potentially hurt the community.
- Not at this time.
- This is an important document for us to tie justification of projects and needs for planning back to.

Appendix C – Jurisdictional Hazard Mitigation Actions

Chase County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Chase County-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Emergency Manager, Facilities Director	High	1, 3	$35,000 to $150,000 per location	HMGP, General fund	Ten years	Carried over due to lack of funding
Chase County-2	Conduct regular hazard mitigation information programs for all citizens.	All hazards	Emergency Manager	High	1, 2	Staff Time	General fund	Five years	Carried over due to lack of staff
Chase County-3	Upgrade and expand warning siren network throughout the county, especially in currently underserved areas.	All hazards	Emergency Manager	High	1, 2	Site and size dependent	HMGP, General fund	Ten years	On-going, funding source dependent
Chase County-4	Institute a county-wide building code utilizing the latest IBC codes.	All hazards	Emergency Manager, Zoning Director	Low	1,2	Staff Time	General fund	Five years	Carried over due to lack of staff
Chase County-5	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Emergency Manager	High	1, 2	Staff Time and $500	General fund	Five years	Carried over due to lack of staff
Chase County-6	Map all infrastructure and facilities within potential dam or levee failure inundation areas, to include special districts, to understand risk	Dam/Levee Failure	Emergency Manager	Medium	1, 2, 4	$10,000 per location	HMGP, General fund	Five years	Carried over due to lack of funding
Chase County-7	Implement a study to determine the residual flood risk in levee-protected areas.	Dam and Levee Failure, Flood	County Planner	Low	1,2,4	Staff time	General fund	Five years	Not started, lack of staff
Chase County-8	Complete education campaign for citizens on the benefits of replacing water intensive landscaping with natural, low water plantings	Drought	Emergency Manager	Low	1,2,3	Volunteers and Staff Time	General fund	Five years	Carried over due to lack of funding
Chase County-9	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New, on-going
Chase County-10	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	General fund	On-going	On-going

Chase County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Chase County-11	Enter CRS Program.	Flood	Emergency Manager, NFIP Administrator	High	1,2	Staff time	NA	Three years	Not started, lack of staff
Chase County-12	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works Director	Medium	1, 2	Facility size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding
Chase County-13	Work closely with Drainage District #2 to assist fund projects for storm water management and maintenance of water quality, flood control, and water conservation efforts.	Flood	Director Road and Bridge, Water District Commissioner	Medium	1,2	Dependent on severity of issue	HMGP, FMA, General fund	Five years	Not started, lack of funding
Chase County-14	Identify and develop alternate flood-proof route to evacuate children and/or provide emergency vehicle access road to Camp Wood.	Flood	Director Camp Woods	Medium	1,2	Dependent on severity of issue	HMGP, FMA, General fund	Five years	Not started, lack of funding
Chase County -15	Install a severe weather warning siren on the Camp Wood YMCA grounds.	Severe Weather, Tornado	Director Camp Woods	Medium	1,2	$35,000	HMGP, FMA, General fund	Five years	Carried over due to lack of funding
Chase County-16	Construct community safe rooms throughout the county to required building standards	Severe Weather, Tornado	Emergency Manager	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	Carried over due to lack of funding
Chase County-17	Construct snow fences along major transportation routes.	Severe Winter Weather	Public Works Director	Low	1, 2	$25,000 - $100,000 per location	HMGP, PDM, General fund	Ten years	New
Chase County-18	Create defensible space buffers at all county facilities	Wildfire	Public Works Director	High	1, 2	Facility size dependent	HMGP, General fund	As required	Carried over due to lack of funding
Chase County-19	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Manager	Low	3	$30 per student per training session	Kansas Forest Service and	Three to five years	Not started, lack of funding

Chase County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
							federal Chases		
Chase County-20	Become a Firewise Community.	Wildfire	Fire Chief	Low	3	Staff time	General fund	Three years	Not started, lack of staff
Chase County-21	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	High	1, 2	Data size dependent	General fund	Five years	Completed, on-going
Chase County-22	Provide hazardous materials handling and transportation information to citizens and businesses.	Hazardous Materials Event	Emergency Manager	High	1, 2	$50 per trainee	HMGP, General fund	As required	New
Chase County-23	Identify and map all structurally deficient bridges.	Infrastructure Failure	Public Works Director	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	On-going
Chase County-24	Conduct active shooter drills and exercises for all county personnel.	Terrorism	County Sheriff	Low	1, 2	Data size dependent	General fund	Five years	On-ging
Cedar Point-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Cedar Point-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	Carried over lack of funding
Cedar Point-3	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Cedar Point-4	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Cedar Point-5	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	Carried over lack of funding
Cedar Point-6	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going

Chase County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Cedar Point-7	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	Carried over lack of funding
Cedar Point-8	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Cedar Point-9	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	Carried over lack of funding
Cedar Point-10	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	Carried over lack of funding
Cedar Point-11	Provide community education on reducing fire risk.	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Cottonwood Falls-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Cottonwood Falls-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Cottonwood Falls-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	On-going as funding allows
Cottonwood Falls-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$10,000 per facility	General fund	Three years	New, on-going
Cottonwood Falls-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going

Chase County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Cottonwood Falls-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	Not started, lack of funding
Cottonwood Falls-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Cottonwood Falls-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	Not started, lack of funding
Cottonwood Falls-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	Not started, lack of funding
Cottonwood Falls-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Cottonwood Falls-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Cottonwood Falls-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Cottonwood Falls-13	Provide community education on reducing fire risk.	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Elmdale-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Elmdale-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	On-going

Chase County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Elmdale-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Elmdale-4	Educate citizens on temperature mitigation measures.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2, 3	Staff time	General fund	Three years	New
Elmdale-5	Continued participation and compliance with the NFIP (currently suspended).	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Elmdale-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Elmdale-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Elmdale-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Elmdale-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Elmdale-10	Provide community education on reducing fire risk.	Wildfire	Fire Chief	High	1, 2, 3	Staff time	General fund	Five years	Carried over, staff restrictions
Matfield Green-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Completed
Matfield Green-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New

Chase County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Matfield Green-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Matfield Green-4	Provide public education that increases awareness of extreme heat and extreme cold hazards and teaches residents practical mitigation measures that reduce vulnerability, such as recognizing health risks, using community cooling or warming resources, improving home weatherization, and taking steps to lessen exposure and protect life and property.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2, 3	Staff time	General fund	Three years	New
Matfield Green-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Matfield Green-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Matfield Green-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Matfield Green-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Matfield Green-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Matfield Green-10	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Matfield Green-11	Provide community education on reducing fire risk.	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions

Chase County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Strong City-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Strong City-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Strong City-3	Educate citizens on drought mitigation measures.	Drought	Mayor	High	1,2	$500 per class	General fund	Five years	New
Strong City-4	Educate citizens on temperature mitigation measures.	Extreme Temperature, Severe Winter Weather	Mayor	Low	1, 2	$500 per class	General fund	Three years	New
Strong City-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Strong City-6	Create drainage system and clean existing ditches to aid in prevention of flooding or to reduce duration, reduce health hazards of standing flood water	Flood	Public Works Director, Emergency Director	High	1, 2	Location and size dependent	KDEM Hazard Mitigation	Five Years	New
Strong City-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Strong City-8	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	School completed, on-going
Strong City-9	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Strong City-10	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions

Chase County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Strong City-11	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Strong City-12	Provide community education on reducing fire risk.	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
USD 284 1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 284 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 284 2	Conduct hazard mitigation education programs for students.	All hazards	USD 284 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 284 3	Educate student son drought mitigation actions.	Drought	USD 284 Superintendent	Low	1, 2	Staff time	District general fund	Three years	New
USD 284 4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 284 Superintendent	Medium	1, 2	$500	District general fund	Five years	On-going
USD 284 5	Institute programs to reduce erosion due to water runoff.	Flood	USD 284 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 284 6	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 284 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	On-going
USD 284 7	Conduct regular staff and student active shooter trainings.	Terrorism	USD 284 Superintendent	High	1, 2, 3	Location and size dependent	District general fund	As required	On-going
Public Wholesale	Purchase and installation of emergency generators for facilities to ensure continued operations.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general	Five Years	Carried over, lack of funding

Chase County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Water Supply District #26-1							fund, HMGP		
Public Wholesale Water Supply District #26-2	Provide education programs smart water usage.	All Hazards	Director	High	3	$2,000	System budget	Five years	Not started, lack of funding
Rural Water District-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Rural Water District-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, HMGP	Five to Ten Years	Carried over, lack of funding
Rural Water District-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Flint Hills REC-1	Purchase and install critical location backup generators.	All hazards	Flint Hills REC Administration	Medium	1, 2	$25,000 - $75,000 per facility	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-2	Replace Copper Weld line construction with current line construction.	All hazards	Flint Hills REC Administration	High	1, 2	Distance and spec dependent	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-3	Replace aging substations that are 40 to 60 years old	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New
Flint Hills REC-4	Purchase a portable substation.	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New
4Rivers Electric-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going

Chase County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
4Rivers Electric -2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Operations Director	High	1, 2	Distance, spec, and location dependent	System budget	Ten years	Carried over, lack of funding
4Rivers Electric -3	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New

Geary County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Geary County-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Emergency Manager, Public Works Director	High	1, 3	$10,000 to $50,000 per location	HMGP, General fund	Ten years	Carried over due to lack of funding
Geary County-2	Conduct regular hazard mitigation information programs for all citizens.	All hazards	Emergency Manager	High	1, 2	Staff Time	General fund	Five years	Carried over due to lack of staff, modified
Geary County-3	Conduct an inventory/survey for the emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Manager	High	1,2	Staff time, per equipment cost	HMGP, General fund	Continuous	Carried over due to lack of staff and funding
Geary County-4	Institute a county-wide building code utilizing the latest IBC codes.	All hazards	Emergency Manager, Planning & Zoning Director	Low	1,2	Staff Time	General fund	Five years	Carried over due to lack of staff
Geary County-5	Provide updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Emergency Manager	High	1, 2	Staff Time and $500	General fund	Five years	Carried over due to lack of staff
Geary County-6	Map all infrastructure and facilities within potential dam or levee failure inundation areas, to include special districts, to understand risk Then develop an annex to the Local Emergency Operations Plan for dam/levee failure response and evacuation plans for high hazard dams/levees in Geary County.	Dam and Levee Failure	Emergency Manager	Medium	1,2	Staff time and $15,000	General fund	Five years	Carried over due to lack of staff and funding
Geary County-7	Complete education campaign for citizens on the benefits of replacing water intensive landscaping with natural, low water plantings	Drought	Emergency Manager	Low	1,2,3	Volunteers and Staff Time	General fund	Five years	New
Geary County-8	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Public Works Director	Low	1, 2	$2,000 per facility	General fund	Three years	New

Geary County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Geary County-9	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	General fund	On-going	On-going
Geary County-10	Research and develop a Comprehensive Land Use Plan for Geary County.	Flood	Planning & Zoning Director County Planner	High	1,2	$35,000	General fund	Three years	Carried over due to lack of funding
Geary County-11	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works Director	Medium	1, 2	Facility size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding, modified
Geary County-12	Develop and recommend an amendment to the existing Flood Damage Prevention Ordinance to include a "no-rise (in base flood elevation)" clause for the county.	Flood	Planning & Zoning Director	High	1,2	Staff time	General fund	Three years	Carried over due to lack of staff
Geary County-13	Research, design and recommend an appropriate stream buffer ordinance to further protect the jurisdiction's water resources and to limit future flood damages adjacent to major waterways.	Flood	Planning & Zoning Director	High	1,2	Staff time	General fund	Three years	Carried over due to lack of staff
Geary County-14	Regularly contact owners identified in high-risk flood areas and inform them of potential availability of flood insurance, in addition to other flood protection measures.	Flood	Planning & Zoning Director	Low	1,2	Staff time	General fund	Continuous	In progress
Geary County-15	Purchase protective window film for all county facility windows to reduce the risk of airborne debris injuries during extreme wind events.	Severe Weather, Tornado	Public Works Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	New
Geary County-16	Construct community safe rooms throughout the county to required building standards.	Severe Weather, Tornado	Emergency Manager	Low	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	Carried over due to lack of funding
Geary County-17	Research and recommend appropriate building codes for the County that include	Severe Weather, Tornado	Planning & Zoning Director	Medium	1,2	Staff time	General fund	Three years	Carried over due to lack of staff

Geary County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	wind-resistant design techniques for new construction.								
Geary County-18	Purchase and install warning sirens in underserved areas of the county.	Severe Weather, Tornado	Planning & Zoning Director County Planner	Low	1,2	$100,000	HMGP, General fund	Five years	Carried over due to lack of funding
Geary County-19	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Sheriff	High	3	Staff time	General fund	Continuous	In progress
Geary County-20	Create defensible space buffers at all county facilities	Wildfire	Public Works Director	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Geary County-21	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Manager, Fire Chiefs	Low	3	$30 per student per training session	Kansas Forest Service and federal funding	Three to five years	Carried over due to lack of funding
Geary County-22	Become a Firewise Community.	Wildfire	Emergency Manager, Fire Chiefs	Low	3	Staff time	General fund	Three years	New
Geary County-23	Evaluate the firefighting water supply resources within the County.	Wildfire	Fire Chiefs	High	4	Staff time	General fund	Five years	Carried over due to lack of staff
Geary County-24	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources. Include agreements with local, state and federal agencies.	Wildfire	Fire Chief	High	4	Staff time	General fund	Continuous	Carried over due to lack of staff
Geary County-25	Establish a livestock disposal plan and compost team to address livestock fatality during extreme heat events.	Agricultural Infestation	Emergency Manager	Low	1,2	Staff time	General fund	Five years	Carried over due to lack of staff

Geary County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Geary County-26	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Finance Director	High	1, 2	Data size dependent	General fund	Five years	Carried over due to lack of funding
Geary County-27	Provide hazardous materials handling and transportation information to citizens and businesses.	Hazardous Materials Event	Emergency Manager	High	1, 2	$50 per trainee	HMGP, General fund	As required	Ongoing
Geary County-28	Assess the impact of natural hazards on water distribution lines, systems, and equipment and seek funding sources to mitigate any damage to critical infrastructure.	Infrastructure Failure	Superintendent Water District No. 4	Low	1,2	$200,000	HMGP, District general fund	Five years	Carried over due to lack of funding
Geary County-29	Conduct active shooter drills and exercises for all county personnel.	Terrorism	County Sheriff	Low	1, 2	Data size dependent	General fund	Five years	New
Grandview Plaza-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Fire Chief	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Grandview Plaza-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Grandview Plaza-3	Upgrade/repair existing water supply infrastructure.	Drought	Public Works Director	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Carried over due to lack of funding
Grandview Plaza-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Fire Chief	Low	1, 2	$2,000 per facility	General fund	Continuous	On-Going
Grandview Plaza-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Grandview Plaza-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New

Geary County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Grandview Plaza-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Grandview Plaza-8	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	On-going
Grandview Plaza-9	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Carried over due to lack of funding
Grandview Plaza-10	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Police Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Grandview Plaza-11	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Grandview Plaza-12	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Junction City-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	City Manager	High	1, 2	$25,000 $300,000 per facility	HMGP, General fund	Five years	On-going
Junction City-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	City Manager	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Junction City-3	Upgrade/repair existing water supply infrastructure.	Drought	P.P.W.	High	1,2	Location and size dependent	HMGP, General fund,	Five years	On-going
Junction City-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	P.P.W.	Low	1, 2	$60,000 per facility	General fund	Three years	On-going

Geary County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Junction City-5	Continued participation and compliance with the NFIP.	Flood	Community Development Director	Medium	1,2	Staff Time	General fund	Continuous	On-going
Junction City-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	P.P.W.	Low	1, 2	Location and size dependent	HMGP, General fund	As required	On-Going
Junction City-7	Meet requirements and join the CRS program.	Flood	Community Development Director	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Junction City-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Junction City-9	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	P.P.W.	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Carried over due to lack of funding
Junction City-10	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Police Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Junction City-11	Create defensible space buffers at all critical facilities	Wildfire	P.P.W.	Low	1, 2	Facility size dependent	HMGP, General fund	As required	New
Junction City-12	Become a Firewise Community	Wildfire	Fire Chief	Low	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Milford-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Clerk	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Milford-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Clerk	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New

Geary County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Milford-3	Upgrade/repair existing water supply infrastructure.	Drought	Clerk	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Milford-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Clerk	Low	1, 2	$2,000 per facility	General fund	Three years	New
Milford-5	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Clerk	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Milford-6	Meet requirements and join the NFIP.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Milford-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Clerk	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Milford-8	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Clerk	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Milford-9	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Clerk	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Carried over due to lack of funding
Milford-10	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Milford-11	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	Low	1, 2	Facility size dependent	HMGP, General fund	As required	New
Milford-12	Become a Firewise Community	Wildfire	Fire Chief	Low	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions

Geary County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Cloud County Community College -1	Conduct a native, low water planting program for all jurisdictional owned facilities.	Drought	Director- J.C.	Low	1, 2	$10,000 - per location	HMGP, College General Fund	Ten years	Carried over due to lack of funding
Cloud County Community College -2	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	Director- J.C.	Medium	1, 2	$500	HMGP, College General Fund	Five years	New
Cloud County Community College -3	Design and construct surface water control runoff projects for Campus.	Flood	Director- J.C.	Low	1, 2	Location and size dependent	HMGP, College General Fund	As required	New
Cloud County Community College -4	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Director- J.C.	Low	1, 2	Facility size dependent	HMGP, College General Fund	Five years	New
USD 475-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 475 Chief Operations Officer	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 475-2	Conduct hazard mitigation education programs for students.	All hazards	USD 475 Chief Operations Officer	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 475-3	Conduct a native, low water planting program for all school facilities	Drought	USD 475 Chief Operations Officer	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 475-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 475 Chief Operations Officer	Medium	1, 2	$500	District general fund	Five years	New

Geary County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD 475-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 475 Chief Operations Officer	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 475-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 475 Chief Operations Officer	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 475-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 475 Chief Operations Officer	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 475-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 475 Chief Operations Officer	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
Rural Water District #1-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Rural Water District #1-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District #1-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Rural Water District #4-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding

Geary County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rural Water District #4-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District #4-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Rural Water District #4 (Dwight)-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Rural Water District #4 (Dwight)-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District #4 (Dwight)-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Bluestem Electrical Cooperative-1	Conduct tree and vegetation clearance around utility infrastructure.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going
Bluestem Electrical Cooperative-2	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New
Bluestem Electrical Cooperative-3	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going
DS&O Electric Cooperative-1	Conduct tree and vegetation clearance around utility infrastructure.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going

Geary County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
DS&O Electric Cooperative-2	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New
DS&O Electric Cooperative -3	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going
Flint Hills REC-1	Purchase and install critical location backup generators.	All hazards	Flint Hills REC Administration	Medium	1, 2	$25,000 - $75,000 per facility	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-2	Replace Copper Weld line construction with current line construction.	All hazards	Flint Hills REC Administration	High	1, 2	Distance and spec dependent	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-3	Replace aging substations that are 40 to 60 years old	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New
Flint Hills REC-4	Purchase a portable substation.	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New
4Rivers Electric Cooperative-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going
4Rivers Electric Cooperative -2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Operations Director	High	1, 2	Distance, spec, and location dependent	System budget	Ten years	Carried over, lack of funding
4Rivers Electric Cooperative-3	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Lyon County-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Emergency Manager, Facilities Director	High	1, 3	$10,000 to $50,000 per location	HMGP, General fund	Ten years	Carried over due to lack of funding
Lyon County-2	Conduct regular hazard mitigation information programs for all citizens.	All hazards	Emergency Manager	High	1, 2	Staff Time	General fund	Five years	Carried over due to lack of staff
Lyon County-3	Upgrade and expand warning siren network throughout the county, especially in currently underserved areas.	All hazards	Emergency Manager	High	1, 2	Site and size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding
Lyon County-4	Institute a county-wide building code utilizing the latest IBC codes.	All hazards	Emergency Manager, Zoning Director	Low	1,2	Staff Time	General fund	Five years	New
Lyon County-5	Promote and educate the public and private sectors on potential agricultural issues that can severely impact the county and regional economies and develop and implement plans to address these issues.	Agricultural Infestation	Extension Agent, Emergency Manager	Medium	3	Staff Time	General fund	Four years	Not started, lack of staff
Lyon County-6	Map all infrastructure and facilities within potential dam or levee failure inundation areas, to include special districts and colleges, to understand risk	Dam/Levee Failure	Emergency Manager	Medium	1, 2, 4	$10,000 per location	HMGP, General fund	Five years	New
Lyon County-7	Complete education campaign for citizens on the benefits of replacing water intensive landscaping with natural, low water plantings	Drought	Emergency Managers	Low	1,2,3	Volunteers and Staff Time	General fund	Five years	New
Lyon County-8	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Lyon County-9	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	General fund	On-going	On-going
Lyon County-10	Continue to participate in, and enforce provisions of, CRS Program.	Flood	Emergency Manager,	High	1,2	Staff time	General Fund	Three years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
			NFIP Administrator						
Lyon County-11	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works Director	Medium	1, 2	Facility size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding
Lyon County-12	Purchase protective window film for all county facility windows to reduce the risk of airborne debris injuries during extreme wind events.	Severe Weather, Tornado	Emergency Manager	Low	1,2	Facility size dependent	HMGP, General fund	Five years	New
Lyon County-13	Construct community safe rooms throughout the county to required building standards	Severe Weather, Tornado	Emergency Manager	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	Carried over due to lack of funding
Lyon County-14	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Emergency Manager	Medium	3	Staff Time	General fund	Three years	Not started, lack of staff
Lyon County-15	Create defensible space buffers at all county facilities	Wildfire	Public Works Director	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Lyon County-16	Develop and implement a wildfire prevention/education program.	Wildfire	Fire Chief, Emergency Manager	Medium	1,2,3	$350 per workshop	General fund	On-going	Not started, lack of staff
Lyon County-17	Become a Firewise Community.	Wildfire	Emergency Management Coordinator	Low	3	Staff time	General fund	Three years	Not started, lack of staff
Lyon County-18	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	High	1, 2	Data size dependent	General fund	Five years	New
Lyon County-19	Provide hazardous materials handling and transportation information to citizens and businesses.	Hazardous Materials Event	Emergency Manager	High	1, 2	$50 per trainee	HMGP, General fund	As required	New
Lyon County-20	Identify and map all structurally deficient bridges.	Infrastructure Failure	Public Works Director	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	Carried over due to lack of funding
Lyon County-21	Conduct active shooter drills and exercises for all county personnel.	Terrorism	County Sheriff	Low	1, 2	Data size dependent	General fund	Five years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Admire-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Admire-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Admire-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Admire-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Admire-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Admire-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Admire-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Admire-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Admire-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Admire-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Admire-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Admire-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Admire-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Allen-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Allen-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Allen-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Allen-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Allen-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Allen-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Allen-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Allen-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Allen-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Allen-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Allen-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Allen-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Allen-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Americus-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Americus-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Americus-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Americus-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Americus-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Americus-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Americus-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Americus-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Americus-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Americus-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Americus-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Americus-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Americus-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Bushong-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Bushong-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Bushong-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Bushong-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Bushong-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Bushong-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Bushong-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Bushong-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Bushong-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Bushong-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Bushong-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Bushong-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Bushong-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Emporia-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$75,000 - $3,000,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Emporia-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	City Manager	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Emporia-3	Upgrade/repair existing water supply infrastructure.	Drought	City Manager	High	1,2	Location and size dependent	HMGP, General fund,	Five years	On-going
Emporia-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	City Manager	Low	1, 2	$2,000 per facility	General fund	Three years	New
Emporia-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Emporia-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Emporia-7	Meet requirements and join the CRS program.	Flood	NFIP Coordinator	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Emporia-8	Conduct an engineering study to identify flood mitigation strategies to protect against flood damage and water contamination at critical infrastructure and facilities.	Flood	City Manager, Gacilities Director	High	1, 2	Facility and study size dependent	HMGP, General fund	Three to five years	New
Emporia-9	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather,	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
		Tornado, Wildfires							
Emporia-10	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	City Manager	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Emporia-11	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Emporia-12	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	Low	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Emporia-13	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	Low	1, 2	Facility size dependent	HMGP, General fund	As required	New
Emporia-14	Become a Firewise Community	Wildfire	Fire Chief	Low	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Hartford-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Hartford-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Hartford-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Hartford-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Hartford-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Hartford-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Hartford-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Hartford-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Hartford-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Hartford-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Hartford-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Hartford-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Hartford-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Neosho Rapids-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Neosho Rapids-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Neosho Rapids-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Neosho Rapids-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Neosho Rapids-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Neosho Rapids-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Neosho Rapids-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Neosho Rapids-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Neosho Rapids-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Neosho Rapids-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Neosho Rapids-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Neosho Rapids-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Neosho Rapids-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Olpe-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Olpe-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Olpe-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Olpe-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Olpe-5	Meet the requirements to join the NFIP.	Flood	Mayor	Medium	1,2	Staff Time	General fund	Two years	New
Olpe-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Olpe-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Olpe-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Olpe-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Olpe-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Olpe-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Olpe-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Olpe-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Reading-1	Encourage the installation of generators in business and residential buildings.	All hazards	Facilities Director	High	1, 2	Staff Time	General fund	Five years	Complete
Reading-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Reading-3	Replace all landscaping around jurisdictional buildings with low water native species.	Drought	Mayor	Medium	1,2	Location and size dependent	HMGP, General fund,	Five years	New
Reading-4	Provide public education that increases awareness of extreme heat and extreme cold hazards and teaches residents practical mitigation measures that reduce vulnerability, such as recognizing health risks, using community cooling or warming resources, improving home weatherization, and taking steps to lessen exposure and protect life and property.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	Staff time	General fund	Three years	New
Reading-5	Meet the requirements to join the NFIP.	Flood	Mayor	Medium	1,2	Staff Time	General fund	Two years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Reading-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Reading-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Reading-8	Replace exterior facility signage with high wind, hail, and fire-resistant signage on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$2,000 per location	HMGP, General fund	Ten years	New
Reading-9	Educate public about constructing personal saferooms to mitigate severe weather and tornado hazards..	Severe Weather, Tornado	Facilities Director	High	1, 2	Staff Time	General fund	Five years	New
Reading-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Reading-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Reading-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Reading-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Reading Complete	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	-	-	-	-	-	-	Complete
Reading Complete	Upgrade/repair existing water supply infrastructure.	Drought	-	-	-	-	-	-	Complete

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Reading Complete	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	-	-	-	-	-	-	Complete
Reading Complete	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	-	-	-	-	-	-	Complete
Reading Complete	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	-	-	-	-	-	-	Complete
Emporia State University-1	Conduct a native, low water planting program for all jurisdictional owned facilities.	Drought	President	Low	1, 2	$10,000 - per location	HMGP, College General Fund	Ten years	Carried Over, Lack of Funding
Emporia State University-2	Provide stidentg and staff education that increases awareness of extreme heat and extreme cold hazards and teaches residents practical mitigation measures that reduce vulnerability, such as recognizing health risks, using community cooling or warming resources, improving home weatherization, and taking steps to lessen exposure and protect life and property.	Extreme Temperature, Severe Winter Weather	President	Medium	1, 2	$500	HMGP, College General Fund	Five years	New
Emporia State University-3	Design and construct surface water control runoff projects for Campus.	Flood	Building and Grounds Director	Low	1, 2	Location and size dependent	HMGP, College General Fund	As required	New
Emporia State University-4	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Building and Grounds Director	Low	1, 2	Facility size dependent	HMGP, College General Fund	Five years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Flint Hills Technical College-1	Conduct a native, low water planting program for all jurisdictional owned facilities.	Drought	President	Low	1, 2	$10,000 - per location	HMGP, College General Fund	Ten years	Carried Over, Lack of Funding
Flint Hills Technical College-2	Provide student and staff education that increases awareness of extreme heat and extreme cold hazards and teaches residents practical mitigation measures that reduce vulnerability, such as recognizing health risks, using community cooling or warming resources, improving home weatherization, and taking steps to lessen exposure and protect life and property.	Extreme Temperature, Severe Winter Weather	President	Medium	1, 2	$500	HMGP, College General Fund	Five years	New
Flint Hills Technical College-3	Design and construct surface water control runoff projects for Campus.	Flood	Building and Grounds Director	Low	1, 2	Location and size dependent	HMGP, College General Fund	As required	New
Flint Hills Technical College-4	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Building and Grounds Director	Low	1, 2	Facility size dependent	HMGP, College General Fund	Five years	New
USD 251-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 251 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 251-2	Conduct hazard mitigation education programs for students.	All hazards	USD 251 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 251-3	Conduct a native, low water planting program for all school facilities	Drought	USD 251 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD 251-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 251 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 251-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 251 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 251-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 251 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 251-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 251 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 251-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 251 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
USD 252-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 252 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 252-2	Conduct hazard mitigation education programs for students.	All hazards	USD 252 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 252-3	Conduct a native, low water planting program for all school facilities	Drought	USD 252 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 252-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe	USD 252 Superintendent	Medium	1, 2	$500	District general fund	Five years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
		Winter Weather							
USD 252-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 252 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 252-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 252 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 252-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 252 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 252-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 252 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
USD 253-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 253 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 253-2	Conduct hazard mitigation education programs for students.	All hazards	USD 253 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 253-3	Conduct a native, low water planting program for all school facilities	Drought	USD 253 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 253-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 253 Superintendent	Medium	1, 2	$500	District general fund	Five years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD 253-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 253 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 253-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 253 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 253-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 253 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 253-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 253 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
Coffey County Rural Water District #2-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Coffey County Rural Water District #2-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Coffey County Rural Water District #2-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Rural Water District #1-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rural Water District #1-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District #1-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Rural Water District #2-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Rural Water District #2--2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District #2-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Rural Water District #3-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Rural Water District #3-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District #3-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rural Water District #4-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Rural Water District #4-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District #5-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Rural Water District #5-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Rural Water District #5-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Flint Hills REC-1	Purchase and install critical location backup generators.	All hazards	Flint Hills REC Administration	Medium	1, 2	$25,000 - $75,000 per facility	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-2	Replace Copper Weld line construction with current line construction.	All hazards	Flint Hills REC Administration	High	1, 2	Distance and spec dependent	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-3	Replace aging substations that are 40 to 60 years old	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New
Flint Hills REC-4	Purchase a portable substation.	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New

Lyon County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
4 Rivers Electric Cooperative-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going
4 Rivers Electric Cooperative-2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Operations Director	High	1, 2	Distance, spec, and location dependent	System budget	Ten years	Carried over, lack of funding
4 Rivers Electric Cooperative-3	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Morris County-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Emergency Manager, Facilities Director	High	1, 3	$10,000 to $50,000 per location	HMGP, General fund	Ten years	Carried over due to lack of funding
Morris County-2	Conduct regular hazard mitigation information programs for all citizens.	All hazards	Emergency Manager	High	1, 2	Staff Time	General fund	Five years	Carried over due to lack of staff
Morris County-3	Upgrade and expand warning siren network throughout the county, especially in currently underserved areas.	All hazards	Emergency Manager	High	1, 2	Site and size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding
Morris County-4	Institute a county-wide building code utilizing the latest IBC codes.	All hazards	Emergency Manager, Zoning Director	Low	1,2	Staff Time	General fund	Five years	New
Morris County-5	Promote and educate the public and private sectors on potential agricultural issues that can severely impact the county and regional economies and develop and implement plans to address these issues.	Agricultural Infestation	Extension Agent, Emergency Manager	Medium	3	General fund	Local, State	Four years	Not started, lack of staff
Morris County-6	Map all infrastructure and facilities within potential dam or levee failure inundation areas, to include special districts, to understand risk	Dam/Levee Failure	Emergency Manager	Medium	1, 2, 4	$10,000 per location	HMGP, General fund	Five years	New
Morris County-7	Complete education campaign for citizens on the benefits of replacing water intensive landscaping with natural, low water plantings	Drought	Emergency Managers	Low	1,2,3	Volunteers and Staff Time	General fund	Five years	New
Morris County-8	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Morris County-9	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	General fund	On-going	On-going
Morris County-10	Enter CRS Program.	Flood	Emergency Manager,	High	1,2	Staff time	General Fund	Three years	New

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
			NFIP Administrator						
Morris County-11	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works Director	Medium	1, 2	Facility size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding
Morris County-12	Purchase protective window film for all county facility windows to reduce the risk of airborne debris injuries during extreme wind events.	Severe Weather, Tornado	Emergency Manager	Low	1,2	Facility size dependent	HMGP, General fund	Five years	New
Morris County-13	Construct community safe rooms throughout the county to required building standards	Severe Weather, Tornado	Emergency Manager	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	Carried over due to lack of funding
Morris County-14	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storms	Emergency Manager	Medium	3	Staff Time	General fund	Three years	Not started, lack of staff
Morris County-15	Create defensible space buffers at all county facilities	Wildfire	Public Works Director	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Morris County-16	Develop and implement a wildfire prevention/education program.	Wildfire	Fire Chief, Emergency Manager	Medium	1,2,3	$350 per workshop	General fund	On-going	Not started, lack of staff
Morris County-17	Become a Firewise Community.	Wildfire	Emergency Management Coordinator	Low	3	Staff time	General fund	Three years	Not started, lack of staff
Morris County-18	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	High	1, 2	Data size dependent	General fund	Five years	New
Morris County-19	Provide hazardous materials handling and transportation information to citizens and businesses.	Hazardous Materials Event	Emergency Manager	High	1, 2	$50 per trainee	HMGP, General fund	As required	New
Morris County-20	Identify and map all structurally deficient bridges.	Infrastructure Failure	Public Works Director	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	Carried over due to lack of funding
Morris County-21	Conduct active shooter drills and exercises for all county personnel.	Terrorism	County Sheriff	Low	1, 2	Data size dependent	General fund	Five years	New

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Council Grove-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Council Grove-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Council Grove-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Council Grove-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Council Grove-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Council Grove-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Council Grove-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Council Grove-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Council Grove-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Council Grove-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Council Grove-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Council Grove-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Council Grove-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Dwight-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Dwight-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Dwight-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Dwight-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Dwight-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Dwight-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Dwight-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Dwight-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Dwight-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Dwight-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Dwight-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Dwight-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Dwight-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
White City-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
White City-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
White City-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
White City-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
White City-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
White City-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
White City-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
White City-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
White City-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
White City-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
White City-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
White City-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
White City-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Wilsey-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Wilsey-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wilsey-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Wilsey-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Wilsey-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Wilsey-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Wilsey-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Wilsey-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Wilsey-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Wilsey-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Wilsey-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Wilsey-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wilsey-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
USD 417-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 417 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 417-2	Conduct hazard mitigation education programs for students.	All hazards	USD 417 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 417-3	Conduct a native, low water planting program for all school facilities	Drought	USD 417 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 417-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 417 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 417-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 417 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 417-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 417 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 417-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 417 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 417-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 417 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD 481-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 481 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 481-2	Conduct hazard mitigation education programs for students.	All hazards	USD 481 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 481-3	Conduct a native, low water planting program for all school facilities	Drought	USD 481 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 481-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 481 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 481-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 481 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 481-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 481 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 481-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 481 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 481-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 481 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
Diamond Creek Watershed	Purchase and installation of emergency generators for facilities to ensure continued operations.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund,	Five Years	New

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Joint District #61-1	Loss of power could potentially curtail services to the community.						Federal grant		
Diamond Creek Watershed Joint District #61-2	Continue to construct, operate, and maintain water detention dams and related structures for flood reduction in their watershed district	Dam and Levee Failure	Operations Director	Medium	1,2	Staff Time	Jurisdiction general fund, State Grant, Federal Grant	On-going	On-going
Lyon Creek Watershed-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	New
Lyon Creek Watershed-2	Continue to construct, operate, and maintain water detention dams and related structures for flood reduction in their watershed district	Dam and Levee Failure	Operations Director	Medium	1,2	Staff Time	Jurisdiction general fund, State Grant, Federal Grant	On-going	On-going
Rock Creek Watershed Joint District #84-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	New
Rock Creek Watershed Joint District #84-2	Continue to construct, operate, and maintain water detention dams and related structures for flood reduction in their watershed district	Dam and Levee Failure	Operations Director	Medium	1,2	Staff Time	Jurisdiction general fund, State Grant, Federal Grant	On-going	On-going
Rural Water District-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rural Water District-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
DS&O Electric Cooperative-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going
DS&O Electric Cooperative-2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Operations Director	High	1, 2	Distance, spec, and location dependent	System budget	Ten years	Carried over, lack of funding
DS&O Electric Cooperative-3	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New
Flint Hills REC-1	Purchase and install critical location backup generators.	All hazards	Flint Hills REC Administration	Medium	1, 2	$25,000 - $75,000 per facility	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-2	Replace Copper Weld line construction with current line construction.	All hazards	Flint Hills REC Administration	High	1, 2	Distance and spec dependent	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-3	Replace aging substations that are 40 to 60 years old	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New
Flint Hills REC-4	Purchase a portable substation.	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New
4 Rivers Electric-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going

Morris County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
4 Rivers Electric-2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Operations Director	High	1, 2	Distance, spec, and location dependent	System budget	Ten years	Carried over, lack of funding
4 Rivers Electric-3	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Pottawatomie County-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Emergency Manager, Facilities Director	High	1, 3	$10,000 to $50,000 per location	HMGP, General fund	Ten years	Carried over due to lack of funding
Pottawatomie County-2	Conduct regular hazard mitigation information programs for all citizens.	All hazards	Emergency Manager	High	1, 2	Staff Time	General fund	Five years	Carried over due to lack of staff
Pottawatomie County-3	Upgrade and expand warning siren network throughout the county, especially in currently underserved areas.	All hazards	Emergency Manager	High	1, 2	Site and size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding
Pottawatomie County-4	Institute a county-wide building code utilizing the latest IBC codes.	All hazards	Emergency Manager, Zoning Director	Low	1,2	Staff Time	General fund	Five years	New
Pottawatomie County-5	Promote and educate the public and private sectors on potential agricultural issues that can severely impact the county and regional economies and develop and implement plans to address these issues.	Agricultural Infestation	Extension Agent, Emergency Manager	Medium	3	General fund	Local, State	Four years	Not started, lack of staff
Pottawatomie County-6	Map all infrastructure and facilities within potential dam or levee failure inundation areas, to include special districts, to understand risk	Dam/Levee Failure	Emergency Manager	Medium	1, 2, 4	$10,000 per location	HMGP, General fund	Five years	New
Pottawatomie County-7	Complete education campaign for citizens on the benefits of replacing water intensive landscaping with natural, low water plantings	Drought	Emergency Managers	Low	1,2,3	Volunteers and Staff Time	General fund	Five years	New
Pottawatomie County-8	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Pottawatomie County-9	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	General fund	On-going	On-going
Pottawatomie County-10	Enter CRS Program.	Flood	Emergency Manager,	High	1,2	Staff time	General Fund	Three years	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
			NFIP Administrator						
Pottawatomie County-11	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works Director	Medium	1, 2	Facility size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding
Pottawatomie County-12	Purchase protective window film for all county facility windows to reduce the risk of airborne debris injuries during extreme wind events.	Severe Weather, Tornado	Emergency Manager	Low	1,2	Facility size dependent	HMGP, General fund	Five years	New
Pottawatomie County-13	Construct community safe rooms throughout the county to required building standards	Severe Weather, Tornado	Emergency Manager	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	Carried over due to lack of funding
Pottawatomie County-14	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storms	Emergency Manager	Medium	3	Staff Time	General fund	Three years	Not started, lack of staff
Pottawatomie County-15	Create defensible space buffers at all county facilities	Wildfire	Public Works Director	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Pottawatomie County-16	Develop and implement a wildfire prevention/education program.	Wildfire	Fire Chief, Emergency Manager	Medium	1,2,3	$350 per workshop	General fund	On-going	Not started, lack of staff
Pottawatomie County-17	Become a Firewise Community.	Wildfire	Emergency Management Coordinator	Low	3	Staff time	General fund	Three years	Not started, lack of staff
Pottawatomie County-18	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	High	1, 2	Data size dependent	General fund	Five years	New
Pottawatomie County-19	Provide hazardous materials handling and transportation information to citizens and businesses.	Hazardous Materials Event	Emergency Manager	High	1, 2	$50 per trainee	HMGP, General fund	As required	New
Pottawatomie County-20	Identify and map all structurally deficient bridges.	Infrastructure Failure	Public Works Director	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	Carried over due to lack of funding
Pottawatomie County-21	Conduct active shooter drills and exercises for all county personnel.	Terrorism	County Sheriff	Low	1, 2	Data size dependent	General fund	Five years	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Belvue-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Belvue-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Belvue-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Belvue-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Belvue-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Belvue-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Belvue-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Belvue-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Belvue-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Belvue-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Belvue-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Belvue-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Belvue-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Emmett-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Emmett-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Emmett-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Emmett-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Emmett-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Emmett-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Emmett-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Emmett-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Emmett-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Emmett-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Emmett-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Emmett-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Emmett-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Havensville-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Havensville-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Havensville-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Havensville-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Havensville-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Havensville-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Havensville-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Havensville-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Havensville-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Havensville-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Havensville-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Havensville-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Havensville-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Louisville-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Louisville-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Louisville-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Louisville-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Louisville-5	Continued participation and compliance with the NFIP (currently suspended).	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Louisville-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Louisville-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Louisville-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Louisville-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Louisville-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Louisville-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Louisville-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Louisville-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Olsburg-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Olsburg -2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Olsburg -3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Olsburg -4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Olsburg -5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Olsburg -6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Olsburg -7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Olsburg -8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Olsburg -9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Olsburg -10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Olsburg -11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Olsburg -12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Olsburg -13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Onaga-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Onaga-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Onaga-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Onaga-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Onaga-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Onaga-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Onaga-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Onaga-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Onaga-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Onaga-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Onaga-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Onaga-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Onaga-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
St. George-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
St. George-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
St. George-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
St. George-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
		Winter Weather							
St. George-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
St. George-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
St. George-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
St. George-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
St. George-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
St. George-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
St. George-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
St. George-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
St. George-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
St. Mary's-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
St. Mary's-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
St. Mary's-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
St. Mary's-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
St. Mary's-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
St. Mary's-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
St. Mary's-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
St. Mary's-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
St. Mary's-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
St. Mary's-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
St. Mary's-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
St. Mary's-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
St. Mary's-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Wamego-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Wamego-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Wamego-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Wamego-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Wamego-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Wamego-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Wamego-7	Continue to participate in, and enforce provisions of, CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Wamego-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wamego-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Wamego-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Wamego-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Wamego-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Wamego-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Westmoreland -1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Westmoreland -2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Westmoreland -3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Westmoreland -4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Westmoreland -5	Meet the requirements to join the NFIP.	Flood	Mayor	Medium	1,2	Staff Time	General fund	Two years	New
Westmoreland -6	Construct rainwater retention/detention ponds or other	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	flood control projects at strategic locations.								
Westmoreland -7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Westmoreland -8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Westmoreland -9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Westmoreland -10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Westmoreland -11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Westmoreland -12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Westmoreland -13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Wheaton-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Wheaton -2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Wheaton -3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wheaton -4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Wheaton -5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Wheaton -6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Wheaton -7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Wheaton -8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Wheaton -9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Wheaton -10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Wheaton -11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Wheaton -12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Wheaton -13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD 320-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 320 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 320-2	Conduct hazard mitigation education programs for students.	All hazards	USD 320 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 320-3	Conduct a native, low water planting program for all school facilities	Drought	USD 320 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 320-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 320 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 320-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 320 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 320-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 320 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 320-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 320 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 320-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 320 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
USD 321-1	Purchase and install school facility backup generators in conjunction	All hazards	USD 321 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District	Five years	Carried over due to lack of funding

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	with hardening existing electrical systems.						general fund		
USD 321-2	Conduct hazard mitigation education programs for students.	All hazards	USD 321 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 321-3	Conduct a native, low water planting program for all school facilities	Drought	USD 321 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 321-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 321 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 321-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 321 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 321-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 321 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 321-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 321 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 321-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 321 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
USD 322-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 322 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD 322-2	Conduct hazard mitigation education programs for students.	All hazards	USD 322 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 322-3	Conduct a native, low water planting program for all school facilities	Drought	USD 322 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 322-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 322 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 322-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 322 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 322-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 322 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 322-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 322 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 322-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 322 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
USD 323-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 323 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 323-2	Conduct hazard mitigation education programs for students.	All hazards	USD 323 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD 323-3	Conduct a native, low water planting program for all school facilities	Drought	USD 323 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 323-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 323 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 323-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 323 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 323-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 323 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 323-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 323 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 323-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 323 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
USD 384-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 384 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 384-2	Conduct hazard mitigation education programs for students.	All hazards	USD 384 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 384-3	Conduct a native, low water planting program for all school facilities	Drought	USD 384 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District	Ten years	New

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
							general fund		
USD 384-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 384 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 384-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 384 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 384-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 384 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 384-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 384 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 384-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 384 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
Rural Water District #2-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Rural Water District #2-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rural Water District #2-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Rural Water District #3-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Rural Water District #3-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District #3-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Rural Water District #4-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Rural Water District #4-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District #4-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Bluestem Electric Cooperative-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going

Pottawatomie County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Bluestem Electric Cooperative-2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Operations Director	High	1, 2	Distance, spec, and location dependent	System budget	Ten years	Carried over, lack of funding
Bluestem Electric Cooperative-3	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New
Nemaha-Marshall Electric Cooperative-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going
Nemaha-Marshall Electric Cooperative-2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Operations Director	High	1, 2	Distance, spec, and location dependent	System budget	Ten years	Carried over, lack of funding
Nemaha-Marshall Electric Cooperative-3	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Riley County-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Emergency Manager, Facilities Director	High	1, 3	$10,000 to $50,000 per location	HMGP, General fund	Ten years	Carried over due to lack of funding
Riley County-2	Conduct regular hazard mitigation information programs for all citizens.	All hazards	Emergency Manager	High	1, 2	Staff Time	General fund	Five years	Carried over due to lack of staff
Riley County-3	Upgrade and expand warning siren network throughout the county, especially in currently underserved areas.	All hazards	Emergency Manager	High	1, 2	Site and size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding
Riley County-4	Fund the hiring of a consultant to develop zoning and subdivision regulations to mitigate hazards.	All Hazards	Planning and Development Supervisor	Medium	1,2	$150,000	General fund	Five years	Carried over due to lack of funding
Riley County-5	Promote and educate the public and private sectors on potential agricultural issues that can severely impact the county and regional economies and develop and implement plans to address these issues.	Agricultural Infestation	Extension Agent, Emergency Manager	Medium	3	Staff Time	General fund	Four years	Not started, lack of staff
Riley County-6	Map all infrastructure and facilities within potential dam or levee failure inundation areas, to include special districts, to understand risk	Dam/Levee Failure	Emergency Manager	Medium	1, 2, 4	$10,000 per location	HMGP, General fund	Five years	Carried over, lack of funding
Riley County-7	Complete education campaign for citizens on the benefits of replacing water intensive landscaping with natural, low water plantings	Drought	Emergency Managers	Low	1,2,3	Volunteers and Staff Time	General fund	Five years	New
Riley County-8	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Riley County-9	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	General fund	On-going	On-going
Riley County-10	Continue to participate in, and enforce provisions of, CRS Program.	Flood	Emergency Manager, NFIP Administrator	High	1,2	Staff time	General Fund	Three years	New

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Riley County-11	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works Director	Medium	1, 2	Facility size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding
Riley County-12	Fund a future conditions floodplain map that depicts the extent of the 1% floodplain following the build out of city of Manhattan to 2035.	Flood	GIS Department Director, Floodplain Manager	High	1,2	$50,000	FMA, General fund	Three years	Carried over due to lack of funding
Riley County-13	Purchase protective window film for all county facility windows to reduce the risk of airborne debris injuries during extreme wind events.	Severe Weather, Tornado	Emergency Manager	Low	1,2	Facility size dependent	HMGP, General fund	Five years	New
Riley County-14	Construct community safe rooms throughout the county to required building standards	Severe Weather, Tornado	Emergency Manager	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	Carried over due to lack of funding
Riley County-15	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storms	Emergency Manager	Medium	3	Staff Time	General fund	Three years	Not started, lack of staff
Riley County-16	Create defensible space buffers at all county facilities	Wildfire	Public Works Director	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Riley County-17	Develop and implement a wildfire prevention/education program.	Wildfire	Fire Chief, Emergency Manager	Medium	1,2,3	$350 per workshop	General fund	On-going	Not started, lack of staff
Riley County-18	Become a Firewise Community.	Wildfire	Emergency Management Coordinator	Low	3	Staff time	General fund	Three years	Not started, lack of staff
Riley County-19	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	High	1, 2	Data size dependent	General fund	Five years	New
Riley County-20	Provide hazardous materials handling and transportation information to citizens and businesses.	Hazardous Materials Event	Emergency Manager	High	1, 2	$50 per trainee	HMGP, General fund	As required	New
Riley County-21	Identify and map all structurally deficient bridges.	Infrastructure Failure	Public Works Director	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	Carried over due to lack of funding

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Riley County-22	Conduct active shooter drills and exercises for all county personnel.	Terrorism	County Sheriff	Low	1, 2	Data size dependent	General fund	Five years	New
Leonardville-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Leonardville-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Leonardville-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Leonardville-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Leonardville-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Leonardville-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Leonardville-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Leonardville-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Leonardville-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Leonardville-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Leonardville-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Leonardville-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Leonardville-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Manhattan-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Manhattan-2	Maintain system (upgrades complete 2024) and FEMA Accreditation for Manhattan Levees, having previously completed PM 43 certification.	Dam and Levee Failure	City Engineer, Director Public Works	High	1,2,4	Staff Time	General Fund, Stormwater Utility	Continuous	On-going
Manhattan-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Manhattan-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Manhattan-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Manhattan-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations, including voluntary	Flood	Public Works Director	High	1, 2	Location and size dependent	HMGP, General fund,	As required	On-going

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	acquisition and removal of flood prone properties.						Stormwater Utility		
Manhattan-7	Continue to participate in, and enforce provisions of, CRS program.	Flood	Floodplain Administrator	High	1, 2	Staff time	General fund	Continuous	On-going
Manhattan-8	Continue use of conservation easements and other standards to guide development away from natural hazard and environmentally sensitive areas, as identified in the Comprehensive Plan and Manhattan Development Code	Flood, Wildfire, Drought	Dir of Community Development, Public Works Director	Medium	1, 2	Staff time	General fund	Continuous	On-going
Manhattan-9	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Manhattan-10	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Manhattan-11	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Manhattan-12	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Manhattan-13	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Manhattan-14	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Manhattan Complete	The city of Manhattan will complete PM 43 certification of the city levee according to the	Dam and Levee Failure	-	-	-	-	-	-	Complete

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	FEMA Provisionally Accredited Levee agreement.								
Ogden-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Ogden-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Ogden-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Ogden-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Ogden-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Ogden-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Ogden-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Ogden-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Ogden-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Ogden-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Ogden-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Ogden-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Ogden-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Randolph-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Randolph-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Randolph-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Randolph-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Randolph-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Randolph-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Randolph-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Randolph-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Randolph-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Randolph-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Randolph-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Randolph-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Randolph-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Riley-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Riley-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Riley-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Riley-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
		Winter Weather							
Riley-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Riley-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Riley-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Riley-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Riley-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Riley-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Riley-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Riley-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Riley-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Kansas State University-1	Conduct a native, low water planting program for all jurisdictional owned facilities.	Drought	President	Low	1, 2	$10,000 - per location	HMGP, College General Fund	Ten years	Carried Over, Lack of Funding

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Kansas State University-2	Provide public education that increases awareness of extreme heat and extreme cold hazards and teaches residents practical mitigation measures that reduce vulnerability, such as recognizing health risks, using community cooling or warming resources, improving home weatherization, and taking steps to lessen exposure and protect life and property.	Extreme Temperature, Severe Winter Weather	President	Medium	1, 2	$500	HMGP, College General Fund	Five years	New
Kansas State University-3	Design and construct surface water control runoff projects for Campus.	Flood	Building and Grounds Director	Low	1, 2	Location and size dependent	HMGP, College General Fund	As required	New
Kansas State University-4	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Building and Grounds Director	Low	1, 2	Facility size dependent	HMGP, College General Fund	Five years	New
Kansas State University-Complete	Public Safety will research and implement enhancements to the University's early warning emergency notification system (K-State Alerts) for faculty, staff, students, and the general public for weather alerts and campus emergencies.	All Hazards	KSU Public Safety Director	Medium	1,2	$100,000	General Fund	Five Years	Complete
USD 378-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 378 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 378-2	Conduct hazard mitigation education programs for students.	All hazards	USD 378 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD 378-3	Conduct a native, low water planting program for all school facilities	Drought	USD 378 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 378-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 378 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 378-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 378 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 378-6	Apply shatter resistant film to all external windows in all district facilities.	Severe Weather, Tornado	USD 378 Superintendent	High	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 378-7	Create a defensible space boundary around all district facilities	Severe Weather, Tornado, Wildfires	USD 378 Superintendent	High	1, 2	Facility size dependent	HMGP-PF, District general fund	Five years	New
USD 378-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 378 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	On-going
USD 378	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 378 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Complete
USD 378	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 378 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	Complete

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD 383-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 383 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 383-2	Conduct hazard mitigation education programs for students.	All hazards	USD 383 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 383-3	Conduct a native, low water planting program for all school facilities	Drought	USD 383 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 383-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 383 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 383-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 383 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 383-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 383 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 383-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 383 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 383-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 383 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
USD 384-1	Purchase and install school facility backup generators in conjunction	All hazards	USD 384 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District	Five years	Carried over due to lack of funding

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	with hardening existing electrical systems.						general fund		
USD 384-2	Conduct hazard mitigation education programs for students.	All hazards	USD 384 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 384-3	Conduct a native, low water planting program for all school facilities	Drought	USD 384 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 384-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 384 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 384-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 384 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 384-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 384 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 384-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 384 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 384-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 384 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
Bluestem Electric COOP-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going

Riley County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Bluestem Electric COOP-2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Operations Director	High	1, 2	Distance, spec, and location dependent	System budget	Ten years	Carried over, lack of funding
Bluestem Electric COOP-3	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New
Flint Hills REC-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Flint Hills REC Administration	Medium	1, 2	$25,000 - $75,000 per facility	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Flint Hills REC Administration	High	1, 2	Distance and spec dependent	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-3	Replace aging substations that are 40 to 60 years old	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New
Flint Hills REC-4	Purchase a portable substation.	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New
Sunflower Electric-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going
Sunflower Electric-2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Operations Director	High	1, 2	Distance, spec, and location dependent	System budget	Ten years	Carried over, lack of funding
Sunflower Electric-3	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wabaunsee County-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Emergency Manager, Facilities Director	High	1, 3	$10,000 to $50,000 per location	HMGP, General fund	Ten years	Carried over due to lack of funding
Wabaunsee County-2	Conduct regular hazard mitigation information programs for all citizens.	All hazards	Emergency Manager	High	1, 2	Staff Time	General fund	Five years	Carried over due to lack of staff
Wabaunsee County-3	Upgrade and expand warning siren network throughout the county, especially in currently underserved areas.	All hazards	Emergency Manager	High	1, 2	Site and size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding
Wabaunsee County-4	Institute a county-wide building code utilizing the latest IBC codes.	All hazards	Zoning Director	Low	1,2	Staff Time	General fund	Five years	New
Wabaunsee County-5	Promote and educate the public and private sectors on potential agricultural issues that can severely impact the county and regional economies and develop and implement plans to address these issues.	Agricultural Infestation	Extension Agent, Emergency Manager	Medium	3	General fund	Local, State	Four years	Not started, lack of staff
Wabaunsee County-6	Map all infrastructure and facilities within potential dam or levee failure inundation areas, to include special districts, to understand risk	Dam/Levee Failure	Emergency Manager	Medium	1, 2, 4	$10,000 per location	HMGP, General fund	Five years	New
Wabaunsee County-7	Complete education campaign for citizens on the benefits of replacing water intensive landscaping with natural, low water plantings	Drought	Emergency Manager	Low	1,2,3	Volunteers and Staff Time	General fund	Five years	New
Wabaunsee County-8	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Emergency Mgr/Health Dept	Low	1, 2	$2,000 per facility	General fund	Three years	New
Wabaunsee County-9	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	General fund	On-going	On-going
Wabaunsee County-10	Enter CRS Program.	Flood	Emergency Manager, NFIP Administrator	High	1,2	Staff time	General Fund	Three years	New

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wabaunsee County-11	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works Director	Medium	1, 2	Facility size dependent	HMGP, General fund	Ten years	Carried over due to lack of funding
Wabaunsee County-12	Purchase protective window film for all county facility windows to reduce the risk of airborne debris injuries during extreme wind events.	Severe Weather, Tornado	Emergency Manager	Low	1,2	Facility size dependent	HMGP, General fund	Five years	New
Wabaunsee County-13	Construct community safe rooms throughout the county to required building standards	Severe Weather, Tornado	Emergency Manager	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	Carried over due to lack of funding
Wabaunsee County-14	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storms	Emergency Manager	Medium	3	Staff Time	General fund	Three years	Not started, lack of staff
Wabaunsee County-15	Create defensible space buffers at all county facilities	Wildfire	Public Works Director	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Wabaunsee County-16	Develop and implement a wildfire prevention/education program.	Wildfire	Fire Chief, Emergency Manager	Medium	1,2,3	$350 per workshop	General fund	On-going	Not started, lack of staff
Wabaunsee County-17	Become a Firewise Community.	Wildfire	Emergency Management Coordinator	Low	3	Staff time	General fund	Three years	Not started, lack of staff
Wabaunsee County-18	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Network Computer Solutions	High	1, 2	Data size dependent	General fund	Five years	New
Wabaunsee County-19	Provide hazardous materials handling and transportation information to citizens and businesses.	Hazardous Materials Event	Emergency Manager	High	1, 2	$50 per trainee	HMGP, General fund	As required	New
Wabaunsee County-20	Identify and map all structurally deficient bridges.	Infrastructure Failure	Road and Bridge Director	Medium	1, 2	$1,000,000 per facility	HMGP, General fund	Ten years	R&B working on identifying.
Wabaunsee County-21	Conduct active shooter drills and exercises for all county personnel.	Terrorism	County Sheriff	Low	1, 2	Data size dependent	General fund	Five years	New

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Alma-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	City Superintendent	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Alma-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	City Superintendent	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Alma-3	Upgrade/repair existing water supply infrastructure.	Drought	City Superintendent	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Alma-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	City Superintendent	Low	1, 2	$2,000 per facility	General fund	Three years	New
Alma-5	Continued participation and compliance with the NFIP.	Flood	Mayor	Medium	1,2	Staff Time	General fund	Continuous	On-going
Alma-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	City Superintendent	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Alma-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Alma-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	City Superintendent	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Alma-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	City Superintendent	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Alma-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	City Superintendent	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Alma-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Alma-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Alma-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Alta Vista-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Alta Vista-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Alta Vista-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Alta Vista-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Alta Vista-5	Meet the requirements to join the NFIP.	Flood	Mayor	Medium	1,2	Staff Time	General fund	Two years	New
Alta Vista-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Alta Vista-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Alta Vista-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Alta Vista-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Alta Vista-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Alta Vista-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Alta Vista-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Alta Vista-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Eskridge-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Eskridge-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Eskridge-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Eskridge-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Eskridge-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Eskridge-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Eskridge-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Eskridge-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Eskridge-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Eskridge-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Eskridge-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Eskridge-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Eskridge-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Harveyville-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Harveyville-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Harveyville-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Harveyville-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Harveyville-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Harveyville-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Harveyville-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Harveyville-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Harveyville-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Harveyville-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Harveyville-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Harveyville-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Harveyville-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
Maple Hill-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding
Maple Hill-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Maple Hill-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Maple Hill-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Maple Hill-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Maple Hill-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Maple Hill-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Maple Hill-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Maple Hill-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Maple Hill-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Maple Hill-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions
Maple Hill-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Maple Hill-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
McFarland-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	Medium	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Generators are available but not fixed on site
McFarland-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Low	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	Our dam don't hold water back
McFarland-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	Medium	1,2	Location and size dependent	HMGP, General fund,	Five years	We are looking into this. Grants needed!
McFarland-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	McFarland Senior Center
McFarland-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	Meeting held June 2025 with NFIP
McFarland-6	Construct rainwater retention/detention ponds or other	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	In place already

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	flood control projects at strategic locations.								
McFarland-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Lack of funding
McFarland-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	City Hall and Sr Center have asphalt shingles. Other buildings are metal.
McFarland-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	Lack of funding. Grants are needed.
McFarland-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
McFarland-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	City Superintendent	High	4	$1,000	General fund	Continuous	City Supt has put things on social media page.
McFarland-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	Currently in place.
McFarland-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Possibly
Paxico-1	Purchase and install critical facility backup generators in conjunction with hardening existing electrical systems.	All hazards	Facilities Director	High	1, 2	$25,000 - $50,000 per facility	HMGP, General fund	Five years	Carried over lack of funding

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Paxico-2	Map all infrastructure and facilities within potential failure inundation areas to understand risk.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, General fund	Five years	New
Paxico-3	Upgrade/repair existing water supply infrastructure.	Drought	Mayor	High	1,2	Location and size dependent	HMGP, General fund,	Five years	Not started, lack of funding
Paxico-4	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Facilities Director	Low	1, 2	$2,000 per facility	General fund	Three years	New
Paxico-5	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	General fund	Continuous	On-going
Paxico-6	Construct rainwater retention/detention ponds or other flood control projects at strategic locations.	Flood	Public Works Director	Low	1, 2	Location and size dependent	HMGP, General fund	As required	New
Paxico-7	Meet requirements and join the CRS program.	Flood	Mayor	Low	1, 2	Staff time	General fund	Three years	Carried over, lack of staff
Paxico-8	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	HMGP, General fund	Ten years	New
Paxico-9	Construct community saferooms in select jurisdictional buildings.	Severe Weather, Tornado	Facilities Director	High	1, 2	Facility size dependent	HMGP, General fund	Ten years	New
Paxico-10	Purchase protective window film for all jurisdictional facilities	Severe Weather, Tornado	Facilities Director	Low	1,2	Facility size dependent	HMGP, General fund	Five years	Not started, lack of funding
Paxico-11	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Fire Chief	High	4	$1,000	General fund	Continuous	Carried over, staff restrictions

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Paxico-12	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, General fund	As required	New
Paxico-13	Become a Firewise Community	Wildfire	Fire Chief	High	1, 2	Staff time	General fund	Five years	Carried over, staff restrictions
USD 329-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 329 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 329-2	Conduct hazard mitigation education programs for students.	All hazards	USD 329 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 329-3	Conduct a native, low water planting program for all school facilities	Drought	USD 329 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 329-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 329 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 329-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 329 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 329-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 329 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 329-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 329 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD 329-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 329 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District general fund	As required	New
USD 330-1	Purchase and install school facility backup generators in conjunction with hardening existing electrical systems.	All hazards	USD 330 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, District general fund	Five years	Carried over due to lack of funding
USD 330-2	Conduct hazard mitigation education programs for students.	All hazards	USD 330 Superintendent	Medium	1, 2, 3	$2,000	District general fund	As required	New
USD 330-3	Conduct a native, low water planting program for all school facilities	Drought	USD 330 Superintendent	Low	1, 2	$10,000 - per location	HMGP, District general fund	Ten years	New
USD 330-4	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 330 Superintendent	Medium	1, 2	$500	District general fund	Five years	New
USD 330-5	Construct rainwater gardens adjacent to paved areas.	Flood	USD 330 Superintendent	Low	1, 2	Location and size dependent	HMGP, District general fund	As required	New
USD 330-6	Construct safe rooms in all school buildings to required standards.	Severe Weather, Tornado	USD 330 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, District general fund	Ten years	Carried over due to lack of funding
USD 330-7	Install high wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	USD 330 Superintendent	Low	1, 2	Facility size dependent	HMGP, District general fund	Five years	New
USD 330-8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 330 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, District	As required	New

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
							general fund		
Rural Water District #1-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Water Manager	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding. No generators, currently
Rural Water District #1-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Water Manager	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District #1-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Water Manager	High	1,2	Staff time	Jurisdiction general fund,	Ten years	No fire hydrants in RWD#1
Rural Water District #2-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding
Rural Water District #2-2	Replace and upgrade pump stations to provide additional water capacity for fire and emergency storage.	Drought, Wildfire, Infrastructure Failure	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five to Ten Years	Carried over, lack of funding
Rural Water District #2-3	Maintain, repair, and collect GPS locations of fire hydrants within the area served.	Wildfire	Operations Director	High	1,2	Staff time	Jurisdiction general fund,	Ten years	Carried over due to lack of funding
Tri-County Drainage District-1	Purchase and installation of emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Operations Director	High	1,2	Location dependent	Jurisdiction general fund, Federal grant	Five Years	Carried over, lack of funding

Wabaunsee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Bluestem Electric COOP-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going
Bluestem Electric COOP-2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Operations Director	High	1, 2	Distance, spec, and location dependent	System budget	Ten years	Carried over, lack of funding
Bluestem Electric COOP-3	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New
Flint Hills REC-1	Purchase and install critical location backup generators.	All hazards	Flint Hills REC Administration	Medium	1, 2	$25,000 - $75,000 per facility	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-2	Replace Copper Weld line construction with current line construction.	All hazards	Flint Hills REC Administration	High	1, 2	Distance and spec dependent	HMGP, System budget	Five years	Carried over due to lack of funding
Flint Hills REC-3	Replace aging substations that are 40 to 60 years old	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New
Flint Hills REC-4	Purchase a portable substation.	All hazards	Flint Hills REC Administration	High	1, 2	$2,000,000	HMGP, System budget	Five years	New
4 Rivers Electric Cooperative-1	Conduct tree and vegetation clearance around utility infrastructure, including overhead lines.	All hazards	Operations Director	High	1, 2	$50,000 per year	System budget	Continuous	On-going
4 Rivers Electric Cooperative-2	Shorten distance between utility poles to mitigate downed lines during a hazard occurrence.	All hazards	Operations Director	High	1, 2	Distance, spec, and location dependent	System budget	Ten years	Carried over, lack of funding
4 Rivers Electric Cooperative-3	Encourage long-term decrease in consumer energy use through education programs.	All Hazards	Operations Director	High	1, 2, 3, 4	Staff Time	System budget	Continuous	New

Title:	N.R.Hamm Quarry, Inc. Contract-Consent to continue Contract under new ownership.
Agenda Date:	January 21, 2026
Presented By:	Mark Detter, Deputy City Manager
	Charlie Sedlock, Hamm (Republic)

Background:

N.R. Hamm Quarry, Inc. has provided the City of Emporia/Lyon County with solid waste/recycling services since 2000 at the Emporia/Lyon County Transfer Station/Landfill. The agreement has been amended four times over a 25-year period and includes trash/recycling hauling. The partnership with Hamm(s) has been solid for the last two decades.

Discussion:

The City was informed in December that N.R. Hamm Quarry, Inc will become part of Allied Waste Systems, Inc. (Republic) a Delaware Corporation. Republic is asking Hamm to secure the consent of its customers to honor the existing contracts with Hamm. If approved by the City Commission, the Lyon County Commission will be asked to approve the consent at their January 22nd meeting.

Republic Services is a company with 13 Million customers, which generates $16 Billion in revenues and 42,000 employees.

Financial considerations:

The contract with Hamms was scheduled to expire at the end of 2026. The City is planning to bid the contract for trash/recycling hauling services early summer of 2026. In addition, City staff would like to have to develop a Solid Waste Master Plan as cash balances in the Solid Waste Fund have dropped substantially in the last 3 years.

The approval of the consent agreement will not increase costs beyond the scheduled increase in agreement signed in August of 2024 with N.R. Hamm Quarry, Inc.

Recommended action:

Approve N.R. Hamm Quarry, Inc's. request to allow Allied Waste System, Inc, a subsidiary of Republic Services, to fulfill the contact commitment for solid waste/recycling hauling services to expire at the end of 2026.

Attachments:

Consent Agreement.

December 9, 2025

SENT VIA CERTIFIED MAIL, RETURN RECEIPT REQUESTED

c/o City Manager
522 Mechanic
Emporia, KS 66801

Re: Agreement for Transport and Disposal of Solid Waste dated March 30, 2000, by and among N. R. Hamm Quarry, LLC, a Kansas limited liability company ("Hamm"), the City of Emporia, Kansas ("Emporia"), and the Board of County Commissioners of Lyon County, Kansas ("Lyon County" and together with Emporia, "You"), as modified and supplemented by that certain Modification and Addendum effective as of October 1, 2006, as further modified and supplemented by that certain Second Modification and Addendum dated July 17, 2008, as further modified and supplemented by that certain Third Modification and Addendum dated June 3, 2020, as further modified and supplemented by that certain Fourth Modification and Addendum dated August 21, 2024 (the "Contract")

We are pleased to advise that Hamm recently agreed to sell certain of its assets (the "Sale") to Allied Waste Systems, Inc., a Delaware corporation ("Allied") and its affiliates, including Prairie Landfill, LLC, a wholly owned subsidiary of Allied ("Republic").

The Contract identified above is among the assets proposed to be sold to Republic as part of the Sale. We are confident that Republic will continue the business relationship embodied in the Contract and will continue to provide services to You at the highest level.

The Sale will constitute an assignment of the Contract (the "Assignment") requiring the Your consent. Accordingly, we kindly request that You acknowledge and consent to the Assignment to Republic. Specifically, by signing this letter, You: (i) acknowledge and consent to the Assignment; (ii) waive any right to terminate the Contract as a result of the Assignment; (iii) acknowledge and confirm that You are not in default or breach of any term or provision of the Contract; and (iv) acknowledge that the Contract will continue in full force and effect in accordance with its terms following the Assignment. If the Sale is not consummated for any reason, this letter will cease to have effect and the Contract will remain in place between Hamm and You in accordance with its terms.

Please note that we expect to complete the transaction on or around the first quarter of 2026. Accordingly, we would appreciate Your prompt attention to this matter. If you have any questions, please contact Charlie Sedlock at Charlie.Sedlock@summit-materials.com or at (785) 865-8698. Otherwise, kindly sign and return this letter to Charlie Sedlock via email by .pdf at Charlie.Sedlock@summit-materials.com.

[*Signature Page Follows*]

N.R. Hamm Quarry, LLC,
a Kansas limited liability company

By: _____
Name: Nick Ivezaj
Title: General Counsel

AGREED AND ACKNOWLEDGED:

City of Emporia, Kansas

By: _____
Name: _____
Title: _____

Board of County Commissioners of Lyon County, Kansas

By: _____
Name: _____
Title: _____

Title: Financials and Permits

Agenda Date: January 21, 2026

Presented By: Trey Cocking, City Manager

Background:
This is a time for the City Manager to make comments and reports to the Public.

The following is general information for the month of December 2025 for the community:

Monthly Local Retail Sales Tax Receipts Update

	2024	2025	
	$ 524,145.22	$ 546,291.26	**Increase of $22,146.04** for the month, and
YTD	**$ 6,473,541.24**	**$6,627,422.25**	Overall increase of 2.32% from year 2024.

City Share from County Tax

	2024	2025	
	$ 269,446.98	$ 289,326.31	**Increase of $19,879.33** for the month, and
YTD	**$ 3,316,346.03**	**$ 3,457,387.81**	Overall increase of 4.08% from year 2024.

Building Permits issued from 12/1/2025 to 12/31/2025 for new construction, remodeling/repairs and demolition.

Total number of building permits issued through Code Services:	58
Total valuations associated with those building permits:	$ 2,150,902.40
Total number of dollars collected for Building Permit Fees:	$ 12,750.50
Construct – Single-family dwellings	1
Demo – Single-family dwellings	0

Flint Hills Mall CID for December 2025	$ 14,517.83
YTD	**$ 203,724.97**
Pavilions CID for December 2025	$ 14.896.88
CID #2	**$** 14,896.88
YTD	**$ 378,300.62**
Fairview Hotel CID for December 2025	**$** 8,088.18
YTD	**$ 88,153.04**
West Plaza CID for December 2025	$ 6,089.00
YTD	**$ 106,359.37**

The Governing Body of the City of Emporia, Kansas, met in Regular Session, Wednesday, January 7, 2026, with Mayor Harter presiding and Commissioners Brinkman, Curtis, Sauder and Smith present. Also present were City Manager Cocking, Deputy City Manager Detter, Assistant City Manager Wash, City Clerk Sull and City Attorney Montgomery.

CITY COMMISSION
(Public Comment)

This is the time for the public to make comments.

The public is invited to make comments at this time. Please limit comments to two (2) minutes each. Please state your name and address prior to making comments. No comments were made at this time.

CITY COMMISSION
(Board Appointments)

Natural Resources Advisory Board:

It was moved by Commissioner Smith, seconded by Commissioner Sauder that Nadia Qureshi be reappointed to the Natural Resources Advisory Board for a term that expires on December 31, 2029. The vote follows: Commissioner Smith, aye; Commissioner Sauder, aye; Commissioner Brinkman, aye; Commissioner Curtis, aye; and Mayor Harter, aye.

FIRE DEPARTMENT
(Crossland Construction Co., Inc. Contract – Fire Station Projects)
(Change Order No. 1)

Brandon Beck, Fire Chief, was recognized and addressed the Governing Body. He stated the next phase of the fire department facility upgrades; Fire Station No. 2 will undergo the construction of a new addition to the building as well as a complete remodel of the existing living areas. He stated as with Fire Station No. 1, Fire Station No. 2 suffers from a lack of usable space, efficient space, and some deferred maintenance that needs

addressed. Upgrades to Station No. 2 need to be carried out to improve the safety and living conditions of the firefighters. The same philosophy for contamination will be used in Fire Station No. 2. Staff have been working with architect Tessere, and construction manager at risk, Crossland Construction, to complete all documents for Station No. 2. He stated the contract sum guaranteed by the Construction Manager not to exceed $16,355,361. for Station No. 1 and Station No. 2, subject to additions and deductions by Change Order. This item is a request for change order to the construction contract with Crossland Construction to include the remodel and addition to Fire Station No. 2. This will be paid for by the Bond and Interest Fund. Staff recommend approval of the Crossland Construction Contract for the approved remodel and addition to Fire Station No. 2 for $6,271,246 with allowances totaling $149,278 and contractor contingency of $136,405. Approval of costs outside of Crossland Construction contract of $200,000 for fixtures, furniture, and equipment.

Commissioner Curtis made a motion to approve GMAX A.2 to the Crossland Construction Contract for the approved remodel and addition to Fire Station 2 for $6,271,246 with allowances totaling $149,278 and contractor contingency of $136,405. Additionally, approval of costs outside of Crossland Constructions contract of $200,000 for fixtures, furniture, and equipment. Commissioner Smith seconded the motion. The vote follows: Commissioner Curtis, aye; Commissioner Smith, aye; Commissioner Brinkman, aye; Commissioner Sauder, aye; and Mayor Harter, aye.

BONDS
(Public Improvements)
(Aerial Fire Truck Acquisition)
(Fire Station No. 2 Improvements)
(Resolution Number 3785)

Deputy City Manager Detter was recognized and addressed the Governing Body. He stated the adopted CIP Budget includes funds for a new Aerial Fire Truck and improvements to Fire Station No. 2. The fire truck is estimated not to exceed $2,225,000.00. The current aerial truck is over 24 years old and fully depreciated. Fire Station No. 2 is estimated not to exceed $7,000,000.00 in costs, including the cost of the bond issuance. The financial debt service for Fire Station No. 2 is estimated at $540,000

per year for twenty years; the debt service for the aerial truck is estimated at $280,000 per year for ten years. The City added a debt payment of $825,000 in 2026 for Fire Station No. 1. The total increase in debt in 2027 will be approximately $1,645,000. The Bond and Interest Fund currently has more than $5,000,000. Based on current revenues and expenses in the Bond & Interest Fund, the City has capacity to pay for both Fire Stations No. 1 and No. 2 and the new aerial fire truck and maintain a substantial Bond & Interest Fund balance. Staff recommend approval of Resolution Number 3785 authorizing certain public improvements for the Aerial Fire Truck and improvements to Fire Station No. 2.

Commissioner Smith made a motion to approve Resolution Number 3785 of the City of Emporia authorizing certain public improvements for Aerial Fire Truck and improvements to Fire Station No. 2. Commissioner Curtis seconded the motion. The vote follows: Commissioner Smith, aye; Commissioner Curtis, aye; Commissioner Brinkman, aye; Commissioner Sauder, aye; and Mayor Harter, aye.

Consent Agenda

It was moved by Commissioner Sauder, seconded by Commissioner Brinkman that the Consent Agenda listed below be ratified as a whole:

a. Minutes of Regular Commission Meetings Held on December 17, 2025.

b. Appropriation Request for Flint Hills Technical College - Nursing Education Classroom Technology.

c. Municipal Advisory Agreement with Raymond James related to the issuance of Series 2026 General Obligation Bonds.

d. Approve Supplement No. 3 to BG Consultants Engineering Services Agreement for 24th Avenue & Prairie Street Watermain Improvements Project No. WM2201 and KDHE Loan #3070.

The vote follows: Commissioner Sauder; Commissioner Brinkman, aye; Commissioner Curtis, aye; Commissioner Smith, aye; and Mayor Harter, aye.

CITY COMMISSION
(City Manager's Report)

This is an opportunity for the City Manager to present information to the public that may not be reported in other news accounts or City activities or to highlight accomplishments of the organization.

At the time this Agenda was prepared, the following items were in the works:

TENTATIVE AGENDA FOR JANUARY 21, 2026, MEETING.

- Proclamation recognizing Catholic Schools Week.
- Amend Regulations for Mobile Food Truck Vendors.
- City of Emporia Legislative Policy Statement.

STUDY SESSION
Discuss Award for Lift Station No. 1
Street Rehabilitation Discussion
Debt Discussion with Greg Vahrenberg

CITY COMMISSION
(Governing Body Comment)

This is the time for the Mayor and City Commissioners to make comments and reports to the public. The Commissioners Curtis, Sauder and Brinkman made the following comments.

Commissioner Curtis stated:

"As my time on the commission fulfilling the late Danny Giefer's term comes to an end, I want to thank several people who have made this experience so meaningful.

First, I want to thank my commission colleagues for their partnership and for sharing the wisdom they have gained as public servants and beyond. We have cussed and discussed, so to speak, and I know each of them has one goal, a shared goal, to make Emporia the best community it can be. Thank you, Commissioners.

Next, I want to thank the staff. I value everyone and certainly value every city worker. I've come to learn so much more about the work they do day in and day out. Thank you and keep up the good work.

Obviously, most of my interactions have been with City leadership: Trey, Mark, Tayler, Christina, Jim, Ed, Brandon, Janet, Kerry, and Sue. You are outstanding people. I appreciate you and your leadership of our great City. I remain in your corner.

To our community, I appreciate the opportunity to serve. We have a great community, and we need all entities - not just a select few - to move ahead and succeed.

If you're familiar with the community's Leadership Emporia program, then you're familiar with Ed O'Malley, the Kansas Leadership Center, and the Kansas Health Foundation. In Ed O'Malley's most recent book Leading Health, he shares the following:

"Leadership is all about progress. Period."

"People who exercise leadership look at the current reality and imagine something greater."

"Leadership is about naming what needs to be named, no matter how tough it is to hear."

"It's tempting to interpret data in ways that make us comfortable, especially for those of us in authority."

"We often need to endure pain to achieve meaningful change."

"We must disrupt the narrative."

"Leadership requires disruption."

It's been an honor to exercise this kind of leadership alongside my fellow commissioners, City staff, and several community members. We all like "nice," but what's been known as "Kansas Nice" or "Midwest Nice" has led to average or below average performance. Our desire to simply "hold our tongue," "avoid rocking the boat," and "just get along" has kept us from pursuing excellence and striving for preferred outcomes, opting instead for status quo, what we know, and keeping us comfortable.

To me, perhaps a larger issue affecting our community - and the nation at large - is how we respond to criticism. Disagreeing does not mean we have to disassociate. Disagreeing and disassociating is what's wrong with our country today - and what's wrong with human relationships in general.

We've forgotten how to disagree without being disagreeable. The sentiment that "If you're not with me, you're against me" is toxic. And if you're not with me on one issue, then you're against me on every issue? This sentiment is sad and so, so wrong.

Our tendency to cancel someone the minute they disagree with us limits our ability to make needed changes and work towards a better future. Pride is a sin for a reason: it undermines personhood and undergirds resistance to change.

That said, our community does need to move forward, positively and productively. Let's build the community we imagine - one that is greater than and better. Let's work towards shared goals and hold each other accountable, sometimes sharing critiques but always agreeing to move forward in a positive direction.

Let's get back to being able to disagree without being disagreeable and to a place where we can find common ground on some things whether or not we agree on all things. That, to me, is a formula for a much stronger and more resilient community.

Thank you again for the opportunity to serve in this role. While my service on the commission is coming to a close, my service to the community will certainly continue. Go Emporia!"

Commissioner Sauder stated:

"I want to thank my fellow commissioners for their service and for serving with me. It has been an unbalanced relationship and I have taken advantage of all of you far more than you of me. I will forever be grateful for what I've learned working side by side with each of you.

I want to thank Trey and the administrative staff at the City. It is truly amazing to witness what it takes to make this machine work every day. You all make it look very easy.

I want to thank all city employees who bring it every day. Each function of each department is vital to the day to day operation of our town. The people that live here go to bed and wake up each day relying on the services you provide and expect them to be consistent and reliable. Without all of you, that reliability would not happen.

I want to thank everyone who supported me in 2 successful campaigns. Being on the commission was the honor of my life and was more of a challenge than I could have prepared myself for. The events of the past 4 years have tested me in every way possible and then some. Without your support, I would not have made it.

To those of you who comment on social media, be it supportive, snarky, negative, mean or otherwise…do better. Go ahead and make your comments, but don't stop there. Commenting on a social media post or headline is not the height of civic engagement. And if you're going to take the time to take shot from the cheap seats, then take it a step further and actually reach out to the commissioners or staff. We have never been more accessible. Engage them. Question them. In that process 2 things will happen…the commissioners will better learn your perspective on issues and you will most likely gain a better understanding of why decisions are made. And, if you're not willing to engage with the commissioners, then perhaps maybe reconsider your comments, they are often very hurtful and unnecessary. There isn't a single commissioner, new or old, or a staff member that doesn't want what is best for Emporia and the people who live here. Making assumptions about our motivations is just lazy and disingenuous. Taking

the time to better understand policy decisions doesn't require attendance at a meeting or an encyclopedic knowledge of civics, it only requires that you ask in a constructive manner. That's it. The commissioners are your representatives, and I think that you will find them willing to converse with you on about any matter or topic. We live in a community and that comes with many responsibilities. One of those responsibilities is to be civil to one another and it will be one of my goals after leaving office, to better promote civility.

Thank you, again to the City of Emporia for this incredible opportunity and I am truly excited for what comes next for our town!"

Commissioner Brinkman stated:

"After fourteen years of public service to my community, I really don't have a lot of prophetic words for you beyond the thanks that we have already heard to our city staff and community. It is very important to me to publicly acknowledge my family, my husband, my son, my in-laws and my employees. They have suffered scrutiny beyond anything they ever asked for in life because of my leadership choices, and they have never waivered in their support and I am forever grateful for them. I could have never served for fourteen years without all of them standing right there behind me.

For my community I want you to be vigilant, be awake, be involved, be wary of things arriving in shiny packages that are expensive and promise trickle down. Nothing ever trickles down. And honestly, if it did, don't we deserve more than a trickle? I think that we probably do so remain awake.

When you come across a fellow traveler in our community, let your first judgement be if he or she is homeless or hungry on the system. It is the system that has failed not the human being, the system has failed.

And finally, to our dissenters, our detractors and our critics as Jamie mentioned, I tell you to keep lighting those fires. We need them to light the way forward. Thank you for letting me serve for fourteen years and question and question and question and question. It is important to be a voice at the table for those who do not have one and it will continue to do so. Thank you."

2025 CITY COMMISSION
(State of City Speech)
(Mayor Erren Harter)

"As we begin a new year, I'm proud of what our community accomplished in 2025. While we faced challenges, Emporians showed resilience and determination, and together we had many victories and made meaningful progress. As we look ahead to 2026, I'm confident we will continue building a stronger, more vibrant Emporia.

Looking forward, the City Commission has identified four strategic priorities to guide our work: ***responsible stewardship of resources, community growth, quality of life, and engaging and informing citizens****. These priorities reflect what we value as a community and will shape our efforts throughout the year.*

*First, We remain committed to r****esponsible stewardship of resources*** *by making thoughtful, sustainable decisions and using taxpayer dollars wisely to create long-term value and sustainability. Economic development will also remain a top priority, as we work to attract jobs and investment while ensuring growth that preserves the character and quality of life we value.*

When it comes to ***community growth****, we are focused on fostering a city where businesses can thrive, families can grow, and opportunities are abundant. Economic development will continue to be a top priority for the Commission in 2026. We understand that a thriving economy is the backbone of any strong community. But we also recognize the importance of* ***sustainable growth****—we want Emporia to grow in ways that preserve the things we love about our city. We're committed to bringing new jobs and investment, while ensuring that our growth does not outpace our ability to maintain the quality of life we all enjoy.*

Speaking of quality of life, we know that it touches every part of our community—from safe neighborhoods and strong public services to parks, recreation, and public safety. We will continue investing in the services and amenities that make Emporia a great place to live, work, and raise a family.

Equally important is ***engaging and informing our citizens****. We are committed to transparency, communication, and meaningful involvement. Whether through City meetings, surveys, or other outreach efforts, we will work hard to make sure your concerns and ideas are heard and acted upon.*

Together, these priorities reflect our long-term vision for Emporia: a city that is connected, inclusive, and sustainable. I'm excited about what lies ahead and grateful for the dedication of the Commission and the continued support of our residents. With your continued support and involvement, we will build a brighter future for Emporia, one where every citizen has the opportunity to succeed and feel proud of the city we call home."

Mayor Harter then adjourned sine die.

_____
Erren Harter, Mayor

ATTEST:

_____
Kerry Sull, City Clerk

OATH OF OFFICE

Oath of Office was administered by Monica Duncan, Tammi Olge and Kurt Steinkuhler.

Commissioners, Duncan, Harter, Olge, Smith and Steinkuhler convened as the Governing Body.

Commissioner Duncan made a motion nominating Becky Smith to serve as Mayor for the coming year. Commissioner Harter seconded the motion. The vote follows: Commissioner Duncan, aye; Commissioner Harter, aye; Commissioner Olge, aye; Commissioner Steinkuhler, aye; and Mayor Smith, aye.

Commissioner Duncan made a motion nominating Tammi Olge to serve as Vice-Mayor for the coming year. Commissioner Harter seconded the motion. The vote follows: Commissioner Duncan, aye; Commissioner Harter, aye; Commissioner Olge, aye; Commissioner Steinkuhler, aye; and Mayor Smith, aye.

CITY COMMISSION
(Designate Official City Newspaper)

Commissioner Harter made a motion to designate The Emporia Gazette to be the official City newspaper, as per K.S.A. 12-140. The City is required by State law to designate an official newspaper, which must have a general circulation in the City. All public hearing and meeting notices, emergency orders and other official notices must be published in the official newspaper. Commissioner Olge seconded the motion. The vote follows: Commissioner Harter, aye; Commissioner Olge, aye; Commissioner Duncan, aye; Commissioner Steinkuhler, aye; and Mayor Smith, aye.

CITY COMMISSION
(Approve Surety Bonds)

Commissioner Harter made a motion to approve Surety Bonds for City Manager Cocking, City Clerk Sull and City Treasurer Harrouff. The City has obtained Surety Bonds from Cincinnati Insurance Co. for the 2026 fiscal year. Commissioner Steinkuhler seconded the motion. The vote follows: Commissioner Harter, aye; Commissioner Steinkuhler, aye; Commissioner Duncan, aye; Commissioner Olge, aye; and Mayor Smith, aye.

CITY COMMISSION
(Designate Financial Institutions)

Commissioner Harter made a motion to designate the following financial institutions to serve as depositories of funds of the City of Emporia, per K.S.A. 9-1401: Citizens State Bank; Community National Bank & Trust; ESB Financial; Lyon County State Bank and Capital Federal. Commissioner Duncan seconded the motion. The vote follows: Commissioner Harter, aye; Commissioner Duncan, aye; Commissioner Olge, aye; Commissioner Steinkuhler, aye; and Mayor Smith, aye.

Commissioner Harter made a motion to recess the meeting until 12:20 p.m. to Conference Room 1AB. Commissioner Olge seconded the motion. The vote follows: Commissioner Harter, aye; Commissioner Olge, aye; Commissioner Duncan, aye; Commissioner Steinkuhler, aye; and Mayor Smith, aye.

The following items were discussed at the Study Session:

1. Discuss Legislative Policy Statement.
2. Appoint Commission Members to Regional Development Associate of East Central Kansas Board; Emporia Recreation Commission; Emporia Enterprises; Emporia Public Library Board; and Emporia Main Street.
3. Appoint Commission Liaisons and Designate Commissioners for Board Interviews.

Study Session Discussion:

City of Emporia
Adopt 2026 Legislative Policy Statement

City Manager Cocking stated each year, the City Commission adopts its legislative position detailing the City's positions on key issues impacting municipal governance. New for 2026, the policy statement adds a Veterans Tax Relief section calling for the State of Kansas to provide property tax relief or other appropriate tax relief measures for veterans. The 2026 Legislative Policy Statement outlines the supporting City's position on the following topics:

HOME RULE - We believe the governing of public affairs should be as close to the people as possible and the Home Rule is essential to vigorous, effective, and responsible local government under our representative system. Home Rule is crucial to the continued ability of locally elected officials to solve problems in ways most appropriate to local needs and conditions. Legislation, which affirms the ability to pass local laws on the same subject, is strongly supported.

RURAL HOSPITAL FUNDING – Emergency medical services and public hospitals must provide medical services without regard to the ability of patients to pay. The expansion of Medicaid in Kansas would allow medical provides to be at least partially compensated for some medical services to economically disadvantaged citizens. We support the expansion of Medicaid in Kansas.

RURAL HOUSING INCENTIVE LOAN FUND – We support creation of a state low-interest revolving loan fund to finance development in Reinvestment Housing Incentive Districts.

HOUSING – The City of Emporia supports programs that encourage access to quality housing, including but not limited to, the Housing Investor Tax Credit Act, the Kansas Affordable Housing Tax Credit Act, the Kansas Rural Home Loan Guarantee Act, guaranteeing appraisals in rural counties, the Historic Kansas Act, and the Kansas Rural Housing Incentive District Act.

PROPERTY TAXES – All property taxing authorities, including cities, counties, the state, school districts, special districts, and community colleges should be transparent, and abide by the same limitations, restrictions, and requirements. Any additional transparency measure should not be burdensome or costly. We encourage the state and local governments to make government more efficient and recognize the need to work together on innovative approaches to reduce property taxes.

VETERANS TAX RELIEF – As the Founding City of Veterans Day, the City of Emporia recognized the extraordinary service and sacrifice of those who have served in the United States Armed Forces. The City calls on the State of Kansas to create a meaningful program to provide property tax relief or other appropriate tax relief measures for veterans. Such a program should honor service to our country while remaining administratively feasible and fiscally responsible for local governments.

SUPPORT FOR EMPORIA STATE UNIVERSITY AND FLINT HILLS TECHNICAL COLLEGE - The City of Emporia recognized the vital role Emporia State University and Flint Hills Technical College play in fostering a skilled workforce, driving economic growth, and enriching the cultural and educational opportunities in our region. We strongly support policies and funding initiatives that ensure these institutions have the resources necessary to remain competitive, accessible, and responsive to local needs. By investing in higher education and technical training, we can cultivate a vibrant community, strengthen our local economy, and equip our citizens with the skills needed to thrive in a rapidly evolving workforce.

TAX POLICY & SPENDING – Local spending and taxing decisions are best left to local officials representing the citizens that elected them. We oppose state-imposed limits on the taxing and spending authority of cities. Changes to tax policies should not be undertaken without a full understanding of the overall impact on all taxpayers, taxing entities, and the sources and amounts of revenue generated or eliminated by such policy changes.

LEAGUE OF KANSAS MUNICIPALITIES – In addition, the City of Emporia supports the League of Kansas Municipalities Statement of Municipal Policy. The policy is a crucial framework supporting local autonomy and effective governance. It emphasizes the importance of Home Rule, allowing municipalities to address unique local needs effectively. This policy advocates for empowering local officials, who are intimately aware of their community's challenges and opportunities, ensuring that decisions are made closest to the people they affect.

Commissioner Olge made a motion to approve the City of Emporia 2026 Legislative Policy Statement. Commissioner Steinkuhler seconded the motion. The vote follows: Commissioner Olge, aye; Commissioner Steinkuhler, aye; Commissioner Duncan, aye; Commissioner Harter, aye; and Mayor Smith, aye.

City Commission
Regional Development Association of East-Central Kansas Board
Appointing Governing Body Representative

Commissioner Harter made a motion to appoint Commissioner Olge as the representative of the Governing Body to participate in the activities of the Regional Development Association of East Central Kansas Board. Mayor Smith seconded the motion. The vote follows: Commissioner Harter, aye; Mayor Smith, aye; Commissioner Duncan, aye; Commissioner Olge, aye; and Commissioner Steinkuhler, aye.

City Commission
Emporia Recreation Commission
Appointing Governing Body Representative

Commissioner Harter made a motion to appoint Commissioner Harter as the representative of the Governing Body to participate in the activities of the Emporia Recreation Commission. Mayor Smith seconded the motion. The vote follows: Commissioner Harter, aye; Mayor Smith, aye; Commissioner Duncan, aye; Commissioner Olge, aye; and Commissioner Steinkuhler, aye.

City Commission
Emporia Enterprises
Appointing Governing Body Representative

Commissioner Harter made a motion to appoint Commissioner Steinkuhler as the representative of the Governing Body to participate in the activities of Emporia Enterprises. Mayor Smith seconded the motion. The vote follows: Commissioner Harter, aye; Mayor Smith, aye; Commissioner Duncan, aye; Commissioner Olge, aye; and Commissioner Steinkuhler, aye.

City Commission
Emporia Public Library Board
Appointing Governing Body Representative

Commissioner Harter made a motion to appoint Commissioner Duncan as the representative of the Governing Body to participate in the activities of the Emporia Public Library Board. Mayor Smith seconded the motion. The vote follows: Commissioner Harter, aye; Mayor Smith, aye; Commissioner Duncan, aye; Commissioner Olge, aye; and Commissioner Steinkuhler, aye.

City Commission
Emporia Main Street
Appointing Governing Body Representative

Commissioner Harter made a motion to appoint Mayor Smith as the representative of the Governing Body to participate in the activities of Emporia Main Street. Mayor Smith seconded the motion. The vote follows: Commissioner Harter, aye; Mayor Smith, aye; Commissioner Duncan, aye; Commissioner Olge, aye; and Commissioner Steinkuhler, aye.

City Commission
Joint Economic Development Advisory Council
Appoint Commission Liaisons
Designate Commissioners for Board Interviews

Commissioner Harter made a motion to appoint Tammi Ogle as the representative of the Governing Body to participate as liaison for the Joint Economic Development Advisory Council. Commissioner Olge seconded the motion. The vote follows: Commissioner Harter, aye; Commissioner Olge, aye; Commissioner Duncan, aye; Commissioner Steinkuhler, aye; and Mayor Smith, aye.

Commissioner Harter made a motion designating Commissioners as Board Interviewers for the following boards. Commissioner Ogle seconded the motion. The vote follows: Commissioner Harter, aye; Commissioner Ogle, aye; Commissioner Duncan, aye; Commissioner Steinkuhler, aye; and Mayor Smith, aye.

Community Corrections Board
Commissioner Smith and Commissioner Olge.

Emporia Human Relations Commission
Commissioner Smith and Commissioner Olge.

Building Trades Board
Commissioner Harter and Commissioner Steinkuhler.

Transient Guest Tax Advisory Board
Commissioner Harter and Commissioner Steinkuhler.

Community Housing Board/Land Bank
Commissioner Smith and Commissioner Duncan

Golf Advisory Board
Commissioner Harter and Commissioner Smith

Emporia Public Library Board
Commissioner Harter and Commissioner Ogle

Multi Use Path Planning Board
Commissioner Smith and Commissioner Duncan

Natural Resources Advisory Board
Commissioner Harter and Commissioner Smith

Emporia Planning Commission/Board of Zoning Appeals
Commissioner Steinkuhler and Commissioner Duncan

Emporia Recreation Commission
Commissioner Duncan and Commissioner Steinkuhler

Regional Development Association of East Central Kansas Board
Commissioner Smith and Commissioner Steinkuhler

Emporia Enterprises
Commissioner Olge and Commissioner Duncan

Homelessness Advisory Board
Commissioner Smith and Commissioner Harter

Joint Traffic Safety Committee
Commissioner Duncan and Commissioner Steinkuhler

OFF THE AGENDA ITEM:
City Commission
Rename City Conference Room

Mayor Smith stated there have been discussions about renaming the City Conference Room for quite some time. With the passing of Evora Wheeler, who was Mayor and sat on the Emporia City Commission; she was a wonderful philanthropic lady, a mentor, the Commission suggested renaming this room to the Evora Wheeler

Conference Room. Mayor Smith made a motion to rename the City Conference Room as the Evora Wheeler Conference Room. Commissioner Harter seconded the motion. The vote follows: Mayor Smith, aye; Commissioner Harter, aye; Commissioner Duncan, aye; Commissioner Olge, aye; and Commissioner Steinkuhler, aye.

Commissioner Harter then made a motion to adjourn. Commissioner Olge seconded the motion. The vote follows: Commissioner Harter, aye; Commissioner Olge, aye; Commissioner Duncan, aye; Commissioner Steinkuhler, aye; and Mayor Smith, aye.

_____
Becky Smith, Mayor

ATTEST:

_____
Kerry Sull, City Clerk

Title: Informational Items

Agenda Date: January 21, 2026

Presented By: Trey Cocking, City Manager

Background:
This is an opportunity for the City Manager to present information to the public that may not be reported in other news accounts or City activities or to highlight the organization's accomplishments.

Discussion:
At the time this Agenda was prepared, the following items were in the works for the tentative Agendas of the upcoming meetings on Wednesday, February 4, 2026.

Commission Meeting :

- Award Lift Station No. 1
- Ordinance for Regulation of Mobile Food Trucks

Study Session:

- Debt Discussion
- Discuss Common Consumption Area
- Discuss Emporia Land Bank Housing Infill Project

Commission Action Report
Executive Session

Title: Executive Session

Agenda Date: January 21, 2026

Recommended Action:
Recess into executive session for 30 minutes, inviting pertinent city staff to discuss confidential data of a third party relating to economic development. The justification for the executive session is provided by K.S.A. 75-4319(b)(4) to protect financial affairs and trade secrets of third parties. The open meeting will resume in this room at approximately __:_____ a.m./p.m.

Title:	Lift Station #1 Upgrade
Agenda Date:	January 21,2026
Presented By:	Mark Detter, Deputy City Manager Bruce Boettcher, BG Consultants

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Background:
Lift Station #1 is located north of the ESU Campus just off Merchant Street. It is one of the largest lift stations in the City, managing heavy flow (particularly during heavy rain events). The lift station is between 40–50-years old and is largely depreciated.

Discussion: The primary purpose of the lift station is to upgrade pumping capacity as one of the pumps is inoperable. A pump was replaced in the lift station 5-6 years ago. However, the lift station still does not manage the heavy flow during high rain periods.

Emporia State personnel have complained about the odor emanating from the lift station. BG Consultants upgraded the design to add Ozone treatment to reduce the odor. The Lift Station has standing water near the pumps consistently.

Financial considerations:
The bid on Lift Station #1 Upgrade was $2,861,000. The Engineers Opinion of Probable Cost was $2,935,000. The Lift Station originally was bid in 2024, and the bid was over $3,000,000. The Lift Station had some redesigned work and a better bidding environment led to 4 bidders and a bid under $3,000,000. The original project estimate was $2,800,000 when the Bond issue was sized in 2023. The total cost of the lift station, including engineering and inspection, will be approximately $3,400,000. The additional $600,000 will be from Bond funds that were to be dedicated to the upgrade of the Zoo Education Building Sewer line (the Main that serves the Zoo Education Building). Staff are looking at the issues with the sewer line and will possibly recommend a replacement of the line in a future bond issue.

Attachment:
Further information will be provided at Study Session.

City of Emporia, KS Sanitary Sewer Lift Station Report

As of June 2019

Overview of all 20 Stations

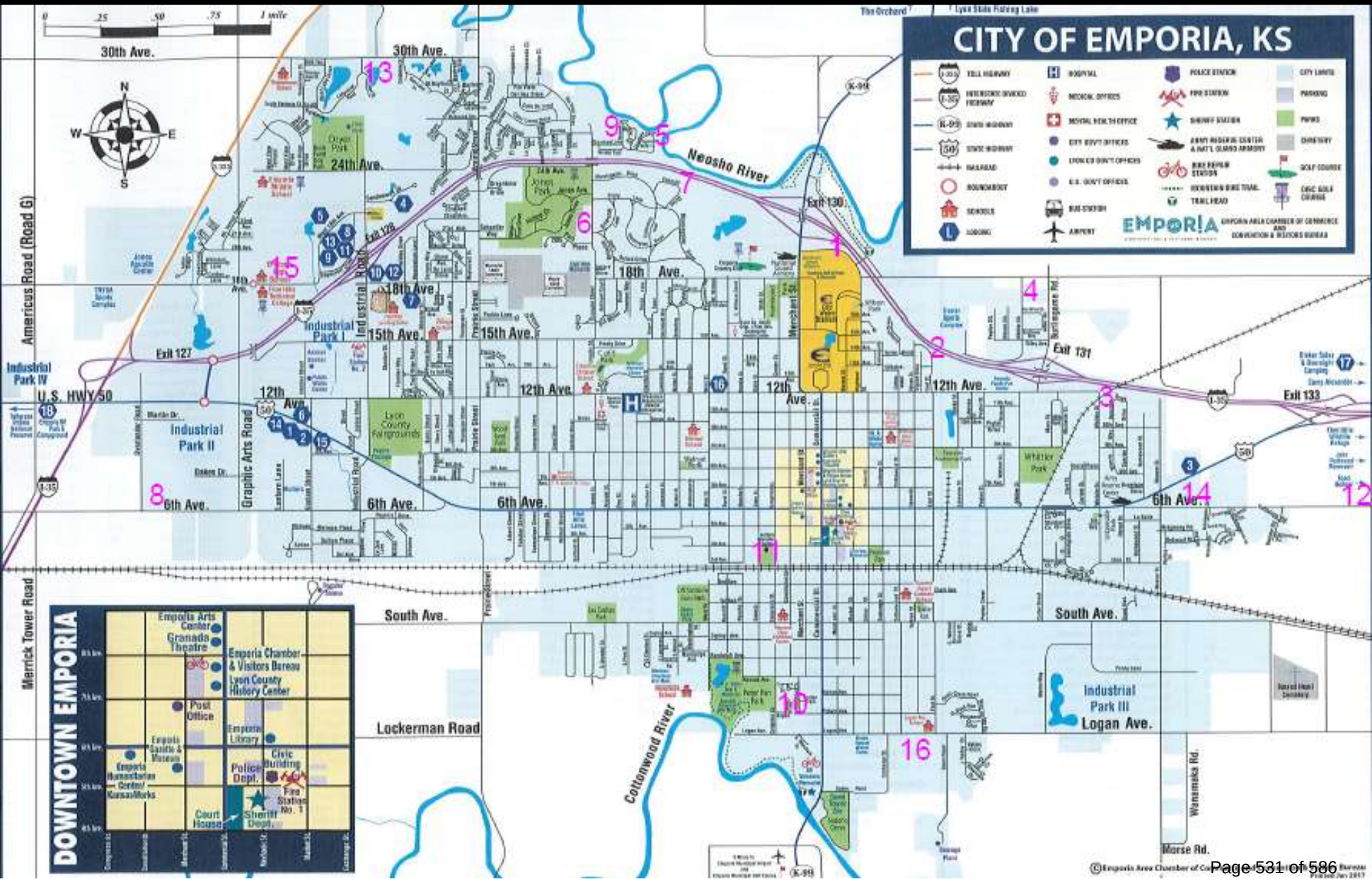
Condition:

- 5 in poor or worse condition
- 6 in good or better condition
- 4 with no written condition
- 15 have alarm systems

Time:

- 4 built pre-2000
  - All are in poor condition
- 6 built after 2000-2010
  - 1 is already in poor condition
- 8 built after 2010
  - 5 were built within the last year

Map of Emporia Transfer Stations



1 1836 Merchant POOR

- Large and Important
- Telephone Circuit
  - 301-316-71 tcpa 044907
- Serial Number-
  - Henry Pratt
- Manufacture Date
  - 1978

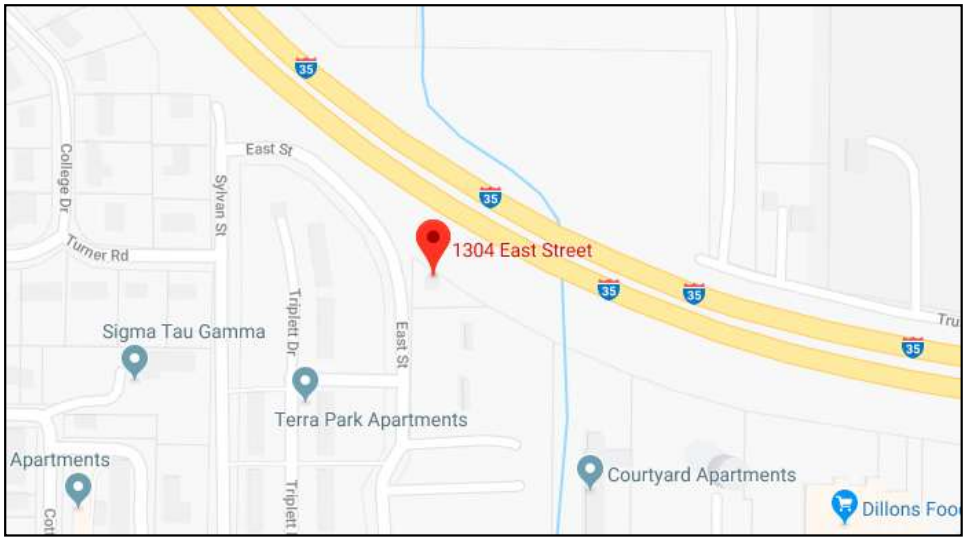




2 1304 East POOR

- Large and Important
- Telephone Circuit
  - 317-316-71 tcpa 049897
- Serial Number
  - Henry Pratt
- Manufacture Date
  - 1978

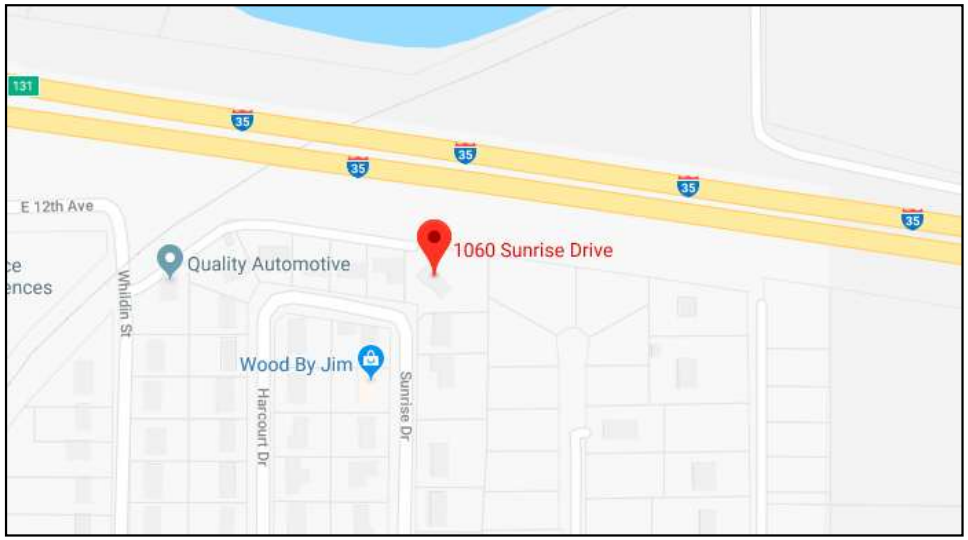




3 1042 Whildin GOOD

- Located behind 1060 Sunrise
- Telephone Circuit
  - 316-71 tcpa 049890
- Serial Number
  - Flyght
- Manufacture Date
  - Unknown





4 1728 Whittier GOOD

- North of I-35
- Telephone Circuit
  - 321-316-71 tcpa 049896
- Serial Number
  - Smith & Loveless FX01007
- Manufacture Date
  - 2002

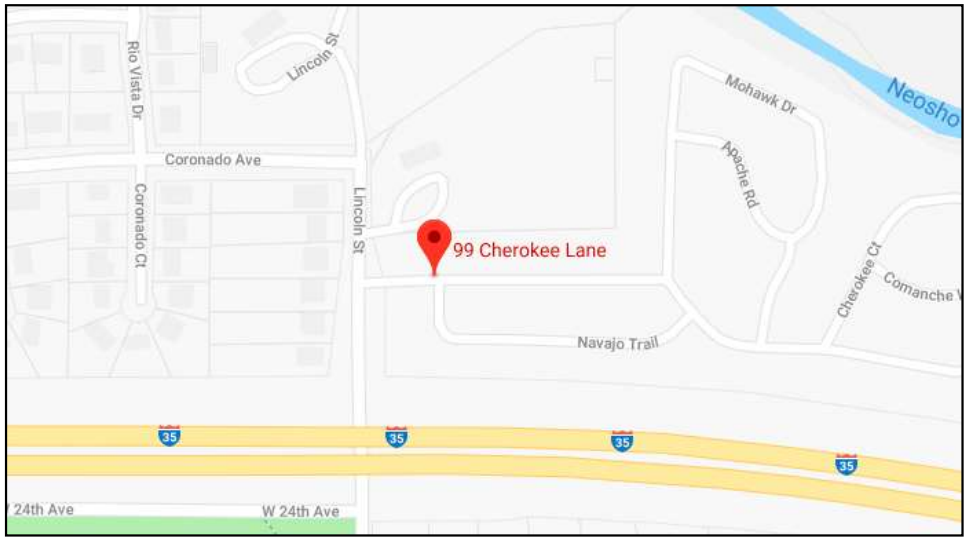




5 99 B Cherokee POOR

- Lincoln Village E
- Telephone Circuit
  - 310-316-71 tcpa 049906
- Serial Number
  - Smith & Loveless 16-6409
- Manufacture Date
  - 1998





6 2055 Lincoln NEW

- Telephone Circuit
  - 316-71 tcpa 049906
- Serial Number
  - Flyght/Mission
- Manufacture Date
  - 2017





7 2042 Fanestil POOR

- Located in the trees behind 2034 Fanestil Dr
- Telephone Circuit
  - tcpa 049901
  - upgrades needed
- Serial Number
  - Smith & Loveless FX 01006
- Manufacture Date
  - 2002

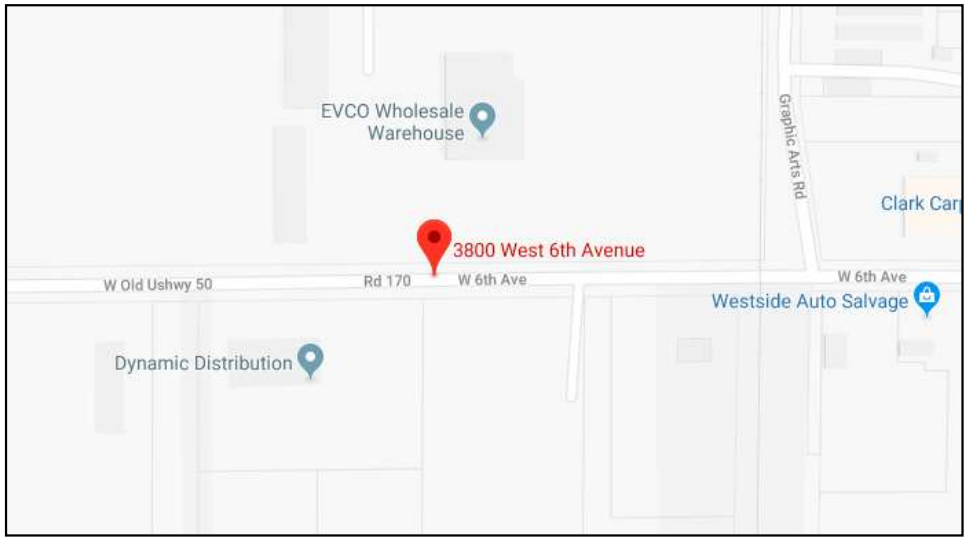




8 3800 W 6th GOOD

- Large and Imporant
- Telephone Circuit
  - 316-710 tcpa 049923
- Serial Number
  - ????
- Manufacture Date
  - 2008

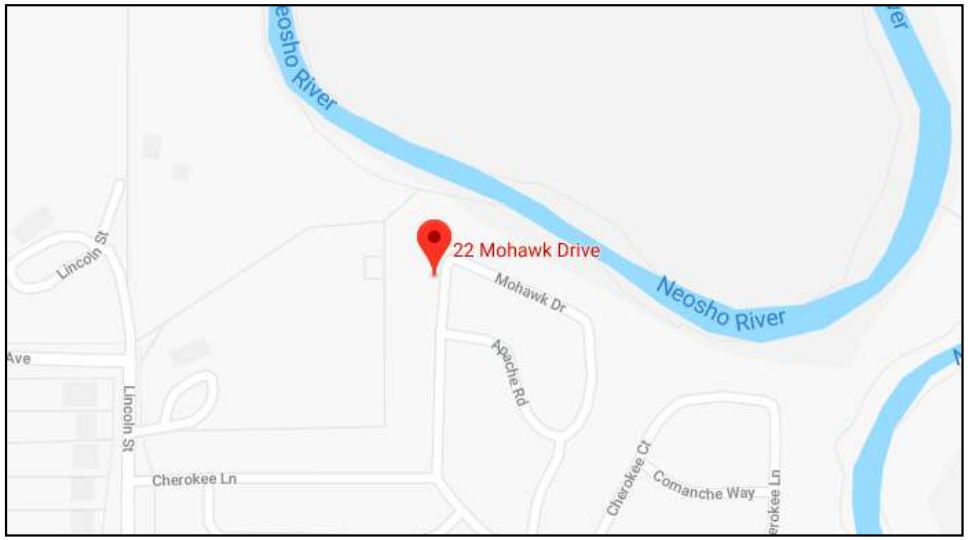




9 22 B Mohawk Dr NEW

- Located in Lincoln Village
- Telephone Circuit
  - 336-316-71 tcpa 049886
  - will be new
- Serial Number
  - Flyght/Mission
- Manufacture Date
  - 2018

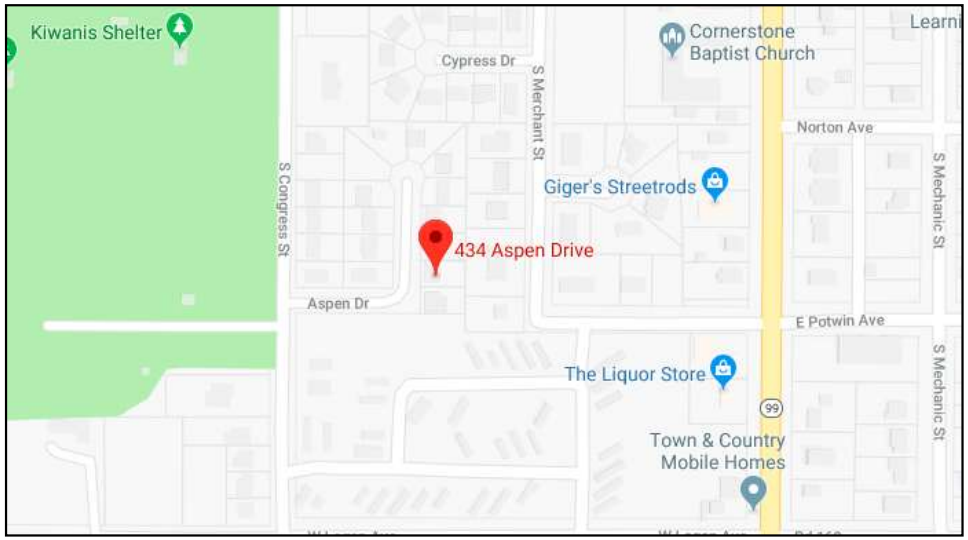




10 434 Aspen NEW

- Located between 438 Aspen and 431 S Merchant
- Telephone Circuit
  - 71 tcpa 040011
- Serial Number
  - Smith & Loveless 15-1758
- Manufacture Date
  - 2018

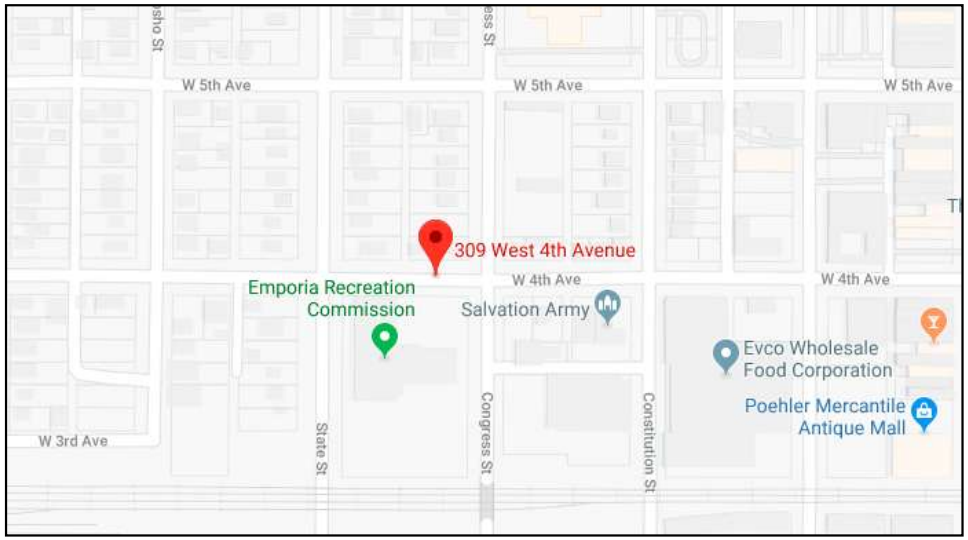




11 309 W 4th UNKNOWN

- Located in front of the Recreation Center
- Telephone Circuit
  - Not hooked to an alarm system
- Serial Number
  - No info
- Manufacture Date
  - No info





12 2321 E 6th NEW

- Located Past Belmont II
- Telephone Circuit
  - 71 tcpa 040012
- Serial Number
  - Smith & Loveless 16-2931
- Manufacture Date
  - 2018

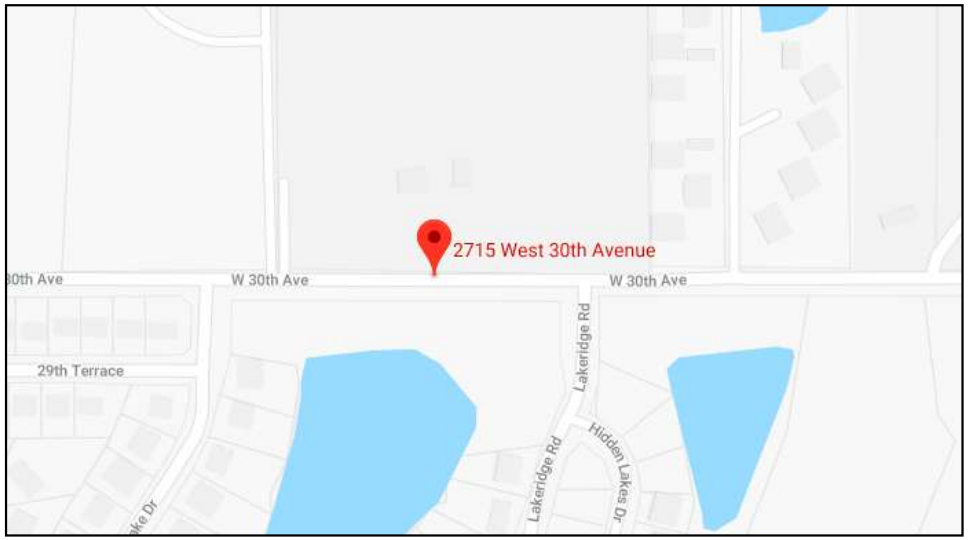




13 2715 W 30th NEW

- Located in Crestview Lakes
- Telephone Circuit
  - 71 tcpa 040013
- Serial Number
  - Smith & Loveless 16-3049
- Manufacture Date
  - 2018

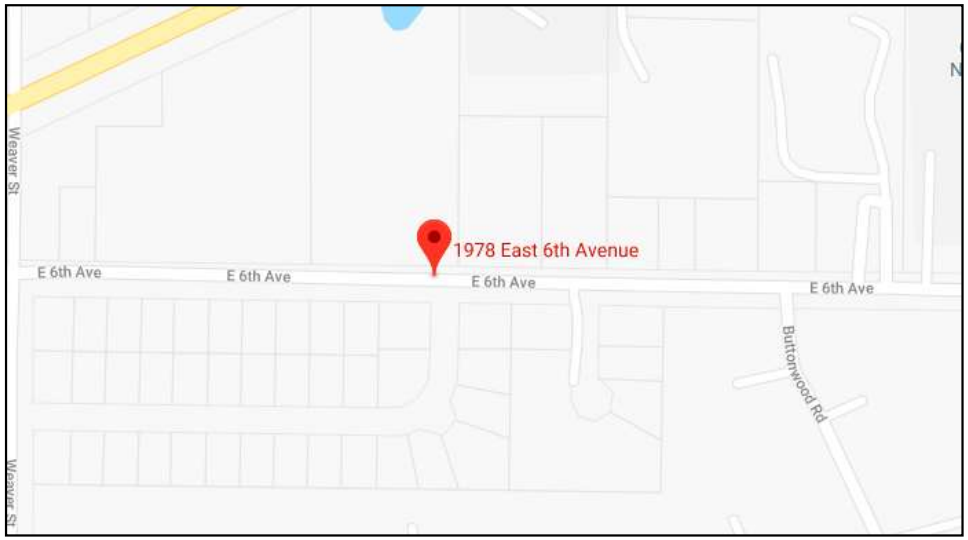




14 1978 E 6th EXCELLENT

- Located in the backyard of 2020 E 6th
- Telephone Circuit
  - 71 tcpa 040021
- Serial Number
  - Flyght
- Manufacture Date
  - 2013

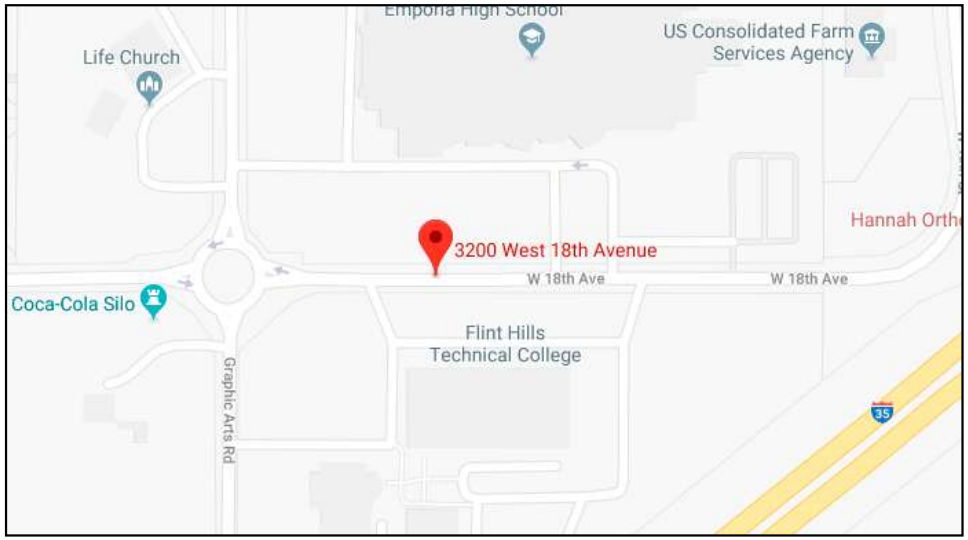




15 3200 W 18th POOR

- Located on the East side of EHS
- Telephone Circuit
  - 72 ntfs 508-858
- Serial Number
  - Smith & Loveless 16-48795
- Manufacture Date
  - 1993





16 537 E Logan UNKNOWN

- Telephone Circuit
  - Sump pumps no info
- Manufacture Date
  - 2004





17 650 W Hwy 50 GOOD

- Located on the north side of Highway 50 just before John Deere
- Telephone Circuit
  - Sump pumps new
- Manufacture Date
  - 2015
  - Potential to expand and hold three 8-inch pumps



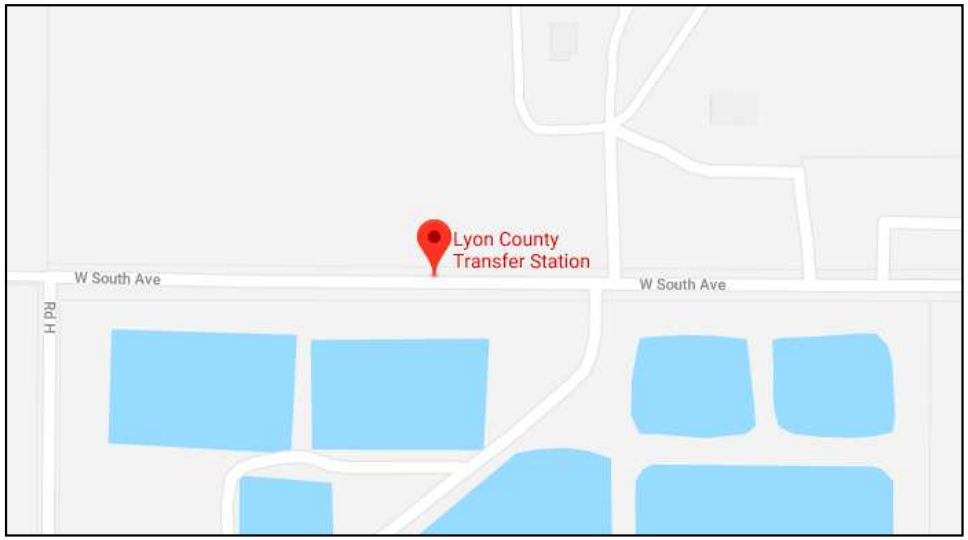


18 3100 W South

In Progress

- Located in the Lyon Co transfer station
- Telephone Circuit
  - No info
- Serial Number
  - Smith & Loveless 16-7121
- Manufacture Date
  - 2019





19 2929 W South UNKNOWN

- Located east of the transfer station
- Telephone Circuit
  - Sump pumps no info
- Manufacture Date
  - 2005





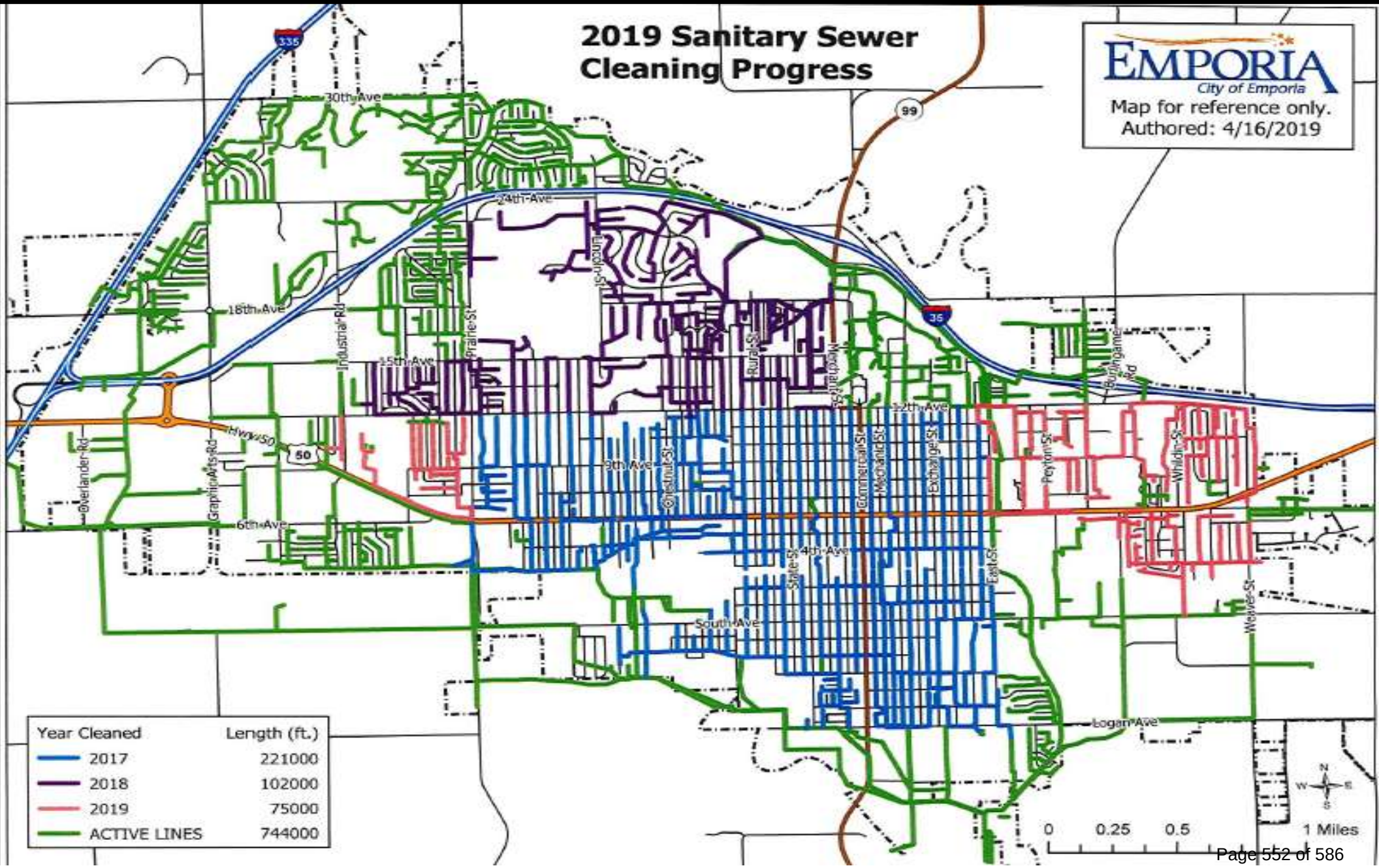
20 3000 W South UNKNOWN

- Located east of the transfer station
- Telephone Circuit
  - Sump pumps no info
- Manufacture Date
  - 2005





Sewage Line Cleaning Process



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TECHNICAL MEMORANDUM NO. 2 DRAFT

LIFT STATION NO. 1 PRESENT WORTH EVALUATION (OPTION 2 AND 3)
CITY OF EMPORIA, KS
BG PROJECT NO. 19-1151E
12.19.19

BACKGROUND:

- On November 7, 2019, BG Consultants delivered a Lift Station No. 1 Technical Memorandum to the City of Emporia Staff.
- On November 26, 2019, BG Consultants provided supplemental information in draft form considering the following additional improvements:
    - Peak Flow Storage Structure
    - Gravity Sewer Alignment Modification
    - Portable Back up Generator Equipment
    - Additional Option for New Wet Well
- The updated Engineering Opinion of Probable Costs (EOPC) for the Lift Station No. 1 improvements are as follows:
    - Option 1 Short Term Improvements (Pump Replacement) $346,650
    - Option 2 Long Term Improvements (Rehab. Existing Wet Well) $1,135,600
    - Option 3 Long Term Improvements (New Wet Well) $1,289,000
- Detailed EOPC's are included as attachments to this technical memorandum.
- Option 3 is more expensive than Option 2 by approximately $153,400.

A 20 year present worth analysis was requested by City Staff comparing the major concrete structure items (wet well and valve vault). This Technical Memorandum No. 2 is the response to that request.

PRESENT WORTH ANALYSIS:

- Option 2 includes the following:
    - A new peak flow structure in 2020: $75,000
    - A new wet well in 2035: $202,000 (adjusted for 2.0% inflation)
    - A new valve vault in 2035: $135,000 (adjusted for 2.0% inflation)
    - A new fiberglass building and equip. in 2035 $67,300 (adjusted for 2.0% inflation)
- Option 3 includes the following:
    - A new wet well in 2020: $150,000
    - A new valve vault in 2020: $100,000
- It is estimated that the existing dry well will completely reach its design life in 15 years and a new wet well will need to be installed at that time.
- Concrete structures have a 50 year design life.

- Future work is adjusted for 2.0% annual inflation rate
- At the 20 year evaluation time:
    - Option 2 will have 45 years useful life remaining
    - Option 3 will have 30 years useful life remaining
- Present worth analysis was performed for a 20 year duration
- The existing wet well will be rehabilitated in both Options 2 and 3.
- A Cash Flow diagram showing the major parameters of Option 2 and 3 is attached.
- Option 3 utilizes the existing wet well as the peak flow holding basin, therefore a new peak flow holding basin is not needed in Option 3.
- The 20 year Life Cycle Costs worksheet is attached and results in the following:
    - 20 year Life Cycle Cost Option 2: $223,000
    - 20 year Life Cycle Cost Option 3: $131,850
- The life cycle analysis did not take into consideration:
    - Annual operation and maintenance costs
    - Engineering, admin, financing, observation fees associated with Option 2 at year 15
    - The project financing rates at year 15

CONCLUSION:

- The cost difference between Option 2 and Option 3 initial project costs is $153,400
- The cost difference between Option 2 and Option 3 life cycle cost (20 years) is: $ 91,200
- The relative cost difference between Option 2 and 3 is approximately: $62,200

RECOMMENDATION:

It is recommended to perform Option 3 and construct a new facility for the following reasons:

- The cost difference between the options is less than 10% difference.
- Wet well and valve vault would be new condition in 2020 with a 50-year design life
- Staff would not have to go below grade to lower levels to perform maintenance on pumps.
- Pumps would be submersible and retrievable by power winch.
- Staff would have “open air” access to station valves at a 4 foot bury depth and removable grating/railing.
- The existing pump station could stay in operation and serve as the temporary project pumping during construction. Bypass pumping or temporary pumping would be reduced.
- Would not require use or rehabilitation of original station valves.
- Would not require interior gas monitoring or HVAC upgrades.
- There is less inherent risk when “building new” which has the potential to reduce construction costs.

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ENGINEERING OPINION OF PROBABLE COST
SHORT TERM IMPROVEMENTS LIFT STATION NO. 1 (OPTION 1)
EMPORIA, KANSAS
BG PROJECT NO. 19-1151E
12/19/19

No.	Description	Quanity	Unit	Unit Cost	Total
1	Mobilization	1	LS	$ 10,000.00	$ 10,000.00
2	Demolition of Existing Pumps, Piping, Controls, Etc.	1	LS	$ 17,500.00	$ 17,500.00
3	Replace Pump No. 2, Valves, Piping and Controls	1	LS	$ 165,000.00	$ 165,000.00
4	Remove and Replace Sump Pump	1	LS	$ 18,500.00	$ 18,500.00
5	Electrical Improvements	1	LS	$ 40,000.00	$ 40,000.00
6	HVAC Improvements	1	LS	$ 30,000.00	$ 30,000.00

Construction Subtotal	$	281,000.00
Construction Contingency (10%)	$	28,100.00
Design Engineering	$	24,800.00
Construction Engineering	$	12,750.00
Total Project Cost	**$**	**346,650.00**

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ENGINEERING OPINION OF PROBABLE COST
LONG TERM IMPROVEMENTS LIFT STATION NO. 1 (OPTION 2)
EMPORIA, KANSAS
BG PROJECT NO. 19-1151E
12/19/19

No.	Description	Quantity	Unit	Unit Cost	Total
1	Mobilization	1	LS	$ 60,000.00	$ 60,000.00
2	Bypass Pumping	1	LS	$ 30,000.00	$ 30,000.00
3	Demolition of Existing Pumps, Piping, Controls, Etc.	1	LS	$ 15,000.00	$ 15,000.00
4	Replace Pump No. 2, Valves, Piping and Controls	1	LS	$ 165,000.00	$ 165,000.00
5	Remove and Replace Sump Pump	1	LS	$ 22,000.00	$ 22,000.00
6	Electrical and Control Improvements	1	LS	$ 40,000.00	$ 40,000.00
7	HVAC Improvements	1	LS	$ 30,000.00	$ 30,000.00
8	Wet Well Rehabilitation	1100	SF	$ 50.00	$ 55,000.00
9	Replace Odor Control Equipment	1	LS	$ 50,000.00	$ 50,000.00
10	Replace Wet Well Covering	1	LS	$ 15,000.00	$ 15,000.00
11	Remove and Replace Flow Meter	1	LS	$ 6,500.00	$ 6,500.00
12	Interior Painting (Pipe, Valves, Walls, Floors, etc.)	1	LS	$ 35,000.00	$ 35,000.00
13	Peak Storage Control Structure (Cast in Place)	1	LS	$ 15,000.00	$ 15,000.00
14	Peak Storage Holding Structure (Cast in Place)	1	LS	$ 75,000.00	$ 75,000.00
15	60" Precast Manhole	2	EA	$ 6,000.00	$ 12,000.00
16	12" Gravity Sewer Main	100	FT	$ 75.00	$ 7,500.00
17	18" Gravity Sewer Main	50	FT	$ 100.00	$ 5,000.00
18	Connection to Existing	1	EA	$ 5,000.00	$ 5,000.00
19	Replace Slide Gates and Stationary Bar Screen	1	LS	$ 5,000.00	$ 5,000.00
20	Exterior Building Improvements	1	LS	$ 25,000.00	$ 25,000.00
21	Emergency Backup Generator (Trailer Mount)	1	LS	$ 100,000.00	$ 100,000.00
22	New Roof	1	LS	$ 40,000.00	$ 40,000.00

Construction Subtotal	$	813,000.00
Construction Contingency (15%)	$	122,000.00
Design Engineering	$	98,175.00
Advertise and Bidding	$	10,000.00
Construction Admin	$	15,000.00
Construction Observation	$	77,400.00
Total Project Cost	**$**	**1,135,575.00**

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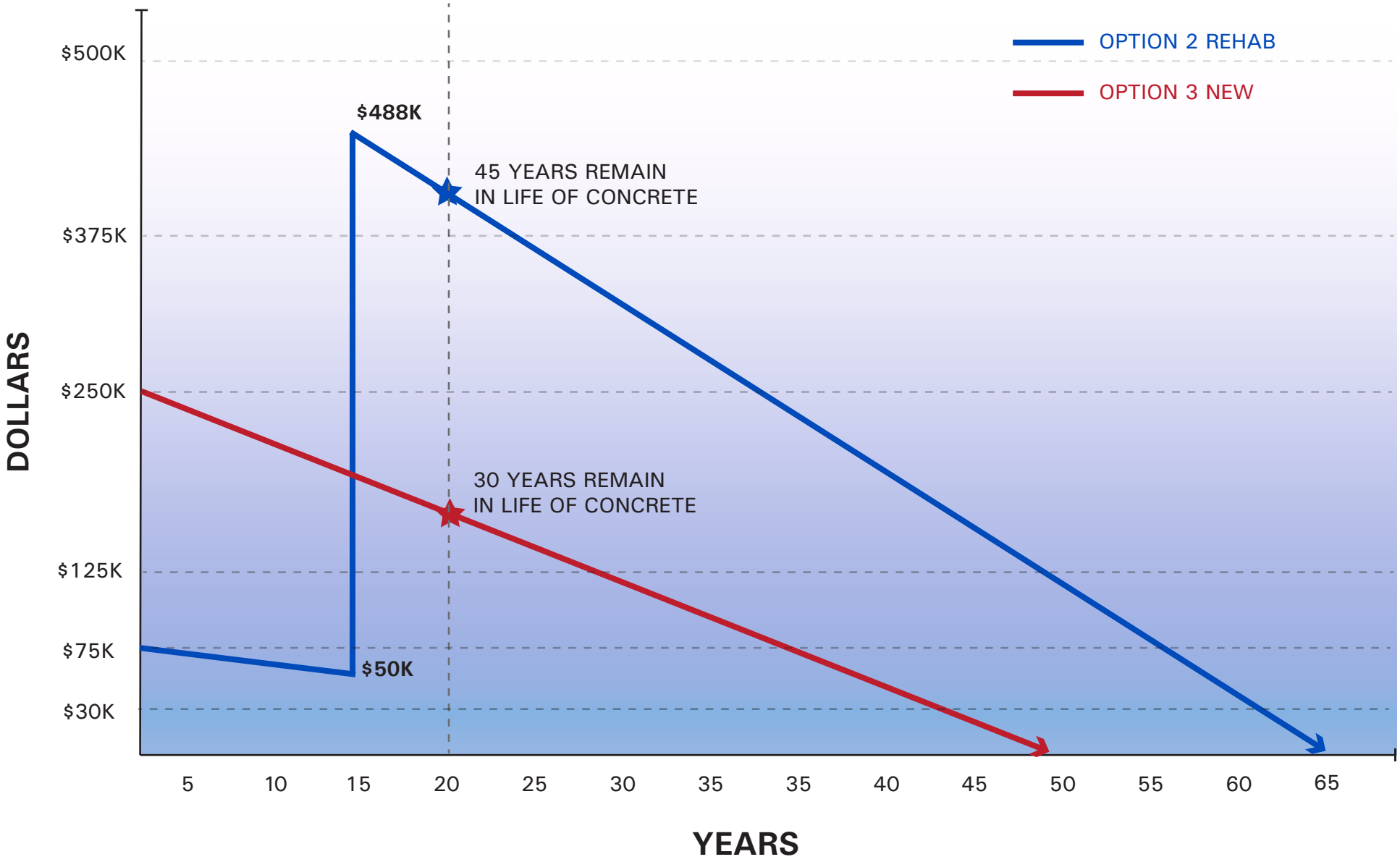
ENGINEERING OPINION OF PROBABLE COST
LONG TERM IMPROVEMENTS LIFT STATION NO. 1 (OPTION 3) NEW
EMPORIA, KANSAS
BG PROJECT NO. 19-1151E
12/19/19

No.	Description	Quantity	Unit	Unit Cost	Total
1	Mobilization	1	LS	$ 60,000.00	$ 60,000.00
2	Bypass Pumping	1	LS	$ 12,000.00	$ 12,000.00
3	Demolition of Existing Pumps, Piping, Controls, Etc.	1	LS	$ 15,000.00	$ 15,000.00
4	New Pump No. 2, Rails, Controls, VFD, Hardware.	1	LS	$ 145,000.00	$ 145,000.00
~~5~~	~~Remove and Replace Sump Pump~~	~~1~~	~~LS~~		~~$ -~~
6	Electrical and Control Improvements	1	LS	$ 65,000.00	$ 65,000.00
~~7~~	~~HVAC Improvements~~	~~1~~	~~LS~~		~~$ -~~
8	Wet Well Rehabilitation	1100	SF	$ 50.00	$ 55,000.00
9	Replace Odor Control Equipment	1	LS	$ 50,000.00	$ 50,000.00
10	Replace Wet Well Covering	1	LS	$ 15,000.00	$ 15,000.00
11	New 12" Flow Meter	1	LS	$ 6,500.00	$ 6,500.00
~~12~~	~~Interior Painting (Pipe, Valves, Walls, Floors, etc.)~~	~~1~~	~~LS~~		~~$ -~~
13	Peak Storage Control Structure (Cast in Place)	1	LS	$ 25,000.00	$ 25,000.00
~~14~~	~~Peak Storage Holding Structure (Cast in Place)~~	~~1~~	~~LS~~		~~$ -~~
15	60" Precast Manhole	~~3~~	EA	$ 6,000.00	$ 18,000.00
16	12" Gravity Sewer Main	150	FT	$ 75.00	$ 11,250.00
17	18" Gravity Sewer Main	50	FT	$ 100.00	$ 5,000.00
18	Connection to Existing	1	EA	$ 5,000.00	$ 5,000.00
19	Replace Slide Gates and Stationary Bar Screen	1	LS	$ 5,000.00	$ 5,000.00
~~20~~	~~Exterior Building Improvements~~	~~1~~	~~LS~~		~~$ -~~
21	Emergency Backup Generator (Trailer Mount)	1	LS	$ 100,000.00	$ 100,000.00
22	12' x 14' x 30' Cast In Place Wet Well	1	LS	$ 150,000.00	$ 150,000.00
23	6' x 12' x 5' Cast In Place Valve Vault with Valves	1	LS	$ 100,000.00	$ 100,000.00
24	Remove and Reinstall Pump No. 1	1	LS	$ 1,500.00	$ 1,500.00
25	Demo Existing Building	1	LS	$ 25,000.00	$ 25,000.00
26	Sitework and Grading	1	LS	$ 12,000.00	$ 12,000.00
27	Concrete Driveway	310	SY	$ 100.00	$ 31,000.00
28	Relocate Existing Waterline	1	LS	$ 1,500.00	$ 1,500.00
29	New Fiberglass Building	1	LS	$ 20,000.00	$ 20,000.00

Construction Subtotal	$ 933,750.00
Construction Contingency (15%)	$ 140,100.00
Design Engineering	$ 112,754.25
Advertise and Bidding	$ 10,000.00
Construction Admin	$ 15,000.00
Construction Observation	$ 77,400.00
Total Project Cost	**$ 1,289,004.25**

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CASH FLOW DIAGRAM
OPTION 2 AND 3 COMPARISON
LIFT STATION 1
EMPORIA, KS
12/19/19



Lift Station No. 1
City of Emporia, Kansas
Life Cycle Cost Analysis Worksheet
BG Project No. 19-1151E

Present Worth Summary:

	Option No. 2 Rehab Wet Well					Option No. 3 New Wet Well		
	New Peak Flow Structure (2020)	Fiberglass Bldg and Equip. (In 15 Years)	Demo Building (In 15 Years)	New Wet Well (In 15 Years)	New Valve Vault (In 15 Years)	New Wet Well (In 2020)	New Valve Vault (In 2020)	
Total Capital Costs	$ 75,000.00	$ 67,300.00	$ 34,000.00	$ 202,000.00	$ 135,000.00	$ 150,000.00	$ 100,000.00	
Annual O&M								
Annual Short Lived Assets Fund								
20 Year Present Worth (O&M + Reserve)	$ -			$ -	$ -	$ -	$ -	$ -
Salvage Value	$ 45,000.00	$ 42,857.14	$ -	$ 135,000.00	$ 90,000.00	$ 90,000.00	$ 60,000.00	$ -
20 Year Present Worth (Salvage Value)	$ 35,448.86	$ 42,857.14	$ -	$ 127,183.63	$ 84,789.08	$ 70,897.72	$ 47,265.15	$ -
Life Cycle Cost	$ 39,551.14	$ 24,442.86	$ 34,000.00	$ 74,816.37	$ 50,210.92	$ 79,102.28	$ 52,734.85	$ -
Life Cycle based upon 20 years and a discount rate of 1.2%								
**Based on a 20 year Cost Analysis*					**$ 223,021.29**	**Total**	**$ 131,837.14**	

Annual O&M Calculation:

$$P = \frac{A[(1+i)^N - 1]}{[i(1+i)^N]}$$

A= Annual O&M + Short Lived Assets Fund	$ -			$ -	$ -	$ -	$ -	$ -
N= Number of Years	20			20	20	20	20	20
I = Discount Rate	1.20%			1.20%	1.20%	1.20%	1.20%	1.20%
Present Worth (O&M)	$ -			$ -	$ -	$ -	$ -	$ -

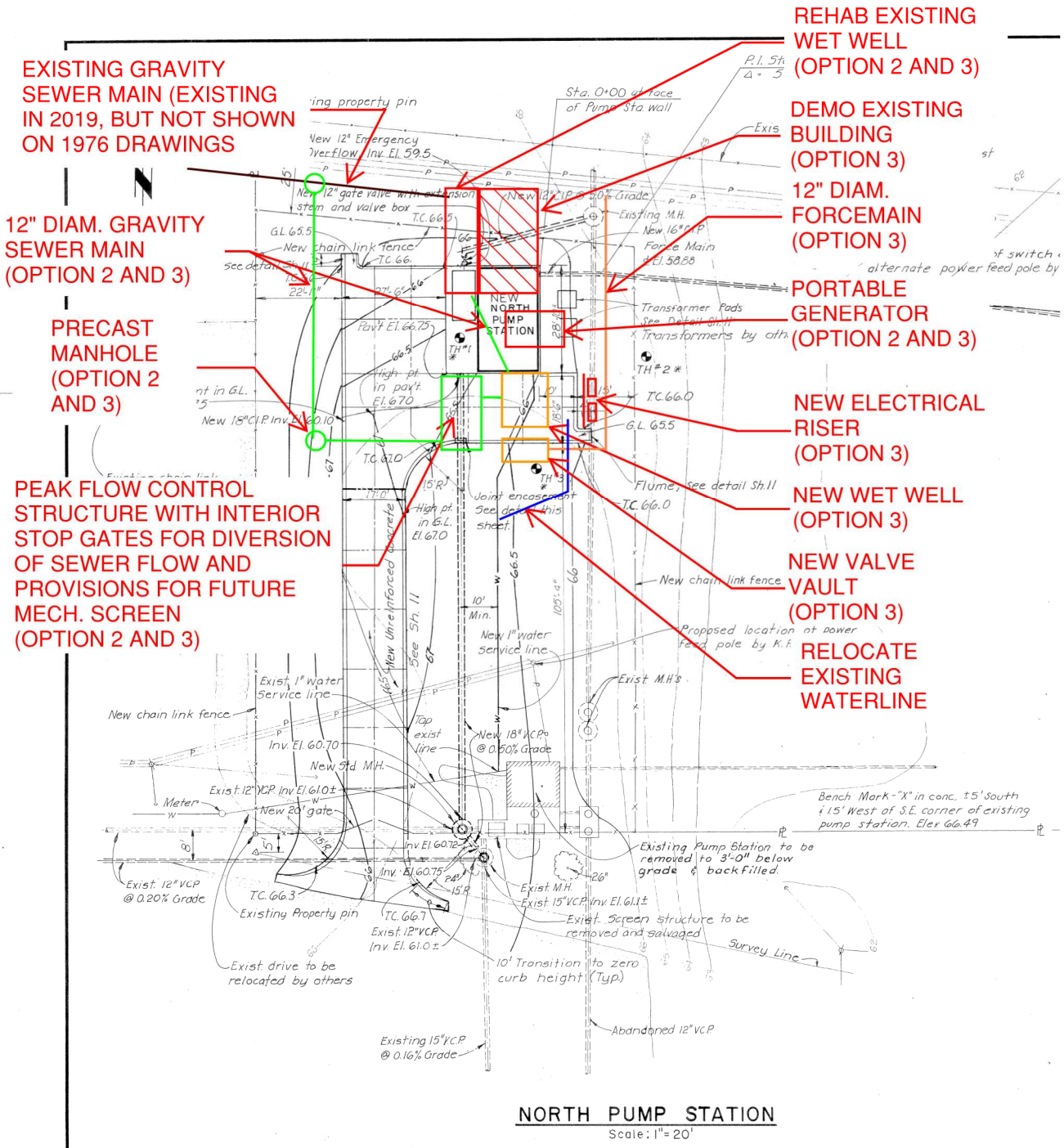
Salvage Value Calculation:

$$P = S(1+i)^{-N}$$

Present Capital Cost	$ 75,000.00	$ 50,000.00		$ 150,000.00	$ 100,000.00	$ 150,000.00	$ 100,000.00	$ -
Useful Life	50	35		50	50	50	50	200
N = Number of Years	20	5		5	5	20	20	20
Remaining Useful Life	60%	86%		90%	90%	60%	60%	90%
S = Salvage Value	$ 45,000.00	$ 42,857.14		$ 135,000.00	$ 90,000.00	$ 90,000.00	$ 60,000.00	$ -
i = discount rate	1.20%	0.00%		1.20%	1.20%	1.20%	1.20%	1.20%
P = Present Worth (Salvage Value)	$ 35,448.86	$ 42,857.14		$ 127,183.63	$ 84,789.08	$ 70,897.72	$ 47,265.15	$ -

Valve Vault Present Value	$ 100,000.00
Wet Well Present Value	$ 150,000.00
Misc. Equipment and Fiberglass Enclosure	$ 50,000.00
Inflation Rate or Consumer Price Index	0.02

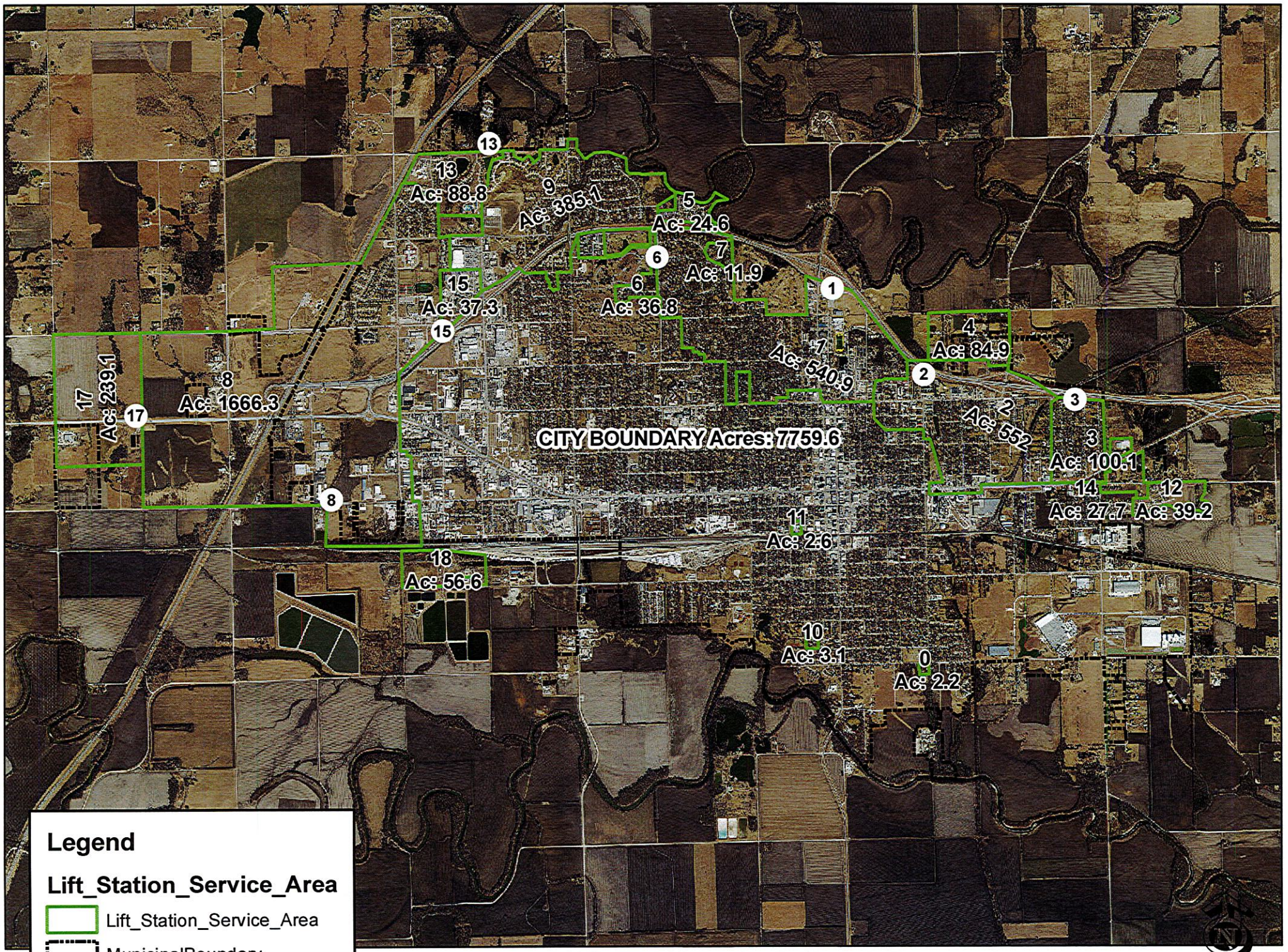
Number	Year	Fiberglass Bldg/Equip.	Demo Bldg.	Wet Well	Valve Vault
0	2019	$ 50,000.00	$ 25,000.00	$ 150,000.00	$ 100,000.00
1	2020	$ 51,000.00	$ 25,500.00	$ 153,000.00	$ 102,000.00
2	2021	$ 52,020.00	$ 26,010.00	$ 156,060.00	$ 104,040.00
3	2022	$ 53,060.40	$ 26,530.20	$ 159,181.20	$ 106,120.80
4	2023	$ 54,121.61	$ 27,060.80	$ 162,364.82	$ 108,243.22
5	2024	$ 55,204.04	$ 27,602.02	$ 165,612.12	$ 110,408.08
6	2025	$ 56,308.12	$ 28,154.06	$ 168,924.36	$ 112,616.24
7	2026	$ 57,434.28	$ 28,717.14	$ 172,302.85	$ 114,868.57
8	2027	$ 58,582.97	$ 29,291.48	$ 175,748.91	$ 117,165.94
9	2028	$ 59,754.63	$ 29,877.31	$ 179,263.89	$ 119,509.26
10	2029	$ 60,949.72	$ 30,474.86	$ 182,849.16	$ 121,899.44
11	2030	$ 62,168.72	$ 31,084.36	$ 186,506.15	$ 124,337.43
12	2031	$ 63,412.09	$ 31,706.04	$ 190,236.27	$ 126,824.18
13	2032	$ 64,680.33	$ 32,340.17	$ 194,040.99	$ 129,360.66
14	2033	$ 65,973.94	$ 32,986.97	$ 197,921.81	$ 131,947.88
15	2034	$ 67,293.42	$ 33,646.71	$ 201,880.25	$ 134,586.83



NORTH PUMP STATION
Scale: 1"= 20'

MARK UP SHOWN FROM ORIGINAL PROJECT DOCUMENTS (SHEET 1 OF 39) EMPORIA KANSAS WASTEWATER SYSTEM IMPROVEMENTS 1976 BLACK AND VEATCH CONSULTING ENGINEERS, KANSAS CITY, MO.

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LIFT STATION SERVICE AREA BOUNDARIES

Title:	Discuss 2026 Street Rehab Streets
Agenda Date:	January 14, 2026
Presented By:	Jim Ubert, City Engineer

Background:
The Attached Maps for 2026 Street Rehab streets, 2020-2026 Streets selected, 2025-2030 Streets (Future), database list of streets with PCI, and one (1) page database sheet provide a brief description of the streets considered.

STREET REHABILITATION
2026



2026 Street Rehabilitation Suggested Streets

Street	Location	Desctiption of work to be done	Construction Work	PCI Avg.	Estimated Cost
W. 24TH AVENUE	Prairie Street to Jones Drive	2" average mill and overlay of entire area. Starting immediately north of Greenbriar Drive and continuing to immediately west Jones Drive, saw cut south edge of pavement and install new curb & gutter.	Constructed (Unknown) Slurried in 1989	19	$120,000.00
GARFIELD STREET	6th Avenue to 12th Avenue	2" average mill and overlay of entire area. Asphalt Patching. Some curb & gutter to be replaced where existing has heaved and/or settled and no longer effieciently carries storm water. Sidewalk replacement to meet ADA standards along with installation of Ramps.	Constructed in 1923 Resurfaced Street in 1989	42.4	$150,000.00
W. 7TH AVENUE	West Street to Congress Street	1" average leveling course asphalt overlay over brick area. 2" average mill of currently paved areas. 2" average overlay of full street (curb face-to-curb face). Some curb & gutter to be replaced where existing has heaved and/or settled and no longer effieciently carries storm water. Removal and Replacement of Concrete alley approaches that have deteriorated. Sidewalk replacement to meet ADA standards along with installtion of Ramps. Utility adjustment of Valve Boxes (Water) and Manholes (Sewer).	Constructed in 1922 with Brick Resurfaced in (None)	30.4	$140,000.00
NEOSHO STREET	South Avenue to Railroad	1" average leveling course asphalt overlay over brick area. 2" average overlay of full street (curb face-to-curb face). Some curb & gutter to be replaced where existing has heaved and/or settled and no longer effieciently carries storm water. Sidewalk replacement to meet ADA standards along with installation of Ramps. Utility adjustment of Valve Boxes (Water).	Constructed (Unknown) with Brick Resurfaced in (None)	19.3	$105,000.00
STATE STREET	South Avenue to 4th Avenue	2" average mill and overlay of entire area (curb-face to curb face). Asphalt Patching. Some curb & gutter to be replaced where existing has heaved and/or settled and no longer effieciently carries storm water. Removal and Replacement of Concrete driveway approaches that have deteriorated. Sidewalk replacement to meet ADA standards along with installation of Ramps.	Constructed (Unknown) Resurfaced in 1985	41.3	$135,000.00
WEST COPLEY AVENUE	S. Lawrence Street to approx. 300' West	2" average mill and overlay of entire area. Asphalt Patching. Install surface aggregate as needed for transitions to driveways and alley.	Constructed (Unknown) Resurfaced in 2011	12.1	$25,000.00
E. 9TH AVENUE	Mechanic Street to Union Street	1" average leveling course asphalt overlay over brick area. 2" average overlay of full street (curb face-to-curb face). Some curb & gutter to be replaced where existing has heaved and/or settled and no longer effieciently carries storm water. Removal and Replacement of Concrete driveway and alley approaches that have deteriorated. Sidewalk replacement to meet ADA standards along with installation of Ramps. Utility adjustment of Valve Boxes (Water).	Constructed in 1924 with Brick Resurfaced in (None)	6.9	$95,000.00
WHILDIN STREET	US-50 Highway to 12th Avenue	2" average mill and overlay of full street (curb face-to-curb face). Asphalt Patching. Some curb & gutter to be replaced where existing has heaved and/or settled and no longer effieciently carries storm water. Utility adjustment of Valve Boxes (Water).	Constructed in 1964 with 6" HMA over Rock Slurried in 1995, 2000, 2005, 2010 Resurfaced in 1987 (9th Ave to 12th Ave Resurfaced in 2015)	65.7	$190,000.00
Mobilization and Traffic Control					$100,000.00
Total Estimated Cost					**$1,060,000.00**

Alternate Streets

WEAVER STREET	US HWY 50 to 10th Avenue	1" average asphalt leveling course overlay to fill existing dips caused by settling or shifting. 1.5" average asphalt overlay of entire area. Install surface aggregate as needed for transitions to driveways. Utility adjustment of Valve Boxes (Water) and Manhole (Sewer).	Constructed (Unknown) Slurried in 1995, 2005, 2010, 2015 Resurfaced in (None)	34.1	$95,000.00
EAGLECREST DRIVE	18th Avenue to 18th Avenue	2" average mill and overlay of entire area. Existing entrances, curb, and gutter to remain in place.	Constructed (Unknown) Resurfaced in (None)	42.4	$85,000.00
Mobilization and Traffic Control					$40,000.00
Total Alternate Estimated Cost					**$220,000.00**

STREET REHABILITATION
2020 – 2026



Pavement Management
Asphalt Surface

Branch Name	From	To	Rank	Description	Zone	Date	PCI	PCI Category
Copley Avenue	South Lawrence Street	South Chestnut Street	Resident	Asphalt Concrete	zne1	03-07-2023	25.80	Very Poor
Garfield Street	6th Avenue	9th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	26.00	Very Poor
24th Avenue	Jones Park Entrance	Prairie Street	Collector	Asphalt Concrete	zne3	05-17-2023	30.70	Very Poor
Lincoln Street	Morningside Street	24th Avenue	Collector	Asphalt Concrete	zne3	05-16-2023	31.70	Very Poor
Sherbrooke Drive	7th Avenue	8th Avenue	Resident	Asphalt Concrete	zne4	03-13-2024	32.40	Very Poor
Weaver Street	East HWY 50	East 10th Avenue	Resident	Asphalt Concrete	zne2	03-12-2024	34.10	Very Poor
Lincoln Street	24th Avenue	Coronado Avenue	Collector	Asphalt Concrete	zne3	05-16-2023	34.40	Very Poor
South Merchant Street	Cypress Drive	Kansas Avenue	Resident	Asphalt Concrete	zne1	03-06-2023	37.50	Very Poor
Market Street	RR Tracks	5th Avenue	Resident	Asphalt Concrete	zne1	04-03-2023	38.80	Very Poor
Grand Street	9th Avenue	12th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	39.90	Very Poor
Barbie Street	Dead End	South Avenue	Resident	Asphalt Concrete	zne1	03-02-2023	40.50	Poor
Sylvan Street	South Avenue	RR Tracks	Resident	Asphalt Concrete	zne1	04-04-2023	40.70	Poor
South Neosho Street	Kansas Avenue	Randolph Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	41.20	Poor
West Street	South Avenue	2nd Avenue	Resident	Asphalt Concrete	zne1	04-03-2023	41.40	Poor
Rural Street	6th Avenue	9th Avenue	Collector	Asphalt Concrete	zne3	04-12-2023	41.70	Poor
Apple Drive	24th Avenue	Hickory Lane	Resident	Asphalt Concrete	zne4	05-21-2024	41.80	Poor
State Street	300 ft north of 15th Avenue	18th Avenue	Resident	Asphalt Concrete	zne3	05-05-2023	41.80	Poor
Turner Road	Sylvan Street	Exchange Court	Resident	Asphalt Concrete	zne2	03-05-2024	41.80	Poor
West Street	12th Avenue	15th Avenue	Resident	Asphalt Concrete	zne3	05-09-2023	42.10	Poor
State Street	South Avenue	RR Tracks	Collector	Asphalt Concrete	zne1	04-03-2023	42.30	Poor
Eaglecrest Drive	18th Avenue	18th Avenue	Resident	Asphalt Concrete	zne4	05-23-2024	42.40	Poor
Rio Vista Drive	Coronado Avenue	Monterey Drive	Resident	Asphalt Concrete	zne3	05-17-2023	42.80	Poor
Congress Street	4th Avenue	5th Avenue	Resident	Asphalt Concrete	zne3	04-06-2023	42.90	Poor
Cottonwood Street	RR Tracks	6th Avenue	Resident	Asphalt Concrete	zne1	04-04-2023	43.00	Poor
Redwood Avenue	Prairie Street	Cul de Sac	Resident	Asphalt Concrete	zne4	05-21-2024	43.00	Poor
College Drive	Turner Road	Dead End	Resident	Asphalt Concrete	zne2	02-29-2024	43.10	Poor
South Merchant Street	Kansas Avenue	Copley Avenue	Resident	Asphalt Concrete	zne1	03-06-2023	43.50	Poor
East Street	East 12th Avenue	Sylvan Street	Resident	Asphalt Concrete	zne2	03-05-2024	43.80	Poor
Market Street	South Avenue	2nd Avenue	Resident	Asphalt Concrete	zne1	04-03-2023	43.80	Poor
Frontier Way	12th Avenue	15th Avenue	Resident	Asphalt Concrete	zne4	05-15-2024	44.20	Poor
Garfield Street	12th Avenue	15th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	44.30	Poor
Huntington Road	Canterbury Road	Drury Lane	Resident	Asphalt Concrete	zne3	05-17-2023	44.80	Poor
Stanton Street	12th Avenue	15th Avenue	Resident	Asphalt Concrete	zne4	05-15-2024	44.80	Poor
Bel-Aire Drive	Stratford Drive	Sutton Place	Resident	Asphalt Concrete	zne4	03-12-2024	44.90	Poor
Rural Street	12th Avenue	15th Avenue	Resident	Asphalt Concrete	zne3	05-09-2023	45.50	Poor
Rural Street	9th Avenue	12th Avenue	Collector	Asphalt Concrete	zne3	04-12-2023	45.80	Poor
18th Avenue	Prairie Street	Industrial Road	Collector	Asphalt Concrete	zne4	05-15-2024	45.90	Poor
West Street	15th Avenue	17th Avenue	Resident	Asphalt Over Brick	zne3	05-09-2023	46.30	Poor
10th Avenue	Neosho Street	West Street	Resident	Asphalt Concrete	zne3	05-05-2023	46.40	Poor
Coronado Avenue	Lincoln Street	Prairie Street	Collector	Asphalt Concrete	zne3	05-17-2023	46.60	Poor
Copley Avenue	South Congress Street	South Rural Street	Resident	Asphalt Concrete	zne1	03-07-2023	46.80	Poor
Sherman Street	7th Avenue	9th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	46.80	Poor
East 4th Avenue	East Street	Exchange Street	Resident	Asphalt Concrete	zne1	04-04-2023	46.90	Poor
South Merchant Street	Copley Avenue	South Avenue	Resident	Asphalt Concrete	zne1	03-06-2023	47.10	Poor
Woodland Street	12th Avenue	13th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	47.20	Poor
7th Avenue	Dead End	Anderson Street	Resident	Asphalt Concrete	zne4	03-13-2024	47.70	Poor
Mary Street	East 9th Avenue	East 10th Avenue	Resident	Asphalt Concrete	zne2	02-29-2024	47.70	Poor
Sheridan Court	Berkeley Road	Dead End	Resident	Asphalt Concrete	zne3	05-09-2023	47.90	Poor
Pheasant Ridge	Wild Turkey Road	Cul de Sac	Resident	Asphalt Concrete	zne1	03-02-2023	48.10	Poor
Congress Street	5th Avenue	6th Avenue	Resident	Asphalt Concrete	zne3	04-06-2023	48.20	Poor
South Mechanic Street	Logan Avenue	South Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	48.20	Poor
East Street	South Avenue	RR Tracks	Collector	Asphalt Concrete	zne1	03-02-2023	48.30	Poor
Lakeview Street	East 9th Avenue	East 12th Avenue	Resident	Asphalt Concrete	zne2	03-04-2024	48.70	Poor
15th Avenue	Prairie Street	Trail Ridge Road	Collector	Asphalt Concrete	zne4	05-15-2024	48.80	Poor
Constitution Street	South Avenue	RR Tracks	Resident	Asphalt Concrete	zne1	04-03-2023	48.80	Poor
Trail Ridge Road	Santa Fe Trail Road	15th Avenue	Resident	Asphalt Concrete	zne4	05-15-2024	48.80	Poor
Cottonwood Street	East 9th Avenue	East 10th Avenue	Resident	Asphalt Concrete	zne2	02-29-2024	49.10	Poor
Aspen Drive	Cul de Sac	South Congress Street	Resident	Asphalt Concrete	zne1	03-06-2023	49.30	Poor
Gloria Street	12th Avenue	Beverly Street	Resident	Asphalt Concrete	zne3	05-16-2023	49.30	Poor
Constitution Street	RR Tracks	4th Avenue	Resident	Asphalt Over Brick	zne3	04-05-2023	49.40	Poor
Neosho Street	6th Avenue	12th Avenue	Resident	Asphalt Concrete	zne3	04-12-2023	49.50	Poor

Pavement Management
Asphalt Surface

Cottonwood Street	South Avenue	RR Tracks	Resident	Asphalt Concrete	zne1	04-04-2023	49.60	Poor
Mechanic Street	4th Avenue	5th Avenue	Collector	Asphalt Concrete	zne1	04-03-2023	49.70	Poor
Garfield Street	3rd Avenue	5th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	49.80	Poor
Mava Avenue	Luther Street	Patrick Street	Resident	Asphalt Concrete	zne4	05-15-2024	49.90	Poor
West Ridge Court	West Ridge Drive	Cul de Sac	Resident	Asphalt Concrete	zne4	05-21-2024	49.90	Poor
South State Street	Randolph Avenue	South Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	50.40	Poor
East Street	East 7th Avenue	East 9th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	50.50	Poor
Prairie Park Lane	Park Avenue	Prairie Street	Resident	Asphalt Concrete	zne3	05-16-2023	50.60	Poor
8th Avenue	West Street	Walnut Street	Resident	Asphalt Concrete	zne3	05-05-2023	50.70	Poor
9th Avenue	Commercial Street	Merchant Street	Collector	Asphalt Concrete	zne2	02-29-2024	50.80	Poor
Randolph Avenue	South Constitution Street	South Congress Street	Resident	Asphalt Concrete	zne1	03-06-2023	51.20	Poor
Sunnyslope Street	13th Avenue	15th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	51.30	Poor
Yucca Lane	Dover Road	18th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	51.30	Poor
Sylvan Street	East 12th Avenue	Dead End	Resident	Asphalt Concrete	zne2	03-05-2024	51.40	Poor
13th Avenue	Sunnyslope Street	Woodland Street	Resident	Asphalt Concrete	zne3	05-16-2023	51.50	Poor
Park Avenue	Woodland Street	Prairie Street	Resident	Asphalt Concrete	zne3	05-16-2023	51.50	Poor
Kansas Avenue	South Market Street	South Mechanic Street	Resident	Asphalt Concrete	zne1	03-06-2023	51.60	Poor
Scott Street	West HWY 50	Janice Street	Resident	Asphalt Concrete	zne4	05-31-2024	51.70	Poor
17th Avenue	Rural Street	West Street	Resident	Asphalt Concrete	zne3	05-09-2023	51.80	Poor
Kansas Avenue	South Cottonwood Street	South Union Street	Resident	Asphalt Concrete	zne1	03-06-2023	51.90	Poor
South State Street	Kansas Avenue	Randolph Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	52.00	Poor
Briarcliff Lane	18th Avenue	Oxford Drive	Resident	Asphalt Concrete	zne3	05-17-2023	52.30	Poor
Trail Ridge Road	Magic Circle Drive	Santa Fe Trail Road	Resident	Asphalt Concrete	zne4	05-15-2024	52.60	Poor
West Street	4th Avenue	5th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	52.60	Poor
Market Street	5th Avenue	6th Avenue	Resident	Asphalt Concrete	zne1	04-03-2023	52.80	Poor
Wilson Street	7th Avenue	9th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	53.00	Poor
Regency Drive	Stratford Drive	164 feet east	Resident	Asphalt Concrete	zne4	03-12-2024	53.30	Poor
Burns Street	9th Avenue	12th Avenue	Resident	Asphalt Concrete	zne4	05-14-2024	53.40	Poor
South Cottonwood Street	Potwin Avenue	Kansas Avenue	Resident	Asphalt Concrete	zne1	03-20-2023	53.60	Poor
Topeka Street	East 9th Avenue	East 12th Avenue	Resident	Asphalt Concrete	zne2	02-29-2024	53.60	Poor
West Wilman Court	17th Avenue	18th Avenue	Resident	Asphalt Concrete	zne3	05-09-2023	53.60	Poor
Waverly Way	East 7th Avenue	East 10th Avenue	Resident	Asphalt Concrete	zne2	03-12-2024	54.00	Poor
10th Avenue	State Street	Neosho Street	Resident	Asphalt Concrete	zne3	05-05-2023	54.10	Poor
Janice Street	Scott Street	12th Avenue	Resident	Asphalt Concrete	zne4	05-14-2024	54.10	Poor
Graham Street	Sutton Place	West 6th Avenue	Resident	Asphalt Concrete	zne4	03-12-2024	54.20	Poor
Santa Fe Trail Road	Luther Street	Tomahawk Road	Resident	Asphalt Concrete	zne4	05-15-2024	54.20	Poor
Thompson Street	12th Avenue	15th Avenue	Resident	Asphalt Concrete	zne4	03-13-2024	54.20	Poor
Beverly Street	12th Avenue	Dead End	Resident	Asphalt Concrete	zne3	05-16-2023	54.80	Poor
South Walnut Grove	Rindom Road	South Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	54.90	Poor
7th Avenue	Garfield Street	Wilson Street	Resident	Asphalt Concrete	zne3	05-05-2023	55.20	Poor
Corinth Street	East HWY 50	Dead End	Resident	Asphalt Concrete	zne2	02-29-2024	55.20	Poor
Michelle Street	East 10th Avenue	Mary Street	Resident	Asphalt Concrete	zne2	02-29-2024	55.20	Poor
Exchange Street	RR Tracks	6th Avenue	Resident	Asphalt Concrete	zne1	04-04-2023	55.30	Poor
East 7th Avenue	Whittier Street	Watson Street	Resident	Asphalt Concrete	zne2	02-29-2024	55.60	Fair
South Walnut Grove	Cul de Sac	South Avenue	Resident	Asphalt Concrete	zne1	03-02-2023	55.60	Fair
East Street	Logan Avenue	South Avenue	Collector	Asphalt Concrete	zne1	03-02-2023	55.70	Fair
12th Avenue	300' east of Industrial Road	Scott Street	Arterial	Asphalt Concrete	zne4	05-14-2024	55.80	Fair
Wilson Street	6th Avenue	7th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	56.20	Fair
East 9th Avenue	Sylvan Street	Cottonwood Street	Resident	Asphalt Concrete	zne2	03-05-2024	56.30	Fair
South Congress Street	Kansas Avenue	South Avenue	Resident	Asphalt Concrete	zne1	03-06-2023	56.30	Fair
Tomahawk Road	12th Avenue	Santa Fe Trail Road	Resident	Asphalt Concrete	zne4	05-15-2024	56.30	Fair
East 7th Avenue	Homewood Street	Waverly Way	Resident	Asphalt Concrete	zne2	02-29-2024	56.50	Fair
East 9th Avenue	Michelle Street	Whittier Street	Resident	Asphalt Concrete	zne2	02-29-2024	56.50	Fair
East 9th Avenue	Sunrise Drive	Whildin Street	Resident	Asphalt Concrete	zne2	03-05-2024	56.70	Fair
Kansas Avenue	South Mechanic Street	South Commercial Street	Resident	Asphalt Concrete	zne1	03-06-2023	56.70	Fair
Burlingame Road	East 12th Avenue	Riley Avenue	Primary	Asphalt Concrete	zne2	02-29-2024	57.00	Fair
Congress Street	RR Tracks	4th Avenue	Resident	Asphalt Concrete	zne3	04-06-2023	57.00	Fair
Oxford Drive	Morningside Drive	Canterbury Road	Resident	Asphalt Concrete	zne3	05-17-2023	57.00	Fair
South Market Street	Randolph Avenue	South Avenue	Resident	Asphalt Concrete	zne1	03-20-2023	57.00	Fair
East 4th Avenue	Exchange Street	Union Street	Resident	Asphalt Concrete	zne1	04-04-2023	57.20	Fair
Union Street	South Avenue	RR Tracks	Resident	Asphalt Concrete	zne1	04-03-2023	57.20	Fair
Birch Road	Willow Lane	Cul de Sac	Resident	Asphalt Concrete	zne4	05-21-2024	57.40	Fair

Pavement Management
Asphalt Surface

Morningside Drive	Fanestil Drive	Lincoln Street	Resident	Asphalt Concrete	zne3	05-17-2023	57.40	Fair
Patrick Street	Mava Street	15th Avenue	Resident	Asphalt Concrete	zne4	05-15-2024	57.40	Fair
Quail Creek Road	Wild Turkey Road	East Street	Resident	Asphalt Concrete	zne1	03-02-2023	57.50	Fair
Soden Road	Zoo Office	Commercial Street	Resident	Asphalt Concrete	zne1	03-06-2023	57.50	Fair
East 7th Avenue	Exchange Street	Union Street	Resident	Asphalt Concrete	zne2	02-29-2024	57.60	Fair
Michelle Street	East 9th Avenue	East 10th Avenue	Resident	Asphalt Concrete	zne2	02-29-2024	57.60	Fair
Cottonwood Street	East 6th Avenue	East 9th Avenue	Resident	Asphalt Concrete	zne2	02-29-2024	57.70	Fair
Cypress Drive	Merchant Street	Cul de Sac	Resident	Asphalt Concrete	zne1	03-06-2023	57.80	Fair
Del Oso Drive	Rio Vista Drive	Monterey Drive	Resident	Asphalt Concrete	zne3	05-17-2023	57.80	Fair
18th Avenue	Graphic Arts Road	Chapel Ridge	Collector	Asphalt Concrete	zne4	05-22-2024	58.00	Fair
Center Street	13th Avenue	15th Avenue	Resident	Asphalt Concrete	zne3	05-05-2023	58.10	Fair
Watson Street	Riley Street	Dead end	Resident	Asphalt Concrete	zne2	03-05-2024	58.40	Fair
Constitution Street	9th Avenue	12th Avenue	Resident	Asphalt Concrete	zne3	04-06-2023	58.50	Fair
Sunrise Drive	East 7th Avenue	East 10th Avenue	Resident	Asphalt Concrete	zne2	03-12-2024	58.60	Fair
South Arundel Street	Dead End	South Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	58.70	Fair
9th Avenue	West HWY 50	Graham Street	Resident	Asphalt Concrete	zne4	03-13-2024	58.80	Fair
East 12th Avenue	Mary Street	Burlingame Road	Collector	Asphalt Overlay Over Portland Cement Concrete	zne2	02-29-2024	58.80	Fair
East Street	East 6th Avenue	East 7th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	58.80	Fair
Hillcrest Drive	18th Avenue	Flint Road	Resident	Asphalt Concrete	zne4	05-15-2024	58.80	Fair
Garfield Street	9th Avenue	12th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	58.90	Fair
Luther Street	465' North of 15th Avenue	18th Avenue	Resident	Asphalt Concrete	zne4	03-13-2024	58.90	Fair
13th Avenue	Merchant Street	State Street	Resident	Asphalt Concrete	zne3	05-09-2023	59.00	Fair
Copley Avenue	South Mechanic Street	South Commercial Street	Resident	Asphalt Concrete	zne1	03-07-2023	59.00	Fair
Hatcher Street	12th Avenue	15th Avenue	Resident	Asphalt Concrete	zne4	05-15-2024	59.30	Fair
7th Avenue	Wilson Street	Sherman Street	Resident	Asphalt Concrete	zne3	05-05-2023	59.40	Fair
Sherman Street	3rd Avenue	5th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	59.40	Fair
Exchange Street	East 8th Avenue	East 9th Avenue	Collector	Asphalt Concrete	zne2	03-05-2024	59.70	Fair
Potwin Avenue	Union Street	Mechanic Street	Resident	Asphalt Concrete	zne1	03-06-2023	59.70	Fair
Grove Avenue	West Street	Walnut Street	Resident	Asphalt Concrete	zne3	05-05-2023	59.80	Fair
Sean Street	Mava Street	15th Avenue	Resident	Asphalt Concrete	zne4	05-15-2024	59.80	Fair
Chestnut Street	5th Avenue	6th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	59.90	Fair
State Street	4th Avenue	6th Avenue	Collector	Asphalt Concrete	zne3	04-12-2023	59.90	Fair
East 14th Avenue	Exchange Court	Highland Street	Resident	Asphalt Concrete	zne2	03-06-2024	60.00	Fair
Izquierdo Court	Rio Vista Drive	Cul de Sac	Resident	Asphalt Concrete	zne3	05-17-2023	60.00	Fair
Kansas Avenue	South Union Street	South Market Street	Resident	Asphalt Concrete	zne1	03-06-2023	60.00	Fair
Peyton Street	Riley Street	Dead end	Resident	Asphalt Concrete	zne2	03-05-2024	60.10	Fair
East 6th Avenue	Buttonwood RD	Weaver Street	Resident	Asphalt Concrete	zne1	03-01-2023	60.20	Fair
Neosho Street	3rd Avenue	6th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	60.20	Fair
15th Avenue	Hatcher Street	Graphic Arts Road	Collector	Asphalt Concrete	zne4	05-15-2024	60.30	Fair
Drury Lane	Morningside Drive	Lincoln Street	Resident	Asphalt Concrete	zne3	05-17-2023	60.30	Fair
Harcourt Drive	East 10th Avenue	Sunrise Drive	Resident	Asphalt Concrete	zne2	03-12-2024	60.30	Fair
Sonora Drive	Prairie Street	Prairie Street	Resident	Asphalt Concrete	zne3	05-17-2023	60.30	Fair
Briarcliff Lane	Oxford Drive	Drury Lane	Resident	Asphalt Concrete	zne3	05-17-2023	60.40	Fair
Chestnut Street	12th Avenue	15th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	60.40	Fair
Randolph Avenue	South Commercial Street	South Merchant Street	Resident	Asphalt Concrete	zne1	03-06-2023	60.40	Fair
Congress Street	South Avenue	2nd Avenue	Resident	Asphalt Concrete	zne1	03-06-2023	60.50	Fair
South Pine Street	Dead End	South Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	60.60	Fair
Congress Street	7th Avenue	10th Avenue	Resident	Asphalt Concrete	zne3	04-12-2023	60.70	Fair
South West Street	West Copley Avenue	South Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	60.70	Fair
State Street	RR Tracks	4th Avenue	Collector	Asphalt Concrete	zne3	04-12-2023	60.70	Fair
East Street	East 9th Avenue	East 12th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	60.80	Fair
Dover Road	15th Avenue	18th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	60.90	Fair
East Street	RR Tracks	6th Avenue	Collector	Asphalt Concrete	zne1	03-02-2023	60.90	Fair
Meadowlark Lane	18th Avenue	Flint Road	Resident	Asphalt Concrete	zne4	05-21-2024	61.10	Fair
Magic Circle Drive	12th Avenue	Frontier Way	Resident	Asphalt Concrete	zne4	05-15-2024	61.20	Fair
5th Avenue	Congress Street	State Street	Resident	Asphalt Concrete	zne3	04-05-2023	61.30	Fair
Center Street	15th Avenue	18th Avenue	Resident	Asphalt Concrete	zne3	05-05-2023	61.50	Fair
Dove Run	Wild Turkey Road	Cul de Sac	Resident	Asphalt Concrete	zne1	03-02-2023	61.50	Fair
Hacienda Court	Rio Vista Drive	Cul De Sac	Resident	Asphalt Concrete	zne3	05-17-2023	61.70	Fair
Oak Street	5th Avenue	6th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	61.70	Fair
Constitution Street	7th Avenue	9th Avenue	Resident	Asphalt Concrete	zne3	04-06-2023	61.80	Fair
East 11th Avenue	Whittier Street	Peyton Street	Resident	Asphalt Concrete	zne2	02-29-2024	61.80	Fair

Pavement Management
Asphalt Surface

Mary Street	East 10th Avenue	East 12th Avenue	Resident	Asphalt Concrete	zne2	02-29-2024	61.80	Fair
East 13th Avenue	Highland Street	Market Street	Resident	Asphalt Concrete	zne2	03-06-2024	61.90	Fair
East 9th Avenue	Peyton Street	Sylvan Street	Resident	Asphalt Concrete	zne2	02-29-2024	62.00	Fair
Thompson Street	Dead End	18th Avenue	Resident	Asphalt Concrete	zne4	03-13-2024	62.00	Fair
Kansas Avenue	South Commercial Street	South Neosho Street	Resident	Asphalt Concrete	zne1	03-06-2023	62.20	Fair
Kansas Avenue	South East Street	South Cottonwood Street	Resident	Asphalt Concrete	zne1	03-06-2023	62.30	Fair
Loma Vista Drive	Coronado Avenue	Monterey Court	Resident	Asphalt Concrete	zne3	05-17-2023	62.30	Fair
Walnut Street	12th Avenue	15th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	62.30	Fair
Peyton Drive	Watson Street	Peyton Street	Resident	Asphalt Concrete	zne2	02-29-2024	62.40	Fair
South Lawrence Street	Rindom Road	South Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	62.40	Fair
Luther Street	12th Avenue	Santa fe Trail Road	Resident	Asphalt Concrete	zne4	03-13-2024	62.60	Fair
Peyton Street	South Ave.	RR Tracks	Resident	Asphalt Concrete	zne1	03-02-2023	62.70	Fair
Watson Street	Dead End	East 11th Avenue	Resident	Asphalt Concrete	zne2	02-29-2024	62.70	Fair
Rindom Road	South Walnut Street	South Lawrence Street	Resident	Asphalt Concrete	zne1	03-07-2023	62.80	Fair
8th Avenue	Woodland Street	Prairie Street	Resident	Asphalt Concrete	zne3	05-05-2023	63.10	Fair
5th Avenue	Wilson Street	Sunnyslope Street	Resident	Asphalt Concrete	zne3	04-05-2023	63.40	Fair
Exchange Street	South Avenue	RR Tracks	Resident	Asphalt Concrete	zne1	04-04-2023	63.40	Fair
Gavin Road	Wastewater Treatment Plant	Logan Avenue	Resident	Asphalt Concrete	zne1	03-02-2023	63.40	Fair
Holiday Drive	18th Avenue	Meadowlark Lane	Resident	Asphalt Concrete	zne4	05-21-2024	63.50	Fair
Wild Turkey Road	Logan Avenue	Quail Creek Road	Resident	Asphalt Concrete	zne1	03-02-2023	63.80	Fair
Oxford Drive	Canterbury Road	Briarcliff Lane	Resident	Asphalt Concrete	zne3	05-17-2023	63.90	Fair
Industrial Road	West HWY 50	430' south of 12th Avenue	Arterial	Asphalt Concrete	zne4	05-15-2024	64.00	Fair
Exchange Street	East 9th Avenue	East 12th Avenue	Collector	Asphalt Concrete	zne2	03-05-2024	64.10	Fair
Maplecrest Drive	Flint Road	21st Avenue	Resident	Asphalt Concrete	zne4	05-15-2024	64.10	Fair
Sherman Street	6th Avenue	7th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	64.10	Fair
Melrose Place	Stratford Drive	Graham Street	Resident	Asphalt Concrete	zne4	03-12-2024	64.20	Fair
4th Avenue	Merchant Street	State Street	Resident	Asphalt Concrete	zne3	04-05-2023	64.40	Fair
Randolph Avenue	South Mechanic Street	South Commercial Street	Resident	Asphalt Concrete	zne1	03-06-2023	64.40	Fair
West Street	5th Avenue	6th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	64.40	Fair
Santa Fe Trail Road	Tomahawk Road	Frontier Way	Resident	Asphalt Concrete	zne4	05-15-2024	64.60	Fair
Schaeffer Way	Prairie Street	Cul de Sac	Resident	Asphalt Concrete	zne3	05-17-2023	64.60	Fair
Mechanic Street	5th Avenue	6th Avenue	Collector	Asphalt Concrete	zne1	04-03-2023	64.80	Fair
Weaver Street	East 10th Avenue	Dead End	Resident	Asphalt Concrete	zne2	03-12-2024	64.80	Fair
9th Avenue	Prairie Street	Burns Street	Resident	Asphalt Concrete	zne4	03-13-2024	64.90	Fair
4th Avenue	Rural Street	West Street	Resident	Asphalt Concrete	zne3	04-05-2023	65.00	Fair
9th Avenue	Neosho Street	West Street	Collector	Asphalt Concrete	zne3	05-05-2023	65.00	Fair
West 6th Avenue	Graham Street	Graphic Arts Road	Collector	Asphalt Concrete	zne4	03-12-2024	65.00	Fair
West 6th Avenue	West HWY 50	Graham Street	Collector	Asphalt Concrete	zne4	03-12-2024	65.10	Fair
Arundel Street	5th Avenue	6th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	65.20	Fair
Monterey Drive	Coronado Avenue	Rio Vista Drive	Resident	Asphalt Concrete	zne3	05-17-2023	65.20	Fair
Exchange Street	East 6th Avenue	East 8th Avenue	Collector	Asphalt Concrete	zne2	03-05-2024	65.30	Fair
Goura Place	Whildin Street	Clark Street	Resident	Asphalt Concrete	zne2	03-12-2024	65.30	Fair
Copley Avenue	South Walnut Street	South Lawrence Street	Resident	Asphalt Concrete	zne1	03-07-2023	65.40	Fair
Homewood Street	HWY 50	10th Avenue	Resident	Asphalt Concrete	zne2	03-12-2024	65.40	Fair
Casa Loma Drive	Rio Vista Drive	Monterey Drive	Resident	Asphalt Concrete	zne3	05-17-2023	65.50	Fair
South Congress Street	Logan Avenue	Kansas Avenue	Resident	Asphalt Concrete	zne1	03-06-2023	65.60	Fair
Whildin Street	East HWY 50	East 12th Avenue	Collector	Asphalt Concrete	zne2	03-12-2024	65.70	Fair
Potwin Avenue	East Street	Union Street	Resident	Asphalt Concrete	zne1	07-26-2023	65.80	Fair
Thompson Street	9th Avenue	12th Avenue	Resident	Asphalt Concrete	zne4	03-13-2024	65.80	Fair
State Street	8th Avenue	12th Avenue	Resident	Asphalt Concrete	zne3	04-12-2023	66.00	Fair
Rural Street	South Avenue	2nd Avenue	Resident	Asphalt Concrete	zne1	04-03-2023	66.10	Fair
Woodland Street	13th Avenue	15th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	66.10	Fair
22nd Avenue	Prairie Street	Flint Road	Resident	Asphalt Concrete	zne4	05-15-2024	66.20	Fair
Scott Street	Janice Street	12th Avenue	Resident	Asphalt Concrete	zne4	05-14-2024	66.40	Fair
State Street	6th Avenue	7th Avenue	Resident	Asphalt Concrete	zne3	04-12-2023	66.40	Fair
24th Avenue	Walmart Entrance	West View Terrace	Collector	Asphalt Concrete	zne4	05-21-2024	66.50	Fair
Laura Lane	Deerbrook Lane	Cul de Sac	Resident	Asphalt Concrete	zne4	05-22-2024	66.50	Fair
Morningside Drive	18th Avenue	Canterbury Road	Resident	Asphalt Concrete	zne1	05-17-2023	66.50	Fair
Graphic Arts Road	West 6th Avenue	West HWY 50	Collector	Asphalt Concrete	zne4	03-12-2024	66.70	Fair
West HWY 50	Industrial Road	730 ' east of Graphic Arts Rd	Arterial	Asphalt Concrete	zne4	03-13-2024	66.80	Fair
1st Avenue	East Street	Market Street	Resident	Asphalt Concrete	zne1	03-20-2023	67.00	Fair
1st Avenue	Congress Street	West Street	Resident	Asphalt Concrete	zne1	03-20-2023	67.10	Fair

18th Avenue	Berkeley Road	Braircliff Lane	Collector	Asphalt Concrete	zne3	05-31-2023	67.20	Fair
Canterbury Road	18th Avenue	Drury Lane	Resident	Asphalt Concrete	zne3	05-17-2023	67.20	Fair
East 10th Avenue	Homewood Street	Whildin Street	Resident	Asphalt Concrete	zne2	02-29-2024	67.30	Fair
11th Avenue	State Street	Neosho Street	Resident	Asphalt Concrete	zne3	05-05-2023	67.50	Fair
West HWY 50	Prairie Street	Industrial Road	Arterial	Asphalt Concrete	zne4	03-13-2024	67.50	Fair
Willow Lane	Apple Drive	Redwood Avenue	Resident	Asphalt Concrete	zne4	05-21-2024	67.60	Fair
East 9th Avenue	Cottonwood Street	Exchange Street	Resident	Asphalt Concrete	zne2	03-05-2024	67.70	Fair
Constitution Street	4th Avenue	5th Avenue	Resident	Asphalt Over Brick	zne3	04-05-2023	67.80	Fair
East 10th Avenue	Cottonwood Street	Exchange Street	Resident	Asphalt Concrete	zne2	03-06-2024	67.80	Fair
Copley Avenue	South Exchange Street	South Mechanic Street	Resident	Asphalt Concrete	zne1	03-07-2023	67.90	Fair
Arrowhead Drive	Maplecrest Drive	Flint Road	Resident	Asphalt Concrete	zne4	05-15-2024	68.00	Fair
Congress Street	2nd Avenue	RR Tracks	Resident	Asphalt Concrete	zne1	03-06-2023	68.00	Fair
East 10th Avenue	East Street	Cottonwood Street	Resident	Asphalt Concrete	zne2	03-06-2024	68.10	Fair
West Street	3rd Avenue	4th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	68.10	Fair
Industrial Road	730' north of 12th Avenue	15th Avenue	Arterial	Asphalt Concrete	zne4	05-15-2024	68.20	Fair
Industrial Road	15th Avenue	18th Avenue	Arterial	Asphalt Concrete	zne4	05-15-2024	68.20	Fair
Industrial Road	430' south of 12th Avenue	730' north of 12th Avenue	Arterial	Asphalt Concrete	zne4	05-15-2024	68.20	Fair
Homewood Street	Linn Street	La Salle Street	Resident	Asphalt Concrete	zne1	03-01-2023	68.40	Fair
Montezuma Drive	Coronado Avenue	Casa Loma Drive	Resident	Asphalt Concrete	zne3	05-17-2023	68.40	Fair
Randolph Avenue	Dead End	South Market Street	Resident	Asphalt Concrete	zne1	03-06-2023	68.40	Fair
South Rural Street	Randolph Street	South Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	68.40	Fair
Prairie Street	12th Avenue	15th Avenue	Collector	Asphalt Concrete	zne3	05-16-2023	68.50	Fair
18th Avenue	Chapel Ridge	EWS KTA Bridge	Collector	Asphalt Concrete	zne4	05-22-2024	68.60	Fair
3rd Avenue	Neosho Street	Rural Street	Resident	Asphalt Concrete	zne3	04-05-2023	68.60	Fair
8th Avenue	Congress Street	West Street	Resident	Asphalt Concrete	zne3	05-05-2023	68.60	Fair
Riley Avenue	Whittier Street	Peyton Street	Resident	Asphalt Concrete	zne2	03-05-2024	68.60	Fair
2nd Avenue	Merchant Street	Congress Street	Resident	Asphalt Concrete	zne1	04-03-2023	68.70	Fair
18th Avenue	Rural Street	Berkeley Road	Collector	Asphalt Concrete	zne3	05-31-2023	68.90	Fair
8th Avenue	Commercial Street	Merchant Street	Resident	Asphalt Concrete	zne2	02-29-2024	69.00	Fair
Potwin Avenue	Mechanic Street	Commercial Street	Resident	Asphalt Concrete	zne1	03-06-2023	69.00	Fair
4th Avenue	State Street	Rural Street	Resident	Asphalt Concrete	zne3	04-05-2023	69.10	Fair
18th Avenue	Braircliff Lane	Lincoln Street	Collector	Asphalt Concrete	zne3	05-31-2023	69.30	Fair
Thompson Street	15th Avenue	Dead End	Resident	Asphalt Concrete	zne4	03-13-2024	69.30	Fair
Merchant Street	4th Avenue	6th Avenue	Collector	Asphalt Concrete	zne1	04-03-2023	69.40	Fair
Sherman Street	5th Avenue	6th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	69.40	Fair
Watson Street	East 7th Avenue	East 9th Avenue	Resident	Asphalt Concrete	zne2	02-29-2024	69.40	Fair
Clark Street	Cul de sac	Goura Place	Resident	Asphalt Concrete	zne2	02-29-2024	69.70	Fair
South Cottonwood Street	Logan Avenue	Potwin Avenue	Resident	Asphalt Concrete	zne1	03-20-2023	69.80	Fair
12th Avenue	Prairie Street	Thompson Street	Primary	Asphalt Concrete	zne4	05-14-2024	69.90	Fair
East 6th Avenue	200' east of Lift Station	Buttonwood RD	Resident	Asphalt Concrete	zne1	03-01-2023	69.90	Fair
Washington Street	Grove	12th Avenue	Resident	Asphalt Concrete	zne3	04-12-2023	69.90	Fair
15th Avenue	Grand Street	Prairie Street	Collector	Asphalt Concrete	zne3	05-31-2023	70.10	Fair
Sunnyslope Street	5th Avenue	6th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	70.10	Fair
10th Avenue	Commercial Street	Merchant Street	Resident	Asphalt Over Brick	zne2	02-29-2024	70.40	Fair
11th Avenue	Commercial Street	Merchant Street	Resident	Asphalt Concrete	zne2	02-29-2024	70.40	Fair
8th Avenue	Merchant Street	Constitution Street	Resident	Asphalt Concrete	zne3	05-05-2023	70.40	Fair
9th Avenue	Merchant Street	Constitution Street	Collector	Asphalt Concrete	zne3	05-05-2023	70.40	Fair
Market Street	East 8th Avenue	East 12th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	70.50	Satisfactory
East 4th Avenue	Mechanic Street	Commercial Street	Collector	Asphalt Concrete	zne1	04-04-2023	70.60	Satisfactory
Luther Street	Santa fe Trail	15th Avenue	Resident	Asphalt Concrete	zne4	03-13-2024	70.60	Satisfactory
Luther Street	9th Avenue	12th Avenue	Resident	Asphalt Concrete	zne4	03-13-2024	70.70	Satisfactory
9th Avenue	Constitution Street	Neosho Street	Collector	Asphalt Concrete	zne3	05-05-2023	70.80	Satisfactory
Huntington Road	Morningside Drive	Canterbury Road	Resident	Asphalt Concrete	zne3	05-17-2023	71.00	Satisfactory
Copley Avenue	South West Street	South Walnut Street	Resident	Asphalt Concrete	zne1	03-07-2023	71.10	Satisfactory
Prairie Street	18th Avenue	I-35 Bridge (south end)	Collector	Asphalt Concrete	zne3	05-16-2023	71.10	Satisfactory
Exchange Court	East 13th Avenue	Dead End	Resident	Asphalt Concrete	zne2	03-05-2024	71.30	Satisfactory
Morningside Drive	Canterbury Road	Fanestil Drive	Resident	Asphalt Concrete	zne3	05-17-2023	71.40	Satisfactory
State Street	7th Avenue	8th Avenue	Resident	Asphalt Concrete	zne3	04-12-2023	71.40	Satisfactory
12th Avenue	Merchant Street	State Street	Arterial	Asphalt Concrete	zne3	05-24-2023	71.60	Satisfactory
11th Avenue	Merchant Street	Constitution Street	Resident	Asphalt Concrete	zne3	05-05-2023	71.80	Satisfactory
1st Avenue	Mechanic Street	Commercial Street	Resident	Asphalt Concrete	zne1	03-20-2023	71.80	Satisfactory
Copley Avenue	South Commercial Street	South Merchant Street	Resident	Asphalt Concrete	zne1	03-07-2023	71.80	Satisfactory

Rees Road	Village Avenue	18th Avenue	Resident	Asphalt Concrete	zne4	05-15-2024	71.90	Satisfactory
Fanestil Drive	Morningside Drive	Morningside Drive	Resident	Asphalt Concrete	zne3	05-17-2023	72.00	Satisfactory
Merchant Street	6th Avenue	7th Avenue	Collector	Asphalt Concrete	zne2	03-05-2024	72.00	Satisfactory
12th Avenue	State Street	Chestnut Street	Arterial	Asphalt Concrete	zne3	05-24-2023	72.40	Satisfactory
24th Avenue	Lincoln Street	Jones Park Entrance	Collector	Asphalt Concrete	zne3	05-17-2023	72.40	Satisfactory
7th Avenue	Commercial Street	Merchant Street	Resident	Asphalt Concrete	zne2	02-29-2024	72.40	Satisfactory
Constitution Street	5th Avenue	6th Avenue	Resident	Asphalt Over Brick	zne3	04-05-2023	72.40	Satisfactory
Monterey Court	Cul de Sac	Loma Vista Drive	Resident	Asphalt Concrete	zne3	05-17-2023	72.40	Satisfactory
Woodland Street	6th Avenue	9th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	72.40	Satisfactory
Congress Street	10th Avenue	11th Avenue	Resident	Asphalt Concrete	zne3	04-12-2023	72.60	Satisfactory
Prairie Street	15th Avenue	18th Avenue	Collector	Asphalt Concrete	zne3	05-16-2023	72.60	Satisfactory
24th Avenue	Prairie Street	Pavilion Entrance	Collector	Asphalt Concrete	zne4	05-21-2024	72.90	Satisfactory
Congress Street	11th Avenue	12th Avenue	Resident	Asphalt Concrete	zne3	04-12-2023	72.90	Satisfactory
Grand Street	12th Avenue	15th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	72.90	Satisfactory
30th Avenue	Timmerman Drive	Bridge Deck	Collector	Asphalt Concrete	zne4	05-22-2024	73.00	Satisfactory
East 10th Avenue	Michelle Street	Mary Street	Resident	Asphalt Concrete	zne2	02-29-2024	73.00	Satisfactory
Monterey Drive	Monterey Court	Coronado Avenue	Resident	Asphalt Concrete	zne3	05-17-2023	73.00	Satisfactory
South Market Street	Kansas Avenue	Randolph Avenue	Resident	Asphalt Concrete	zne1	03-20-2023	73.00	Satisfactory
1st Avenue	Merchant Street	Congress Street	Resident	Asphalt Concrete	zne1	03-20-2023	73.20	Satisfactory
South Cottonwood Street	Kansas Avenue	South Avenue	Resident	Asphalt Concrete	zne1	03-20-2023	73.30	Satisfactory
Calle De Loma	Casa Loma Drive	Del Oso Drive	Resident	Asphalt Concrete	zne3	05-17-2023	73.40	Satisfactory
South Commercial Street	Soden Road	Kansas Avenue	Arterial	Asphalt Concrete	zne1	03-07-2023	73.50	Satisfactory
East 5th Avenue	Market Street	Mechanic Street	Resident	Asphalt Concrete	zne1	03-01-2023	73.60	Satisfactory
Merchant Street	7th Avenue	8th Avenue	Collector	Asphalt Concrete	zne2	03-05-2024	73.60	Satisfactory
Prairie Street	6th Avenue	12th Avenue	Collector	Asphalt Concrete	zne3	05-04-2023	73.90	Satisfactory
West Street	6th Avenue	12th Avenue	Resident	Asphalt Concrete	zne3	04-12-2023	73.90	Satisfactory
Logan Avenue	Exchange Street	Commercial Street	Collector	Asphalt Concrete	zne1	03-01-2023	74.20	Satisfactory
East Wilman Court	Rural Street	18th Avenue	Resident	Asphalt Concrete	zne3	05-09-2023	74.50	Satisfactory
Sunnyslope Street	3rd Avenue	5th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	74.60	Satisfactory
Derecho Court	Rio Vista Drive	Cul De Sac	Resident	Asphalt Concrete	zne3	05-17-2023	74.70	Satisfactory
Henry Street	9th Avenue	12th Avenue	Resident	Asphalt Concrete	zne4	05-14-2024	74.70	Satisfactory
Chestnut Street	6th Avenue	7th Avenue	Collector	Asphalt Concrete	zne3	05-04-2023	74.80	Satisfactory
El Charro Court	Cul de Sac	Coronado Avenue	Resident	Asphalt Concrete	zne3	05-17-2023	74.80	Satisfactory
Sunset Circle	Cul de Sac	21st Avenue	Resident	Asphalt Concrete	zne4	05-15-2024	74.80	Satisfactory
Homewood Street	10th Avenue	Cul de Sac	Resident	Asphalt Concrete	zne2	03-12-2024	74.90	Satisfactory
Arundel Street	7th Avenue	9th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	75.00	Satisfactory
Sunnyslope Street	6th Avenue	12th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	75.10	Satisfactory
Maplecrest Drive	18th Avenue	Flint Road	Resident	Asphalt Concrete	zne4	05-15-2024	75.20	Satisfactory
South Sylvan Street	Kansas Avenue	South Avenue	Resident	Asphalt Concrete	zne1	03-20-2023	75.30	Satisfactory
Congress Street	6th Avenue	7th Avenue	Resident	Asphalt Concrete	zne3	04-06-2023	75.40	Satisfactory
Dorset Drive	Dead End	Linn Avenue	Resident	Asphalt Concrete	zne1	03-01-2023	75.60	Satisfactory
18th Avenue	EWS KTA Bridge	Aquatic Center Entrance	Collector	Asphalt Concrete	zne4	05-23-2024	75.70	Satisfactory
7th Avenue	Woodland Street	Prairie Street	Resident	Asphalt Concrete	zne3	05-05-2023	75.80	Satisfactory
La Guna Court	Cul de Sac	Coronado Avenue	Resident	Asphalt Concrete	zne3	05-17-2023	75.80	Satisfactory
Market Street	2nd Avenue	RR Tracks	Resident	Asphalt Concrete	zne1	04-03-2023	75.80	Satisfactory
Graphic Arts Road	I-35 Bridge (north side)	Roundabout	Collector	Asphalt Concrete	zne4	05-14-2024	76.10	Satisfactory
Donelson Drive	Homewood Street	Cul de sac	Resident	Asphalt Concrete	zne2	02-29-2024	76.40	Satisfactory
Trusler Rd	Trusler Complex	Rilye Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	76.40	Satisfactory
18th Avenue	Aquatic Center Entrance	Edge Concrete	Primary	Asphalt Concrete	zne4	05-23-2024	76.50	Satisfactory
24th Avenue	Industrial Road	Walmart Entrance	Collector	Asphalt Concrete	zne4	05-21-2024	76.50	Satisfactory
Logan Avenue	Wild Turkey Road	East Street	Collector	Asphalt Concrete	zne1	03-01-2023	76.50	Satisfactory
South Avenue	Norfolk Iron	Weaver Street	Resident	Asphalt Concrete	zne1	03-01-2023	76.90	Satisfactory
Sylvan Street	East 9th Avenue	East 12th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	77.00	Satisfactory
South Sylvan Street	Potwin Street	Kansas Avenue	Resident	Asphalt Concrete	zne1	03-20-2023	77.20	Satisfactory
Merchant Street	18th Avenue	Highland Street	Arterial	Asphalt Concrete	zne2	11-06-2024	77.30	Satisfactory
30th Avenue	West Lake Drive	Timmerman Drive	Collector	Asphalt Concrete	zne4	05-22-2024	77.40	Satisfactory
Randolph Avenue	South Merchant Street	South Constitution Street	Resident	Asphalt Concrete	zne1	03-06-2023	77.50	Satisfactory
Stratford Drive	Bel-Aire Drive	West 6th Avenue	Resident	Asphalt Concrete	zne4	03-12-2024	77.50	Satisfactory
Coronado Court	Cul de Sac	Coronado Avenue	Resident	Asphalt Concrete	zne3	05-17-2023	77.80	Satisfactory
Sunrise Drive	East 10th Avenue	Harcourt Drive	Resident	Asphalt Concrete	zne2	03-12-2024	77.90	Satisfactory
Hickory Lane	Cul de Sac	Redwood Avenue	Resident	Asphalt Concrete	zne4	05-21-2024	78.30	Satisfactory
Montezuma Court	Cul de Sac	Coronado Avenue	Resident	Asphalt Concrete	zne3	05-17-2023	78.50	Satisfactory

Oak Street	4th Avenue	5th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	78.50	Satisfactory
South Union Street	Kansas Avenue	South Avenue	Resident	Asphalt Concrete	zne1	03-20-2023	78.50	Satisfactory
Sunnyslope Street	12th Avenue	13th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	78.50	Satisfactory
South Market Street	Logan Avenue	Norton Avenue	Resident	Asphalt Concrete	zne1	03-20-2023	78.60	Satisfactory
Exchange Street	East 12th Avenue	East 13th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	78.70	Satisfactory
Dorset Drive	Linn Street	HWY 50	Resident	Asphalt Concrete	zne1	03-01-2023	78.90	Satisfactory
Sutton Place	Stratford Drive	Graham Street	Resident	Asphalt Concrete	zne4	03-12-2024	79.20	Satisfactory
Merchant Street	South Avenue	RR Tracks	Resident	Asphalt Over Brick	zne1	04-03-2023	79.40	Satisfactory
12th Avenue	Chestnut Street	Lincoln Street	Arterial	Asphalt Concrete	zne3	05-24-2023	79.50	Satisfactory
1st Avenue	Market Street	Mechanic Street	Resident	Asphalt Concrete	zne1	03-20-2023	79.70	Satisfactory
Deerbrook Lane	150' south of Laura Lane	Dead End	Resident	Asphalt Concrete	zne4	05-22-2024	80.50	Satisfactory
West Ridge Drive	24th Avenue	Graphic Arts Road	Resident	Asphalt Concrete	zne4	05-21-2024	81.00	Satisfactory
Logan Avenue	Weaver Street	Wild Turkey Road	Collector	Asphalt Concrete	zne1	03-01-2023	81.10	Satisfactory
Village Avenue	Rees Road	Wheeler Street	Resident	Asphalt Concrete	zne4	05-15-2024	81.10	Satisfactory
15th Avenue	Lincoln Street	Grand Street	Collector	Asphalt Concrete	zne3	05-31-2023	81.50	Satisfactory
South Avenue	Southgate Entrance	Prairie Street	Arterial	Asphalt Concrete	zne1	03-01-2023	81.50	Satisfactory
4th Avenue	Commercial Street	Merchant Street	Collector	Asphalt Concrete	zne1	04-04-2023	81.70	Satisfactory
Flint Road	Arrowhead Drive	22nd Avenue	Resident	Asphalt Concrete	zne4	05-15-2024	81.70	Satisfactory
21st Avenue	Prairie Street	Flint Road	Resident	Asphalt Concrete	zne4	05-15-2024	81.80	Satisfactory
Lakeview Street	East HWY 50	East 9th Avenue	Resident	Asphalt Concrete	zne2	03-04-2024	81.80	Satisfactory
South Avenue	West Street	Southgate Entrance	Arterial	Asphalt Concrete	zne1	03-01-2023	82.10	Satisfactory
East 12th Avenue	East Street	Cottonwood Street	Arterial	Asphalt Concrete	zne2	03-06-2024	82.20	Satisfactory
East 12th Avenue	Burlingame Road	East Street	Arterial	Asphalt Concrete	zne2	02-29-2024	82.30	Satisfactory
State Street	13th Avenue	15th Avenue	Resident	Asphalt Concrete	zne3	05-05-2023	82.30	Satisfactory
State Street	12th Avenue	13th Avenue	Resident	Asphalt Concrete	zne3	05-05-2023	82.40	Satisfactory
Whildin Street	Linn Street	HWY 50	Resident	Asphalt Concrete	zne1	03-01-2023	82.40	Satisfactory
East 10th Avenue	Weaver Street	Homewood Street	Resident	Asphalt Concrete	zne2	02-29-2024	82.50	Satisfactory
East 7th Avenue	Watson Street	Peyton Street	Resident	Asphalt Concrete	zne2	02-29-2024	82.50	Satisfactory
Carter Street	RR Tracks	Sundown Street	Resident	Asphalt Concrete	zne1	03-02-2023	82.60	Satisfactory
Darlene Way	De Lane Drive	Diane Avenue	Resident	Asphalt Concrete	zne4	05-21-2024	82.60	Satisfactory
2nd Avenue	Cottonwood Street	Market Street	Resident	Asphalt Concrete	zne1	03-20-2023	82.70	Satisfactory
Anderson Street	W HWY 50	Burns Street	Resident	Asphalt Concrete	zne4	03-13-2024	82.90	Satisfactory
13th Avenue	Grand Street	Sunnyslope Street	Resident	Asphalt Concrete	zne3	05-16-2023	83.00	Satisfactory
West 6th Avenue	Graphic Arts Road	Overlander Road	Collector	Asphalt Concrete	zne4	03-12-2024	83.10	Satisfactory
Commercial Street	4th Avenue	6th Avenue	Arterial	Asphalt Concrete	zne1	04-03-2023	83.20	Satisfactory
Mechanic Street	East 6th Avenue	East 7th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	83.20	Satisfactory
12th Avenue	Commercial Street	Merchant Street	Arterial	Asphalt Concrete	zne2	11-06-2024	83.40	Satisfactory
East 12th Avenue	Cottonwood Street	Exchange Street	Arterial	Asphalt Concrete	zne2	03-06-2024	83.40	Satisfactory
East 12th Avenue	Exchange Street	Highland Street	Arterial	Asphalt Concrete	zne2	03-06-2024	83.40	Satisfactory
Constitution Street	6th Avenue	7th Avenue	Resident	Asphalt Concrete	zne3	04-06-2023	83.50	Satisfactory
Lawrence Street	12th Avenue	15th Avenue	Resident	Asphalt Over Brick	zne3	05-16-2023	83.60	Satisfactory
West HWY 50	Commercial Street	Merchant Street	Arterial	Asphalt Concrete	zne1	03-02-2023	83.60	Satisfactory
12th Avenue	Lincoln Street	Prairie Street	Arterial	Asphalt Concrete	zne3	05-24-2023	83.90	Satisfactory
2nd Avenue	Market Street	Commercial Street	Resident	Asphalt Concrete	zne1	04-03-2023	83.90	Satisfactory
7th Avenue	Merchant Street	Constitution Street	Resident	Asphalt Concrete	zne3	05-04-2023	84.00	Satisfactory
La Cruz Court	Cul de Sac	Coronado Avenue	Resident	Asphalt Concrete	zne3	05-17-2023	84.00	Satisfactory
30th Avenue	Crestview Drive	Holiday Resort	Collector	Asphalt Concrete	zne4	05-22-2024	84.30	Satisfactory
Diane Avenue	Hillcrest Drive	Darlene Way	Resident	Asphalt Concrete	zne4	05-21-2024	84.50	Satisfactory
South Avenue	East Street	Union Street	Collector	Asphalt Concrete	zne1	03-01-2023	84.80	Satisfactory
South Market Street	Norton Avenue	Kansas Avenue	Resident	Asphalt Concrete	zne1	03-20-2023	84.80	Satisfactory
West View Drive	24th Avenue	Cul de Sac	Resident	Asphalt Concrete	zne4	05-21-2024	84.90	Satisfactory
20th Avenue	Graphic Arts	Cul de Sac	Resident	Asphalt Concrete	zne4	05-22-2024	85.20	Satisfactory
East 12th Avenue	Mechanic Street	Commercial Street	Arterial	Asphalt Concrete	zne2	03-06-2024	85.50	Good
East 12th Avenue	Market Street	Mechanic Street	Arterial	Asphalt Concrete	zne2	03-06-2024	85.50	Good
Overlander Road	West 6th Avenue	West HWY 50	Collector	Asphalt Concrete	zne4	03-12-2024	86.20	Good
Prairie Street	I-35 Bridge (north end)	30th Avenue	Collector	Asphalt Concrete	zne3	05-16-2023	86.20	Good
Riley Avenue	Burlingame Road	Whittier Street	Resident	Asphalt Concrete	zne2	03-05-2024	86.20	Good
South Constitution Street	Kansas Avenue	South Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	86.20	Good
Williby Avenue	15th Avenue	Cul de Sac	Resident	Asphalt Concrete	zne3	05-16-2023	86.30	Good
Merchant Street	8th Avenue	12th Avenue	Collector	Asphalt Concrete	zne2	03-05-2024	86.50	Good
Randolph Avenue	South West Street	South Walnut Street	Resident	Asphalt Concrete	zne1	03-06-2023	86.60	Good
De Lane Drive	Hillcrest Drive	Darlene Way	Resident	Asphalt Concrete	zne4	05-21-2024	86.90	Good

Pavement Management
Asphalt Surface

21st Avenue	Graphic Arts Road	Mt Vernon Terrace	Resident	Asphalt Concrete	zne4	05-22-2024	87.00	Good
Deerbrook Lane	Antler Ridge	20th Avenue	Resident	Asphalt Concrete	zne4	05-22-2024	87.00	Good
Flint Road	Maplecrest Drive	Arrowhead Drive	Resident	Asphalt Concrete	zne4	05-15-2024	87.00	Good
Sheridan Court	Sherwood Way	Berkeley Road	Resident	Asphalt Concrete	zne3	05-09-2023	87.00	Good
15th Avenue	Center Street	State Street	Collector	Asphalt Concrete	zne3	05-24-2023	87.20	Good
Randolph Avenue	South Neosho Street	South West Street	Resident	Asphalt Concrete	zne1	03-06-2023	87.20	Good
Oak Street	6th Avenue	9th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	87.30	Good
Arrowhead Drive	Flint Road	Flint Road	Resident	Asphalt Concrete	zne4	05-15-2024	87.60	Good
South West Street	Dead End	School Entrance	Resident	Asphalt Concrete	zne1	03-07-2023	88.00	Good
22nd Avenue	Graphic Arts Road	Mt Vernon Terrace	Resident	Asphalt Concrete	zne4	05-22-2024	88.30	Good
Commercial Street	RR Tracks	4th Avenue	Arterial	Asphalt Concrete	zne1	04-03-2023	88.30	Good
South Commercial Street	City Limits	Soden Road	Arterial	Asphalt Concrete	zne1	03-07-2023	88.70	Good
Deerbrook Lane	20th Avenue	150' south of Laura Lane	Resident	Asphalt Concrete	zne4	05-22-2024	88.80	Good
South West Street	School Entrance	West Copley Avenue	Resident	Asphalt Concrete	zne1	03-07-2023	88.90	Good
Arundel Street	6th Avenue	7th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	89.00	Good
Logan Avenue	East Street	Exchange Street	Collector	Asphalt Concrete	zne1	03-01-2023	89.10	Good
Merchant Street	12th Avenue	15th Avenue	Arterial	Asphalt Concrete	zne2	11-06-2024	89.20	Good
24th Avenue	Pavilion Entrance	Industrial Road	Collector	Asphalt Concrete	zne4	05-21-2024	89.30	Good
Clark Avenue	Dead End	East Street	Resident	Asphalt Concrete	zne1	03-02-2023	89.30	Good
Marco Court	Deerbrook Lane	Cul de Sac	Resident	Asphalt Concrete	zne4	05-22-2024	89.60	Good
Chestnut Street	7th Avenue	9th Avenue	Collector	Asphalt Concrete	zne3	05-04-2023	89.80	Good
East 9th Avenue	Mechanic Street	Commercial Street	Resident	Asphalt Concrete	zne2	03-05-2024	89.80	Good
Merchant Street	RR Tracks	4th Avenue	Resident	Asphalt Over Brick	zne1	04-03-2023	89.80	Good
East 7th Avenue	Union Street	Mechanic Street	Resident	Asphalt Concrete	zne2	02-29-2024	89.90	Good
East 8th Avenue	Mechanic Street	Commercial Street	Resident	Asphalt Concrete	zne2	02-29-2024	89.90	Good
Market Street	East 6th Avenue	East 8th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	90.00	Good
Caribou Lane	Cul de Sac	Deerbrook Lane	Resident	Asphalt Concrete	zne4	05-22-2024	90.60	Good
Mechanic Street	East 7th Avenue	East 12th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	90.60	Good
5th Avenue	Commercial Street	Merchant Street	Resident	Asphalt Concrete	zne1	03-02-2023	90.70	Good
East 8th Avenue	Market Street	Mechanic Street	Resident	Asphalt Concrete	zne2	02-29-2024	90.70	Good
Mt Vernon Terrace	20th Avenue	Graphic Arts Road	Resident	Asphalt Concrete	zne4	05-22-2024	90.80	Good
Sylvan Street	East 6th Avenue	East 7th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	91.00	Good
1st Avenue	Commercial Street	Merchant Street	Resident	Asphalt Concrete	zne1	03-20-2023	91.10	Good
East 4th Avenue	Market Street	Mechanic Street	Resident	Asphalt Concrete	zne1	04-04-2023	91.20	Good
8th Avenue	Cul de Sac	Oakwood Drive	Resident	Asphalt Concrete	zne4	03-13-2024	91.30	Good
South Avenue	Mechanic Street	Commercial Street	Collector	Asphalt Concrete	zne1	03-01-2023	91.80	Good
South Avenue	Weaver Street	Penny Lane	Collector	Asphalt Concrete	zne1	03-01-2023	91.80	Good
Weaver Street	South Avenue	RR Tracks	Arterial	Asphalt Concrete	zne1	02-28-2023	92.40	Good
Weaver Street	Logan Ave	South Ave	Arterial	Asphalt Concrete	zne1	02-28-2023	92.40	Good
Elm Street	7th Avenue	9th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	92.50	Good
Antler Ridge	Deerbrook Lane	Cul de Sac	Resident	Asphalt Concrete	zne4	05-22-2024	93.00	Good
East HWY 50	Mechanic Street	Commercial Street	Arterial	Asphalt Concrete	zne1	03-02-2023	93.00	Good
Mechanic Street	South Avenue	2nd Avenue	Collector	Asphalt Concrete	zne1	04-03-2023	93.00	Good
5th Avenue	Merchant Street	Congress Street	Resident	Asphalt Concrete	zne3	04-05-2023	93.20	Good
East 7th Avenue	Mechanic Street	Commercial Street	Resident	Asphalt Concrete	zne2	02-29-2024	93.30	Good
South Avenue	Union Street	Mechanic Street	Collector	Asphalt Concrete	zne1	03-01-2023	94.00	Good
Deerbrook Lane	18th Avenue	Antler Ridge	Resident	Asphalt Concrete	zne4	05-22-2024	94.10	Good
Elm Street	6th Avenue	7th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	94.10	Good
Whitetail Lane	Cul de Sac	Deerbrook Lane	Resident	Asphalt Concrete	zne4	05-22-2024	94.10	Good
Sylvan Street	East 7th Avenue	East 8th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	94.30	Good
Logan Avenue	Rd M5	Weaver Street	Resident	Asphalt Concrete	zne1	03-01-2023	94.60	Good
Oxford Drive	Dead End	Lincoln Street	Resident	Asphalt Concrete	zne3	05-17-2023	95.30	Good
Sylvan Street	East 8th Avenue	East 9th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	95.30	Good
East 8th Avenue	Union Street	Market Street	Resident	Asphalt Concrete	zne2	02-29-2024	95.70	Good
West View Terrace	24th Avenue	Cul de Sac	Resident	Asphalt Concrete	zne4	05-21-2024	95.70	Good
Elm Street	4th Avenue	5th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	95.90	Good
East 4th Avenue	Union Street	Market Street	Resident	Asphalt Concrete	zne1	04-04-2023	96.20	Good
Commercial Street	11th Avenue	12th Avenue	Arterial	Asphalt Concrete	zne2	02-29-2024	96.30	Good
Commercial Street	8th Avenue	9th Avenue	Arterial	Asphalt Concrete	zne2	02-29-2024	96.30	Good
South Avenue	Peyton Street	East Street	Collector	Asphalt Concrete	zne1	03-01-2023	96.30	Good
9th Avenue	West Street	Elm Street	Collector	Asphalt Concrete	zne3	05-05-2023	96.50	Good
Elm Street	9th Avenue	Hospital	Resident	Asphalt Concrete	zne3	05-04-2023	96.60	Good

Pavement Management
Asphalt Surface

Commercial Street	9th Avenue	11th Avenue	Arterial	Asphalt Concrete	zne2	02-29-2024	96.90	Good
Cottonwood Street	East 10th Avenue	East 12th Avenue	Resident	Asphalt Concrete	zne2	02-29-2024	97.20	Good
Oakwood Drive	8th Avenue	9th Avenue	Resident	Asphalt Concrete	zne4	03-13-2024	98.00	Good
South Avenue	Penny Lane	Peyton Street	Collector	Asphalt Concrete	zne1	03-01-2023	98.30	Good
Graphic Arts Road	18th Avenue	22nd Avenue	Collector	Asphalt Concrete	zne4	05-21-2024	98.40	Good
West HWY 50	Elm Street	Sunnyslope Street	Arterial	Asphalt Concrete	zne3	05-24-2023	98.50	Good
11th Avenue	Rural Street	West Street	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
14th Avenue	State Street	Neosho Street	Resident	Asphalt Concrete	zne3	05-09-2023	100.00	Good
15th Avenue	Merchant Street	Center Street	Collector	Asphalt Concrete	zne3	05-24-2023	100.00	Good
15th Avenue	Rural Street	Lawrence Street	Collector	Asphalt Concrete	zne3	10-31-2023	100.00	Good
15th Avenue	State Street	Rural Street	Collector	Asphalt Concrete	zne3	10-31-2023	100.00	Good
18th Avenue	Industrial Road	Eaglecrest Drive	Collector	Asphalt Concrete	zne4	05-23-2024	100.00	Good
18th Avenue	Lift Station	Graphic Arts Road	Collector	Asphalt Concrete	zne4	05-23-2024	100.00	Good
18th Avenue	Eaglecrest Drive	Lift Station	Collector	Asphalt Concrete	zne4	05-23-2024	100.00	Good
2nd Avenue	Sylvan Street	Cottonwood Street	Resident	Asphalt Concrete	zne1	10-10-2024	100.00	Good
2nd Avenue	State Street	Neosho Street	Resident	Asphalt Concrete	zne1	10-10-2024	100.00	Good
2nd Avenue	Neosho Street	Rural Street	Resident	Asphalt Concrete	zne1	10-10-2024	100.00	Good
2nd Avenue	East Street	Sylvan Street	Resident	Asphalt Concrete	zne1	10-10-2024	100.00	Good
30th Avenue	Prairie Street	Crestview Drive	Collector	Asphalt Concrete	zne4	05-21-2024	100.00	Good
5th Avenue	West Street	Chestnut Street	Resident	Asphalt Concrete	zne3	10-31-2023	100.00	Good
5th Avenue	Chestnut Street	Oak Street	Resident	Asphalt Concrete	zne3	10-31-2023	100.00	Good
5th Avenue	State Street	West Street	Resident	Asphalt Over Brick	zne3	10-31-2023	100.00	Good
9th Avenue	Woodland Street	Prairie Street	Collector	Asphalt Concrete	zne3	05-05-2023	100.00	Good
9th Avenue	Elm Street	Woodland Street	Collector	Asphalt Concrete	zne3	05-05-2023	100.00	Good
Arundel Street	9th Avenue	Dead End	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Belmont Court	Old Manor Road	18th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	100.00	Good
C of E Drive	Kenyon Square Apts.	12th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Chestnut Street	Grove Avenue	12th Avenue	Collector	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Chestnut Street	4th Avenue	5th Avenue	Resident	Asphalt Overlay Over Portland Cement Concrete	zne3	10-10-2024	100.00	Good
Chestnut Street	9th Avenue	Grove Avenue	Collector	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Commercial Street	South Avenue	2nd Avenue	Arterial	Asphalt Concrete	zne1	11-06-2024	100.00	Good
Commercial Street	6th Avenue	8th Avenue	Arterial	Asphalt Concrete	zne2	02-29-2024	100.00	Good
Commercial Street	2nd Avenue	RR Tracks	Arterial	Asphalt Concrete	zne1	11-06-2024	100.00	Good
East 10th Avenue	Union Street	Mechanic Street	Resident	Asphalt Overlay Over Brick	zne2	10-10-2024	100.00	Good
East 10th Avenue	Peyton Street	Topeka Street	Resident	Asphalt Concrete	zne2	10-10-2024	100.00	Good
East 11th Avenue	Market Street	Mechanic Street	Resident	Asphalt Overlay Over Brick	zne2	10-10-2024	100.00	Good
East 12th Avenue	Highland Street	Market Street	Arterial	Asphalt Concrete	zne2	03-06-2024	100.00	Good
East 5th Avenue	Mechanic Street	Commercial Street	Resident	Asphalt Concrete	zne1	03-01-2023	100.00	Good
East HWY 50	Whildin Street	Corinth Street	Arterial	Asphalt Concrete	zne1	10-31-2023	100.00	Good
East HWY 50	Peyton Street	East Street	Arterial	Asphalt Concrete	zne1	10-31-2023	100.00	Good
East HWY 50	East Street	Market Street	Arterial	Asphalt Concrete	zne1	10-31-2023	100.00	Good
East HWY 50	Market Street	Mechanic Street	Arterial	Asphalt Concrete	zne1	10-31-2023	100.00	Good
East HWY 50	City Limits	Whildin Street	Arterial	Asphalt Concrete	zne1	10-31-2023	100.00	Good
Exchange	Norton Ave	Kansas Ave	Resident	Asphalt Concrete	zne1	10-31-2023	100.00	Good
Exchange	Soden Rd	Logan Ave	Resident	Asphalt Concrete	zne1	07-26-2023	100.00	Good
Exchange	Potwin Ave	Norton Ave	Resident	Asphalt Over Brick	zne1	10-31-2023	100.00	Good
Exchange	Logan Ave	Potwin Ave	Resident	Asphalt Concrete	zne1	10-31-2023	100.00	Good
Grove Avenue	Lincoln Street	Garfield Street	Resident	Asphalt Concrete	zne3	05-05-2023	100.00	Good
Highland Street	East 12th Avenue	East 16th Avenue	Resident	Asphalt Concrete	zne2	03-05-2024	100.00	Good
Lawrence Street	Grove Avenue	12th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Lawrence Street	6th Avenue	9th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Lawrence Street	9th Avenue	Grove Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Lincoln Street	9th Avenue	12th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	100.00	Good
Lincoln Street	4th Avenue	5th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Lincoln Street	5th Avenue	6th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Lincoln Street	7th Avenue	9th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Mayfair Street	Sherwood Way	18th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Merchant Street	15th Avenue	18th Avenue	Arterial	Asphalt Concrete	zne2	11-06-2024	100.00	Good
Merchant Street	Highland Street	South of overpass	Arterial	Asphalt Concrete	zne2	11-06-2024	100.00	Good
Neosho Street	12th Avenue	14th Avenue	Resident	Asphalt Concrete	zne3	05-09-2023	100.00	Good
Neosho Street	14th Avenue	15th Avenue	Resident	Asphalt Concrete	zne3	05-09-2023	100.00	Good
Oak Street	9th Avenue	11th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good

Oakes Drive	Graphic Arts Road	Pet Food Entrance	Resident	Asphalt Concrete	zne4	10-10-2024	100.00	Good
Old Manor Road	Lincoln Street	18th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	100.00	Good
Peyton Street	East 6th Avenue	East 12th Avenue	Collector	Asphalt Concrete	zne2	10-10-2024	100.00	Good
Prairie Lane	Prairie Street	Cul de Sac	Resident	Asphalt Concrete	zne3	05-16-2023	100.00	Good
Prairie Street	Bridge Deck	Tyson Entrance	Arterial	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Road 180	Americus Rd	2,176 Feet West	Primary	Asphalt Concrete	zne4	06-01-2023	100.00	Good
Rural Street	3rd Avenue	4th Avenue	Resident	Asphalt Concrete	zne3	04-05-2023	100.00	Good
Rural Street	4th Avenue	6th Avenue	Collector	Asphalt Concrete	zne3	04-05-2023	100.00	Good
Rural Street	2nd Avenue	RR Tracks	Resident	Asphalt Concrete	zne1	10-10--2024	100.00	Good
Sherwood Way	Washington Park	18th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Sherwood Way	Mayfair Street	Washington Park	Resident	Asphalt Concrete	zne3	05-09-2023	100.00	Good
Soden Road	Exchange Street	Zoo office	Primary	Asphalt Concrete	zne1	07-26-2023	100.00	Good
South Commercial Street	Kansas Avenue	South Avenue	Arterial	Asphalt Concrete	zne1	11-06-2024	100.00	Good
South Merchant Street	Cul de Sac	Logan Avenue	Resident	Asphalt Concrete	zne1	03-06-2023	100.00	Good
South Union Street	Potwin Avenue	Norton Avenue	Resident	Asphalt Concrete	zne1	10-31-2023	100.00	Good
Trowman Way	Cul de Sac	18th Avenue	Resident	Asphalt Concrete	zne3	05-16-2023	100.00	Good
Walnut Street	6th Avenue	7th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Walnut Street	7th Avenue	8th Avenue	Resident	Asphalt Overlay Over Portland Cement Concrete	zne3	10-10-2024	100.00	Good
Walnut Street	8th Avenue	9th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Washington Park	West St	Sherwood Way	Resident	Asphalt Concrete	zne3	05-09-2023	100.00	Good
Washington Street	6th Avenue	7th Avenue	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Washington Street	15th Avenue	Sherwood Way	Resident	Asphalt Concrete	zne3	10-10-2024	100.00	Good
Weaver Street	East 6th Ave	East HWY 50	Primary	Asphalt Concrete	zne1	03-01-2023	100.00	Good
West HWY 50	Constitution Street	Congress Street	Arterial	Asphalt Concrete	zne3	05-24-2023	100.00	Good
West HWY 50	Merchant Street	Constitution Street	Arterial	Asphalt Concrete	zne3	05-24-2023	100.00	Good
West HWY 50	West Street	Elm Street	Arterial	Asphalt Concrete	zne3	05-24-2023	100.00	Good
West HWY 50	Woodland Street	Prairie Street	Arterial	Asphalt Concrete	zne3	05-24-2023	100.00	Good
West HWY 50	Congress Street	Rural Street	Arterial	Asphalt Concrete	zne3	05-24-2023	100.00	Good
West HWY 50	Rural Street	West Street	Arterial	Asphalt Concrete	zne3	05-24-2023	100.00	Good
West HWY 50	Sunnyslope Street	Woodland Street	Arterial	Asphalt Concrete	zne3	05-24-2023	100.00	Good
Wheeler Street	15th Avenue	18th Avenue	Resident	Asphalt Concrete	zne4	10-10-2024	100.00	Good
Whittier Street	Riley Avenue	300' south of Lift Station	Resident	Asphalt Concrete	zne2	10-10-2024	100.00	Good
Wilson Street	3rd Avenue	5th Avenue	Resident	Asphalt Concrete	zne3	07-26-2023	100.00	Good
Wilson Street	5th Avenue	6th Avenue	Resident	Asphalt Concrete	zne3	07-26-2023	100.00	Good
Woodland Street	9th Avenue	12th Avenue	Resident	Asphalt Concrete	zne3	05-04-2023	100.00	Good

Pavement Management
Concrete Surface

Branch Name	From	To	Rank	Description	Zone	Date	PCI	PCI Category
7th Avenue	West Street	Washington Street	Resident	Portland Cement Concrete	zne3	05-05-2023	15.50	Serious
East 7th Avenue	Sylvan Street	Exchange Street	Resident	Portland Cement Concrete	zne2	03-05-2024	16.20	Serious
Lincoln Street	6th Avenue	7th Avenue	Resident	Portland Cement Concrete	zne3	05-04-2023	19.00	Serious
7th Avenue	Washington Street	Walnut Street	Resident	Portland Cement Concrete	zne3	05-05-2023	20.70	Serious
Grove Avenue	Lawrence Street	Chestnut Street	Resident	Portland Cement Concrete	zne3	05-05-2023	23.50	Serious
Walnut Street	9th Avenue	12th Avenue	Resident	Portland Cement Concrete	zne3	04-12-2023	26.50	Very Poor
7th Avenue	Lincoln Street	Garfield Street	Resident	Portland Cement Concrete	zne3	05-05-2023	29.80	Very Poor
11th Avenue	Chestnut Street	Oak Street	Resident	Portland Cement Concrete	zne3	05-05-2023	32.10	Very Poor
7th Avenue	Sherman Street	Sunnyslope Street	Resident	Portland Cement Concrete	zne3	05-05-2023	33.70	Very Poor
11th Avenue	Constitution Street	Congress Street	Resident	Portland Cement Concrete	zne3	05-05-2023	34.60	Very Poor
East 5th Avenue	Sylvan Street	Cottonwood Street	Resident	Portland Cement Concrete	zne1	03-01-2023	35.50	Very Poor
East 5th Avenue	East Street	Sylvan Street	Resident	Portland Cement Concrete	zne1	03-01-2023	37.10	Very Poor
7th Avenue	Walnut Street	Lincoln Street	Resident	Portland Cement Concrete	zne3	05-05-2023	37.70	Very Poor
Washington Park	West Street	Sherwood Way	Resident	Portland Cement Concrete	zne3	11-19-2021	38.30	Very Poor
Grove Avenue	Walnut Street	Lawrence Street	Resident	Portland Cement Concrete	zne3	05-05-2023	39.60	Very Poor
Copley Avenue	South Merchant Street	South Constitution Street	Resident	Portland Cement Concrete	zne1	03-07-2023	40.40	Very Poor
Whittier Street	East 9th Avenue	East 12th Avenue	Resident	Portland Cement Concrete	zne2	02-29-2024	40.70	Poor
East 9th Avenue	Whittier Street	Peyton Street	Resident	Portland Cement Concrete	zne2	02-29-2024	41.30	Poor
Copley Avenue	South Constitution Street	South Congress Street	Resident	Portland Cement Concrete	zne1	03-07-2023	45.00	Poor
East 13th Avenue	Cottonwood Street	Exchange Street	Resident	Portland Cement Concrete	zne2	03-06-2024	45.70	Poor
Logan Avenue	South Commercial Street	South Congress Street	Resident	Portland Cement Concrete	zne1	03-01-2023	46.50	Poor
Luther Street	15th Avenue	465' North	Resident	Portland Cement Concrete	zne4	03-13-2024	48.00	Poor
State Street	15th Avenue	300 ft north of 15th ave	Resident	Portland Cement Concrete	zne3	05-05-2023	52.40	Poor
Whittier Street	Cul de sac	East 9th Avenue	Resident	Portland Cement Concrete	zne2	02-29-2024	52.50	Poor
East 8th Avenue	Sylvan Street	Cottonwood Street	Resident	Portland Cement Concrete	zne2	03-05-2024	53.60	Poor
Elm Street	5th Avenue	6th Avenue	Resident	Portland Cement Concrete	zne3	04-05-2023	54.10	Poor
Cottonwood Street	East 12th Avenue	East 13th Avenue	Resident	Portland Cement Concrete	zne2	03-05-2024	54.20	Poor
Albert Street	5th Avenue	6th Avenue	Resident	Portland Cement Concrete	zne3	04-05-2023	54.70	Poor
East 7th Avenue	East Street	Sylvan Street	Resident	Portland Cement Concrete	zne2	03-05-2024	55.90	Fair
Grove Avenue	Chestnut Street	Oak Street	Resident	Portland Cement Concrete	zne3	05-05-2023	57.90	Fair
Industrial Road	West 6th Avenue	West HWY 50	Resident	Portland Cement Concrete	zne4	03-12-2024	59.40	Fair
Moonlight Circle	Eveningside Drive	Cul de sac	Resident	Portland Cement Concrete	zne1	03-02-2023	59.90	Fair
South Union Street	Logan Avenue	Potwin Avenue	Resident	Portland Cement Concrete	zne1	03-20-2023	59.90	Fair
5th Avenue	Lincoln Street	Wilson Street	Resident	Portland Cement Concrete	zne3	04-05-2023	60.00	Fair
South Avenue	Merchant Street	Congress Street	Arterial	Portland Cement Concrete	zne1	03-01-2023	60.90	Fair
Carter Street	South Avenue	RR Tracks	Resident	Portland Cement Concrete	zne1	03-02-2023	64.30	Fair
15th Avenue	Lawrence Street	Dover Road	Collector	Portland Cement Concrete	zne2	05-31-2023	64.50	Fair
Arundel Street	4th Avenue	5th Avenue	Resident	Portland Cement Concrete	zne3	04-05-2023	64.80	Fair
Potwin Avenue	Commercial Street	S Merchant Street	Resident	Portland Cement Concrete	zne1	03-06-2023	67.40	Fair
15th Avenue	Industrial Road	Hatcher Street	Collector	Portland Cement Concrete	zne4	05-15-2024	67.70	Fair
Lincoln Street	15th Avenue	Morningside Drive	Collector	Portland Cement Concrete	zne3	05-16-2023	67.90	Fair
13th Avenue	Washington Street	Chestnut Street	Resident	Portland Cement Concrete	zne3	05-16-2023	69.00	Fair
Eveningside Drive	Twilight Drive	Sundown Street	Resident	Portland Cement Concrete	zne1	03-02-2023	69.00	Fair
Twilight Drive	Whildin Street	Eveningside Drive	Resident	Portland Cement Concrete	zne1	03-02-2023	69.10	Fair
Burlingame Road	East 12th Avenue	Riley Avenue	Collector	Portland Cement Concrete	zne2	03-01-2018	69.50	Fair
East 11th Avenue	Exchange Street	Market Street	Resident	Portland Cement Concrete	zne2	03-06-2024	70.10	Fair
Sunset Lake Drive	Cul de Sac	24th Avenue	Resident	Portland Cement Concrete	zne4	05-21-2024	70.30	Fair
East 8th Avenue	East Street	Sylvan Street	Resident	Portland Cement Concrete	zne2	03-05-2024	71.60	Satisfactory
East 11th Avenue	East Street	Exchange Street	Resident	Portland Cement Concrete	zne2	03-06-2024	72.70	Satisfactory
West Ridge Court	Cul de Sac	South Parkway Court	Resident	Portland Cement Concrete	zne4	05-21-2024	72.90	Satisfactory
South Avenue	Congress Street	West Street	Arterial	Portland Cement Concrete	zne1	03-01-2023	74.10	Satisfactory
Lantern Lane	West 6th Avenue	Cul de Sac	Resident	Portland Cement Concrete	zne4	03-12-2024	75.10	Satisfactory
23rd Avenue	Cul de Sac	Cul de Sac	Resident	Portland Cement Concrete	zne4	05-21-2024	75.20	Satisfactory
Peyton Street	RR Tracks	East HWY 50	Resident	Portland Cement Concrete	zne1	03-02-2023	75.30	Satisfactory
East 6th Avenue	Weaver Street	Dorset Dr	Resident	Portland Cement Concrete	zne1	03-01-2023	75.40	Satisfactory
5th Avenue	Elm Street	Lincoln Street	Resident	Portland Cement Concrete	zne3	04-05-2023	75.50	Satisfactory
15th Avenue	Dover Road	Lincoln Street	Collector	Portland Cement Concrete	zne3	05-31-2023	75.60	Satisfactory
Sherwood Way	15th Avenue	Berkeley Road	Resident	Portland Cement Concrete	zne3	05-09-2023	75.90	Satisfactory
Linn Street	Weaver Street	Whildin Street	Resident	Portland Cement Concrete	zne1	03-01-2023	76.30	Satisfactory
Market Street	East 12th Avenue	East 14th Avenue	Resident	Portland Cement Concrete	zne2	03-05-2024	76.70	Satisfactory
LaSallle Street	Weaver Street	Dorset Dr	Resident	Portland Cement Concrete	zne1	03-01-2023	76.90	Satisfactory

East 12th Avenue	Whilden Street	Mary Street	Collector	Portland Cement Concrete	zne2	02-29-2024	77.10	Satisfactory
Randolph Avenue	South Congress Street	South Neosho Street	Resident	Portland Cement Concrete	zne1	03-06-2023	77.20	Satisfactory
Riverview Drive	Cul de Sac	Valley Drive	Resident	Portland Cement Concrete	zne1	03-06-2023	78.70	Satisfactory
South Parkway Court	Timmerman Drive	Cul de Sac	Resident	Portland Cement Concrete	zne4	05-21-2024	78.80	Satisfactory
12th Avenue	Scott Street	200' east of Graphic Arts Road	Arterial	Portland Cement Concrete	zne4	05-14-2024	79.20	Satisfactory
18th Avenue	Merchant Street	Rural Street	Collector	Portland Cement Concrete	zne3	05-31-2023	79.60	Satisfactory
12th Avenue	Thompson Street	300' east of Industrial Road	Arterial	Portland Cement Concrete	zne4	05-14-2024	80.10	Satisfactory
Graham Street	West 6th Avenue	West HWY 50	Resident	Portland Cement Concrete	zne4	03-12-2024	81.50	Satisfactory
West Lake Drive	South Parkway	30th Avenue	Resident	Portland Cement Concrete	zne4	05-22-2024	82.10	Satisfactory
Weaver Street	RR Tracks	East 6th Ave	Arterial	Portland Cement Concrete	zne1	03-01-2023	82.20	Satisfactory
C of E Drive	Chestnut Street	Kenyon Square Apts.	Resident	Portland Cement Concrete	zne3	05-16-2023	82.80	Satisfactory
Lakeridge Road	South Parkway	30th Avenue	Resident	Portland Cement Concrete	zne4	05-22-2024	82.80	Satisfactory
15th Avenue	Trail Ridge Road	Industrial Road	Collector	Portland Cement Concrete	zne4	05-15-2024	82.90	Satisfactory
Hillcrest Drive	22nd Avenue	Prairie Street	Resident	Portland Cement Concrete	zne4	05-21-2024	83.00	Satisfactory
South Union Street	Norton Avenue	Kansas Avenue	Resident	Portland Cement Concrete	zne1	03-20-2023	83.40	Satisfactory
Anderson Street	West 6th Avenue	West HWY 50	Resident	Portland Cement Concrete	zne4	03-12-2024	84.00	Satisfactory
Union Street	East 11th Avenue	East 12th Avenue	Resident	Portland Cement Concrete	zne2	03-05-2024	84.10	Satisfactory
East 11th Avenue	Mechanic Street	Commercial Street	Resident	Portland Cement Concrete	zne2	03-06-2024	84.20	Satisfactory
5th Avenue	Oak Street	Elm Street	Resident	Portland Cement Concrete	zne3	04-05-2023	84.60	Satisfactory
Prairie Street	Tyson Entrance	6th Avenue	Arterial	Portland Cement Concrete	zne3	04-06-2023	85.70	Good
Valley Drive	Riverview Drive	Logan Avenue	Resident	Portland Cement Concrete	zne1	03-06-2023	85.80	Good
Penny Lane	Weaver Street	Project Begin Sta. 33+00	Resident	Portland Cement Concrete	zne1	03-01-2023	86.30	Good
2nd Avenue	Rural Street	West Street	Resident	Portland Cement Concrete	zne1	04-03-2023	86.70	Good
Berkeley Road	15th Avenue	Sherwood Way	Resident	Portland Cement Concrete	zne3	05-09-2023	86.70	Good
Copley Avenue	South Rural Street	South West Street	Resident	Portland Cement Concrete	zne1	03-07-2023	86.70	Good
Timmerman Drive	South Parkway Court	30th Avenue	Resident	Portland Cement Concrete	zne4	05-21-2024	86.80	Good
Sylvan Street	RR Tracks	6th Avenue	Resident	Portland Cement Concrete	zne1	04-04-2023	87.50	Good
Graphic Arts Road	School Entrance	West Ridge Drive	Collector	Portland Cement Concrete	zne4	05-21-2024	87.70	Good
Randolph Avenue	South Market Street	South Mechanic Street	Resident	Portland Cement Concrete	zne1	03-06-2023	87.70	Good
Martin Drive	New Martin Dr	Overlander Road	Resident	Portland Cement Concrete	zne4	03-12-2024	88.00	Good
Stardust Circle	Eveningside Drive	Cul de sac	Resident	Portland Cement Concrete	zne1	03-02-2023	88.00	Good
West Bayfront Court	Bayfront Drive	Cul de Sac	Resident	Portland Cement Concrete	zne4	05-21-2024	88.00	Good
Twin Lakes Drive	Crestview Drive	Crestview Drive	Resident	Portland Cement Concrete	zne4	05-21-2024	88.50	Good
South Merchant Street	Potwin Avenue	Cypress Drive	Resident	Portland Cement Concrete	zne1	03-06-2023	88.80	Good
Graphic Arts Road	22nd Avenue	School Entrance	Collector	Portland Cement Concrete	zne4	05-21-2024	89.70	Good
South Parkway	Lakeridge Road	Timmerman Drive	Resident	Portland Cement Concrete	zne4	05-22-2024	89.70	Good
Twin Lakes Court	Twin Lakes Drive	Cul de Sac	Resident	Portland Cement Concrete	zne4	05-21-2024	89.70	Good
Industrial Road	18th Avenue	24th Avenue	Arterial	Portland Cement Concrete	zne4	05-23-2024	90.10	Good
Spring Green Street	Sundown Street	East HWY 50	Resident	Portland Cement Concrete	zne1	03-02-2023	90.50	Good
20th Park Place	Lincoln Street	Cul de Sac	Resident	Portland Cement Concrete	zne3	05-16-2023	90.60	Good
Oakes Drive	Pet Food Entrance	Cul de Sac	Resident	Portland Cement Concrete	zne4	03-12-2024	91.40	Good
Mechanic Street	South Underpass	North Underpass	Collector	Portland Cement Concrete	zne1	04-03-2023	91.70	Good
18th Avenue	Edge of Concrete	Road G	Collector	Portland Cement Concrete	zne4	05-23-2024	92.00	Good
Twin Lakes Circle	Twin Lakes Drive	Cul de Sac	Resident	Portland Cement Concrete	zne4	05-22-2024	92.20	Good
South Washington Street	Randolph Street	South Avenue	Resident	Portland Cement Concrete	zne1	03-07-2023	92.50	Good
11th Avenue	Neosho Street	Rural Street	Resident	Portland Cement Concrete	zne3	05-05-2023	93.10	Good
Candlewood Drive	Cul de Sac	Industrial Road	Resident	Portland Cement Concrete	zne4	05-23-2024	93.10	Good
Bayshore Court	Crestview Drive	Cul de Sac	Resident	Portland Cement Concrete	zne4	05-21-2024	93.60	Good
2nd Avenue	Commercial Street	Merchant Street	Resident	Portland Cement Concrete	zne1	04-03-2023	93.70	Good
Twin Lakes Drive	Crestview Drive	Hidden Lakes Drive	Resident	Portland Cement Concrete	zne4	05-21-2024	93.90	Good
Valley Circle	Cul de Sac	Valley Drive	Resident	Portland Cement Concrete	zne1	03-06-2023	94.00	Good
West 29th Terrace	West Lake Drive	Timmerman Drive	Resident	Portland Cement Concrete	zne4	05-22-2024	94.30	Good
Norton Avenue	South Cottonwood Street	South Commercial Street	Resident	Portland Cement Concrete	zne1	03-06-2023	94.40	Good
East Bayfront Court	Cul de Sac	Bayfront Drive	Resident	Portland Cement Concrete	zne4	05-21-2024	94.50	Good
Warren Way	Logan Avenue	500' North of Logan Avenue	Resident	Portland Cement Concrete	zne1	03-02-2023	94.50	Good
Graham Street	West HWY 50	12th Avenue	Resident	Portland Cement Concrete	zne4	05-14-2024	94.70	Good
24th Avenue	West View Terrace	Graphic Arts Road	Collector	Portland Cement Concrete	zne4	05-21-2024	95.00	Good
30th Avenue	Holiday Resort	West Lake Drive	Collector	Portland Cement Concrete	zne4	05-22-2024	95.00	Good
Hidden Lakes Drive	710' SW of Dead End	Lakeridge Road	Resident	Portland Cement Concrete	zne4	05-22-2024	95.00	Good
South Avenue	South Commercial Street	Merchant Street	Arterial	Portland Cement Concrete	zne1	03-01-2023	95.00	Good
Crestview Drive	Prairie Street	Dead End	Resident	Portland Cement Concrete	zne4	05-21-2024	95.40	Good
East 10th Avenue	Mechanic Street	Commercial Street	Resident	Portland Cement Concrete	zne2	03-06-2024	95.40	Good

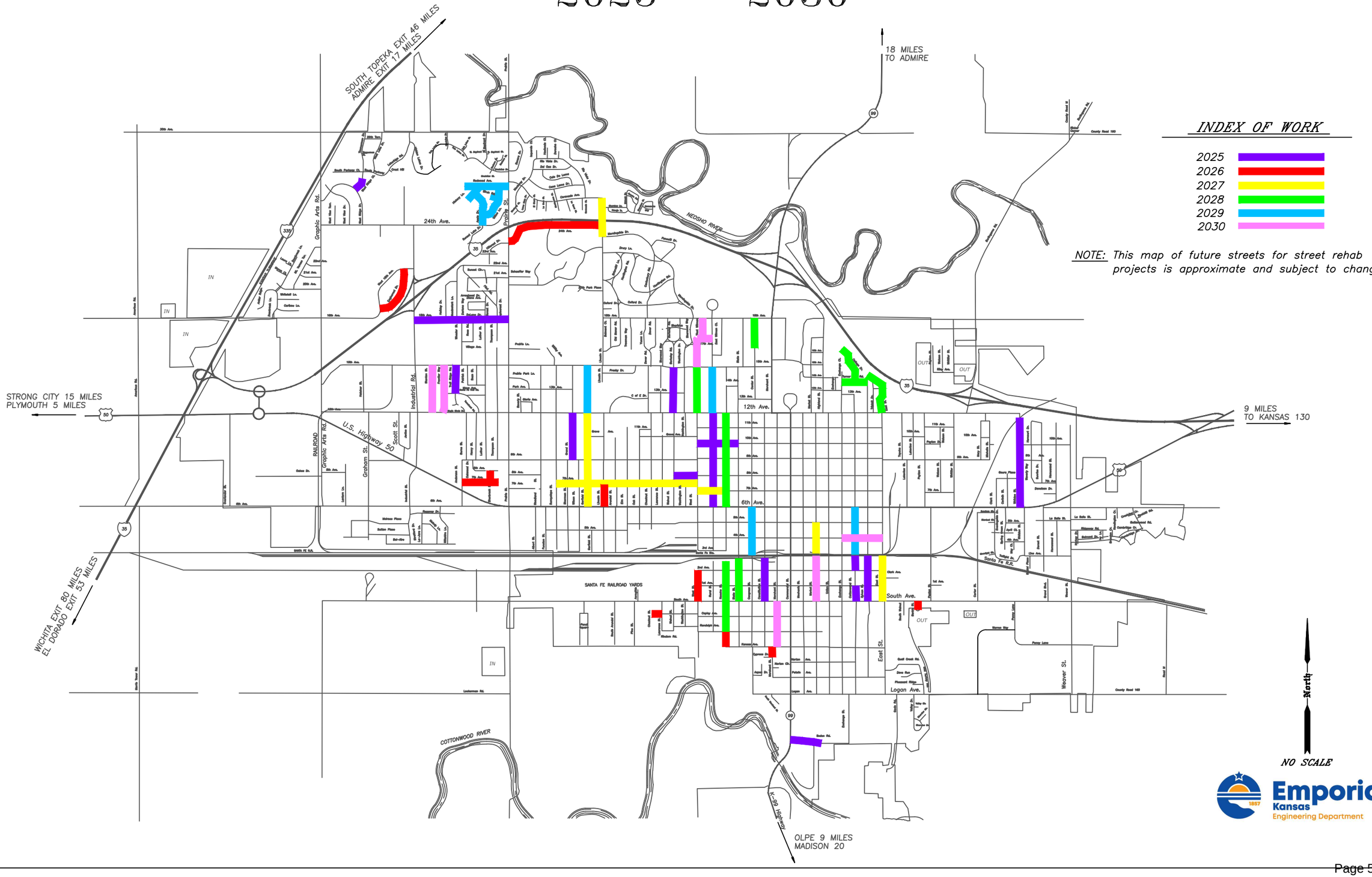
Pavement Management
Concrete Surface

4th Avenue	West Street	Concrete Plant	Resident	Portland Cement Concrete	zne3	04-05-2023	95.50	Good
Warren Way	500' North of Logan Avenue	Penny Lane	Resident	Portland Cement Concrete	zne1	03-02-2023	95.50	Good
Presby Drive	Lincoln Street	15th Avenue	Resident	Portland Cement Concrete	zne3	05-16-2023	95.70	Good
Crestview Drive	Dead End	30th Avenue	Resident	Portland Cement Concrete	zne4	05-21-2024	96.00	Good
Graphic Arts Road	West Ridge Drive	Bridge Deck	Collector	Portland Cement Concrete	zne4	05-22-2024	96.00	Good
Hidden Lakes Drive	Dead End	710' Southwest	Resident	Portland Cement Concrete	zne4	05-22-2024	96.00	Good
Industrial Road	Bridge Deck (north)	18th Avenue	Arterial	Portland Cement Concrete	zne4	05-23-2024	96.00	Good
Industrial Road	18th Avenue	Bridge Deck	Arterial	Portland Cement Concrete	zne4	05-23-2024	96.00	Good
Norton Circle	Cul de Sac	S Merchant Street	Resident	Portland Cement Concrete	zne1	03-06-2023	96.00	Good
Riverview Circle	Riverview Drive	Cul de Sac	Resident	Portland Cement Concrete	zne1	03-07-2023	96.00	Good
Timmerman Court	Cul de Sac	Timmerman Drive	Resident	Portland Cement Concrete	zne4	05-21-2024	96.00	Good
Bayfront Drive	Crestview Drive	30th Avenue	Resident	Portland Cement Concrete	zne4	05-21-2024	96.40	Good
Martin Drive	280' W of Brownstone Blvd	Overlander Rd	Primary	Portland Cement Concrete	zne4	05-12-2023	96.80	Good
12th Avenue	200' east of Graphic Arts Road	Graphic Arts Road	Arterial	Portland Cement Concrete	zne4	05-14-2024	97.20	Good
East HWY 50	Corinth Street	Peyton Street	Arterial	Portland Cement Concrete	zne1	03-02-2023	97.20	Good
Penny Lane	Project Begin Sta. 133+00	South Avenue	Resident	Portland Cement Concrete	zne1	03-01-2023	97.20	Good
Crestview Drive Court	Cul de Sac	Crestview Drive	Resident	Portland Cement Concrete	zne4	05-21-2024	98.00	Good
Sundown Street	Spring Green Street	Carter Street	Resident	Portland Cement Concrete	zne1	03-02-2023	98.30	Good
Graphic Arts Road	West HWY 50	I-35 Bridge	Collector	Portland Cement Concrete	zne4	05-14-2024	99.30	Good
5th Avenue	Sunnyslope Street	Funston Street	Primary	Portland Cement Concrete	zne3	04-05-2023	100.00	Good
Brownstone Blvd	Martin Drive	Highway 50	Primary	Portland Cement Concrete	zne4	05-12-2023	100.00	Good
Buffalo Terrace	Sunflower Way	Red Wheat Drive	Resident	Portland Cement Concrete	zne2	03-05-2024	100.00	Good
Funston Street	5th	6th	Primary	Portland Cement Concrete	zne3	04-05-2023	100.00	Good
Graphic Arts Road	I-35 Bridge (south side)	I-35 Bridge (north side)	Collector	Portland Cement Concrete	zne4	05-14-2024	100.00	Good
Industrial Road	Bridge Deck (south)	Bridge Deck (north)	Arterial	Portland Cement Concrete	zne4	05-23-2024	100.00	Good
Lincoln Street	Cul de sac	15th Avenue	Resident	Portland Cement Concrete	zne3	05-16-2023	100.00	Good
Martin Drive	Cul de Sac	280' W of Brownstone Blvd	Primary	Portland Cement Concrete	zne4	05-12-2023	100.00	Good
Mechanic Street	North Underpass	4th Avenue	Collector	Portland Cement Concrete	zne1	04-03-2023	100.00	Good
Mechanic Street	2nd Avenue	Underpass	Collector	Portland Cement Concrete	zne1	04-03-2023	100.00	Good
Penny Lane	Cul de Sac	Weaver Street	Resident	Portland Cement Concrete	zne1	03-01-2023	100.00	Good
Prairie Street	RR Tracks	Bridge Deck	Arterial	Portland Cement Concrete	zne3	04-06-2023	100.00	Good
Prairie Street	I-35 Bridge (south end)	I-35 Bridge (north end)	Collector	Portland Cement Concrete	zne3	05-16-2023	100.00	Good
Red Wheat Drive	Buffalo Terrace	Whittier Street	Resident	Portland Cement Concrete	zne2	03-05-2024	100.00	Good
Sunflower Way	Buffalo Terrace	Whittier Street	Resident	Portland Cement Concrete	zne2	03-05-2024	100.00	Good
West HWY 50	730' east of Graphic Arts Rd	Graphic Arts Rd	Arterial	Portland Cement Concrete	zne4	03-13-2024	100.00	Good

Pavement Management
Brick Surface

Branch Name	From	To	Rank	Description	Zone	Date	PCI	PCI Category
East 9th Avenue	Union Street	Mechanic Street	Resident	Brick	zne2	03-05-2024	6.90	Failed
Exchange Street	East 13th Avenue	East 14th Avenue	Resident	Brick	zne2	03-05-2024	10.50	Serious
Union Street	East 10th Avenue	East 11th Avenue	Resident	Brick	zne2	03-05-2024	11.50	Serious
Exchange	Kansas	South	Resident	Brick	zne1	03-06-2023	13.40	Serious
10th Avenue	Merchant Street	State Street	Resident	Brick	zne3	05-05-2023	16.70	Serious
East 13th Avenue	Exchange Court	Exchange Street	Resident	Brick	zne2	03-06-2024	18.60	Serious
Neosho Street	South Avenue	RR Tracks	Resident	Brick	zne1	04-03-2023	19.50	Serious
South Neosho Street	Randolph Avenue	South Avenue	Resident	Brick	zne1	03-07-2023	19.60	Serious
7th Avenue	Congress Street	West Street	Resident	Brick	zne3	05-05-2023	27.20	Very Poor
East 5th Avenue	Cottonwood Street	Market Street	Resident	Brick	zne1	03-01-2023	29.10	Very Poor
East 8th Avenue	Cottonwood Street	Union Street	Resident	Brick	zne2	03-05-2024	29.70	Very Poor
East 14th Avenue	Highland Street	Market Street	Resident	Brick	zne2	03-06-2024	30.10	Very Poor
11th Avenue	Congress Street	State Street	Resident	Brick	zne3	05-05-2023	34.90	Very Poor
8th Avenue	Constitution Street	Congress Street	Resident	Brick	zne3	05-05-2023	35.00	Very Poor
Rural Street	15th Avenue	18th Avenue	Resident	Brick	zne3	05-09-2023	45.10	Poor
East 13th Avenue	Exchange Street	Highland Street	Resident	Brick	zne2	03-06-2024	52.30	Poor
Union Street	RR Tracks	6th Avenue	Resident	Brick	zne1	04-03-2023	65.30	Fair
Sherwood Way	Berkeley Road	Mayfair Street	Resident	Brick	zne3	05-09-2023	71.40	Satisfactory
East 10th Avenue	Exchange Street	Union Street	Resident	Brick	zne2	03-06-2024	72.20	Satisfactory
East 9th Avenue	Exchange Street	Union Street	Resident	Brick	zne2	03-05-2024	79.50	Satisfactory
Washington Street	13th Avenue	15th Avenue	Resident	Brick	zne3	05-09-2023	82.70	Satisfactory
Washington Street	12th Avenue	13 th Avenue	Resident	Brick	zne3	05-09-2023	85.70	Good
Berkeley Road	Sherwood Way	18th Avenue	Resident	Brick	zne3	05-09-2023	86.80	Good
Union Street	East 6th Avenue	East 10th Avenue	Resident	Brick	zne2	03-05-2024	89.10	Good
East 10th Avenue	Union Street	Mechanic Street	Resident	Brick	zne2	10-10-2024	100.00	Good
East 11th Avenue	Market Street	Mechanic Street	Resident	Brick	zne2	10-10-2024	100.00	Good

STREET REHABILITATION
2025 – 2030



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NOTE: This map of future streets for street rehab projects is approximate and subject to change.

North

NO SCALE

Emporia Kansas 1857
Engineering Department

Title:	Proposed Mobile Food Vendor / Unit Regulation Changes
Agenda Date:	January 21, 2025
Presented By:	Justin Givens, Interim Director, Building & Neighborhood Development

Background
The City first adopted Vehicular Vendor regulations in 1983, and Mobile Food Vendor / Unit regulations in 2016. Staff was approached last year by Josh Derek, a local mobile food truck operator about reviewing and revising the Mobile Food Truck Ordinance.

Staff and Mr. Derek meet several times during the last year. Based on those discussions and staff research, we have proposed several modifications to the Mobile Food Vendor / Unit permit process. Staff also reached out to several other food truck operators who seemed favorable to some of the items proposed as changes to the process.

Discussion
Key points to the proposed changes to the Mobile Food Vendor / Unit process include the following;

- Modifies existing City Code to merge Vehicle Vendors and Mobile Food Vendors into one Article, rather than regulating MFV separately through the Zoning Regulations.
- Continues to limit the public locations allowed to Commercial and Industrial Parcel Types, but does create an allowance for MFUs in certain public spaces.
- Proposes a Yearly and Monthly Fee – current system only allows monthly but Vendors can and do pay for a year at one time.
- Exempts from the licensing requirement City sanctioned or other Special Events as well as events on Lyon County, Emporia State, USD and Recreation Commission property.
- Removes the restriction on canopies and would allow for tables at a location
- Allows MFUs to continue to be placed at one location for extended periods – except for public property.
- Involves EFD into the process requiring inspections of units prior to a permit being issued.
- Exempts from the fee, but does require farm produce vendors to be licensed.
- Brings the Vehicle Vendor licensing process under Mobile Food process.

Financial Considerations
The proposed language would reduce the total yearly cost of a permit from $600 to $300 if adopted as proposed. Staff feels that the reduction in fees would be offset by more vendors moving to a yearly fee versus a month-to-month fee, and more vendors getting permits.

Attachments
Proposed Mobile Food Vendor / Unit Language

Chapter 14.

Article V. Mobile Food Vendors

Sec. 14-84. Applicability; Definitions

All Mobile Food Vendors must comply with the provisions of this Article and any other applicable state and local requirements.

For the purpose of this article, the following definitions shall apply:

“Mobile Food Unit” means any self-contained vehicle, trailer, cart, wagon, or other type of conveyance from which any food and/or beverage is offered for sale or in exchange for a donation, regardless of whether the activity is characterized as charitable or nonprofit.

“Mobile Food Vendor” means any person, corporation, partnership, association, or other legal entity, however organized, that offers any food or beverage for sale or donation from a Mobile Food Unit.

(Ord. 83-13, § 1, 5-4-83; Ord. _____, § 1, _____)

Sec. 14-85. - License—Required; Exceptions.

(a) It shall be unlawful for any person to conduct business as a mobile food vendor without a license having been issued pursuant to this chapter unless one of the following exceptions applies:
    (1) The mobile food vendor is approved by the sponsor of a special event and operates within a special event for which the sponsor has secured a special event permit. Organizers of these events shall be responsible for ensuring vendors have proper State of Kansas Sales Tax Licenses and Health Department Inspections.
    (2) The mobile food vendor is selling food and/or beverages in a farmers’ market registered with the Kansas Department of Agriculture and operating pursuant to that registration.
    (3) The mobile food vendor is providing catering services to a private event that is not open for the sale of food and/or beverage to the general public.
    (4) The mobile food vendor is operating within the Lyon County Fairgrounds, Emporia State University Property, or USD 253 Property with the permission of the property owner or governing body.

(b) Nothing herein shall limit the City’s authority to enforce applicable state or local laws.

(Ord. 83-13, § 1, 5-4-83 (Ord. 83-13, § 1, 5-4-83; Ord. _____, § 1, _____)

Sec. 14-86. - License—Application.

Any person desiring a license shall make application in writing and accompany the application with the required license fee. The application shall contain:

(a) Applicant's Current Driver's License or state issued Identification Card;
(b) The location and ownership of each place of business, or, if applicable, the location of any fixed or principal place of business;
(c) List and description of every mobile food unit to be used in the operation, including identification numbers and ownership;
(d) Proof of Current State of Kansas Health Department Inspection;
(e) Proof of Current State of Kansas Sales Tax License or Proof of Exempt Status from State Sales Tax;
(f) Proof of vehicle or unit insurance with minimum coverage of $500,000 combined single limit per occurrence for bodily injury and property damage and $1,000,000 general aggregate;
(g) Sketch or Drawing of Proposed Sales Site; and
(h) Name, Address, Telephone Number, and Written Permission of Property Owner or Property Owner's Agent for the Proposed Location (for private property location).

(Ord. 83-13, § 1, 5-4-83; Ord. _____, § 1, _____)

Sec. 14-87. - License—fees and term.

(a) The license fee for each mobile food vendor shall be fifty dollars ($50) for a one-month license or three hundred dollars ($300) for a one-year license. No license fee shall be charged for a mobile food vendor that exclusively sells farm or aquaculture products in compliance with K.S.A. 12-1617.
(b) Each one-month license shall expire on the last day of the licensed month; and each one-year license shall expire on December 31st of the licensed year. The full amount of the license fee shall be paid regardless of the time of the month or year in which the license is issued.

(Ord. 83-13, § 1, 5-4-83; Ord. _____, § 1, _____)

Sec. 14-88. - License—investigation of facilities and vehicles prerequisite for issuance.

(a) Upon filing of an application, the designated city official shall inspect the applicant's food storage and dispensing facilities, including each mobile food unit associated with the application. The following criteria shall be evaluated:
  (1) Compliance with State and local health regulations;
  (2) All plumbing utilities shall be portable and self-contained, with proper treatment and containment for greywater, grease, and wastewater holding and disposal.
  (3) All safety equipment must be up to date.

(4) Electrical or other utility connections must be safe and in compliance with electrical and applicable codes and regulations.
(5) All Mobile Food Units shall comply with the applicable provisions of the most current version of the International Fire Code, and any local amendments adopted by the City of Emporia.

(b) A license shall be issued after payment of the mobile food vendor required license fee and upon finding that all requirements have been met.

(Ord. 83-13, § 1, 5-4-83; Ord. _____, § 1, _____)

Sec. 14-89. - Reinspection of facilities and premises; unsatisfactory condition grounds for license revocation.

(a) The licensee's place of business and mobile food units shall be subject to periodic reinspection throughout the license period by designated city officials.
(b) If an unsatisfactory safety, sanitary, mechanical or operational condition is noted by an inspector, the licensee shall remedy the same within the time period specified by the inspecting official. Failure to remedy an unsatisfactory condition shall be cause for revocation of the applicable license.

(Ord. 83-13, § 1, 5-4-83; Ord. _____, § 1, _____)

Sec. 14-90. - Use of street, sidewalks and public property.

(a) Licensed mobile food vendors may operate mobile food units on private property with written permission of the property owner or property owner’s agent.
(b) Licensed mobile food vendors may operate mobile food units within certain public spaces as set forth in these regulations.
(c) Location:
(1) No mobile food unit shall be operated in a stationary location on public streets, alleys, or parking lots without prior written consent of the City.
(2) No mobile food unit shall be operated within or adjacent to a City park without a valid park reservation through the Park Reservation system.
(3) Non-motorized mobile food units including carts, wagons, or similar types of conveyance may operate on public sidewalks provided that;
i. The public sidewalk is located on or adjacent to property classified as a commercial or industrial parcel type.
ii. The mobile food unit does not obstruct access to any business, crosswalk, or ramp.
iii. Five (5) feet of clear sidewalk access is maintained for pedestrian travel.
iv. The mobile food unit is not located in front of or adjacent to another restaurant/food establishment in a manner that obstructs access or unreasonably interferes with its operation while said establishment is open for business.

v. The mobile food unit is not located within an approved sidewalk enhancement area operated by another entity.
vi. A mobile food unit shall not operate on a public sidewalk within the boundaries of a special event without approval of a special event permit holder.

(d) Maintenance:
(1) No extra storage trucks, trailers, sheds, or containers, shall be allowed to be located on site of venders' location.
(2) Vendor is responsible to keep the location clean and orderly, and provide trash/recycle receptacles, and to clean up all trash, litter, spills within a twenty-foot radius or apparent operating area, whichever is greater.
(3) One temporary sign is allowed and shall not block traffic or be placed in the public right-of-way.

(Ord. 83-13, § 1, 5-4-83; Ord. 86-20, § 1, 7-16-86; Ord. 91-4, § 1, 2-20-91; Ord. _____, § 1, _____)

Sec. 14-91. - Revocation of license; appeal.

Licenses issued hereunder may be revoked for any of the following reasons:

(a) If a licensee has fraudulently obtained the license by giving false information in the application therefor;
(b) If the licensee has violated any of the provisions of this article or any other ordinance or any law of the State relating to mobile food vendors;
(c) For the conviction of a felony offense or a misdemeanor offense directly related to the operation of a mobile food business or public safety;
(d) For conducting the business of the licensee in an unlawful manner or in a manner constituting a breach of the peace or a menace to the health, safety and general welfare of the public;
(e) For the conviction during the license period of more than two (2) traffic offenses arising from the operation of a mobile food unit or vendor vehicle;
(f) If the licensee has become ineligible to obtain a license under this article.

Any person aggrieved by the revocation of their license may appeal to the governing body within ten (10) days after notice of such revocation.

(Ord. 83-13, § 1, 5-4-83; Ord. _____, § 1, _____)

Sec. 14-92. - Penalty.

Any person, whether as principal, agent or employee, who violates or aids, abets or participates in the violation of the provisions of this article shall be guilty of a class C misdemeanor [1].

[1] Cross reference—See § 1-6 of this code.

(Ord. 83-13, § 1, 5-4-83; Ord. _____, § 1, _____)

Sec. 14-93. – Administration

Except as otherwise provided herein, the building and neighborhood development office shall administer, implement, and enforce the provisions of this article.