May 2024

Kansas Region K Hazard Mitigation Plan

Atchison County
Brown County
Doniphan County
Douglas County
Jackson County
Jefferson County
Marshall County
Nemaha County
Washington County

Prepared By:
Blue Umbrella Solutions

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List of Commonly Used Acronyms

Acronym	Meaning
ASCE	American Society of Civil Engineers
BRIC	Building Resilient Infrastructure and Communities
CDC	Centers for Disease Control and Prevention
CFR	Code of Federal Regulations
CRS	Community Rating System
DMA	Disaster Mitigation Act
EAL	Estimated Annual Loss
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
FMA	Flood Mitigation Assistance
GIS	Geographic Information System
HHPD	Rehabilitation Of High Hazard Potential Dam Grant Program
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
IBC	International Building Code
LEPC	Local Emergency Planning Committee
NCEI	National Centers for Environmental Information
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NRI	National Risk Index
NWS	National Weather Service
RAPT	Resilience Analysis and Planning Tool
RL	Repetitive Loss
SFHA	Special Flood Hazard Area
SHMO	State Hazard Mitigation Officer
MPC	Mitigation Planning Committee
SRL	Severe Repetitive Loss
STAPLEE	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	United States Geologic Survey
WUI	Wildland/Urban Interface

Section 1 – Introduction, Assurances, and Adoption

1.1 Introduction

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

This Multi-Jurisdictional Natural Hazard Mitigation Plan (HMP) was prepared to provide sustained actions to eliminate or reduce risk to people and property from the effects of natural and man-made hazards. This plan documents the Kansas Region K 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 2019 HMP
- Build for a safer future for all citizens
- Foster cooperation for planning and resiliency
- Identify, prioritize, and mitigate against hazards
- Assist with sensible and effective planning and budgeting
- Educate citizens about hazards, mitigation, and preparedness
- Comply with 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 HMP 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 201.4).

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.

1.3 Authorities

The HMP 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 Plan Adoption

Upon review and approved pending adoption status by FEMA Region VII, adoption resolutions will be signed by the participating jurisdictions. FEMA approval documentation may be found in Appendix A. Jurisdictional adoption resolutions may be found in Appendix B.

Administration and oversight of the hazard mitigation program is the responsibility of the Kansas Division of Emergency Management (KDEM) Mitigation Branch and local county Emergency Management Departments. 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 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. 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.
- Conduct a thorough review of all relevant current and historic planning efforts.
- Collect data on all related state plans and initiatives, local plans' hazard risk, local plans' mitigation strategies and actions, state owned facilities, 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.
- Conduct a review of all related and relevant state and local plans for integration and incorporation.
- Develop the planning and project management process, including methodology, review procedures, details about plan development changes, interagency coordination, planning integration, and the organization and contribution of stakeholders.
- Develop and update the profile of Kansas Region K.
- Complete a risk and vulnerability assessment using a Geographic Information System (GIS) driven approach 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 a comprehensive mitigation strategy effectively addressing Kansas Region K's hazards and mitigation program objectives. This included identifying state and local capabilities, reviewing pre and post disaster policies and programs, identifying objectives and goals, identifying mitigation actions and projects, and assessing mitigation actions and projects.
- Determination and implementation of a plan maintenance cycle, including a timeline for plan upgrades and improvements.
- Submission of the plan to FEMA for review and approval.

2.2 Hazard Mitigation Planning Equity

Planning equity refers to the principle of fairness and justice in planning and development processes. It emphasizes the equitable distribution of resources, opportunities, and benefits among all members of a community, particularly those who have historically been marginalized or disadvantaged. The concept of planning equity recognizes that planning decisions can have significant impacts on different groups of people and aims to ensure that these decisions promote social justice and inclusivity. It involves addressing spatial inequalities, such as disparities in access to housing, transportation, public services, green spaces, and employment opportunities.

Planning equity entails involving diverse stakeholders in decision-making processes, including community members, advocacy groups, and underrepresented populations. It seeks to empower marginalized communities by giving them a voice in shaping the development and planning policies that directly affect their lives.

Planning equity and hazard mitigation planning are closely related, as both aim to create more resilient and inclusive communities. As part of this planning effort, the following intersections were considered between planning equity and hazard mitigation planning:

- Vulnerability assessment: Planning equity recognizes that certain communities, particularly marginalized and disadvantaged populations, may be more vulnerable to hazards due to social, economic, and environmental factors. When conducting a vulnerability assessment as part of hazard mitigation planning, it is important to consider equity issues and identify areas or groups that may experience disproportionate impacts.
- Engaging marginalized communities: Planning equity emphasizes the inclusion and participation of diverse stakeholders, including marginalized communities, in decision-making processes. In hazard mitigation planning

it is crucial to engage these communities to understand their unique needs, concerns, and perspectives regarding hazards.

- Addressing social disparities: Hazard mitigation planning can help address social disparities by considering the unequal distribution of resources and opportunities in the context of hazards. This can involve implementing mitigation measures that specifically target vulnerable populations, such as affordable housing in safer areas or improved access to emergency services and transportation for underserved communities.
- Equitable distribution of resources: Planning equity promotes the equitable distribution of resources, and this principle can be applied to hazard mitigation planning. It involves ensuring that mitigation measures and investments are allocated fairly, with consideration given to communities that have historically received less attention or investment. This can help reduce existing disparities and enhance the resilience of marginalized communities.

By integrating planning equity into hazard mitigation planning, it becomes possible to develop strategies and actions that not only reduce the risks associated with hazards but also promote social justice, inclusivity, and resilience for all members of the community.

As part of this planning process, the MPC considered potential inequities within the region and encouraged the participation of potentially vulnerable citizens and communities. This process began with recognizing that disparities exist within the region, including health outcomes and living conditions for people of color, people with disabilities, and historically disadvantaged communities. It was recognized that these populations may be at greater risk to the hazards identified in this plan and may be limited in their ability to adapt, respond, and recover if an event were to occur.

2.3 2024 Plan Update

In undertaking this planning effort, the KDEM 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 2019 HMP. 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 and revised based on current and available data. The plan was reviewed and revised 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 2019 HMP was reviewed and 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. Additionally, during this process, and after a thorough review and discussion with all stakeholders, it was determined that the priorities of the Kansas Region K in relation to hazard mitigation planning have not changed during the five years of the previous planning cycle.

The Kansas Region K HMP review and revision process began in August 2023, with the first public meeting held in August 2023. The following chart indicates the planning stages completed as part of this process:

Chart 1: Project Planning Stages

2.4 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.

- **Kansas Region K 2019 Multi-Jurisdictional Natural Hazard Mitigation Plan**
  The previous HMP has been reviewed and is incorporated throughout this plan per FEMA requirements.
- **Jurisdictional Comprehensive Plans**
  These plan, 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.
- **Participating Jurisdictions Master and/or Comprehensive Plans:**
  These plans, as available, help jurisdictions set policies that help 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.
- **Participating Jurisdiction Critical Facilities List**
  The MPC compiled a list of critical facilities and pertinent information on those facilities. This list is used throughout the plan and is the basis for the vulnerability assessments and loss estimates. The complete list is posted in Appendix E.
- **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.
- **State of Kansas Hazard Mitigation Plan**
  The State of Kansas Hazard Mitigation Plan is intended 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.
- **Participating Jurisdiction Planning and Zoning Documents and Ordinances**
  These documents were reviewed, assessed, and cataloged to compile each participating jurisdiction's capabilities.

2.5 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:

- **Kansas Emergency Operations Plan Mapping Program:** Assisted with the development of maps for this plan.
- **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.
- **National Oceanic and Atmospheric Administration (NOAA)/National Centers for Environmental Information (NCEI):** Weather data and historical events were primarily provided by NCEI.
- **U.S. Army Corps of Engineers (USACE):** Levee and flood control data.
- **U.S. Department of Agriculture (USDA):** Drought and agricultural data.
- **U.S. Geological Survey:** Geologic hazard occurrence and probability data.
- **National Weather Service (NWS):** Storm event occurrence and probability data.

2.6 Mitigation Planning Committee

Project initiation began with the selection of a Mitigation Planning Committee (MPC), consisting of each participating county emergency manager from Kansas Region K and KDEM Mitigation Branch staff. 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 as part of the MPC, KDEM 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 1: MPC Members

County	Representative	Title
Atchison County	Corey Scott	Emergency Manager
Brown County	Don Pounds	Emergency Manager
Doniphan County	Julie Meng	Emergency Manager
Douglas County	Robert Bieniecki	Emergency Manager
Jackson County	Pat Korte	Emergency Manager
Jefferson County	Keith Jeffers	Emergency Manager
Marshall County	Bill Schwindamann	Emergency Manager

Table 1: MPC Members

County	Representative	Title
Nemaha County	Eddie Aldrine	Emergency Manager
Washington County	Randy Hubbard	Emergency Manager
KDEM	Stephanie Goodman	State Hazard Mitigation Officer
KDEM	Mike Ahlf	Mitigation Planner
KDEM	Terry Kegin	KDEM Regional Coordinator
KDEM	JD Mersman	KDEM Regional Coordinator

Repeated outreach efforts were made to equity partners extending opportunities to have a representative on the MPC. No answer was received.

2.7 Stakeholders

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

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

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

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

Table 2: Plan Stakeholders

Jurisdiction	Planning Engagement	Name	Title
Atchison County	**x**	**James Stuart**	**Emergency Manager**
City of Atchison	x	Tina Fitzpatrick	City Clerk
City of Effingham	x	Janet Eckert	City Clerk
City of Huron	x	Harvey Fasse	Mayor
City of Lancaster	x	Tim Callahan	Mayor
City of Muscotah	x	Brian Higley	Mayor
USD #377 - Atchison County	x	Dr. Andrew Gaddis	Superintendent
USD #409 - Atchison	x	Renee Nugent	Superintendent
Evergy	x	Tisha Johnson	Emergency Response Manager
Brown County	**x**	Don Pounds	Emergency Manager
City of Everest	x	Jeanne Frakes	City Clerk
City of Fairview	x	Art Vonderschmidt	Mayor
City of Hamlin	x	Michael Dyke	Mayor
City of Hiawatha	x	Becky Berger	City Administrator
City of Horton	x	Kimberly Knudson	City Clerk
City of Morrill	x	Linda Hill	City Clerk
City of Powhattan	x	Jim Foster	Mayor
City of Reserve	x	City Clerk	Linda Grimm
City of Robinson	x	City Clerk	Macy Bryant
City of Willis	x	City Clerk	Linda Grimm
USD #415 - Hiawatha	x	Superintendent	Lonnie Moser
USD #430 - Horton	x	Superintendent	Rebecca Kramer

Table 2: Plan Stakeholders

Jurisdiction	Planning Engagement	Name	Title
Evergy	x	Tisha Johnson	Emergency Response Manager
Doniphan County	**x**	Julie Meng	Emergency Manager
City of Elwood	x	Pam King	City Clerk
City of Troy	x	Jim Richardson	City Clerk
City of Wathena	x	Tammy Bembrick	City Clerk
USD #111 – Doniphan West	x	Joann Karn	City Clerk
USD #429 - Troy	x	Dr. Volora Hanzlicek	Superintendent
Evergy	x	Tisha Johnson	Emergency Response Manager
Douglas County	**x**	Robert Bieniecki	Emergency Manager
City of Baldwin City	x	Mike Pattrick	Chief of Police
City of Eudora	x	Midy Andrasevits	Fire Chief
City of Lawrence	x	Rich Llewellyn	Fire Chief
City of Lecompton	x	Lynley Sanford	City Clerk
Clinton Township		Matt Fishburn,	Trustee
Eudora Township	x	Jim Gabriel	Trustee
Kanawaka Township	x	David Wulfkuhle	Trustee
Lecompton Township	x	Ed Daniels	Trustee
Palmyra Township	x	Don Towns	Trustee
Wakarusa Township	x	Charles Taylor	Trustee
Willow Springs Township	x	Tim Horne	Trustee
Baker University	x	Dr. Lynne Murray	President
University of Kansas	x	John Stipetich	EM Specialist
USD #343 - Perry / Lecompton	x	J.B. Elliott	Superintendent
USD #348 - Baldwin City	x	Mark Dodge	Superintendent
USD #491 - Eudora	x	Stuart Moeckel	Superintendent
USD #497 - Lawrence	x	Anthony Lewis	Superintendent
Palmyra Fire District #2	x	Mike Hirschmann	Fire Chief
Willow Springs Fire District #3	x	Lyle Bowlin	Fire Chief
Rural Water District #2	x	Tyler Flory	Manager
Rural Water District #5	x	Matt Fishburn	Manager
Lawrence Memorial Hospital	x	Russ Johnson	President
Evergy	x	Tisha Johnson	Emergency Response Manager
Jackson County	**x**	Pat Korte	Emergency Manager
City of Circleville	x	Mike Hare	Mayor
City of Delia	x	Don Trimble	Mayor
City of Denison	x	Bruce Sweany	Mayor
City of Holton	x	Teresa Riley	City Manager
City of Hoyt	x	Robert Bell	Mayor
City of Mayetta	x	Darrel Chapman	Mayor
City of Netawaka	x	Jon Banaka	Mayor
City of Soldier	x	Aaron Jones	Mayor
City of Whiting	x	Loren Lind	Mayor
USD #335 - North Jackson	x	Jim Howard	Superintendent
USD #336 - Holton	x	Bob Davies	Superintendent
USD #337 - Royal Valley	x	Aaric Davis	Superintendent
RWD #3	x	Brenda Adkins	General Manager
PWWFD #18	x	Teresa Riley	General Manager
Blue Stem Electric Coop	x	Trisha Bradley	Manager of Finance
Evergy	x	Tisha Johnson	Emergency Response Manager
Nemaha Marshall Electric Coop	x	Kathleen O'Brien	Manager
Jefferson County	**x**	Keith Jeffers	Emergency Manager
City of McLouth	x	Kim Everley	City Administrator/Council
City of Meriden	x	Carrie Daniels	City Clerk

Table 2: Plan Stakeholders

Jurisdiction	Planning Engagement	Name	Title
City of Nortonville	x	Ray Brown	City Mayor
City of Oskaloosa	x	John Norman	City Mayor
City of Ozawkie	x	Loren Lutz	City Mayor
City of Perry	x	Ramon Gonzalez	City Mayor
City of Valley Falls	x	Wes Lanter	City Administrator
City of Winchester	x	Jared Pemberton	City Mayor
Lakeside Village Improvement District	x	Elaine Busher	Clerk
Lake Shore Estates Improvement District	x	Marvin Kopp	President
Lakewood Hills Improvement District	x	Christopher Cain	President
USD #338 – Valley Falls	x	John Hamon	Superintendent
USD #339 - Jefferson County North	x	Dr. Brad Kempf	Superintendent
USD #340 - Jefferson West	x	Brad Neuenswander	Superintendent
USD #341 – Oskaloosa	x	Daniel Wessel	Superintendent
USD #342 – McLouth	x	Jerome Johnson	Superintendent
USD #343 - Perry / Lecompton	x	JB Elliott	Superintendent
Jefferson RWD 1	x	Rodney Bigham	Chairman
Jefferson RWD 2	x	Charles Bowen	Operations Manager
Jefferson RWD 3	x	Terry Broxterman	Chairman
Jefferson RWD 7	x	Mike George	Operations Manager
Jefferson RWD 9	x	Mike George	Operations Manager
Jefferson RWD 10	x	Harold Courter	Chairman
Jefferson RWD 11	x	Phil Engelhardt	Chairman
Jefferson RWD 12	x	Jeffrey Logan	Chairman
Jefferson RWD 13	x	Joe Osborn	District Manager
Jefferson RWD 15	x	Rodney Bigham	Operations Manager
Evergy	x	Tisha Johnson	Emergency Response Manager
FreeState Electric Co-op	x	Sarah Farlee	Communications Manager
Marshall County	**x**	Bill Schwindamann	Emergency Manager
City of Axtell	x	Wynn Buessing	Mayor
City of Beattie	x	Rob Olmsted	Mayor
City of Blue Rapids	x	Jerry Zayas	Mayor
City of Frankfort	x	Brian Smith	Mayor
City of Marysville	x	Todd Frye	Mayor
City of Oketo	x	Larry Novotny	Mayor
City of Summerfield	x	Bruce Mitchell	Mayor
City of Vermillion	x	Russell Ogg	Mayor
City of Waterville	x	Rich Atchison	Mayor
Good Shepherd School	x	Mr. Kyle Erickson	Principal
St. Gregory School	x	Mrs. Karen Farrell	Principal
USD #113 - Prairie Hills	x	Todd Evans	Superintendent
USD #364 - Marysville	x	Darren Schroeder	Superintendent
USD #380 - Vermillion	x	Joel Bickford	Superintendent
USD #498 - Valley Heights	x	Sean Spoonts	Superintendent
Blue Stem Electric Coop	x	Mike Morton	General Manager
Evergy	x	Tisha Johnson	Emergency Response Manager
Nemaha Marshall Electric Coop	x	Kathleen O'Brien	Manager
Prairie Land Electric Coop	x	Elena Larson	General Manager
Nemaha County	**x**	Eddie Aldrine	Emergency Manager
City of Bern	x	Dallas Wood	Mayor
City of Centralia	x	Janel Huninghake	City Clerk
City of Corning	x	Diane Haverkamp	City Clerk
City of Goff	x	Paula Meggison	City Clerk
City of Oneida	x	Jason Steiner	City Clerk
City of Sabetha	x	Doug Allen	City Administrator

Table 2: Plan Stakeholders

Jurisdiction	Planning Engagement	Name	Title
City of Seneca	x	Steve Brooks	City Administrator
City of Wetmore	x	Mike Clowe	City Clerk
Saints Peter and Paul School	x	Todd Leonard	Principal
USD #113 - Prairie Hills	x	Todd Evans	Superintendent
USD #115 - Nemaha Central	x	Tavis Desormiers	Superintendent
USD #380 - Vermillion	x	Dean Dallinghaus	Superintendent
Rural Water District #1	x	Robert Myers	Manager
RWD #3	x	Jeff Stallbaumer	Manager
RWD #4	x	Tonia Evans	Manager
Evergy	x	Tisha Johnson	Emergency Response Manager
Nemaha Marshall Electric Coop	x	Kathy O'Brien	General Manager
Washington County	**x**	**Randy Hubbard**	**Emergency Manager**
City of Barnes	x	Laura Oentrich	City Clerk
City of Clifton	x	Danielle Detrixhe	City Clerk
City of Greenleaf	x	Wanda Uffman	City Clerk
City of Haddam	x	Cheryl Zenger	City Clerk
City of Hanover	x	Katlin Bruna	City Clerk
City of Hollenberg	x	Sandra Clay	City Clerk
City of Linn	x	Alison Meyer	City Clerk
City of Mahaska	x	Peggy Galloway	City Clerk
City of Morrowville	x	Connie Delay	City Clerk
City of Palmer	x	Kadie Voelker	City Clerk
City of Vining	x	Jacqueline Koch	City Clerk
City of Washington	x	Denise M Powell	City Clerk
USD #108 - Washington County	x	Denise O'Dea	Superintendent
USD #223 - Barnes / Hanover / Douglas	x	Lee Schmidt	Superintendent
USD #224 – Clifton/Clyde	x	Art Baker	Superintendent
Blue Stem Electric Coop	x	Mike Morton	General Manager
Nemaha Marshall Electric Coop	x	Kathy O'Brien	General Manager
Rolling Hills Electric	x	Jason Rabe	General Manager

The Kansas Region K MPC provided the opportunity for additional HMP stakeholders, including jurisdictional National Flood Insurance Program (NFIP) coordinators, agencies involved in regulating and overseeing development, neighboring communities, agencies, businesses, academia, non-profits, underserved or marginalized communities, and other interested parties to be involved in the mitigation planning process. Stakeholders were notified of the process through direct communication with the Kansas Region K MPC members, who were provided with details on who to invite at the beginning of the planning process, jurisdictional website notices, and advertisements on social media.

As recommended in FEMA's "Guide to Expanding Mitigation" Kansas Region K took a whole community approach to this planning effort, including:

- Inviting historically underserved populations to participate in the planning and decision-making processes.
- Inviting faith based and community organizations, nonprofit groups, schools, academia, and tribal partners to be plan stakeholders.

As indicated in the above stakeholder list, success was had in engaging faith-based organizations, particularly religious schools, Unified School Districts, and universities. No tribal organizations identified in this region elected to participate, preferring to create their own stand-alone plans.

Local building departments played a critical role in creating and reviewing this HMP. Their expertise was used to help identify local vulnerabilities and develop building-related mitigation measures (please see section 5.3)

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 (please see Section 5.4).

2.8 Community Outreach

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

- Advertised meeting invitations
- Comment period upon completion of draft plan
- Online survey

Experience has indicated that public meetings, no matter how well advertised, generally do not generate either participation or interest in the planning process. Even so, three open meetings were held at an easily accessible community locations. To help generate community interest and participation, a parallel online outreach strategy was undertaken. An online HMP survey was created, the Kansas Region K Hazard Mitigation Plan Update Survey. This online survey portal allowed community members to provide feedback and input on the HMP update using a series of guided questions and open comment fields. Community members commented through this survey, and these comments are both incorporated in this HMP and are included in Appendix B

Input from the general public provided the MPC with a clearer understanding of local concerns, increased the likelihood of citizen buy-in concerning proposed mitigation actions, and provided elected officials with a guide and tool to set regional ordinances and regulations. Additionally, as citizens were made more aware of potential hazards and the local process to mitigation against their impacts, it was believed that they would take a stronger role in making their homes, neighborhoods, schools, and businesses safer from the potential effects of natural hazards.

2.9 Planning Meetings

Three in-person meetings were conducted for the 2024 HMP update. All of the meetings were held in a publicly accessible location 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.

- **HMP Update Kick-Off and Public Information Meeting – November 16, 2023:** Kansas Region K hosted a kick-off meeting for the MPC, stakeholders, and the public. At the meeting, MPC members, plan stakeholders, and the public were invited to voice any concerns, ask questions, and provide input on the mitigation plan update. Additionally, MPC members were tasked with collecting contact information, hazard history, facility information, and other pertinent information from participating jurisdictions.
- **HMP Plan Review, Capability Review, and Mitigation Strategy Review Meeting – March 13, 2023:** Kansas Region K hosted two mid-term planning meetings for the MPC, jurisdictional representatives, and members of the public. Attendees met to review and revise, as necessary, the region's hazards list and vulnerability assessment. MPC members also reviewed the proposed and revised mitigation strategy to ensure it was in-line with the current planning environment.
- **HMP Update Final Review Meeting – TBD:** Kansas Region K hosted a public final plan review meeting for the MPC, stakeholders, and the public. At the meeting, MPC members, jurisdictional representatives, plan stakeholders, and the public were invited to voice any 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 HMP update posted to jurisdictional and county websites for two weeks prior to the final meeting, and prior to its submission to FEMA Region VII.

Additionally, there were monthly situation reports provided to the State Hazard Mitigation Officer (SHMO) to provide updates concerning the phases of plan development.

Section 3 – Regional Profile and Development Trends

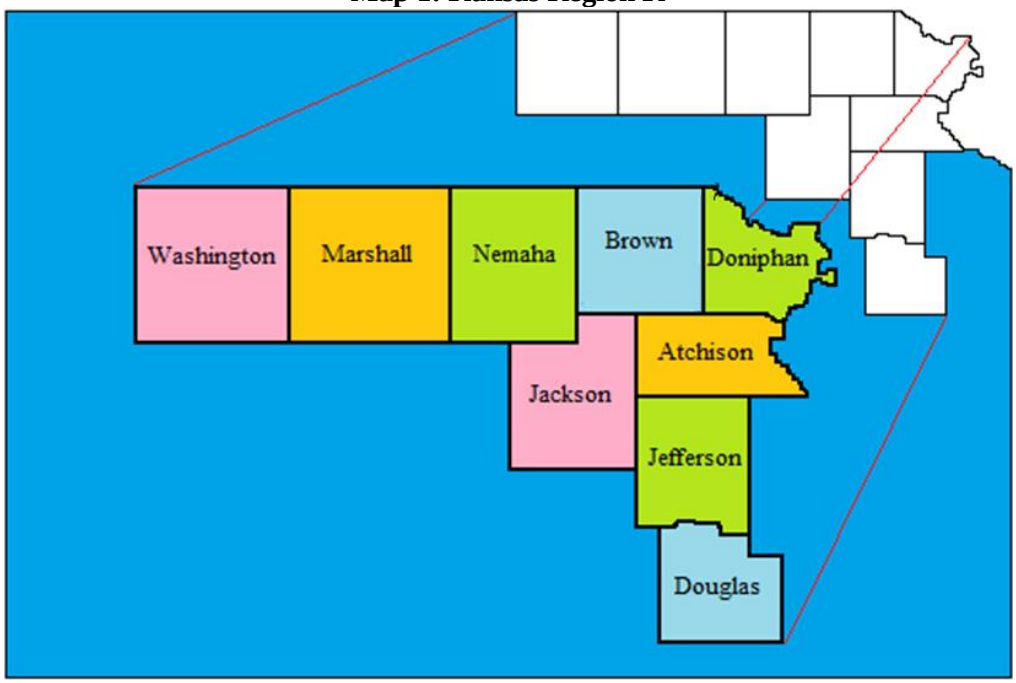
3.1 Introduction

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 the region on a local level basis. This data will then be used to determine and refine potential hazard vulnerability in succeeding sections.

3.2 Regional Maps

The following map details the locations of Kansas Region K relative to the State of Kansas:

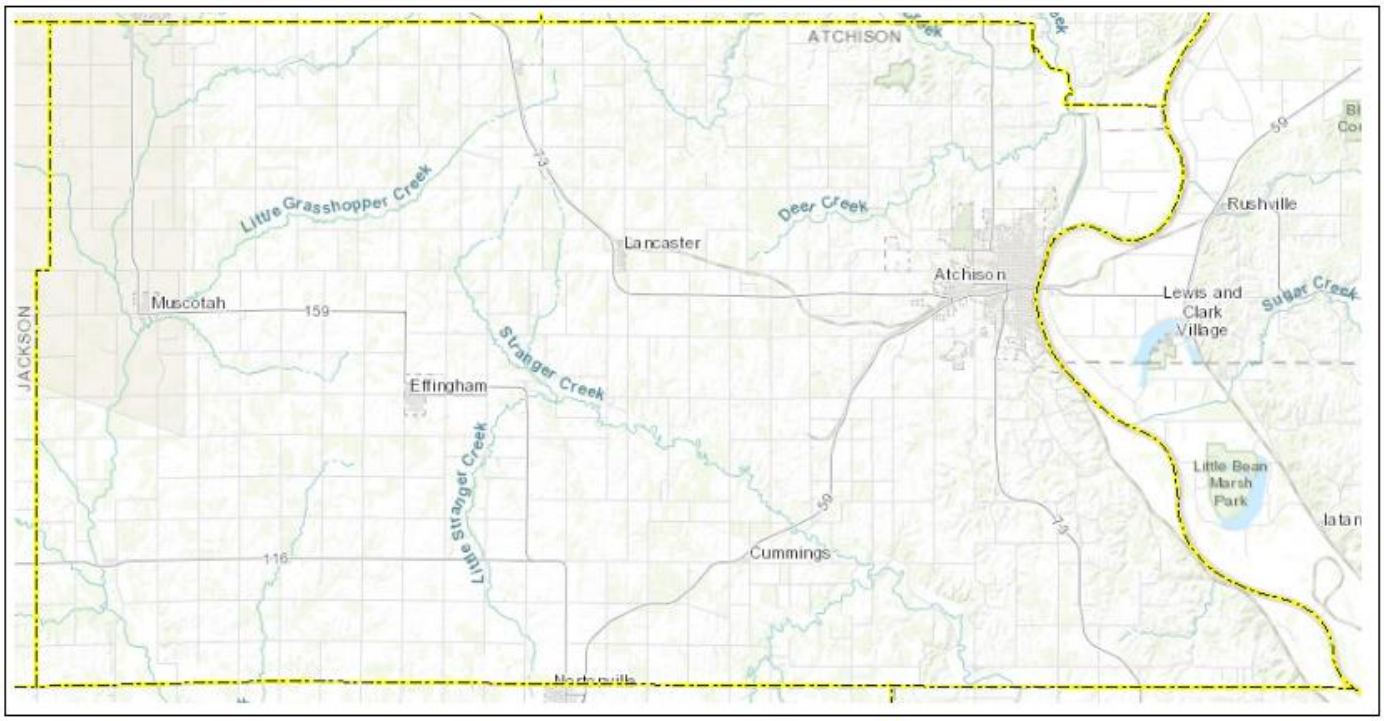
Map 1: Kansas Region K



Source: KDEM

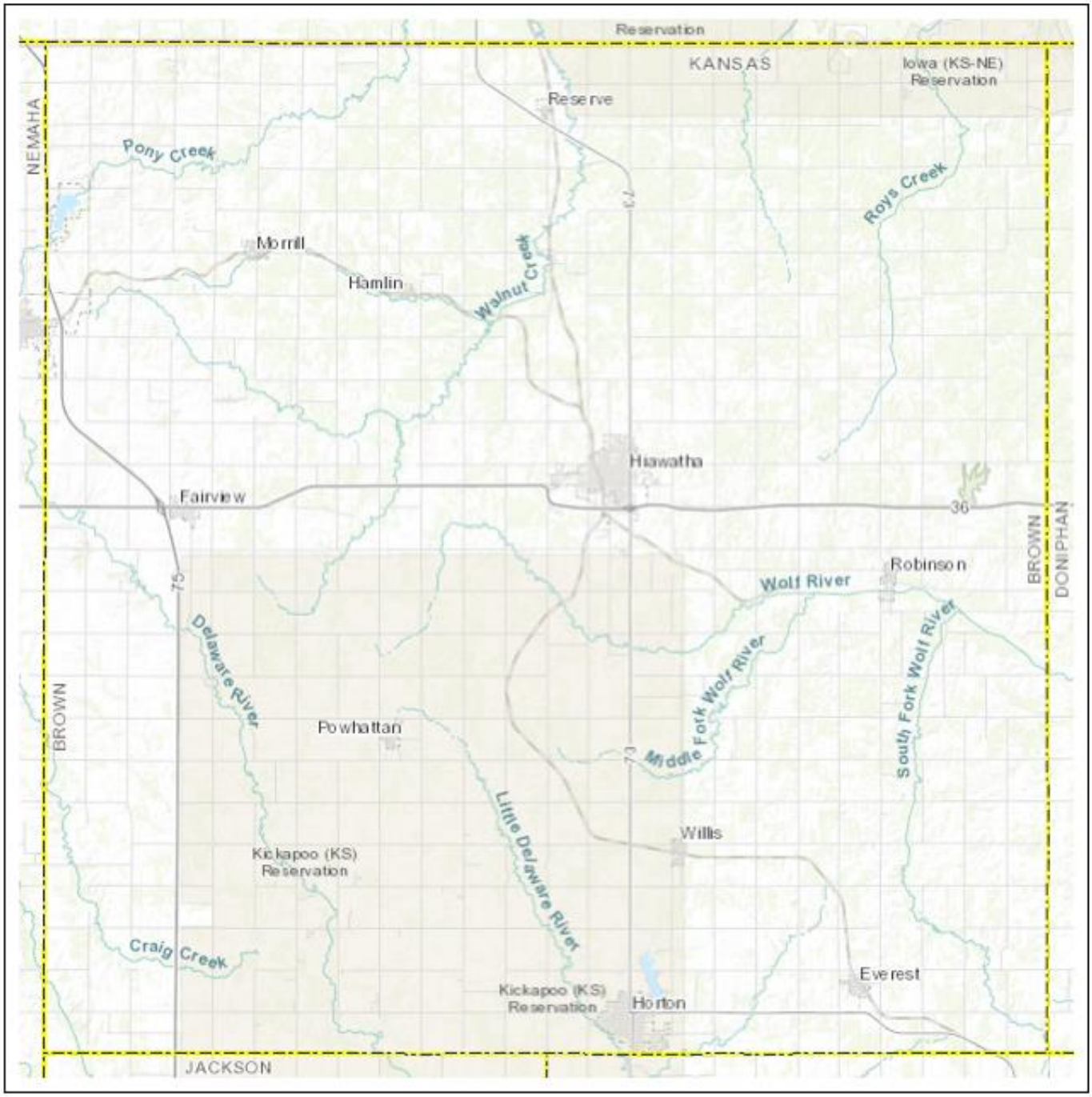
The following maps, provided by the Kansas Department of Transportation, provide county level detail**:**

Map 2: Atchison County



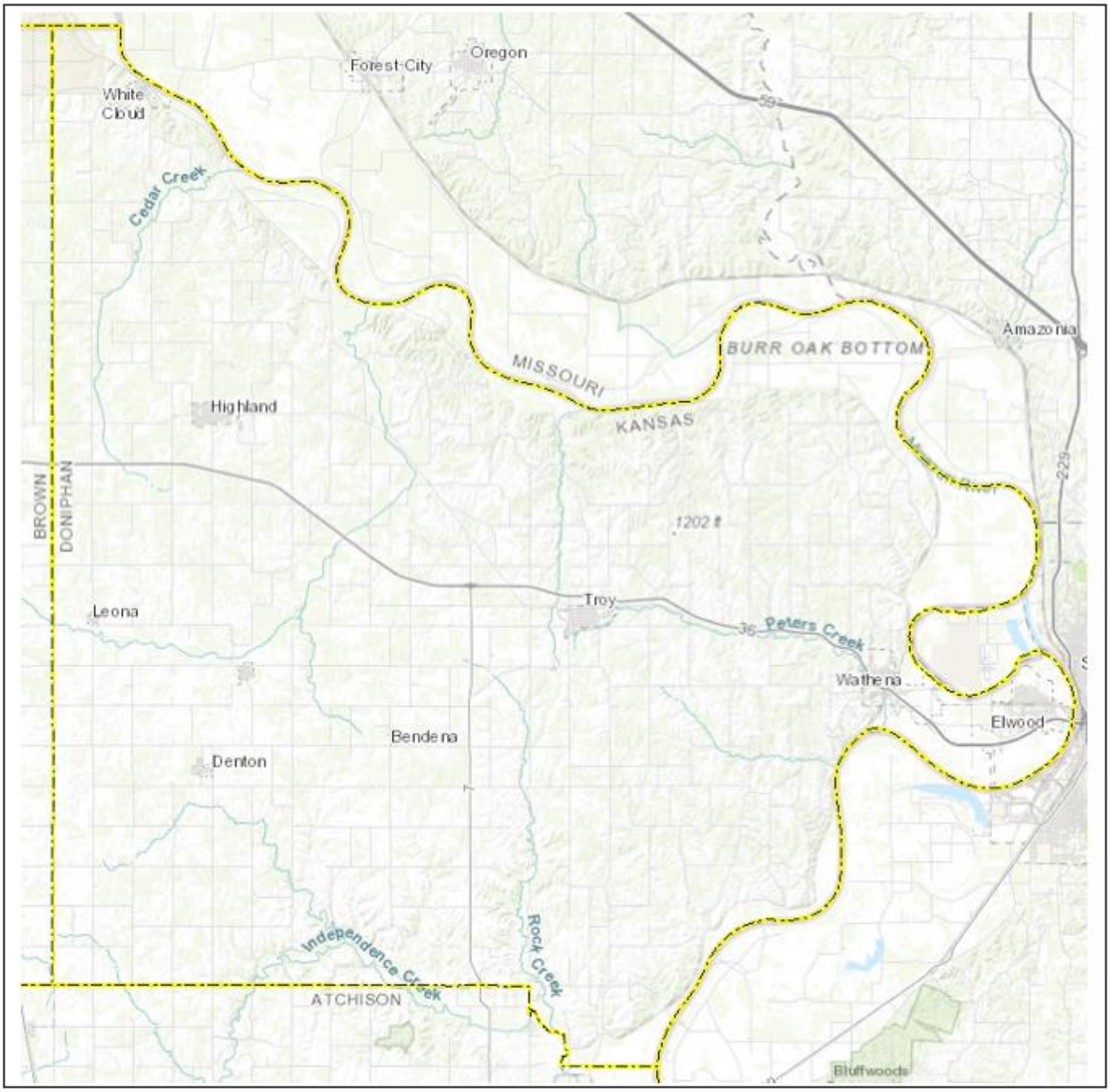
Source: Kansas Department of Transportation

Map 3: Brown County



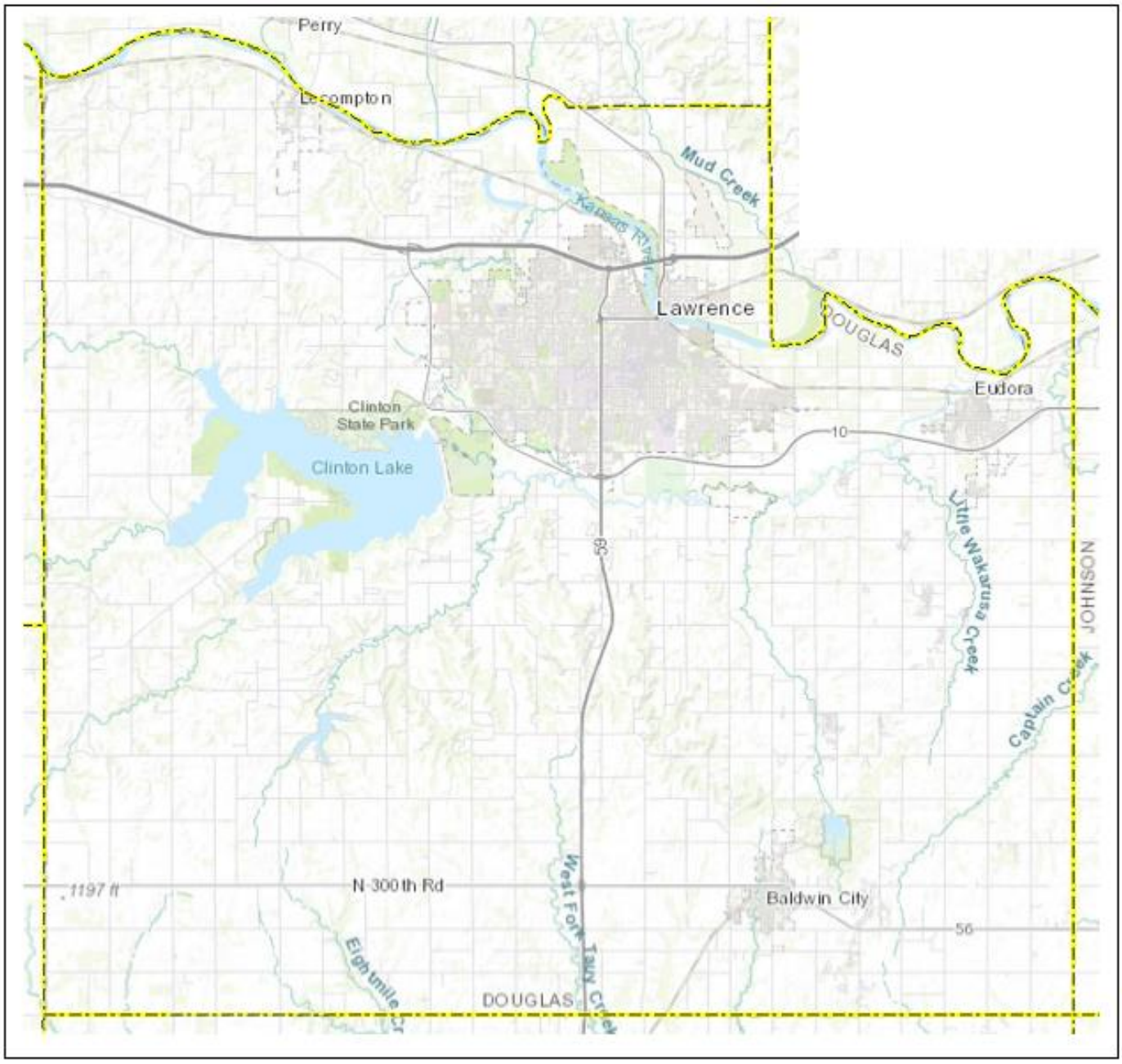
Source: Kansas Department of Transportation

Map 4: Doniphan County



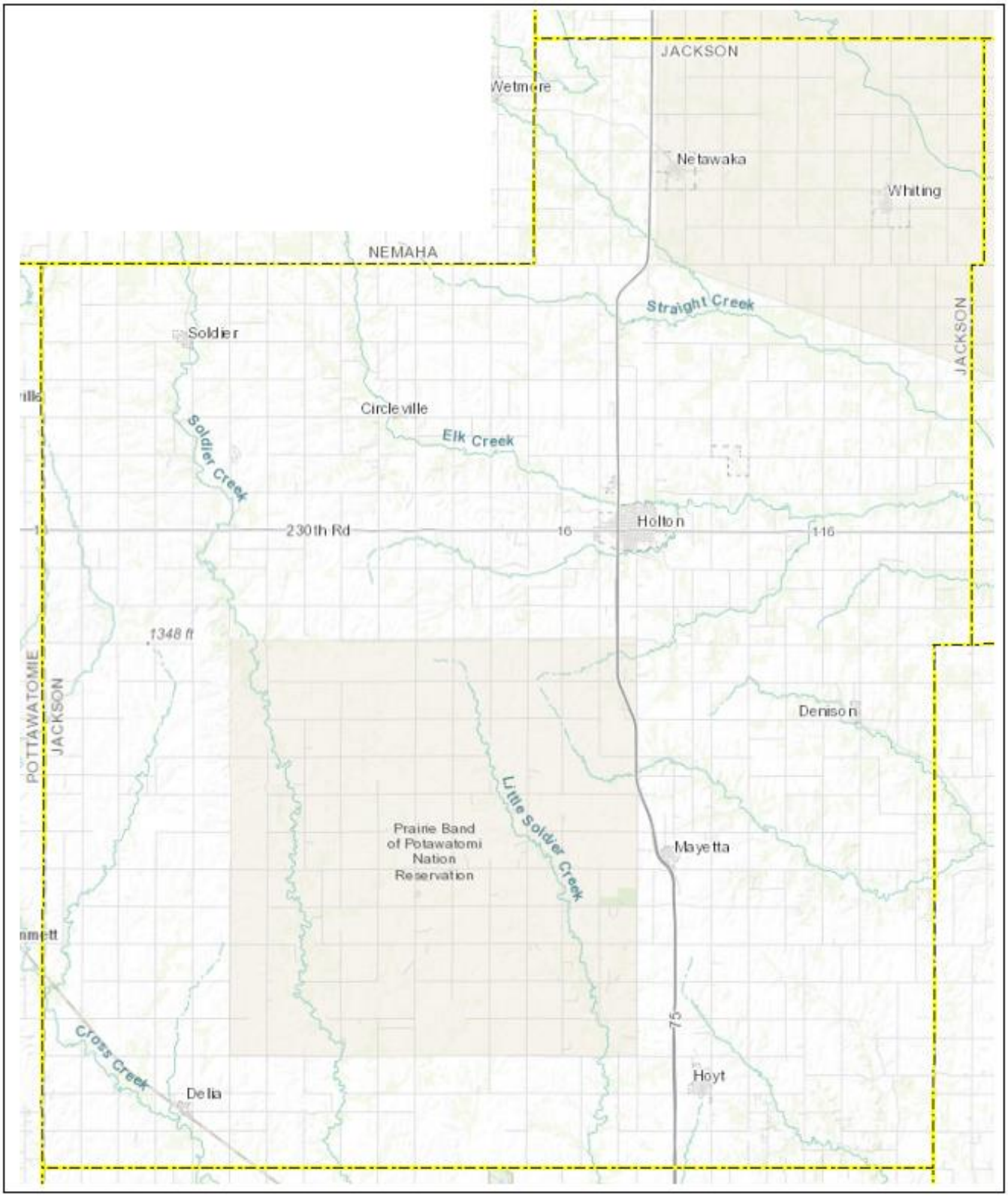
Source: Kansas Department of Transportation

Map 5: Douglas County



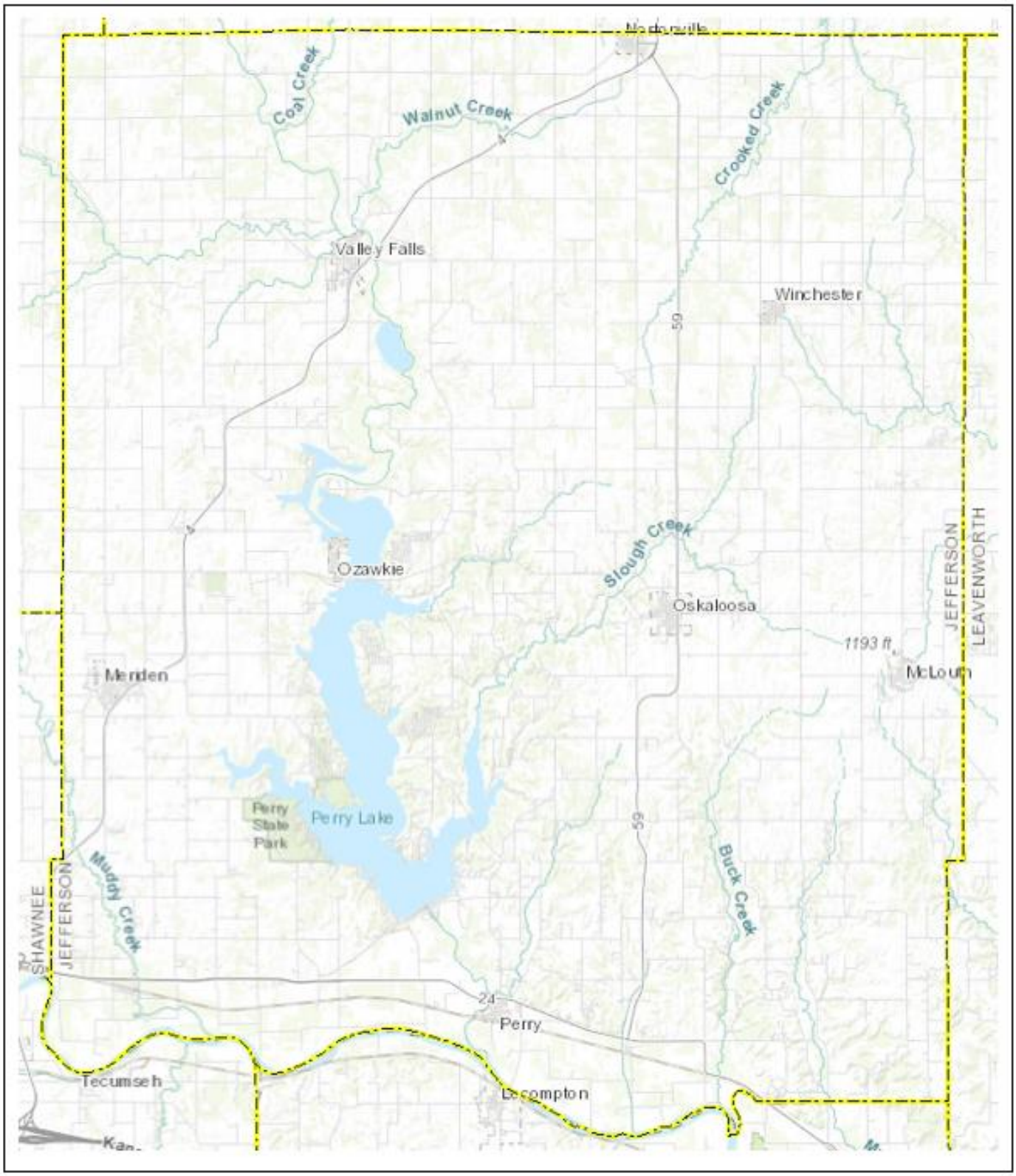
Source: Kansas Department of Transportation

Map 6: Jackson County



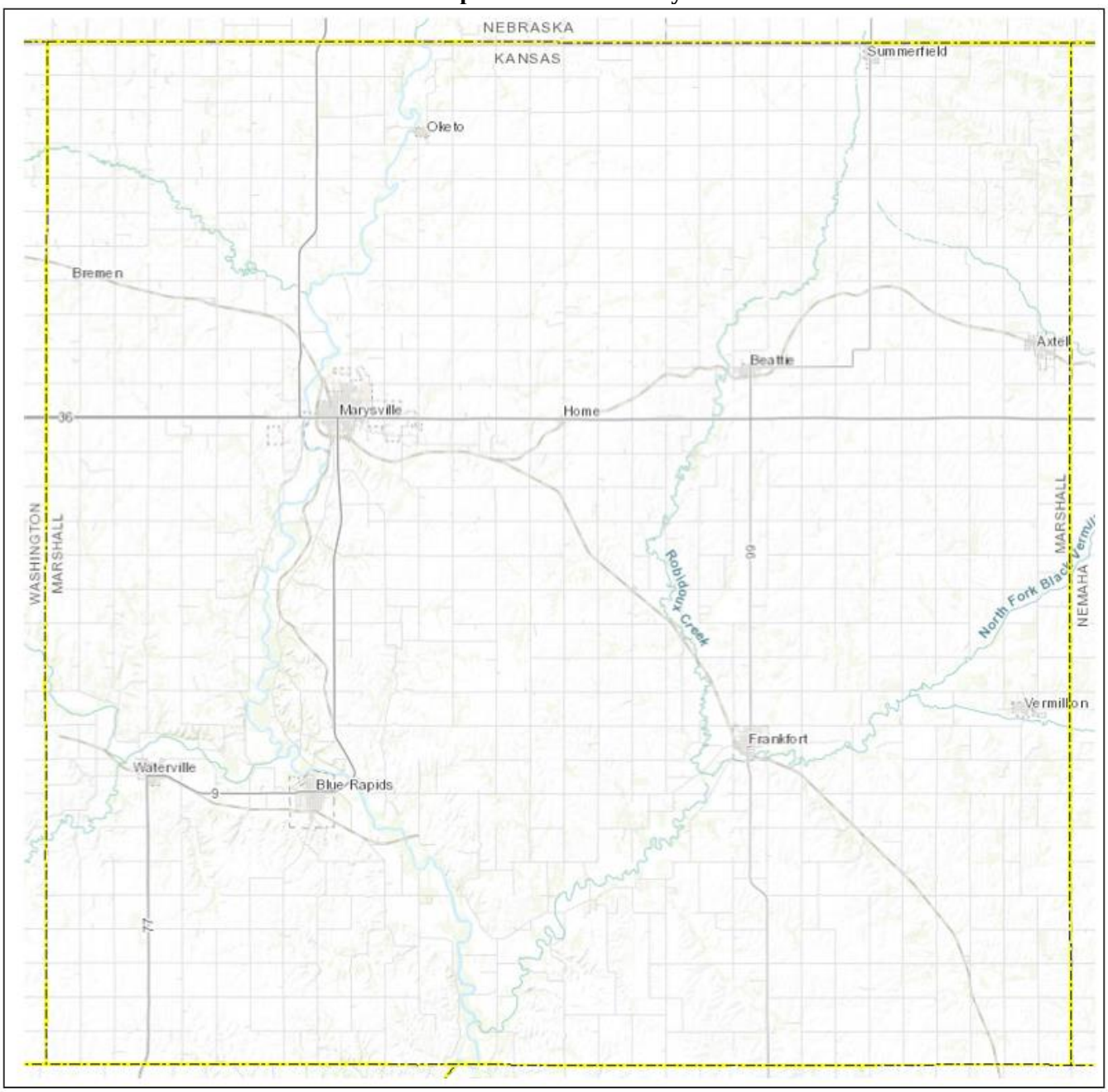
Source: Kansas Department of Transportation

Map 7: Jefferson County



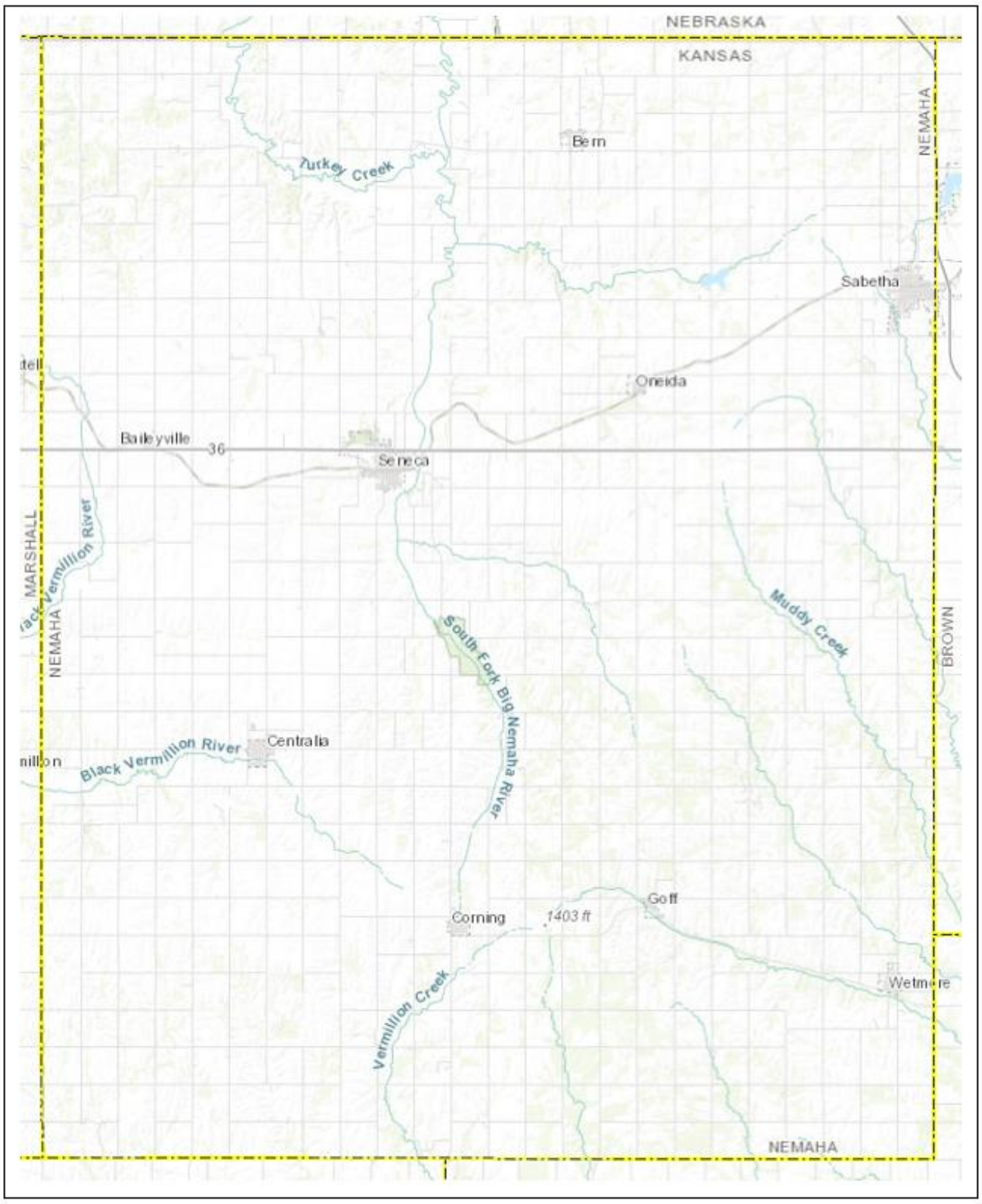
Source: Kansas Department of Transportation

Map 8: Marshall County



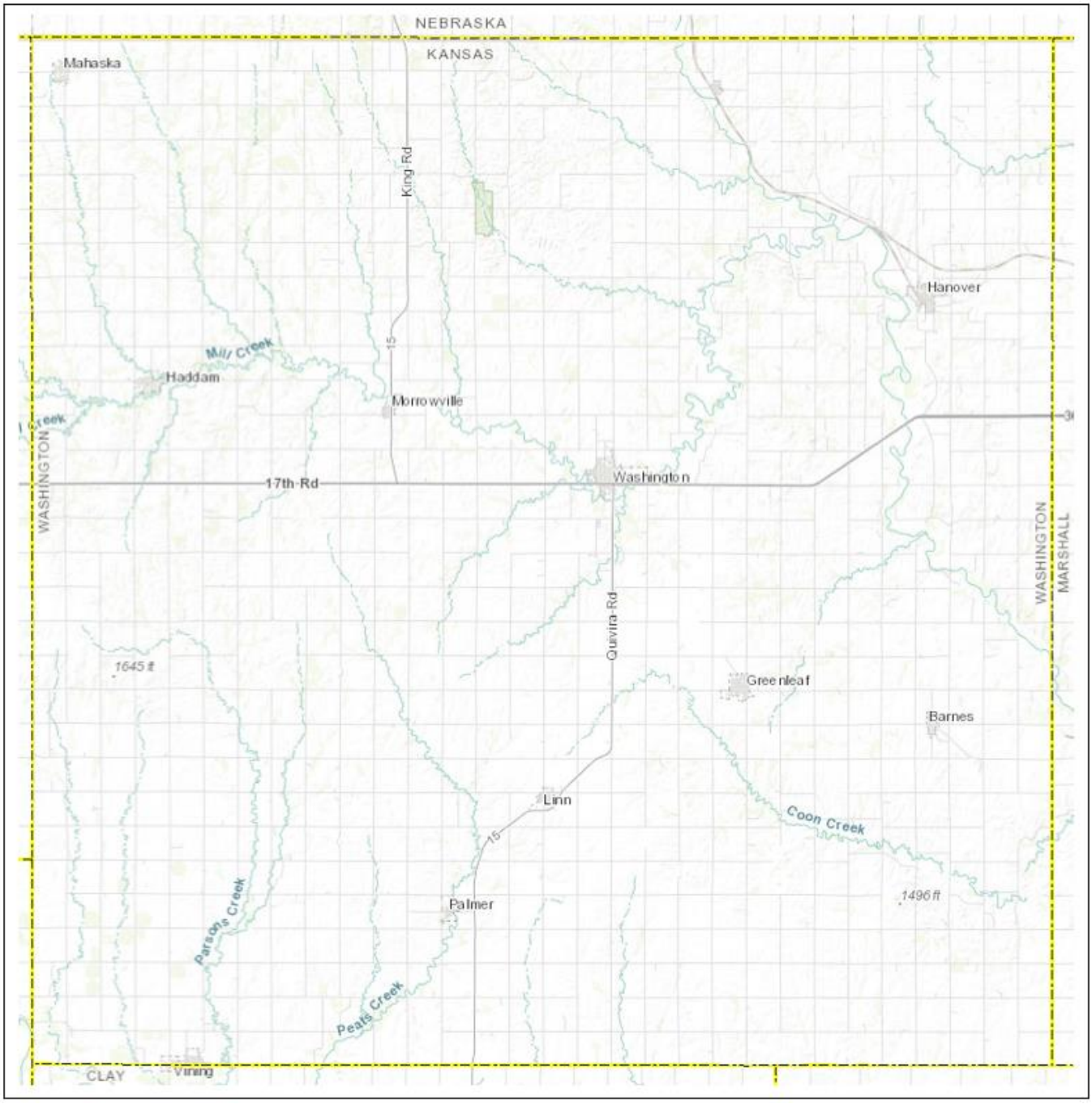
Source: Kansas Department of Transportation

Map 9: Nemaha County



Source: Kansas Department of Transportation

Map 10: Washington County



Source: Kansas Department of Transportation

3.3 Regional Population Trends

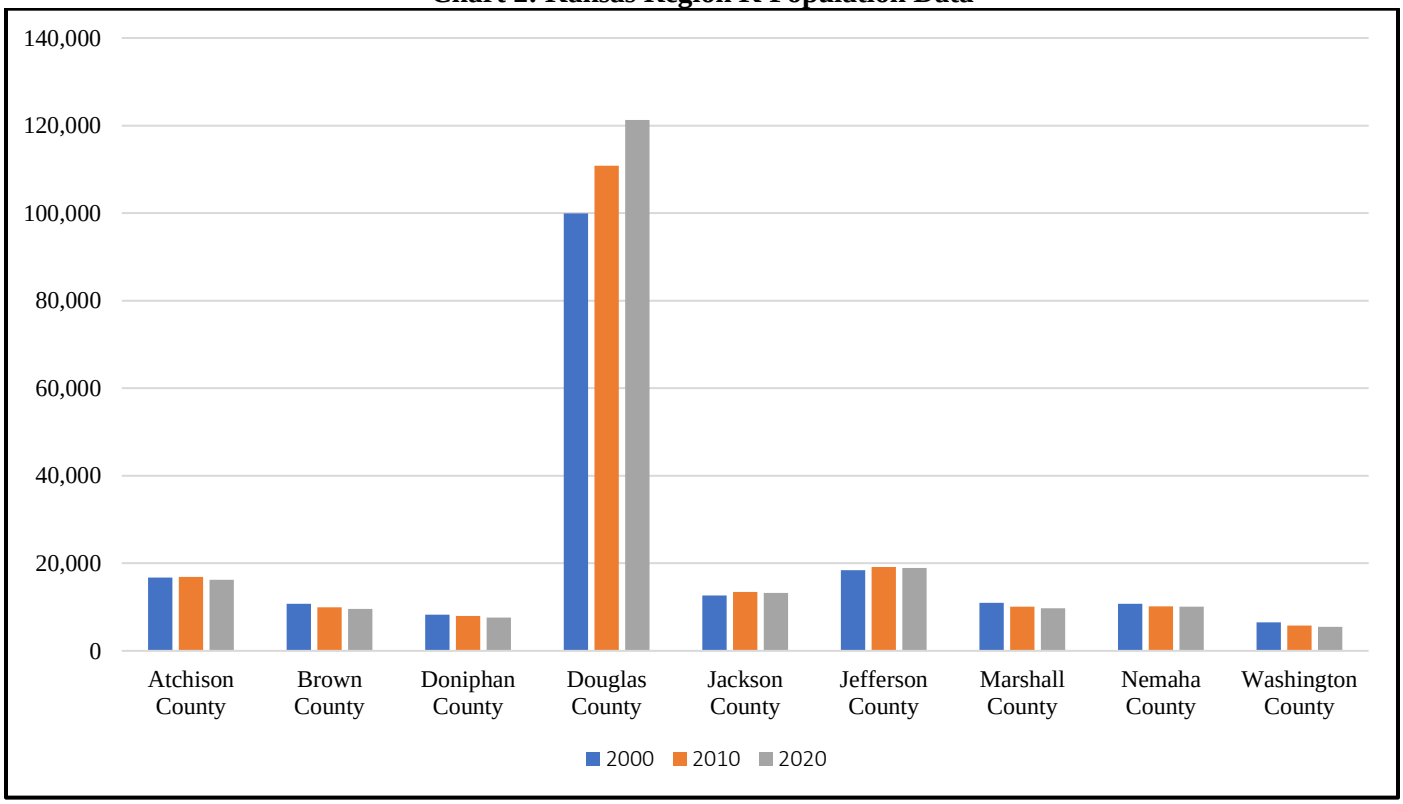
Kansas Region K has seen population growth in two counties, Atchison and Sedgwick, and declining populations in the remaining counties over the 20-year period from 2000 to 2020, as indicated by data collected from the United State Census Bureau. The following table, and associated chart, presents population data for the Kansas Region K counties.

Table 3: Kansas Region K Population Data

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Atchison County	16,774	16,924	16,210	-3.4%	435.0	37
Brown County	10,724	9,984	9,575	-10.7%	572.2	17
Doniphan County	8,249	7,945	7,616	-7.7%	397.1	19
Douglas County	99,962	110,826	121,304	21.4%	474.5	256
Jackson County	12,657	13,462	13,249	4.7%	657.9	20
Jefferson County	18,426	19,126	18,974	3.0%	556.9	34
Marshall County	10,965	10,117	9,713	-11.4%	904.4	11
Nemaha County	10,717	10,178	10,109	-5.7%	719.4	14
Washington County	6,483	5,799	5,474	-15.6%	898.8	6

Source: US Census Bureau

Chart 2: Kansas Region K Population Data



Source: US Census Bureau

The following tables present population data on a city level, broken down by county.

Table 4: Atchison Population Data

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Atchison County	16774	16924	16,210	-3.4%	435.0	37
City of Atchison	10232	11021	10,561	3.2%	7.2	1,465
City of Effingham	588	546	457	-22.3%	0.5	846
City of Huron	87	54	54	-37.9%	0.9	64
City of Lancaster	291	298	347	19.2%	0.2	1,577
City of Muscotah	200	176	159	-20.5%	0.3	468

Source: US Census Bureau

Table 5: Brown County Population Data

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Brown County	10724	9984	9,575	-10.7%	572.2	17
City of Everest	314	284	354	12.7%	0.3	1,362
City of Fairview	271	260	304	12.2%	0.3	1,013
City of Hiawatha	3417	3172	3,119	-8.7%	2.2	1,399
City of Horton	1967	1776	1,829	-7.0%	1.8	1,039
City of Morrill	277	230	210	-24.2%	0.2	1,000
City of Powhattan	83	77	81	-2.4%	0.14	578
City of Reserve	100	84	64	-36.0%	0.1	582
City of Robinson	216	234	215	-0.5%	0.2	896
City of Willis	69	38	29	-58.0%	0.2	171

Source: US Census Bureau

Table 6: Doniphan County Population Data

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Doniphan County	8,249	7,945	7,616	-7.7%	397.1	19
City of Denton	186	148	170	-8.6%	0.1	1,214
City of Elwood	1,145	1,224	955	-16.6%	2.0	468
City of Highland	976	1,012	1,193	22.2%	0.5	2,251
City of Troy	1,054	1,010	762	-27.7%	0.7	1,058
City of Wathena	1,348	1,364	1,520	12.8%	2.0	779

Source: US Census Bureau

Table 7: Douglas County Population Data

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Douglas County	99,962	110,826	121,304	21.4%	474.5	256
City of Baldwin	3,400	4,515	4,684	37.8%	2.2	2,159
City of Eudora	4,307	6,136	6,551	52.1%	2.0	3,259
City of Lawrence	80,098	87,643	97,348	21.5%	28.7	3,392
City of Lecompton	608	625	857	41.0%	1.0	874

Source: US Census Bureau

Table 8: Jackson County Population Data

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Jackson County	12,657	13,462	13,249	4.7%	657.9	20
City of Circleville	185	170	158	-14.6%	0.2	878
City of Delia	179	169	250	39.7%	0.1	2,273
City of Denison	231	187	104	-55.0%	0.1	867
City of Holton	3,353	3,329	3,233	-3.6%	2.5	1,273
City of Hoyt	571	669	600	5.1%	0.4	1,395
City of Mayetta	312	341	414	32.7%	0.2	2,435
City of Netawaka	170	143	152	-10.6%	1.0	155
City of Soldier	122	136	58	-52.5%	0.2	387
City of Whiting	206	187	238	15.5%	1.0	236

Source: US Census Bureau

Table 9: Jefferson County Population Data

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Jefferson County	18,426	19,126	18,974	3.0%	556.9	34
City of McLouth	868	880	1,106	27.4%	0.5	2,304
City of Meriden	706	813	781	10.6%	0.4	2,169
City of Nortonville	620	637	714	15.2%	0.4	1,660
City of Oskaloosa	1,165	1,113	1,229	5.5%	0.9	1,351
City of Ozawkie	554	654	666	20.2%	0.4	1,665
City of Perry	901	929	1,277	41.7%	0.8	1,637
City of Valley Falls	1254	1192	1,145	-8.7%	0.8	1,527
City of Winchester	579	551	547	-5.5%	0.3	1,823

Source: US Census Bureau

Table 10: Marshall County Population Data

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Marshall County	10,965	10,117	9,713	-11.4%	904.4	11
City of Axtell	445	406	436	-2.0%	0.5	872
City of Beattie	277	200	228	-17.7%	0.2	991
City of Blue Rapids	1088	1019	1,071	-1.6%	2.1	515
City of Frankfort	855	726	729	-14.7%	1.0	715
City of Marysville	3271	3294	3,275	0.1%	3.3	1,002
City of Oketo	87	66	102	17.2%	0.1	927
City of Summerfield	211	156	105	-50.2%	0.3	309
City of Vermillion	107	112	77	-28.0%	0.3	308
City of Waterville	681	680	753	10.6%	0.5	1,506

Source: US Census Bureau

Table 11: Nemaha County Population Data

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Nemaha County	10,717	10,178	10,109	-5.7%	719.4	14
City of Bern	204	166	145	-28.9%	0.3	537
City of Centralia	534	512	551	3.2%	0.5	1,224
City of Corning	170	157	150	-11.8%	0.3	536
City of Goff	181	126	84	-53.6%	0.2	400
City of Oneida	70	75	243	247.1%	0.2	1,057
City of Sabetha	2,589	2,571	2,550	-1.5%	1.8	1,401
City of Seneca	2,122	1,991	1,900	-10.5%	1.5	1,234
City of Wetmore	362	368	315	-13.0%	0.4	829

Source: US Census Bureau

Table 12: Washington County Population Data

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Washington County	6,483	5,799	5,474	-15.6%	898.8	6
City of Clifton	557	554	393	-29.4%	0.3	1,572
City of Greenleaf	357	331	324	-9.2%	0.5	704
City of Haddam	169	104	150	-11.2%	0.4	429
City of Hanover	653	682	604	-7.5%	0.5	1,208
City of Hollenberg	31	21	23	-25.8%	0.1	288

Table 12: Washington County Population Data

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
City of Douglas	425	410	428	0.7%	0.3	1,297
City of Morrowville	168	155	152	-9.5%	0.1	1,086
City of Palmer	108	111	134	24.1%	0.3	419
City of Vining	58	45	80	37.9%	0.1	571
City of Washington	1,223	1,131	993	-18.8%	0.9	1,117

Source: US Census Bureau

3.4 Vulnerable Population Data

As a subset of the population data, Kansas Region K 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

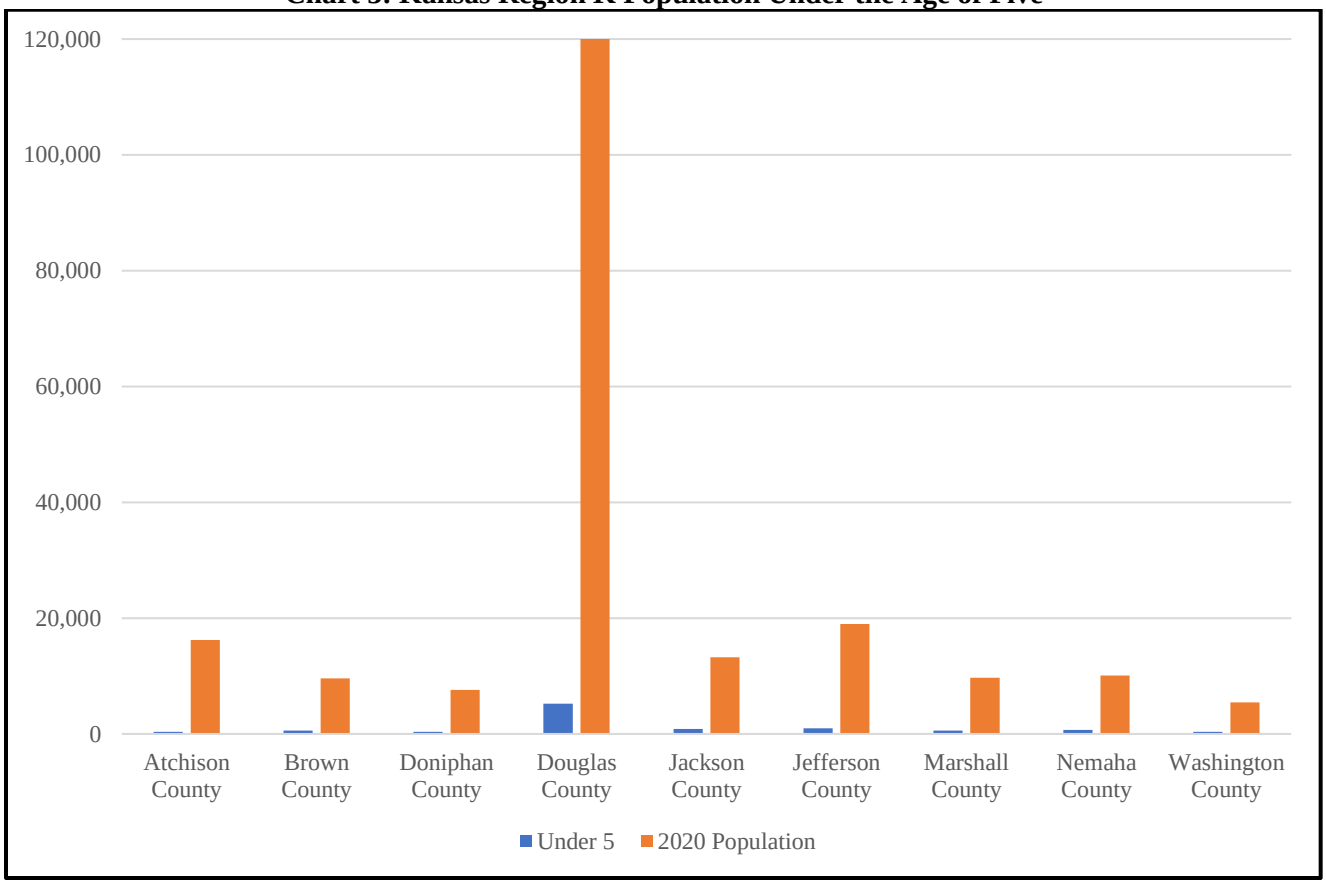
The National Response Framework defines at risk populations as "populations whose members may have additional needs before, during, and after an incident in functional areas, including but not limited to: maintaining independence, communication, transportation, supervision, and medical care." The following table, and associated charts, and maps from the FEMA Resilience Analysis and Planning Tool (RAPT), present information on potentially at risk populations within Kansas Region K on a county level for 2020.

Table 13: Kansas Region K 2020 Vulnerable Populations

Jurisdiction	Under 5	Over 65	Speaking Language Other than English	Below Poverty Level	Persons Under 65 with a Disability
Atchison County	361	1,303	241	542	471
Brown County	594	2,087	172	1341	1,053
Doniphan County	373	1,569	206	131	685
Douglas County	5,216	16,861	12,616	19,287	10,190
Jackson County	861	2,650	331	1,232	1,497
Jefferson County	987	3,890	304	1,518	1,897
Marshall County	573	2215	359	1,030	932
Nemaha County	718	1,991	273	849	799
Washington County	361	1,303	241	542	471

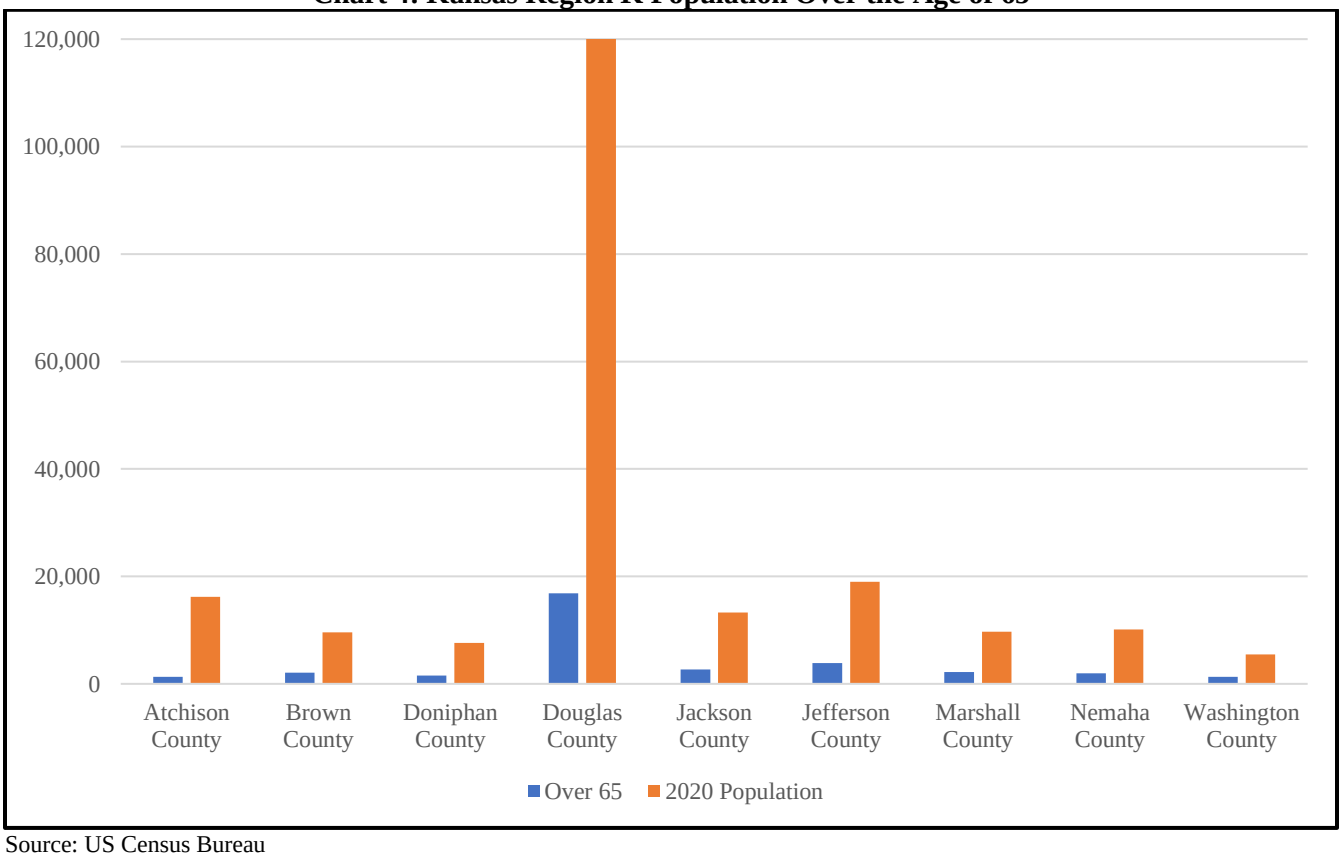
Source: US Census Bureau

Chart 3: Kansas Region K Population Under the Age of Five



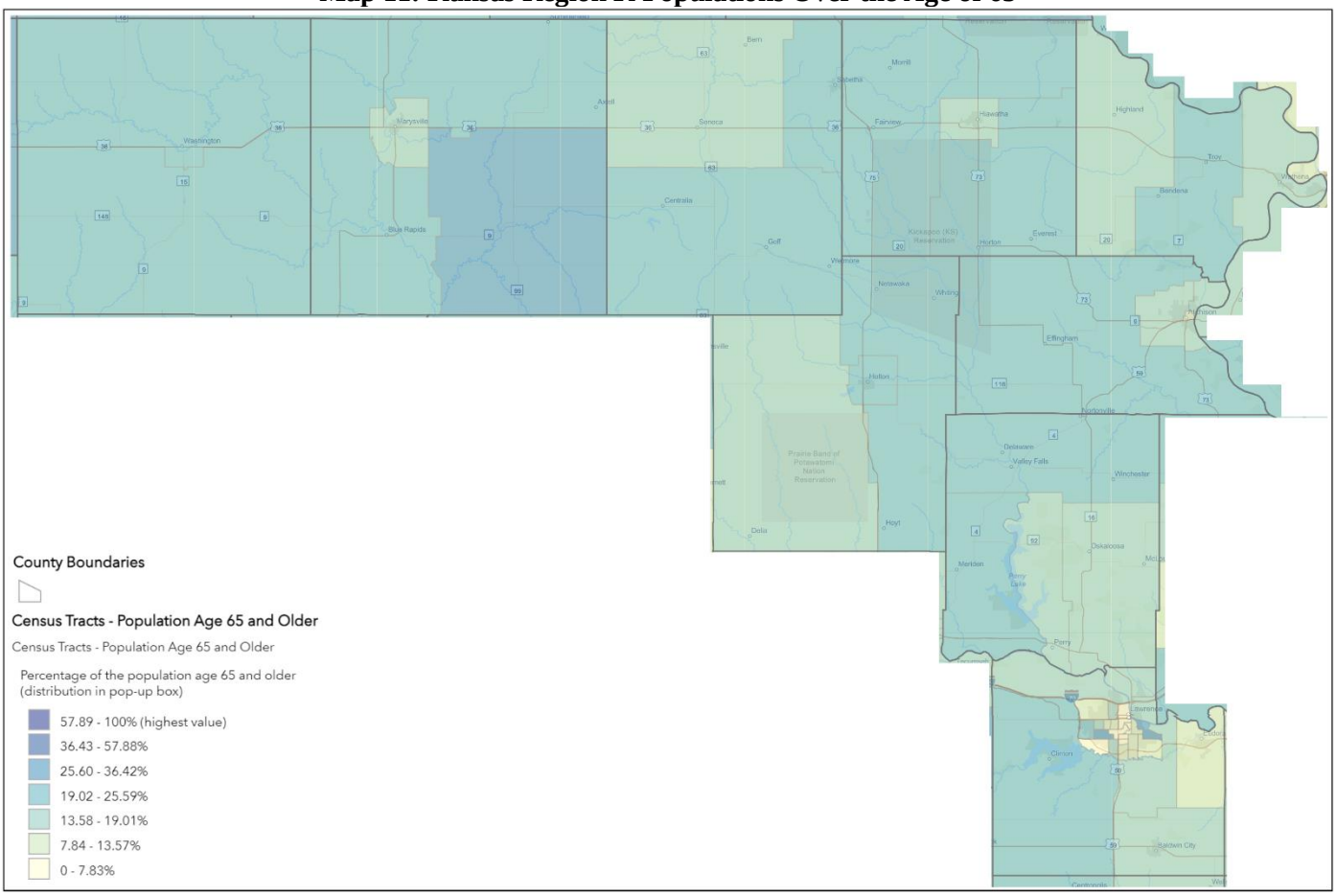
Source: US Census Bureau

Chart 4: Kansas Region K Population Over the Age of 65



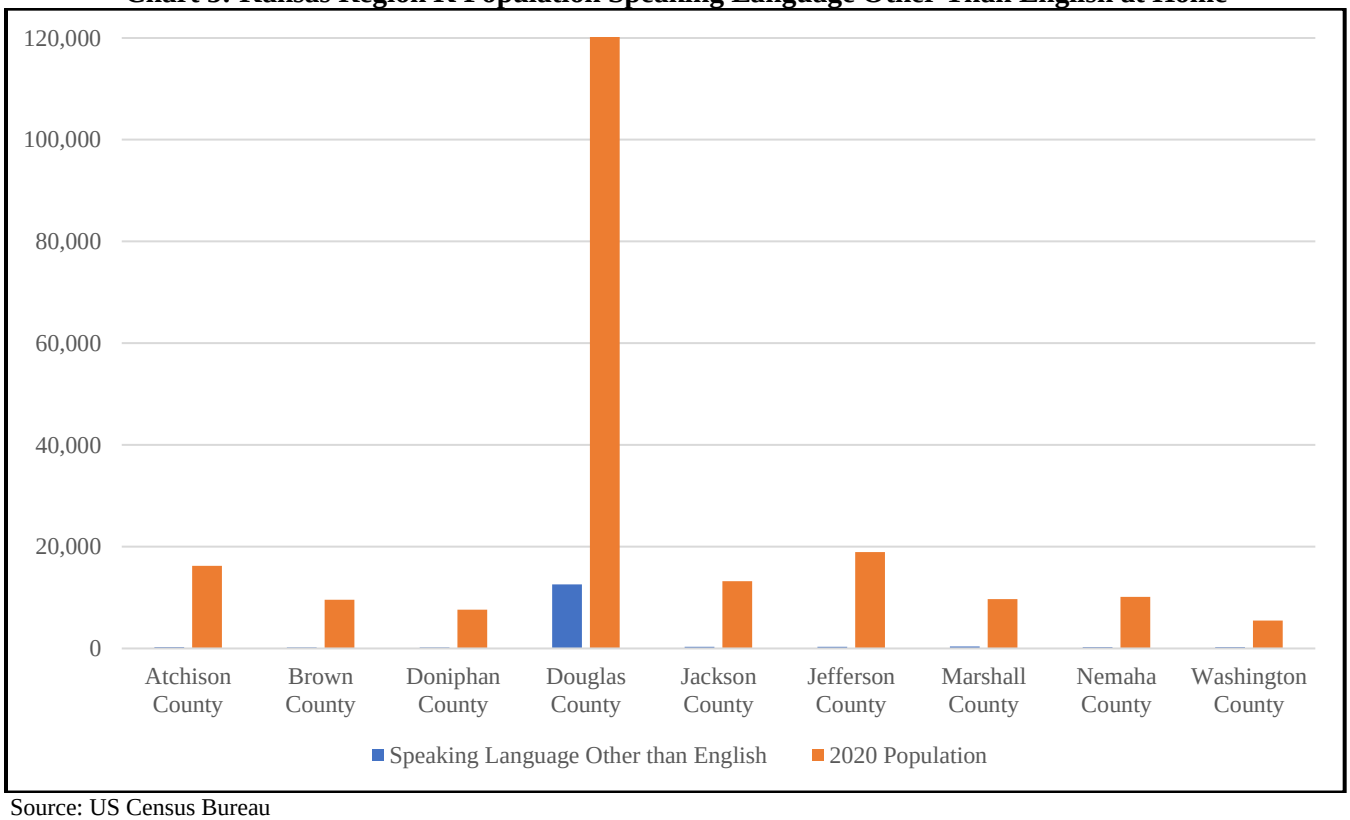
Source: US Census Bureau

Map 11: Kansas Region K Populations Over the Age of 65



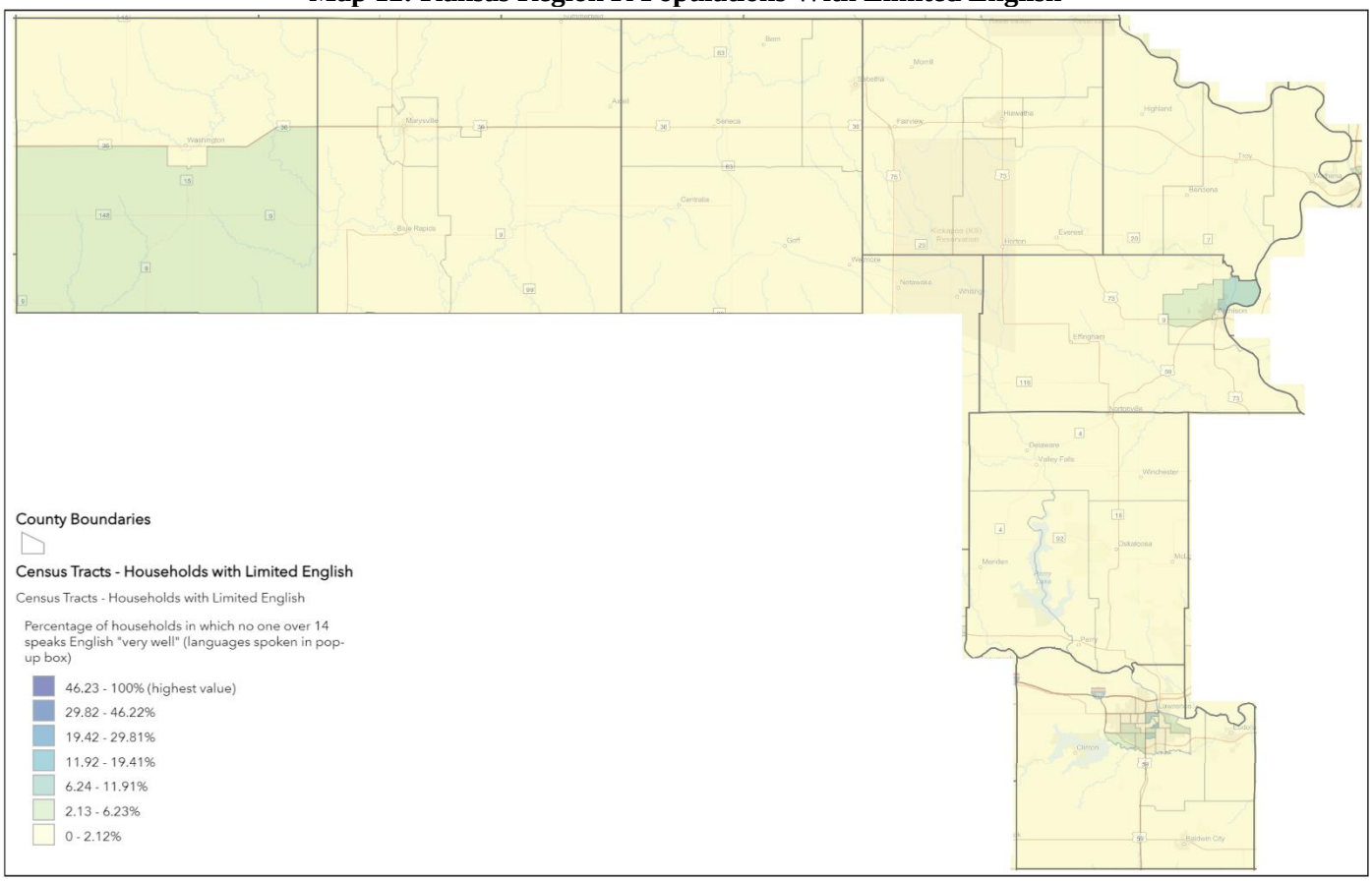
Source: FEMA RAPT

Chart 5: Kansas Region K Population Speaking Language Other Than English at Home



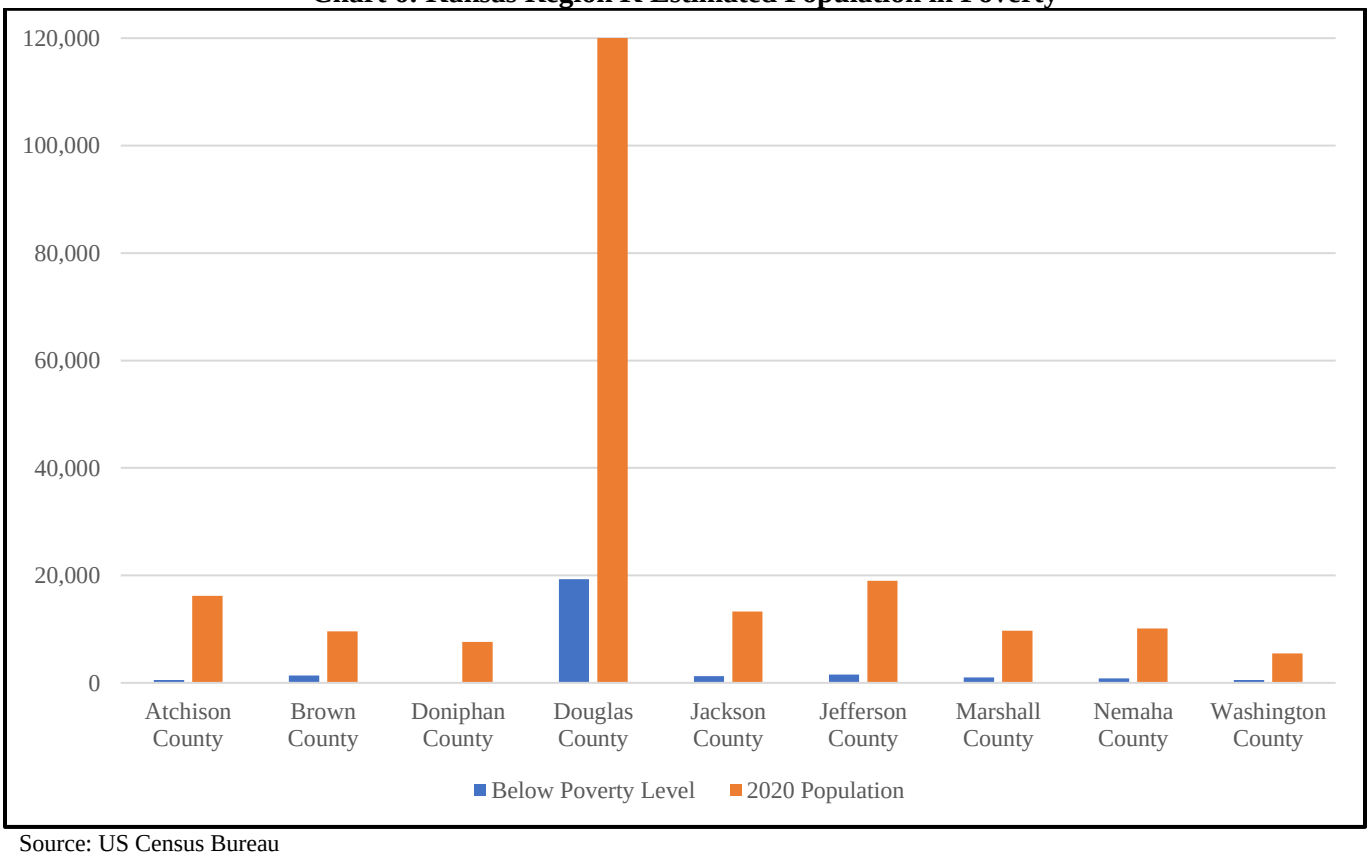
Source: US Census Bureau

Map 12: Kansas Region K Populations With Limited English



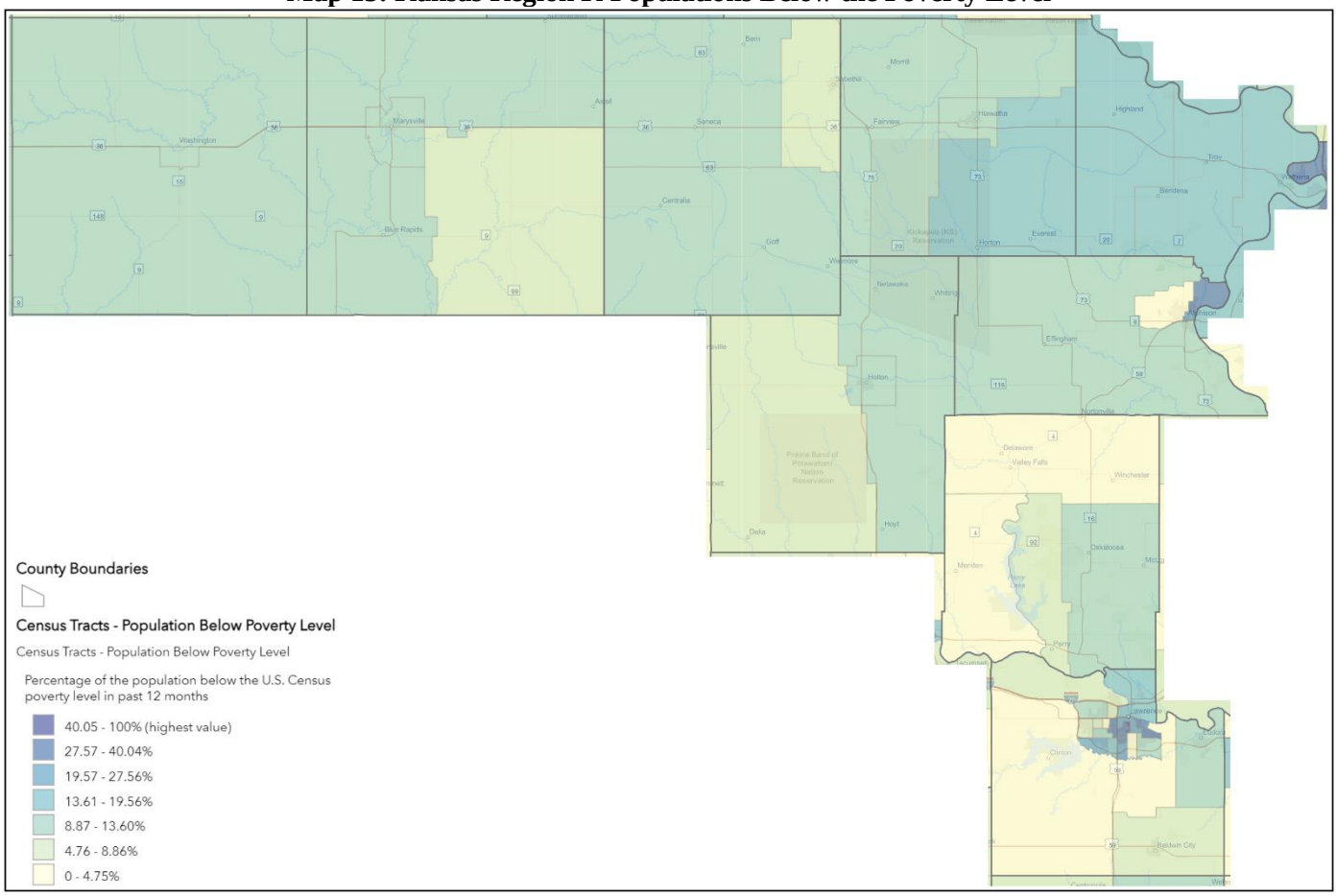
Source: FEMA RAPT

Chart 6: Kansas Region K Estimated Population in Poverty



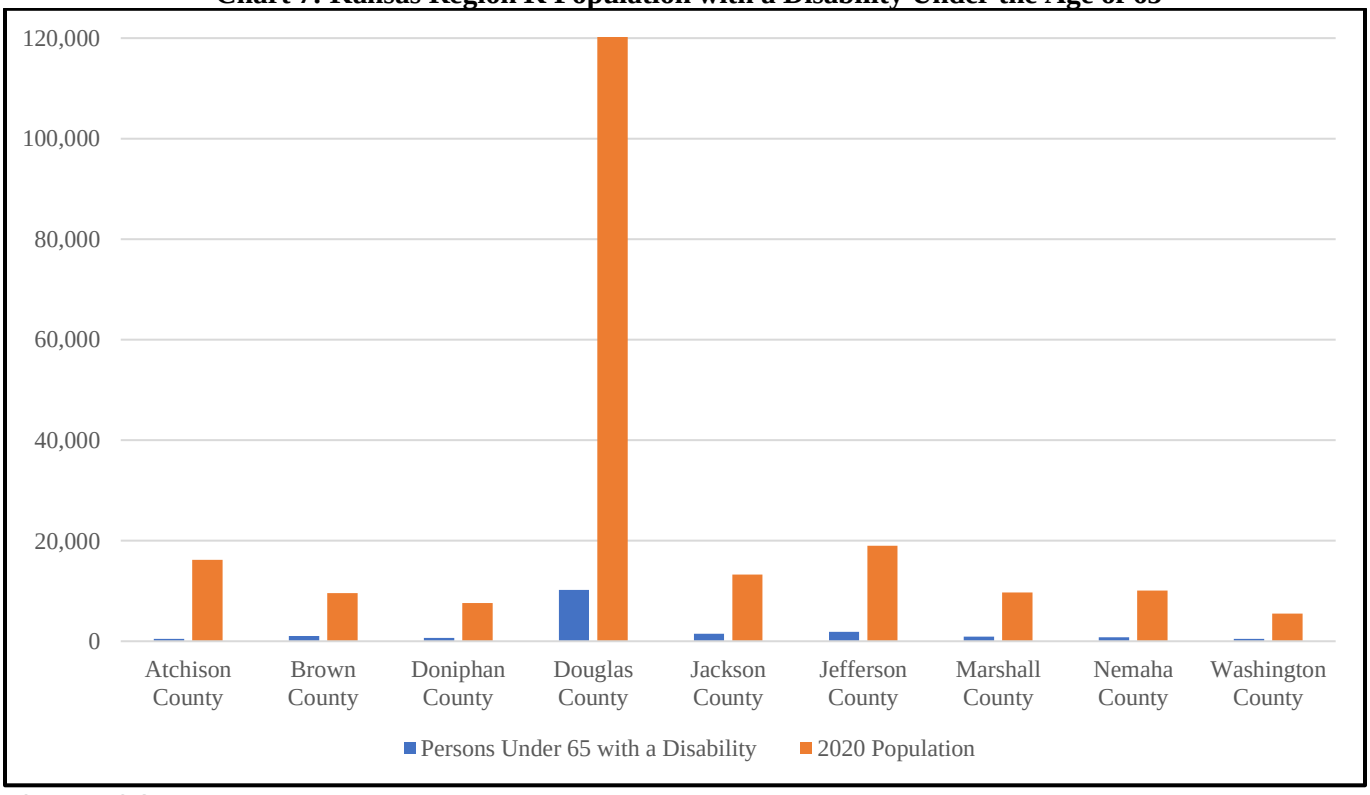
Source: US Census Bureau

Map 13: Kansas Region K Populations Below the Poverty Level



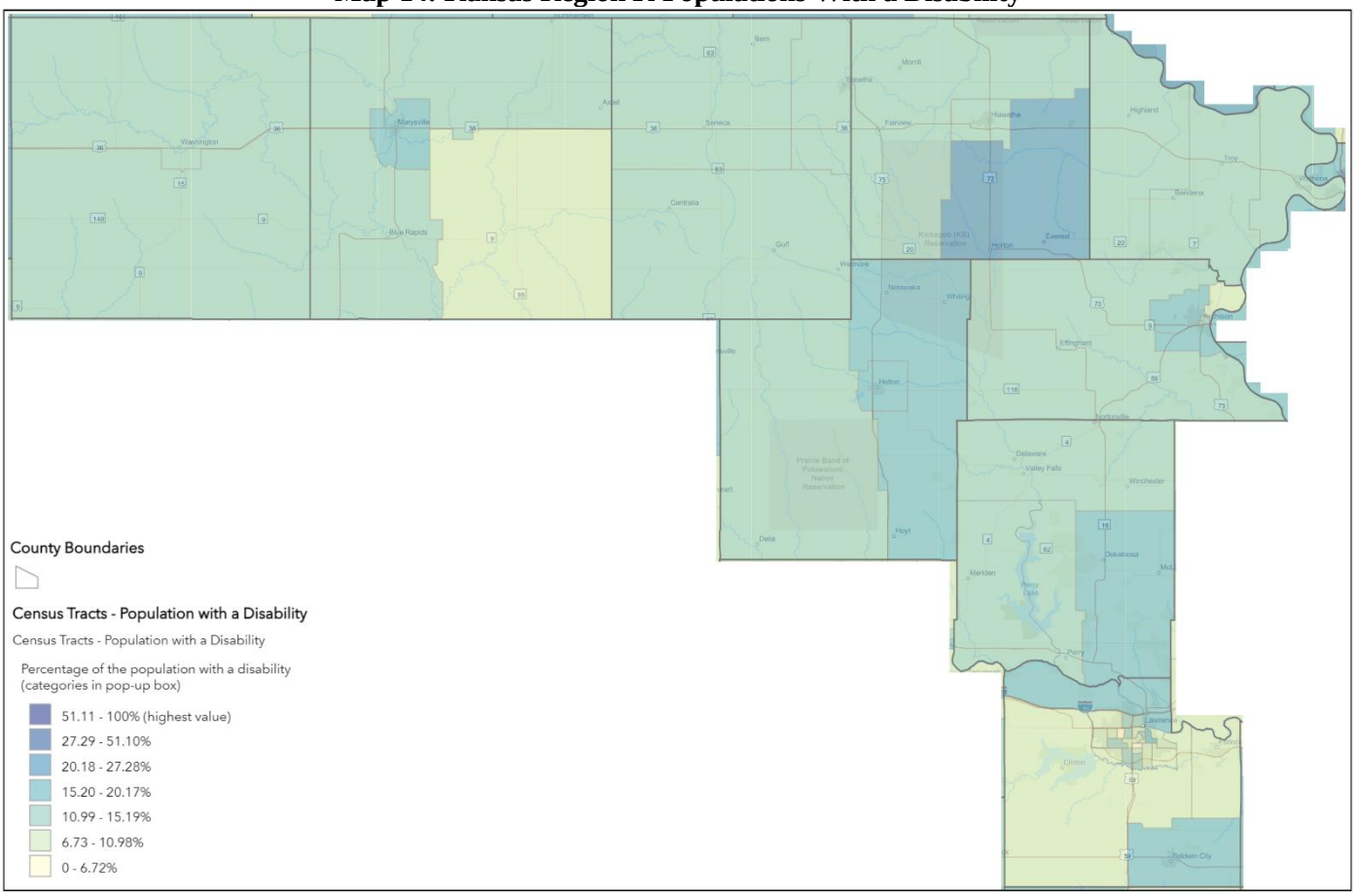
Source: FEMA RAPT

Chart 7: Kansas Region K Population with a Disability Under the Age of 65



Source: US Census Bureau

Map 14: Kansas Region K Populations With a Disability

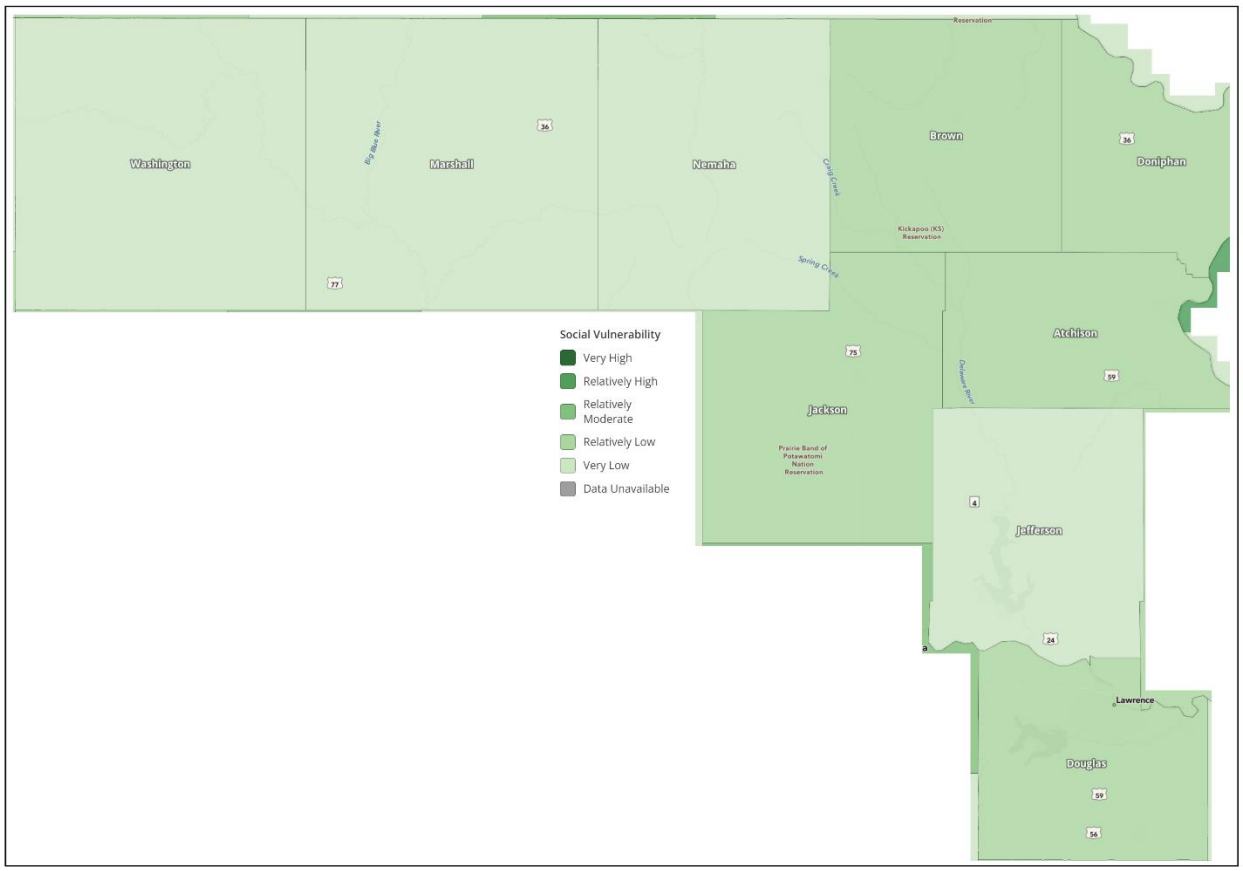


Source: FEMA RAPT

Using data from the Centers for Disease Control and Prevention (CDC)/Agency for Toxic Substances and Disease Registry Social Vulnerability Index FEMA's NRI creates and maps a Social Vulnerability score. In this context, social vulnerability is the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood. This score represents the relative level of a community's social vulnerability compared to all other communities at the same level. A qualitative rating that describes the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High" is used quantify Social Vulnerability. Census tracts with the social vulnerability score highest qualify for designation as a community disaster resilience zone. Census tracts designated as a community disaster resilience zone may receive special technical assistance, planning assistance, and a 90% federal funding match (as opposed to the standard 75% federal match) for mitigation projects.

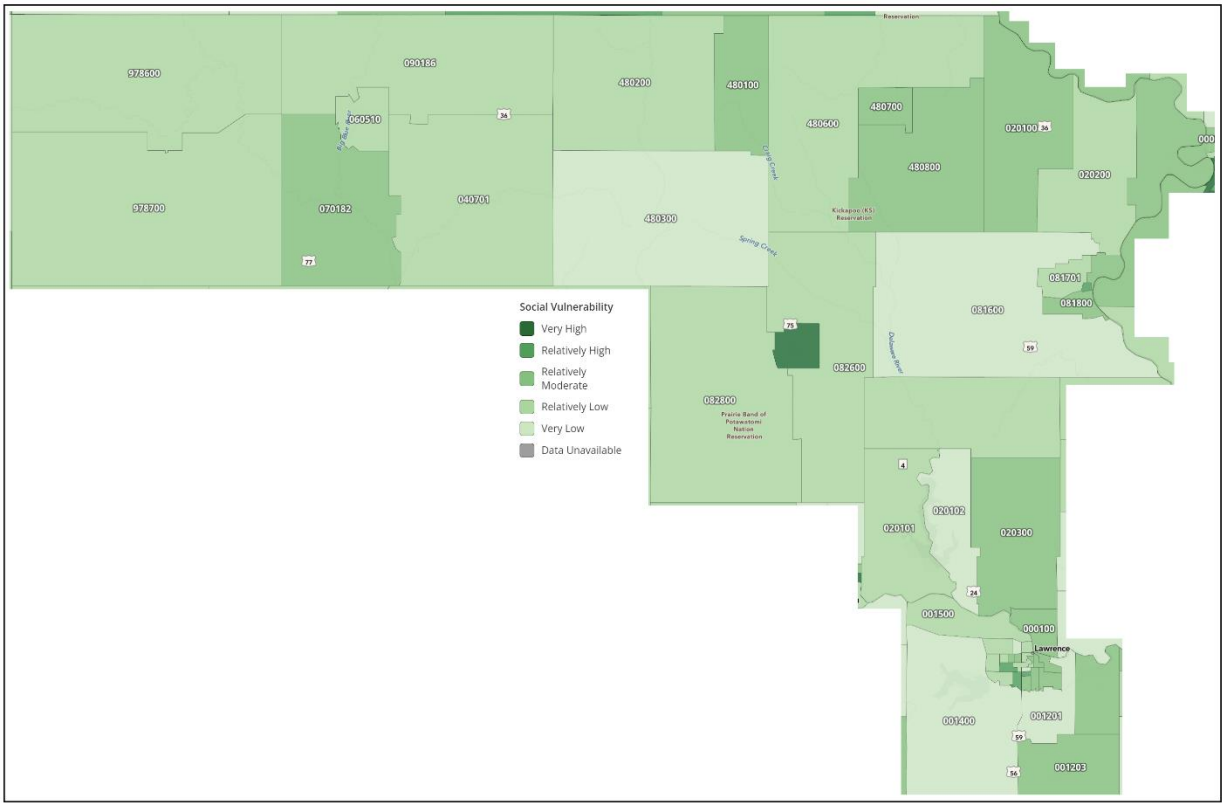
Data concerning social vulnerability is reported by county and by census tract, which can be analogous with jurisdictions. The following maps details the social vulnerability both county and census tract for Kansas Region K:

Map 14: FEMA NRI Kansas Region K Social Vulnerability Map



Source: FEMA

Map 15: FEMA NRI Kansas Region K Social Vulnerability Map



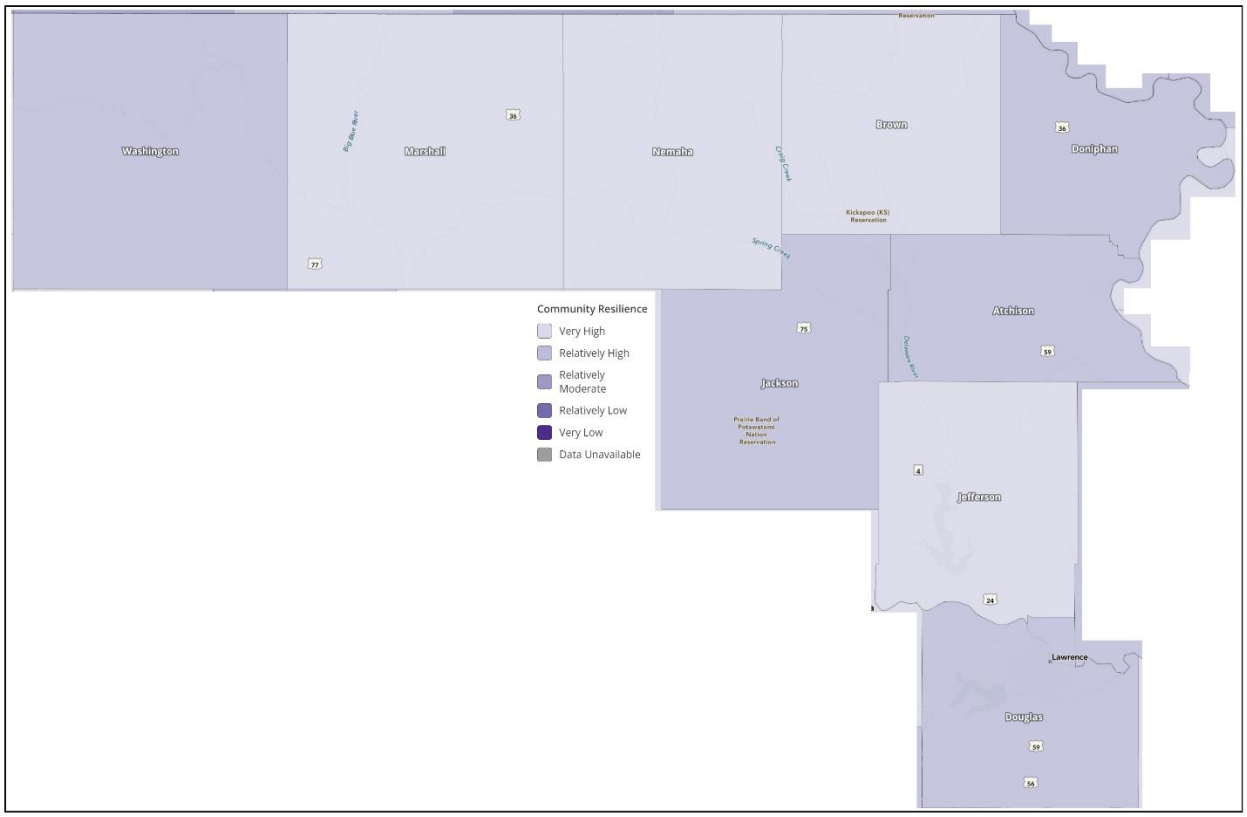
Source: FEMA

Augmenting these maps, full NRI census tract data is available in Appendix C detailing specific information for each census tract in each Kansas Region K county.

Community resilience is the ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions. Factors that are considered when calculating community resilience include governance, infrastructure, education, and other capabilities that help communities deal with hazards on their own. As a consequence reduction risk component of the NRI, a community resilience score and rating represent the relative level of a community's resilience compared to all other communities at the same level. A community resilience score is inversely proportional to a community's risk.

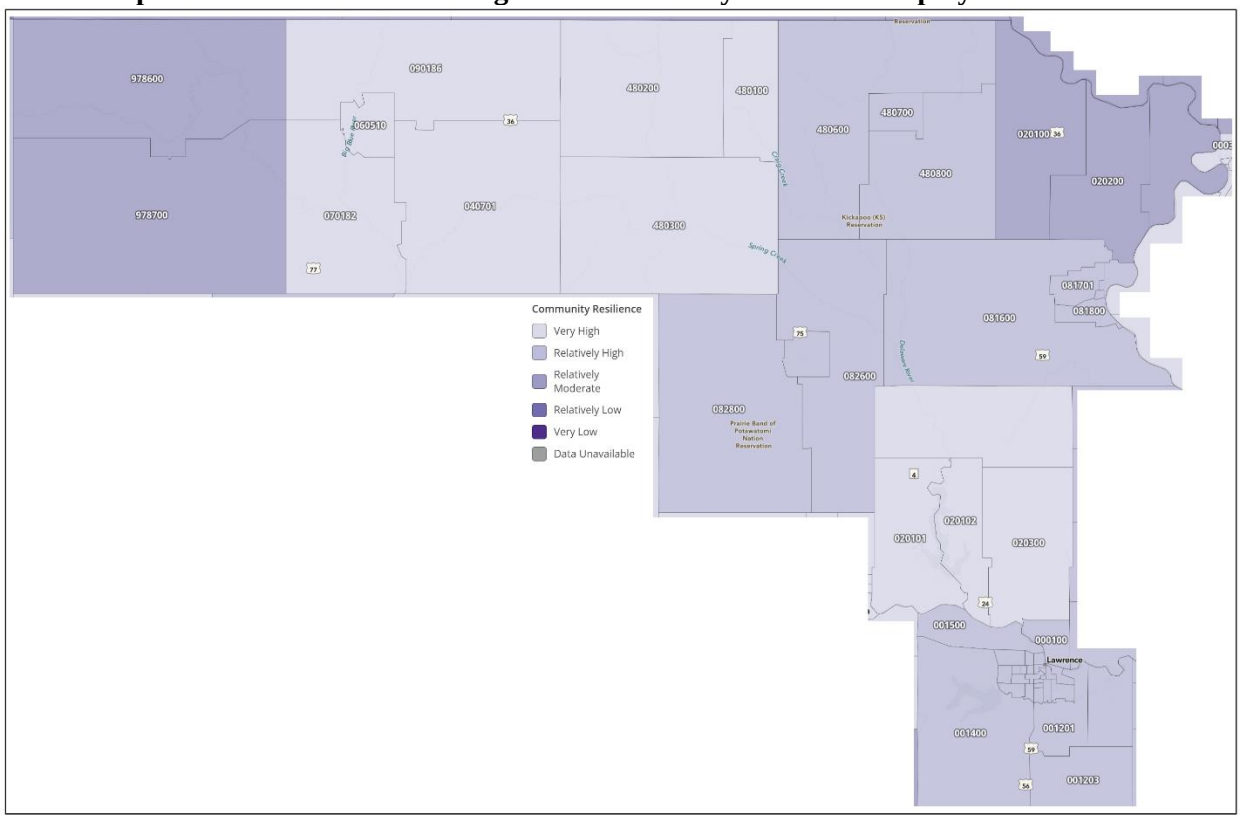
Data concerning community resilience is reported on the county level and by census tract, which can be analogous with jurisdictions. The following maps detail community resilience by both county and census tract for Kansas Region K:

Map 16: FEMA NRI Kansas Region K Community Resilience Map



Source: FEMA

Map 17: FEMA NRI Kansas Region K Community Resilience Map by Census Tract



Source: FEMA

Augmenting these maps, full NRI census tract data is available in Appendix C detailing specific information for each census tract in each Kansas Region K county.

3.5 Regional Population Migration

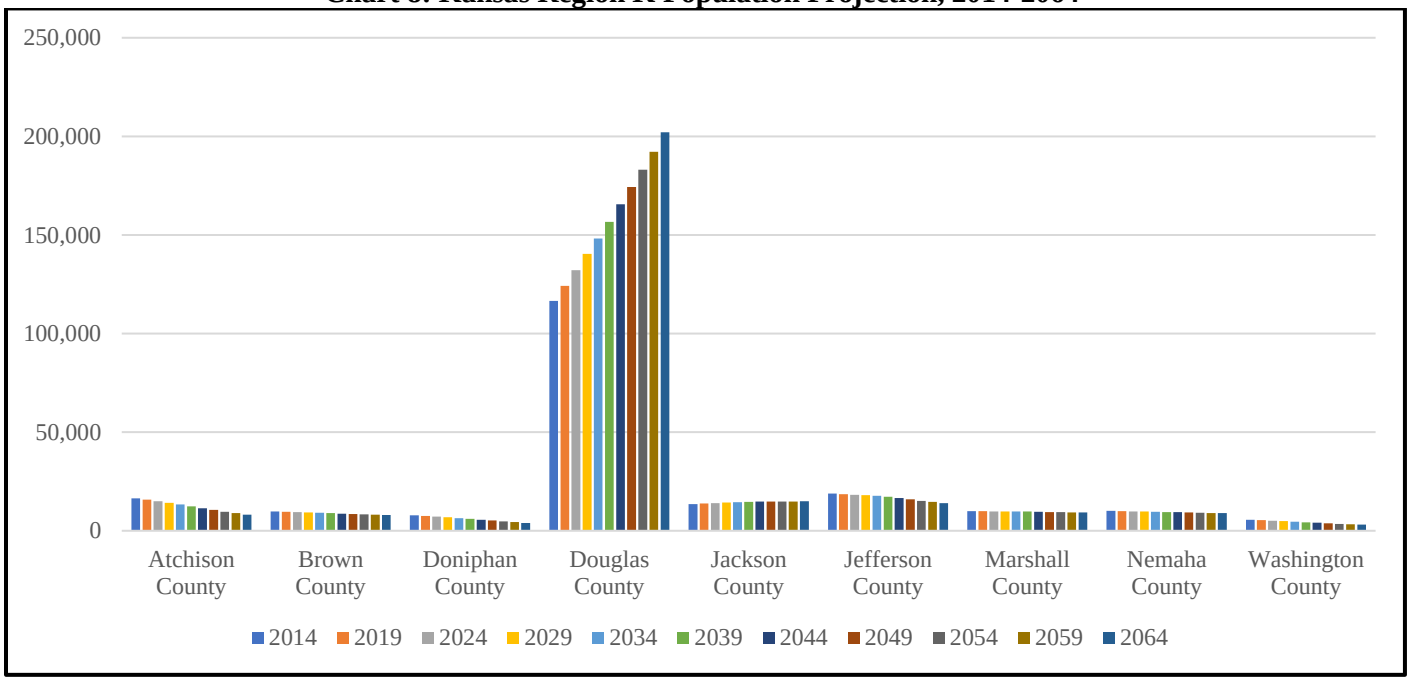
Kansas Region K, an area of the state known for its agricultural heritage and close-knit rural communities, is experiencing a significant population movement as people increasingly migrate from rural areas to urban centers. This transformation reflects broader demographic trends witnessed across the 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. Urban centers such as Wichita, the largest city in the region, 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 locales.
- Technological Advancements in Agriculture: The modernization of agriculture has led to increased mechanization and efficiency, reducing the demand for manual labor on farms. As a result, rural residents whose livelihoods were traditionally tied to farming are increasingly seeking employment in urban 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 rural-to-urban population movement has significant implications for both rural and urban areas in Kansas Region K. Rural communities may experience declining populations, school closures, and reduced economic activity. Meanwhile, urban centers may undergo growth, requiring increased investment in housing, infrastructure, and public services to accommodate the influx of new residents.

The following chart, using data from the Wichita State University Center for Economic Development and Business Research Kansas Population Forecast, indicates population projections (potentially dur to rural-to-urban migration) for Kansas Region K. As indicated in the report, all counties, with the exception of Jackson and Marshall Counties, are indicated to have either a generally static or decreasing population over the next 40 years.

Chart 8: Kansas Region K Population Projection, 2014-2064



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

3.6 Regional Housing Trends

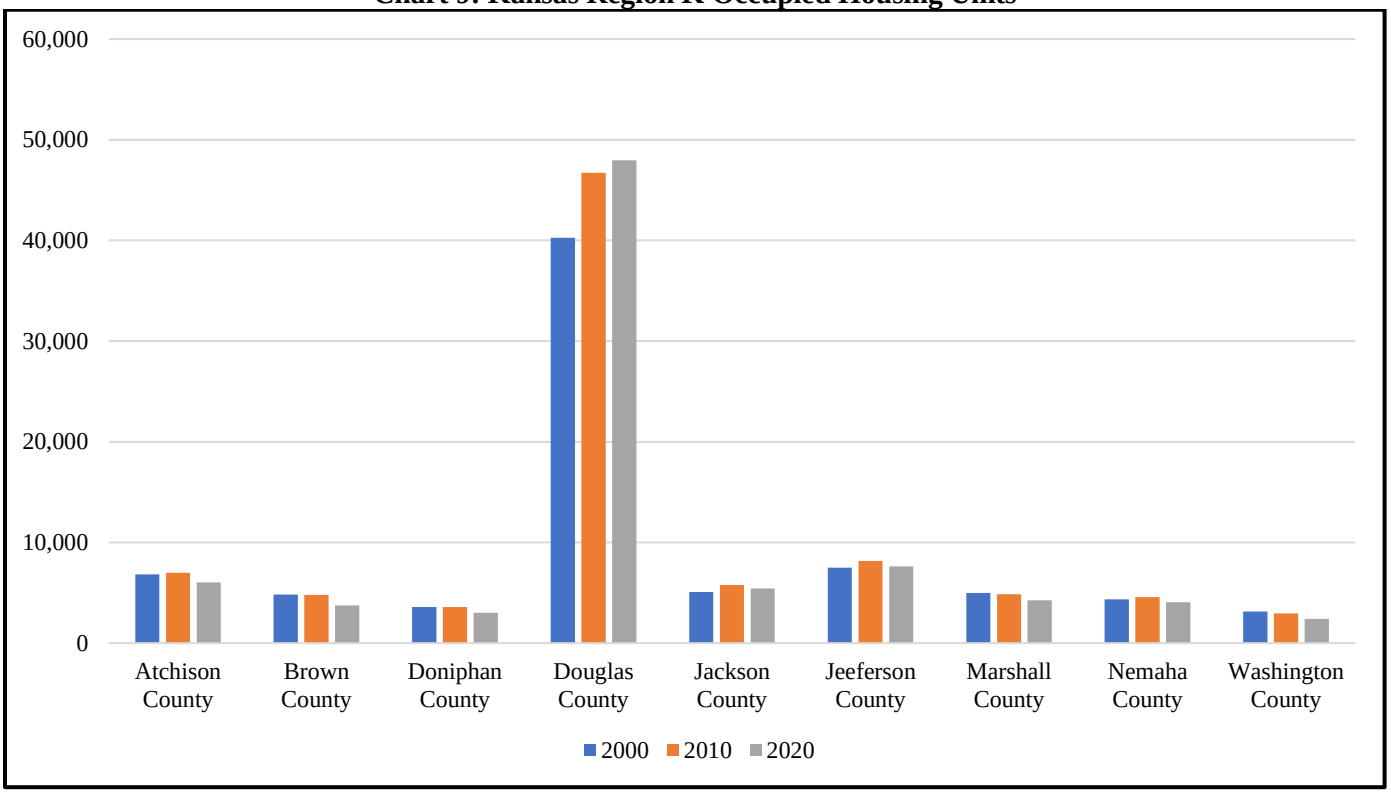
Closely tracking population data, but tending to lag population changes, housing data is a good indicator of changing demographics and growth. The following table and associated chart, using data from the U.S. Census, present occupied housing unit information for the 11 Region K counties.

Table 14: Kansas Region K Housing Data

County	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Atchison County	6,818	6,990	6,039	-779	-11.4%
Brown County	4,815	4,779	3,757	-1,058	-22.0%
Doniphan County	3,588	3,576	3,008	-580	-16.2%
Douglas County	40,250	46,731	47,972	7,722	19.2%
Jackson County	5,094	5,779	5,429	335	6.6%
Jefferson County	7,491	8,160	7,619	128	1.7%
Marshall County	4,999	4,866	4,243	-756	-15.1%
Nemaha County	4,340	4,562	4,069	-271	-6.2%
Washington County	3,142	2,955	2,412	-730	-23.2%

Source: US Census Bureau

Chart 9: Kansas Region K Occupied Housing Units



Source: US Census Bureau

FEMA's Hazus is a nationally standardized risk modeling methodology that uses GIS-based data to identify areas with high risk for natural hazards. Hazus also details the number of buildings and the replacement value of those buildings within the defined area. The following data, from Hazus, indicates the total number of buildings, the replacement valuation (excluding contents), and the percentage of buildings identified as residential properties for Kansas Region K:

Table 15: Kansas Region K Hazus Structure Information

Jurisdiction	Number of Buildings	Replacement Value	Percentage Residential
Atchison County	6,996	$2,205258,000	71.8%
Brown County	4,906	$1,169,619,000	70.8%
Doniphan County	3,782	$1,023,941,000	73.9%
Douglas County	38,118	$13,419,961,000	80.2%
Jackson County	6,007	$1,461,433,000	81.2%
Jefferson County	8,666	$2,391,981,000	84.9%
Marshall County	5,531	$1,253,687,000	67.7%
Nemaha County	4,840	$1,291,498,000	72.4%
Washington County	3,410	$636,657,000	67.9%

Source: FEAM Hazus

The following tables present occupied housing unit data on a jurisdictional level, broken down by county.

Table 16: Atchison Occupied Housing Unit Data

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Atchison County	6,818	6,990	6,039	-779	-11.4%
City of Atchison	4,220	4,442	3,746	-474	-11.2%
City of Effingham	255	252	224	-31	-12.2%
City of Huron	32	25	23	-9	-28.1%

Table 16: Atchison Occupied Housing Unit Data

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
City of Lancaster	117	117	124	7	6.0%
City of Muscotah	90	90	79	-11	-12.2%

Source: US Census Bureau

Table 17: Brown County Occupied Housing Unit Data

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Brown County	4,815	4,779	3,757	-1,058	-22.0%
City of Everest	156	155	125	-31	-19.9%
City of Fairview	149	146	150	1	0.7%
City of Hiawatha	1,646	1,588	1,289	-357	-21.7%
City of Horton	906	904	707	-199	-22.0%
City of Morrill	113	105	68	-45	-39.8%
City of Powhattan	40	30	26	-14	-35.0%
City of Reserve	60	58	32	-28	-46.7%
City of Robinson	111	109	85	-26	-23.4%
City of Willis	29	27	15	-14	-48.3%

Source: US Census Bureau

Table 18: Doniphan County Occupied Housing Unit Data

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Doniphan County	3,173	3,136	2,942	-231	-7.3%
City of Denton	73	77	77	4	5.5%
City of Elwood	442	498	441	-1	-0.2%
City of Highland	312	332	341	29	9.3%
City of Troy	317	277	350	33	10.4%
City of Wathena	537	558	497	-115	-7.5%

Source: US Census Bureau

Table 19: Douglas County Occupied Housing Unit Data

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Douglas County	40,250	46,731	47,972	7,722	19.2%
City of Baldwin City	1,165	1,665	1,469	304	26.1%
City of Eudora	1,664	2,306	2,165	501	30.1%
City of Lawrence	32,761	37,502	39,422	6,661	20.3%
City of Lecompton	233	254	271	38	16.3%

Source: US Census Bureau

Table 20: Jackson County Occupied Housing Unit Data

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Jackson County	5,094	5,779	5,429	335	6.6%
City of Circleville	80	77	80	0	0.0%
City of Delia	72	58	61	-11	-15.3%
City of Denison	88	87	56	-32	-36.4%
City of Holton	1,522	1,652	1,511	-11	-0.7%
City of Hoyt	219	269	265	46	21.0%
City of Mayetta	121	131	154	33	27.3%

Table 20: Jackson County Occupied Housing Unit Data

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
City of Netawaka	66	62	68	2	3.0%
City of Soldier	58	56	44	-12	-24.1%
City of Whiting	109	95	93	-16	-14.7%

Source: US Census Bureau

Table 21: Jefferson County Occupied Housing Unit Data

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Jefferson County	7,491	8,160	7,619	128	1.7%
City of McLouth	350	384	400	50	14.3%
City of Meriden	279	336	315	36	12.9%
City of Nortonville	255	261	250	-5	-2.0%
City of Oskaloosa	478	480	522	44	9.2%
City of Ozawkie	202	243	273	71	35.1%
City of Perry	395	392	510	115	-29.1%
City of Valley Falls	521	518	486	-35	-6.7%
City of Winchester	221	261	243	22	10.0%

Source: US Census Bureau

Table 22: Marshall County Occupied Housing Unit Data

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Marshall County	4,999	4,866	4,243	-756	-11.4%
City of Axtell	204	194	164	-40	-19.6%
City of Beattie	115	104	95	-20	-17.4%
City of Blue Rapids	494	465	418	-76	-15.4%
City of Frankfort	365	363	311	-109	-14.8%
City of Marysville	1,614	1,646	1,463	-151	-9.4%
City of Oketo	47	38	71	24	51.1%
City of Summerfield	74	107	60	-14	-18.9%
City of Vermillion	61	71	41	-20	-32.8%
City of Waterville	328	331	287	-41	-12.5%

Source: US Census Bureau

Table 23: Nemaha County Occupied Housing Unit Data

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Nemaha County	4,340	4,562	4,069	-271	-6.2%
City of Bern	102	95	56	-46	-45.1%
City of Centralia	235	238	221	-14	-6.0%
City of Corning	70	67	57	-13	-18.6%
City of Goff	72	62	41	-31	-43.1%
City of Oneida	19	41	9	10	-52.6%
City of Sabetha	1,049	1,227	1,196	147	14.0%
City of Seneca	899	946	929	30	3.3%
City of Wetmore	156	152	113	-43	-27.6%

Source: US Census Bureau

Table 24: Washington County Occupied Housing Unit Data

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Washington County	3,142	2,955	2,412	-730	-23.2%
City of Clifton	278	151	197	-81	-29.1%
City of Greenleaf	202	199	151	-51	-25.2%
City of Haddam	96	88	46	-50	-52.1%
City of Hanover	332	314	255	-77	-23.2%
City of Hollenberg	28	23	19	-9	-32.1%
City of Douglas	186	165	193	7	3.8%
City of Morrowville	93	90	67	-26	-28.0%
City of Palmer	55	62	57	2	3.6%
City of Vining	29	27	41	12	41.4%
City of Washington	644	582	475	-169	-26.2%

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 Region K county:

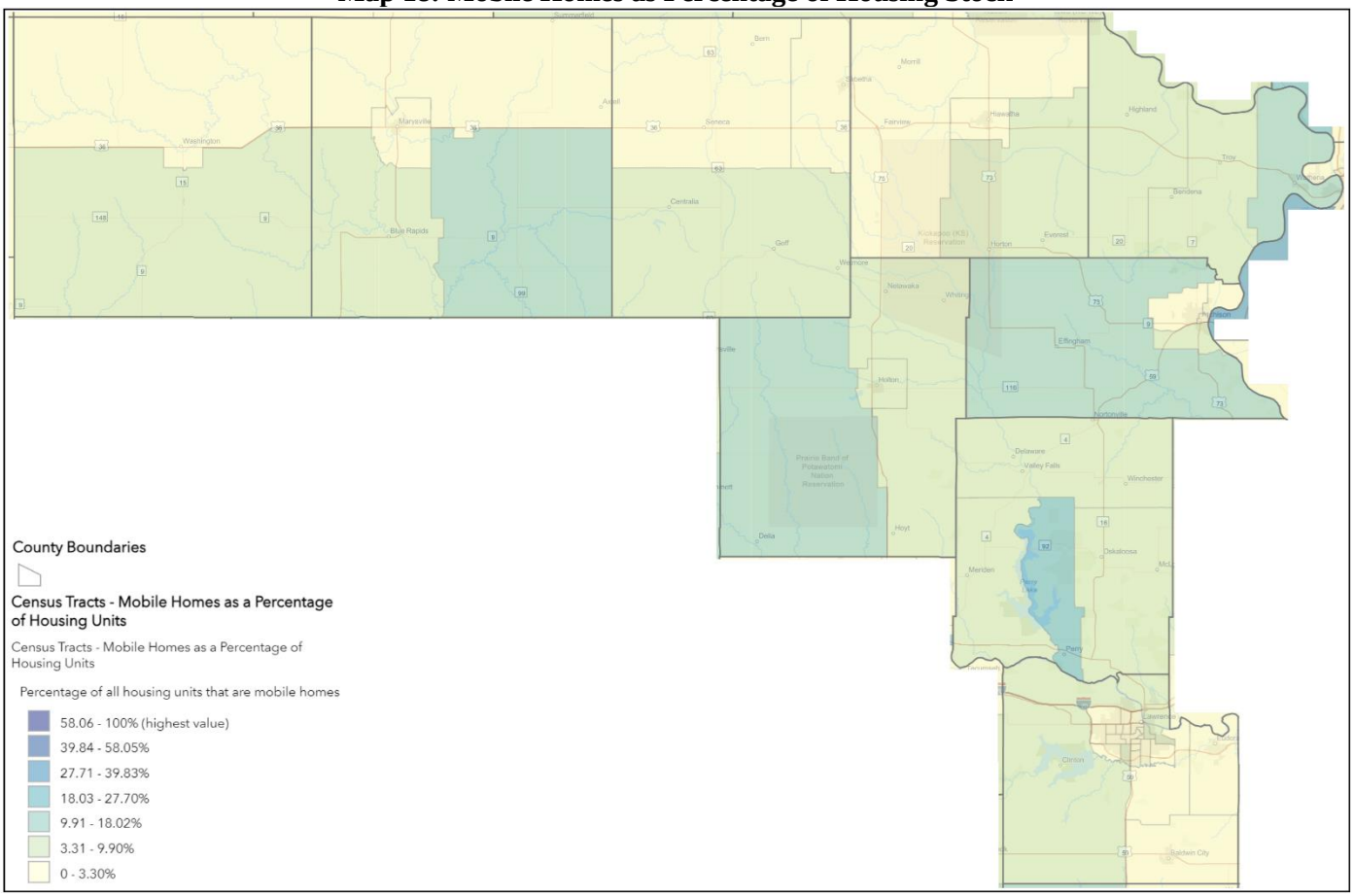
Table 25: Kansas Region K Mobile Home Data

Jurisdiction	Number of Mobile Homes	Percentage Of Housing Stock as Mobile Homes
Atchison County	336	5.7%
Brown County	86	2.3%
Doniphan County	254	9.1%
Douglas County	997	2.0%
Jackson County	356	6.8%
Jefferson County	418	5.8%
Marshall County	212	5.2%
Nemaha County	139	3.5%
Washington County	59	2.6%

Source: United States Census Bureau

The following map, from FEMA RAPT, details mobile homes as a percentage of building stock:

Map 18: Mobile Homes as Percentage of Housing Stock



Source: FEMA RAPT

3.7 School District Data

Each participating county is served by multiple Unified School Districts (USDs). The following table presents USD enrollment information for 2018 (data compiled from the last plan), and 2023 (the most recent available data):

Table 26: USD Enrollment Information

USD #	District Name	County	2018 Enrollment	2023 Enrollment	2018 -2023 Enrollment Change
377	Atchison Co Comm Schools	Atchison	568	496	-72
409	Atchison Public Schools	Atchison	1,702	1,496	-206
415	Hiawatha	Brown	915	886	-29
430	South Brown County	Brown	577	529	-48
111	Doniphan West Schools	Doniphan	338	363	26
114	Riverside	Doniphan	600	637	37
429	Troy Public Schools	Doniphan	332	313	-19
348	Baldwin City	Douglas	1,390	1,335	-55
491	Eudora	Douglas	1,688	1,654	-34
497	Lawrence	Douglas	10,738	10,079	-659
335	North Jackson	Jackson	375	393	18
336	Holton	Jackson	1,065	1,053	-12
337	Royal Valley	Jackson	856	845	-11
338	Valley Falls	Jefferson	385	384	-1
339	Jefferson County North	Jefferson	457	431	-26
340	Jefferson West	Jefferson	874	824	-50

Table 26: USD Enrollment Information

USD #	District Name	County	2018 Enrollment	2023 Enrollment	2018 -2023 Enrollment Change
341	Oskaloosa Public Schools	Jefferson	594	553	-41
342	McLouth	Jefferson	464	449	-15
343	Perry Public Schools	Jefferson	755	745	-10
364	Marysville	Marshall	707	779	73
380	Vermillion	Marshall	566	634	69
498	Valley Heights	Marshall	398	408	11
113	Prairie Hills	Nemaha	1,150	1,062	-88
115	Nemaha Central	Nemaha	572	737	165
108	Washington Co. Schools	Washington	354	358	5
223	Barnes	Washington	367	479	112
224	Clifton-Clyde	Washington	318	297	-21

Source: Kansas State Department of Education

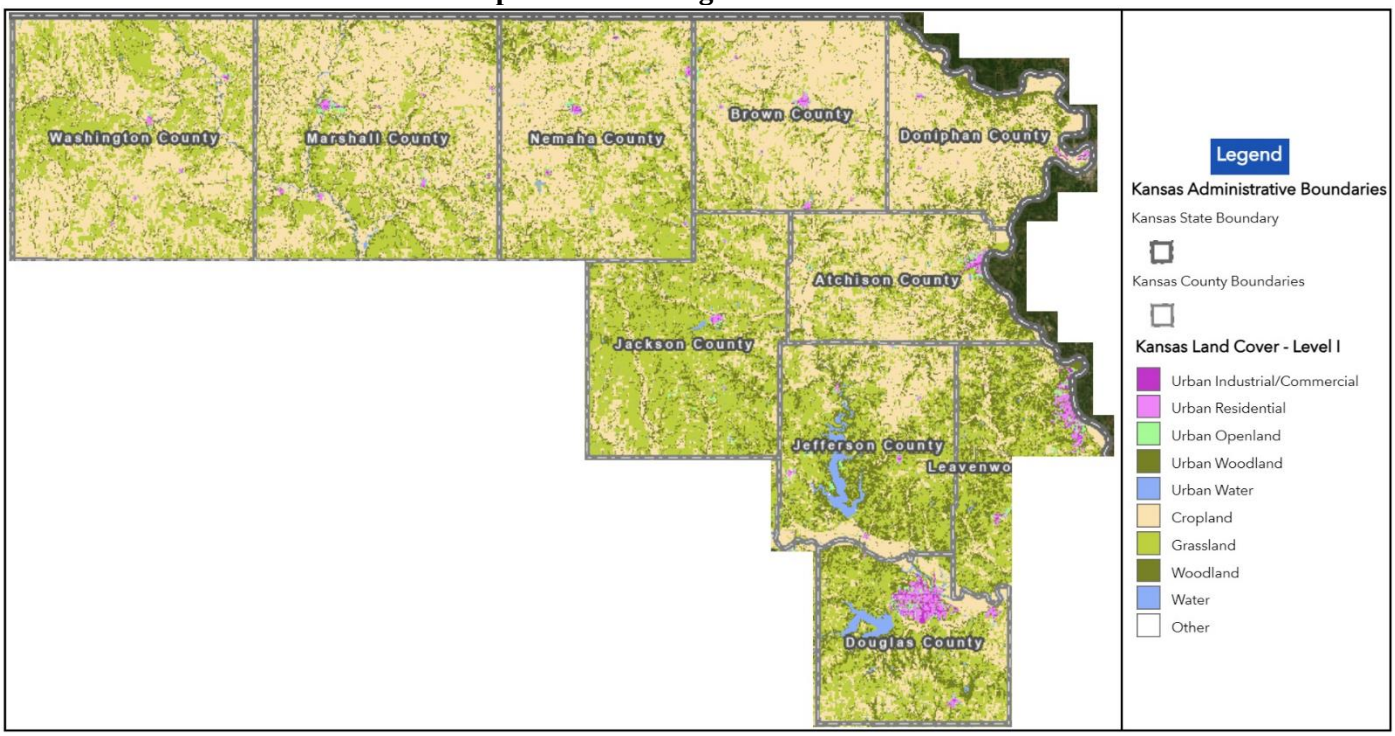
3.8 Regional Land Use

Land use in a Region Kas 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 the overall economic health.
- Transportation and Infrastructure: Land use planning is closely tied to transportation infrastructure. The location of road 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.
- Resilience to Climate Change: Land use planning plays a critical role in a region's ability to adapt to climate change. Smart land use decisions can reduce vulnerability to natural disasters, such as flooding and wildfires, by avoiding high-risk areas and implementing resilient building codes and infrastructure.
- 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 University of Kansas, land use in Kansas Region K is largely rural and agricultural (with the exception of a few larger cities such as Topeka).

Map 19: Kansas Region K Land Cover



Source: University of Kansas

Rural and agricultural areas in Kansas tend to retain their rural and agricultural 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 pWashingtons, 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 in Kansas 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.

3.9 Regional Infrastructure Development

In particular, 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:

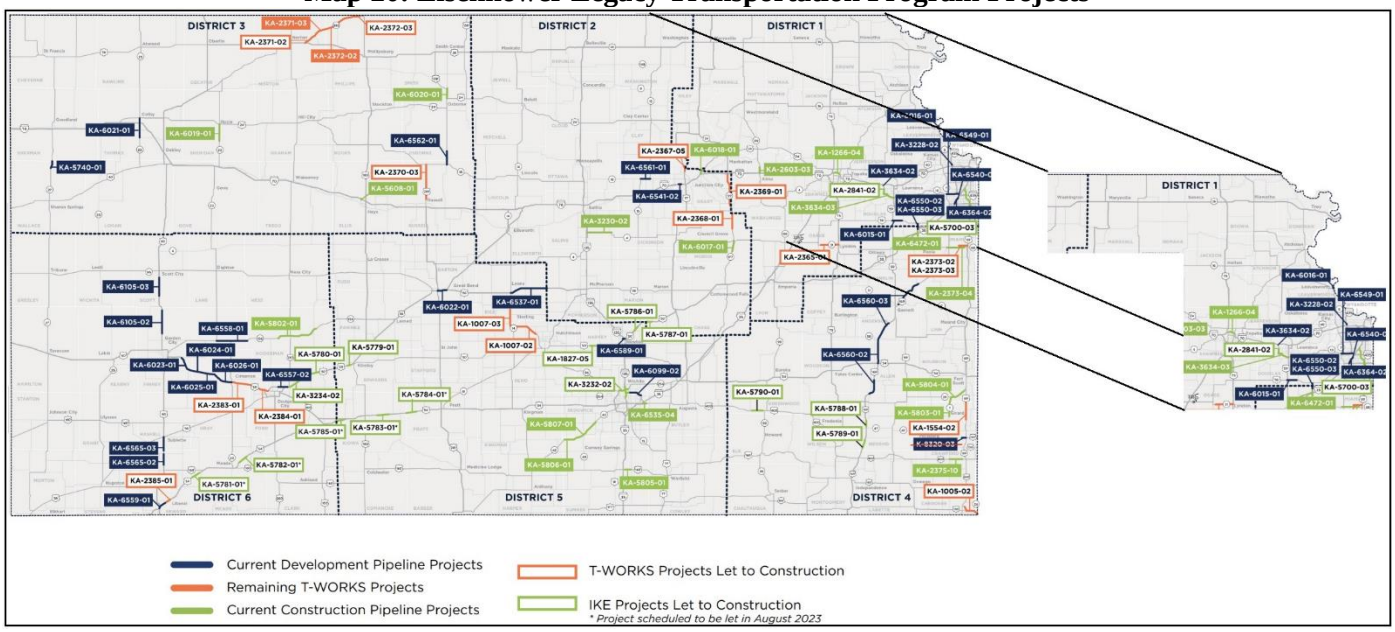
- Improved Connectivity: Repairing and upgrading infrastructure, such as roads, bridges, and ports, can enhance connectivity within and between regions. This improved connectivity can reduce transportation costs, facilitate the movement of goods and people, and attract businesses and investments to the 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 and climate change impacts. This can help protect communities and assets and reduce the long-term costs of recovery and reconstruction.
- Social Equity: Infrastructure repair can address disparities in access to essential services. It can benefit marginalized communities by providing them with equal access to transportation, utilities, and public facilities.

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.

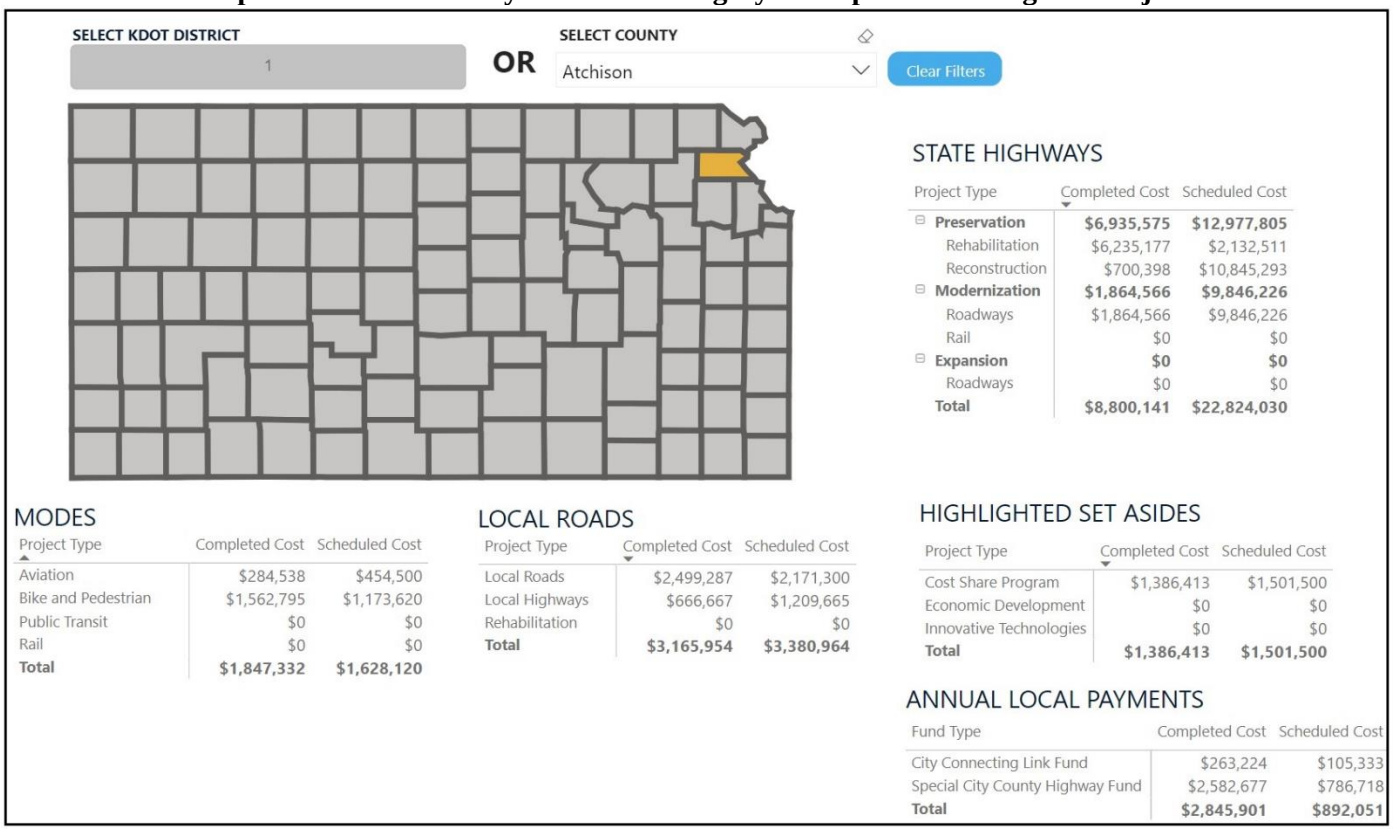
The Eisenhower Legacy Transportation Program is a 10-year program that addresses highways, bridges, public transit, aviation, short-line rail and bike/pedestrian needs across Kansas. The program and associated projects are focused on making roads safer, supporting economic growth and creating more options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

Map 20: Eisenhower Legacy Transportation Program Projects



The following maps represent Eisenhower Legacy Transportation Program filtered by Kansas Region K county

Map 21: Atchison County Eisenhower Legacy Transportation Program Projects



STATE HIGHWAYS

Project Type	Completed Cost	Scheduled Cost
Preservation	**$6,935,575**	**$12,977,805**
Rehabilitation	$6,235,177	$2,132,511
Reconstruction	$700,398	$10,845,293
Modernization	**$1,864,566**	**$9,846,226**
Roadways	$1,864,566	$9,846,226
Rail	$0	$0
Expansion	**$0**	**$0**
Roadways	$0	$0
Total	**$8,800,141**	**$22,824,030**

MODES

Project Type	Completed Cost	Scheduled Cost
Aviation	$284,538	$454,500
Bike and Pedestrian	$1,562,795	$1,173,620
Public Transit	$0	$0
Rail	$0	$0
Total	**$1,847,332**	**$1,628,120**

LOCAL ROADS

Project Type	Completed Cost	Scheduled Cost
Local Roads	$2,499,287	$2,171,300
Local Highways	$666,667	$1,209,665
Rehabilitation	$0	$0
Total	**$3,165,954**	**$3,380,964**

HIGHLIGHTED SET ASIDES

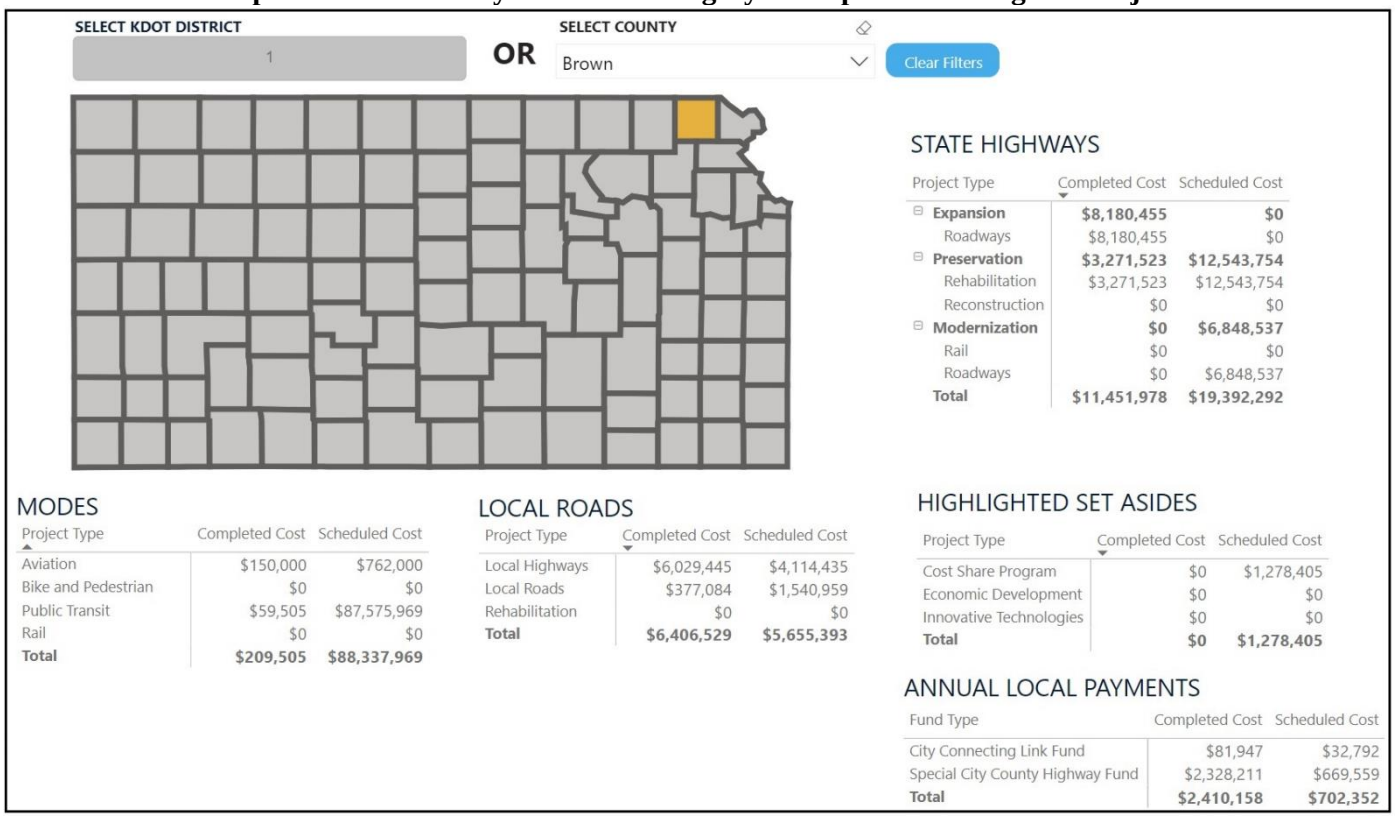
Project Type	Completed Cost	Scheduled Cost
Cost Share Program	$1,386,413	$1,501,500
Economic Development	$0	$0
Innovative Technologies	$0	$0
Total	**$1,386,413**	**$1,501,500**

ANNUAL LOCAL PAYMENTS

Fund Type	Completed Cost	Scheduled Cost
City Connecting Link Fund	$263,224	$105,333
Special City County Highway Fund	$2,582,677	$786,718
Total	**$2,845,901**	**$892,051**

Source: Kansas Department of Transportation

Map 22: Brown County Eisenhower Legacy Transportation Program Projects



STATE HIGHWAYS

Project Type	Completed Cost	Scheduled Cost
Expansion	**$8,180,455**	**$0**
Roadways	$8,180,455	$0
Preservation	**$3,271,523**	**$12,543,754**
Rehabilitation	$3,271,523	$12,543,754
Reconstruction	$0	$0
Modernization	**$0**	**$6,848,537**
Rail	$0	$0
Roadways	$0	$6,848,537
Total	**$11,451,978**	**$19,392,292**

MODES

Project Type	Completed Cost	Scheduled Cost
Aviation	$150,000	$762,000
Bike and Pedestrian	$0	$0
Public Transit	$59,505	$87,575,969
Rail	$0	$0
Total	**$209,505**	**$88,337,969**

LOCAL ROADS

Project Type	Completed Cost	Scheduled Cost
Local Highways	$6,029,445	$4,114,435
Local Roads	$377,084	$1,540,959
Rehabilitation	$0	$0
Total	**$6,406,529**	**$5,655,393**

HIGHLIGHTED SET ASIDES

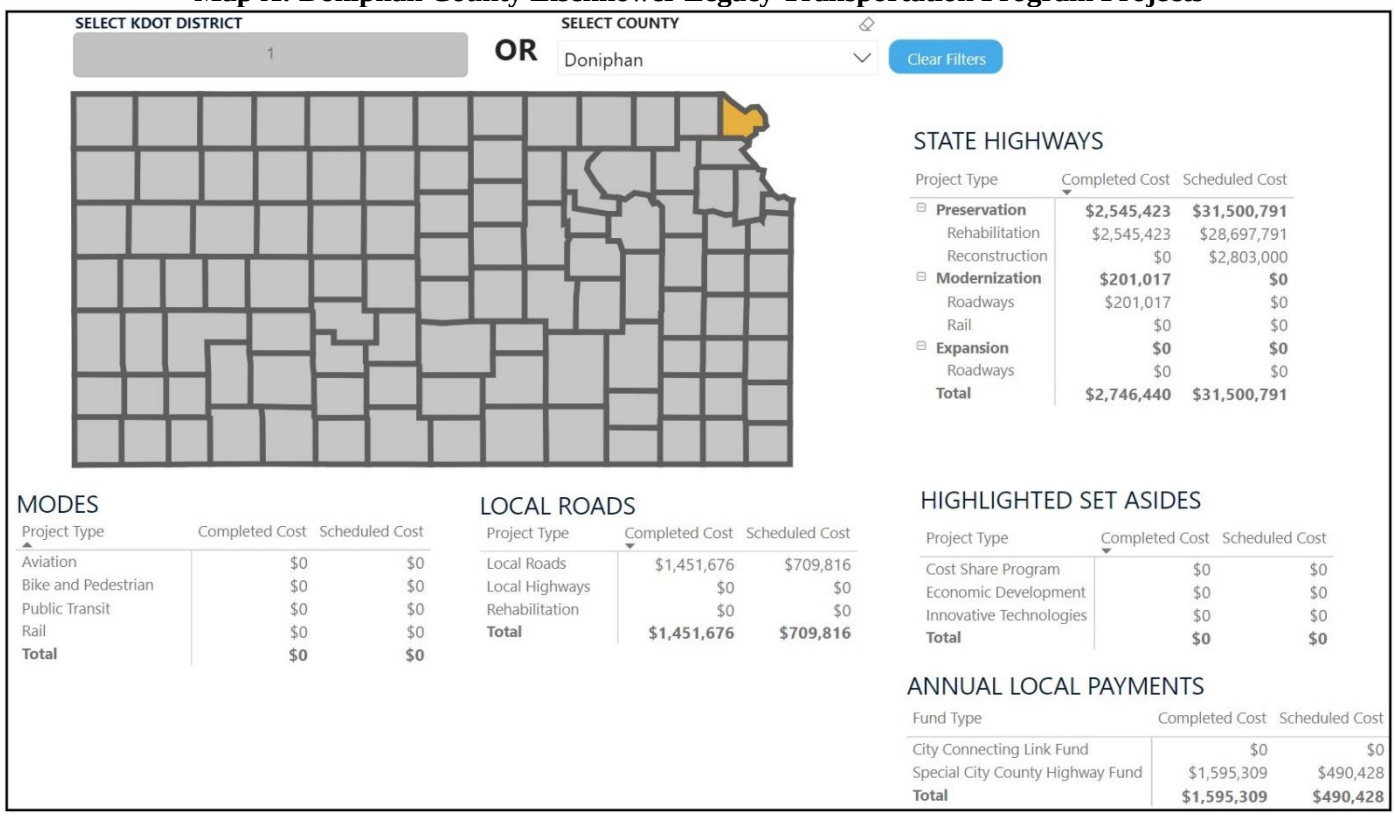
Project Type	Completed Cost	Scheduled Cost
Cost Share Program	$0	$1,278,405
Economic Development	$0	$0
Innovative Technologies	$0	$0
Total	**$0**	**$1,278,405**

ANNUAL LOCAL PAYMENTS

Fund Type	Completed Cost	Scheduled Cost
City Connecting Link Fund	$81,947	$32,792
Special City County Highway Fund	$2,328,211	$669,559
Total	**$2,410,158**	**$702,352**

Source: Kansas Department of Transportation

Map X: Doniphan County Eisenhower Legacy Transportation Program Projects



STATE HIGHWAYS

Project Type	Completed Cost	Scheduled Cost
Preservation	**$2,545,423**	**$31,500,791**
Rehabilitation	$2,545,423	$28,697,791
Reconstruction	$0	$2,803,000
Modernization	**$201,017**	**$0**
Roadways	$201,017	$0
Rail	$0	$0
Expansion	**$0**	**$0**
Roadways	$0	$0
Total	**$2,746,440**	**$31,500,791**

MODES

Project Type	Completed Cost	Scheduled Cost
Aviation	$0	$0
Bike and Pedestrian	$0	$0
Public Transit	$0	$0
Rail	$0	$0
Total	**$0**	**$0**

LOCAL ROADS

Project Type	Completed Cost	Scheduled Cost
Local Roads	$1,451,676	$709,816
Local Highways	$0	$0
Rehabilitation	$0	$0
Total	**$1,451,676**	**$709,816**

HIGHLIGHTED SET ASIDES

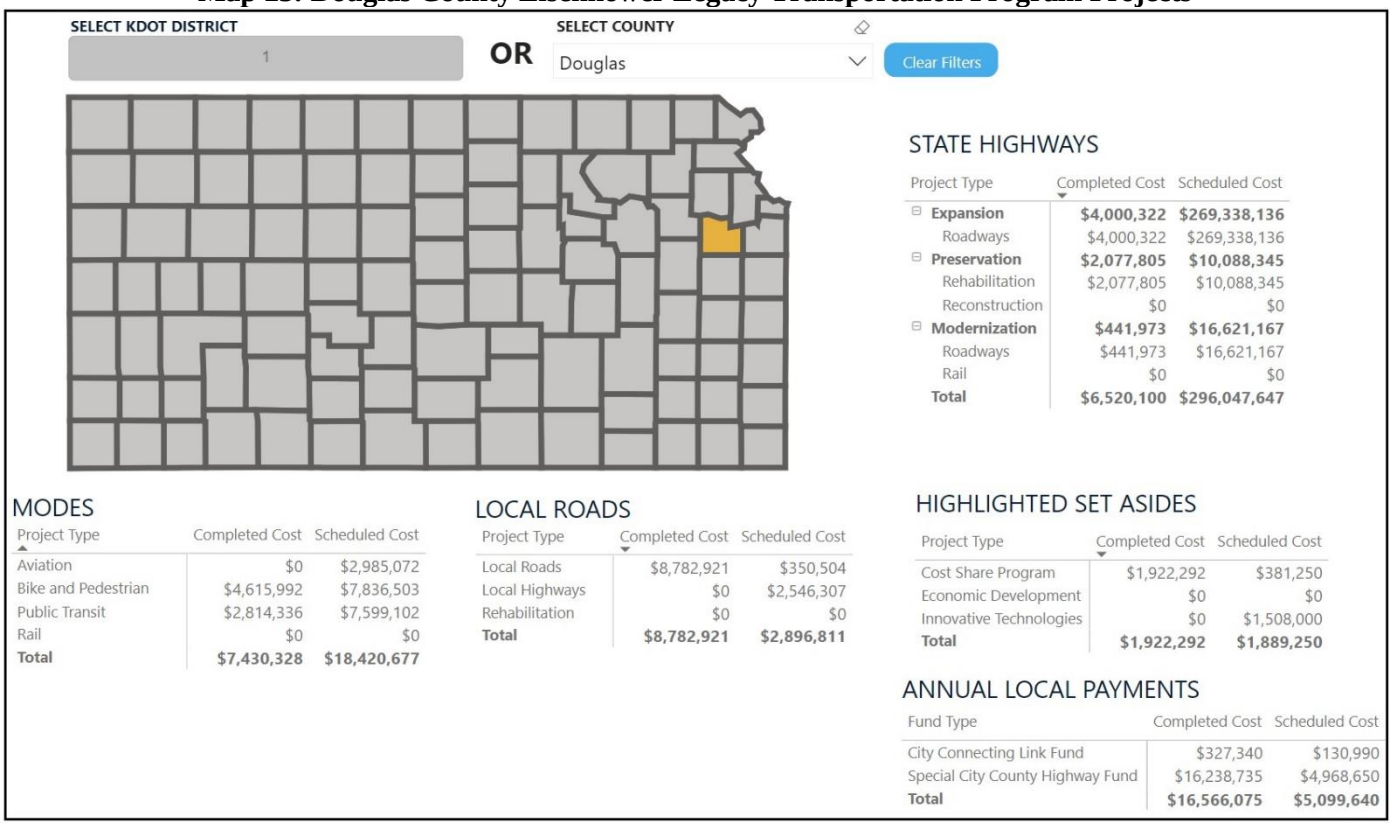
Project Type	Completed Cost	Scheduled Cost
Cost Share Program	$0	$0
Economic Development	$0	$0
Innovative Technologies	$0	$0
Total	**$0**	**$0**

ANNUAL LOCAL PAYMENTS

Fund Type	Completed Cost	Scheduled Cost
City Connecting Link Fund	$0	$0
Special City County Highway Fund	$1,595,309	$490,428
Total	**$1,595,309**	**$490,428**

Source: Kansas Department of Transportation

Map 23: Douglas County Eisenhower Legacy Transportation Program Projects



STATE HIGHWAYS

Project Type	Completed Cost	Scheduled Cost
Expansion	**$4,000,322**	**$269,338,136**
Roadways	$4,000,322	$269,338,136
Preservation	**$2,077,805**	**$10,088,345**
Rehabilitation	$2,077,805	$10,088,345
Reconstruction	$0	$0
Modernization	**$441,973**	**$16,621,167**
Roadways	$441,973	$16,621,167
Rail	$0	$0
Total	**$6,520,100**	**$296,047,647**

MODES

Project Type	Completed Cost	Scheduled Cost
Aviation	$0	$2,985,072
Bike and Pedestrian	$4,615,992	$7,836,503
Public Transit	$2,814,336	$7,599,102
Rail	$0	$0
Total	**$7,430,328**	**$18,420,677**

LOCAL ROADS

Project Type	Completed Cost	Scheduled Cost
Local Roads	$8,782,921	$350,504
Local Highways	$0	$2,546,307
Rehabilitation	$0	$0
Total	**$8,782,921**	**$2,896,811**

HIGHLIGHTED SET ASIDES

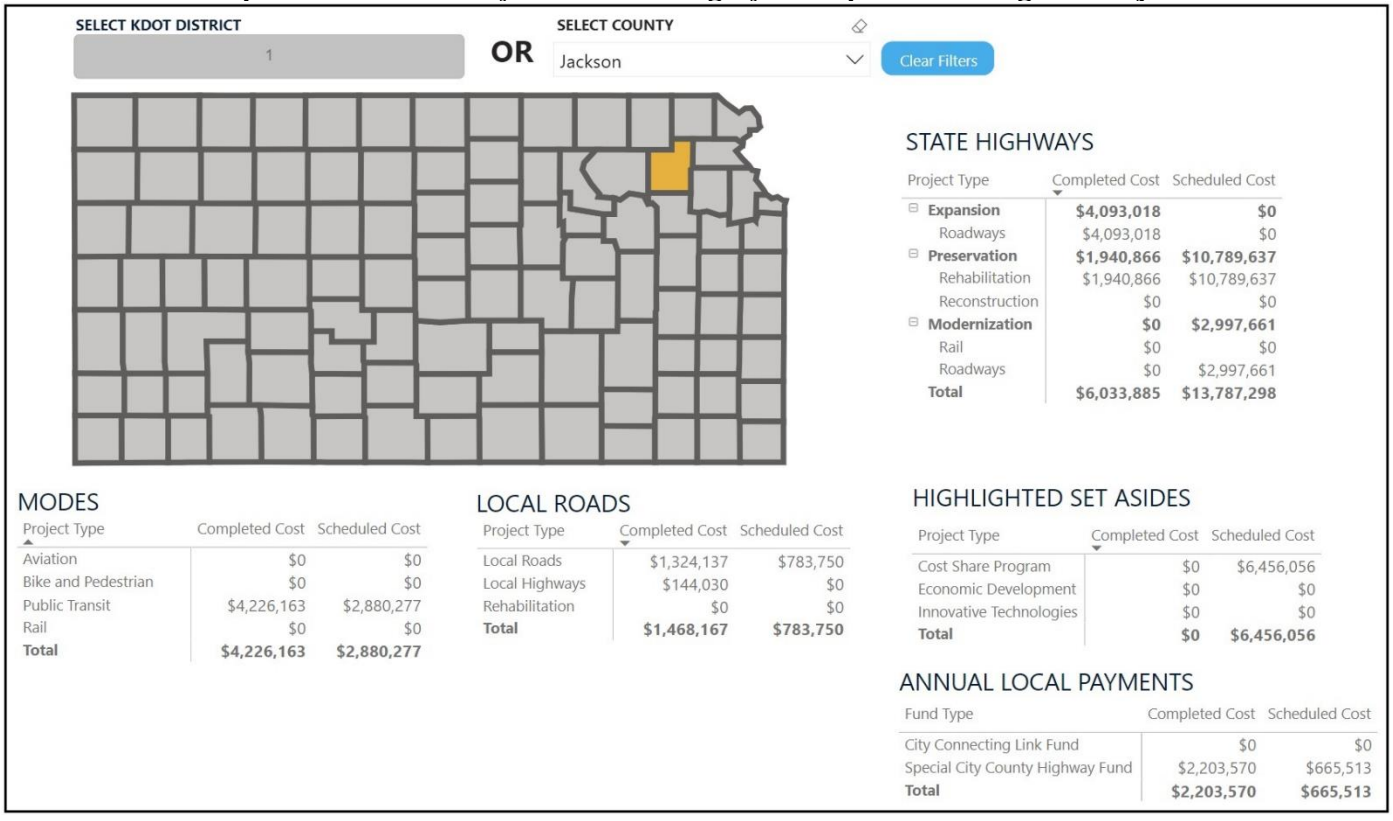
Project Type	Completed Cost	Scheduled Cost
Cost Share Program	$1,922,292	$381,250
Economic Development	$0	$0
Innovative Technologies	$0	$1,508,000
Total	**$1,922,292**	**$1,889,250**

ANNUAL LOCAL PAYMENTS

Fund Type	Completed Cost	Scheduled Cost
City Connecting Link Fund	$327,340	$130,990
Special City County Highway Fund	$16,238,735	$4,968,650
Total	**$16,566,075**	**$5,099,640**

Source: Kansas Department of Transportation

Map 24: Jackson County Eisenhower Legacy Transportation Program Projects



STATE HIGHWAYS

Project Type	Completed Cost	Scheduled Cost
Expansion	**$4,093,018**	**$0**
Roadways	$4,093,018	$0
Preservation	**$1,940,866**	**$10,789,637**
Rehabilitation	$1,940,866	$10,789,637
Reconstruction	$0	$0
Modernization	**$0**	**$2,997,661**
Rail	$0	$0
Roadways	$0	$2,997,661
Total	**$6,033,885**	**$13,787,298**

MODES

Project Type	Completed Cost	Scheduled Cost
Aviation	$0	$0
Bike and Pedestrian	$0	$0
Public Transit	$4,226,163	$2,880,277
Rail	$0	$0
Total	**$4,226,163**	**$2,880,277**

LOCAL ROADS

Project Type	Completed Cost	Scheduled Cost
Local Roads	$1,324,137	$783,750
Local Highways	$144,030	$0
Rehabilitation	$0	$0
Total	**$1,468,167**	**$783,750**

HIGHLIGHTED SET ASIDES

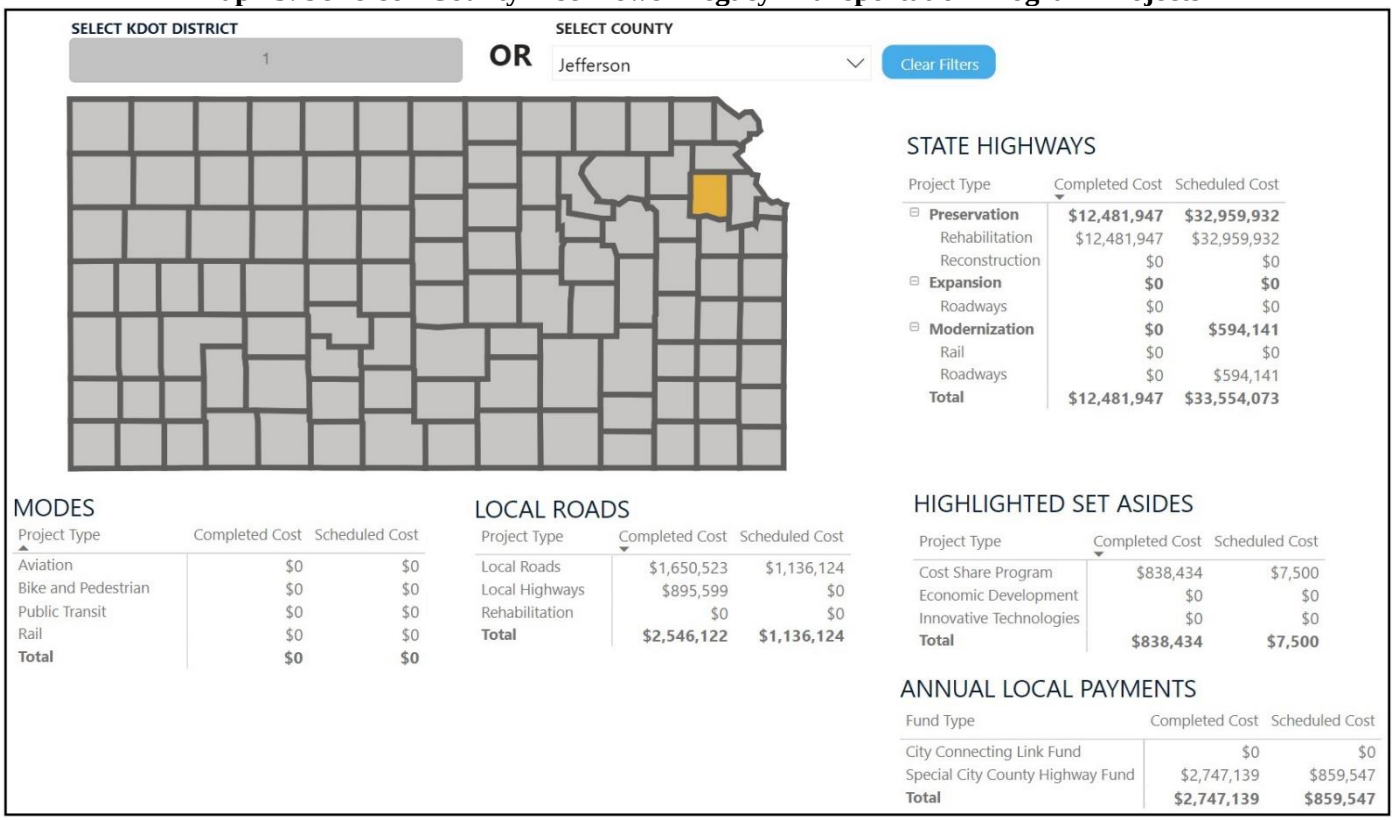
Project Type	Completed Cost	Scheduled Cost
Cost Share Program	$0	$6,456,056
Economic Development	$0	$0
Innovative Technologies	$0	$0
Total	**$0**	**$6,456,056**

ANNUAL LOCAL PAYMENTS

Fund Type	Completed Cost	Scheduled Cost
City Connecting Link Fund	$0	$0
Special City County Highway Fund	$2,203,570	$665,513
Total	**$2,203,570**	**$665,513**

Source: Kansas Department of Transportation

Map 25: Jefferson County Eisenhower Legacy Transportation Program Projects



STATE HIGHWAYS

Project Type	Completed Cost	Scheduled Cost
Preservation	**$12,481,947**	**$32,959,932**
Rehabilitation	$12,481,947	$32,959,932
Reconstruction	$0	$0
Expansion	**$0**	**$0**
Roadways	$0	$0
Modernization	**$0**	**$594,141**
Rail	$0	$0
Roadways	$0	$594,141
Total	**$12,481,947**	**$33,554,073**

MODES

Project Type	Completed Cost	Scheduled Cost
Aviation	$0	$0
Bike and Pedestrian	$0	$0
Public Transit	$0	$0
Rail	$0	$0
Total	**$0**	**$0**

LOCAL ROADS

Project Type	Completed Cost	Scheduled Cost
Local Roads	$1,650,523	$1,136,124
Local Highways	$895,599	$0
Rehabilitation	$0	$0
Total	**$2,546,122**	**$1,136,124**

HIGHLIGHTED SET ASIDES

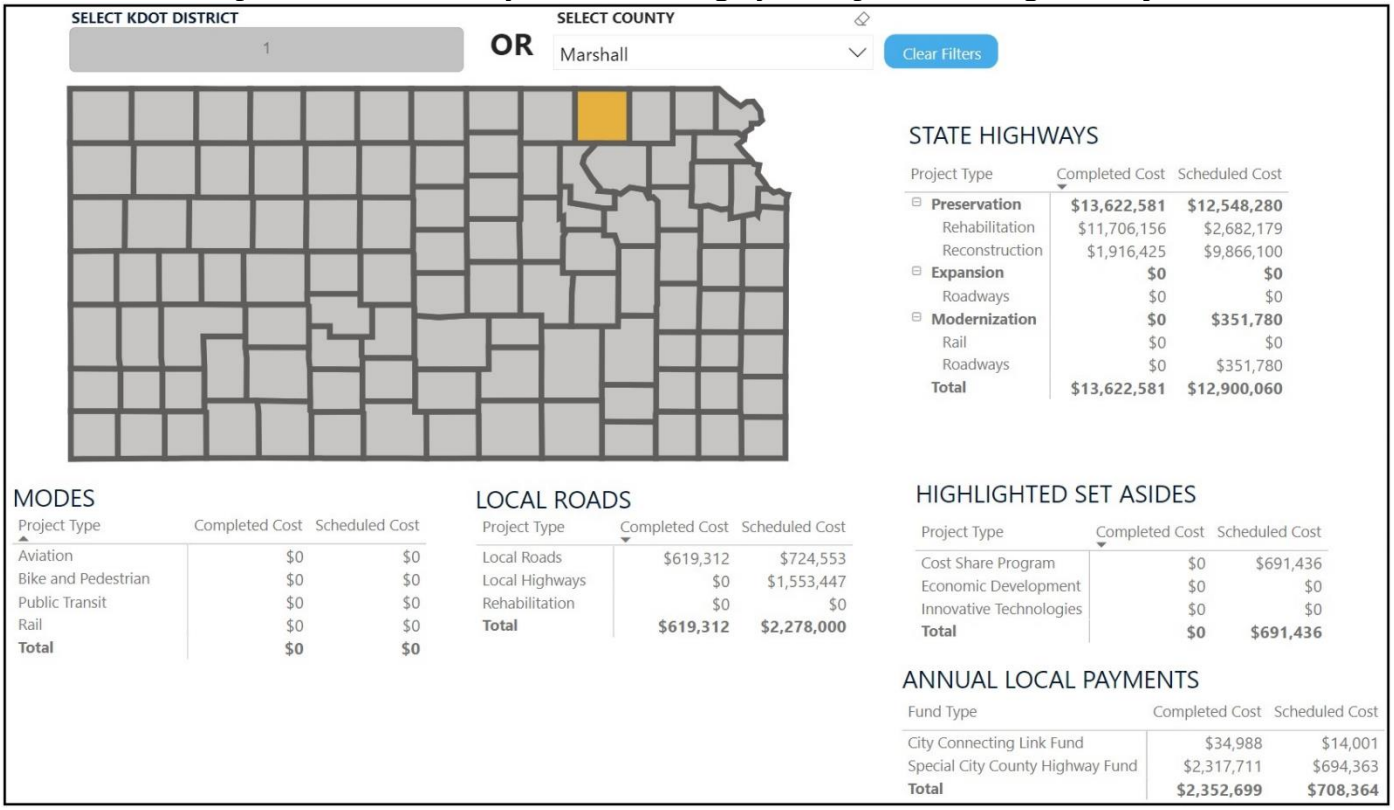
Project Type	Completed Cost	Scheduled Cost
Cost Share Program	$838,434	$7,500
Economic Development	$0	$0
Innovative Technologies	$0	$0
Total	**$838,434**	**$7,500**

ANNUAL LOCAL PAYMENTS

Fund Type	Completed Cost	Scheduled Cost
City Connecting Link Fund	$0	$0
Special City County Highway Fund	$2,747,139	$859,547
Total	**$2,747,139**	**$859,547**

Source: Kansas Department of Transportation

Map 26: Marshall County Eisenhower Legacy Transportation Program Projects



STATE HIGHWAYS

Project Type	Completed Cost	Scheduled Cost
Preservation	**$13,622,581**	**$12,548,280**
Rehabilitation	$11,706,156	$2,682,179
Reconstruction	$1,916,425	$9,866,100
Expansion	**$0**	**$0**
Roadways	$0	$0
Modernization	**$0**	**$351,780**
Rail	$0	$0
Roadways	$0	$351,780
Total	**$13,622,581**	**$12,900,060**

MODES

Project Type	Completed Cost	Scheduled Cost
Aviation	$0	$0
Bike and Pedestrian	$0	$0
Public Transit	$0	$0
Rail	$0	$0
Total	**$0**	**$0**

LOCAL ROADS

Project Type	Completed Cost	Scheduled Cost
Local Roads	$619,312	$724,553
Local Highways	$0	$1,553,447
Rehabilitation	$0	$0
Total	**$619,312**	**$2,278,000**

HIGHLIGHTED SET ASIDES

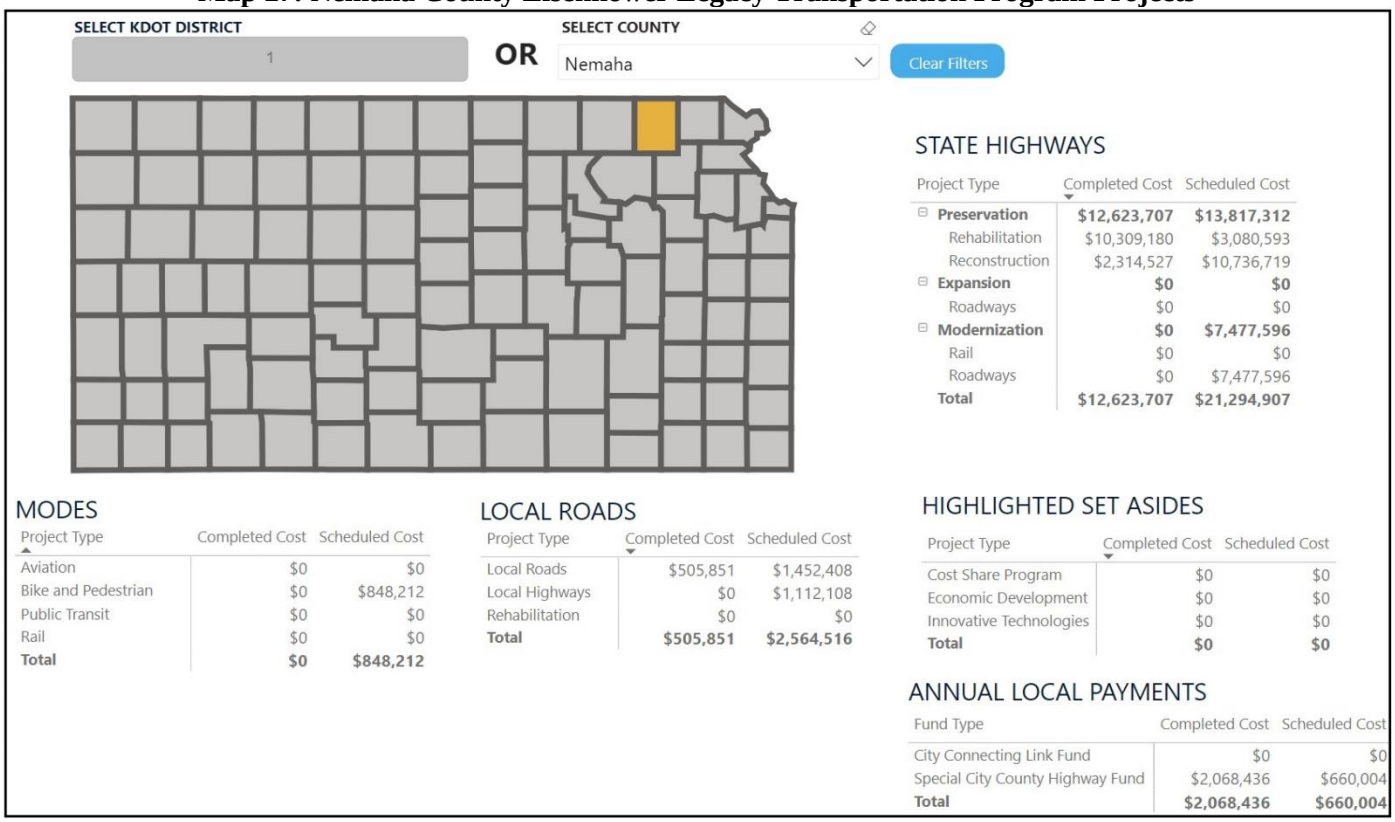
Project Type	Completed Cost	Scheduled Cost
Cost Share Program	$0	$691,436
Economic Development	$0	$0
Innovative Technologies	$0	$0
Total	**$0**	**$691,436**

ANNUAL LOCAL PAYMENTS

Fund Type	Completed Cost	Scheduled Cost
City Connecting Link Fund	$34,988	$14,001
Special City County Highway Fund	$2,317,711	$694,363
Total	**$2,352,699**	**$708,364**

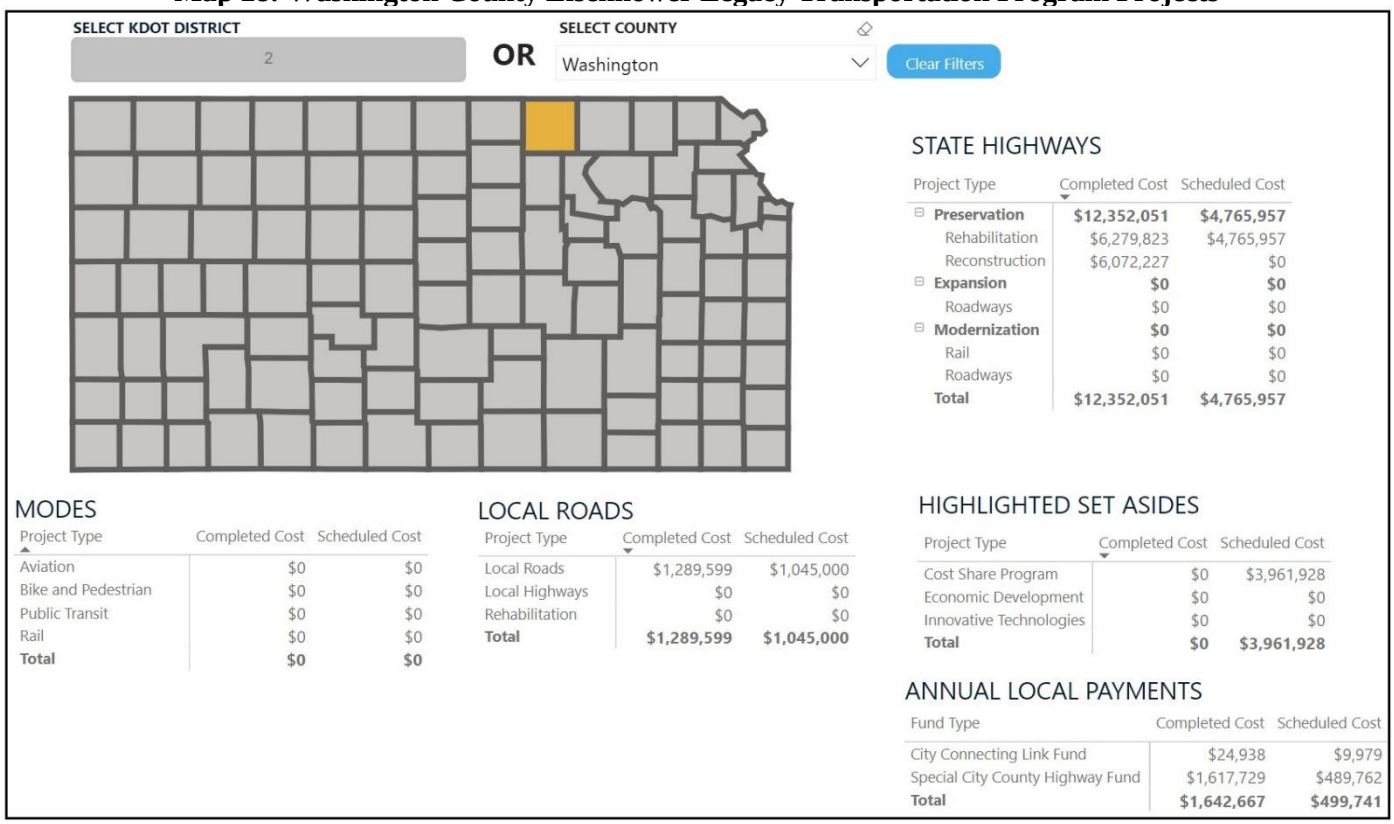
Source: Kansas Department of Transportation

Map 27: Nemaha County Eisenhower Legacy Transportation Program Projects



Source: Kansas Department of Transportation

Map 28: Washington County Eisenhower Legacy Transportation Program Projects



Source: Kansas Department of Transportation

Detailed information concerning development trends may be found in the Jurisdictional Comprehensive Plans. These plans, and on ground observations suggest that Kansas Region K's development continues to follow development described by planners in the previous HMP, specifically small-scale development projects over small areas. On average, the majority of undeveloped land has remained so over the life of the previous HMP and is expected to do so over the life of this plan. In some of the Regions' developing and growing communities building activity has increased proportionally to match the incoming population. This data is reflected in both the previously presented population and housing data. The following projects were reported by individual jurisdiction:

- Doniphan County: Replacement of two low sufficiency rated bridges, with another to be completed by 2025.
- Doniphan County: Phase II of MRLS 471-460 R levee project to raise levee at certain areas by 3.37'
- Elwood, Doniphan County: Installation of 2 permanent large capacity flood pumps to alleviate "fish bowl" flooding when levee floodgates are closed
- Troy, Doniphan County: Completed Phase I of the 4.16kv to 12.47kv voltage conversion of the electrical system
- Troy, Doniphan County: Started a wastewater lagoon project at the water plant
- Highland, Doniphan County: Water treatment plant
- Highland, Doniphan County: Lift Station - New pumps and control panel
- Lawrence, Douglas County: MSO Campus at VenturePark
- Lawrence, Douglas County: KDOT 4-lane expansion of SLT: possible ancillary spin-off developments
- Lawrence, Douglas County: New Boston Crossing: SE corner of Iowa St./US-59 & 35th Street
- Lawrence, Douglas County: Kansas SKY Solar installation (Pending before Board of County Commissioners)
- Lawrence, Douglas County: KU Innovation Park: New national security research center
- Lawrence, Douglas County: New Residential Subdivisions at Hunter's Hill Subdivision (near Hill Song Circle & Hunters Hill Drive) and Garber Annexation (along E. 902 Road)
- The University of Kansas, Douglas County: KU Gateway District renovations to David Booth Kansas Memorial Stadium and the addition of a convention center, hotel, and mixed-use facilities
- The University of Kansas, Douglas County: The Crossings at KU, a mixed-use development with apartments, retail, and research/lab space
- The University of Kansas, Douglas County: Additions to the KU Innovation Park (which is a private company) designed to attract technology startups
- Lakeside Village Improvement District, Jefferson County: Updated water system updated with new control panels at the pump house, wells, and water tower.

All current and future development is potentially vulnerable to the hazards identified in this plan. However, many of the participating jurisdictions of Kansas Region K 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, recreational, and green spaces.

Finally, there have been no major changes in existing jurisdictional facilities, either through construction or Renovation. 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.

3.10 Agricultural Data

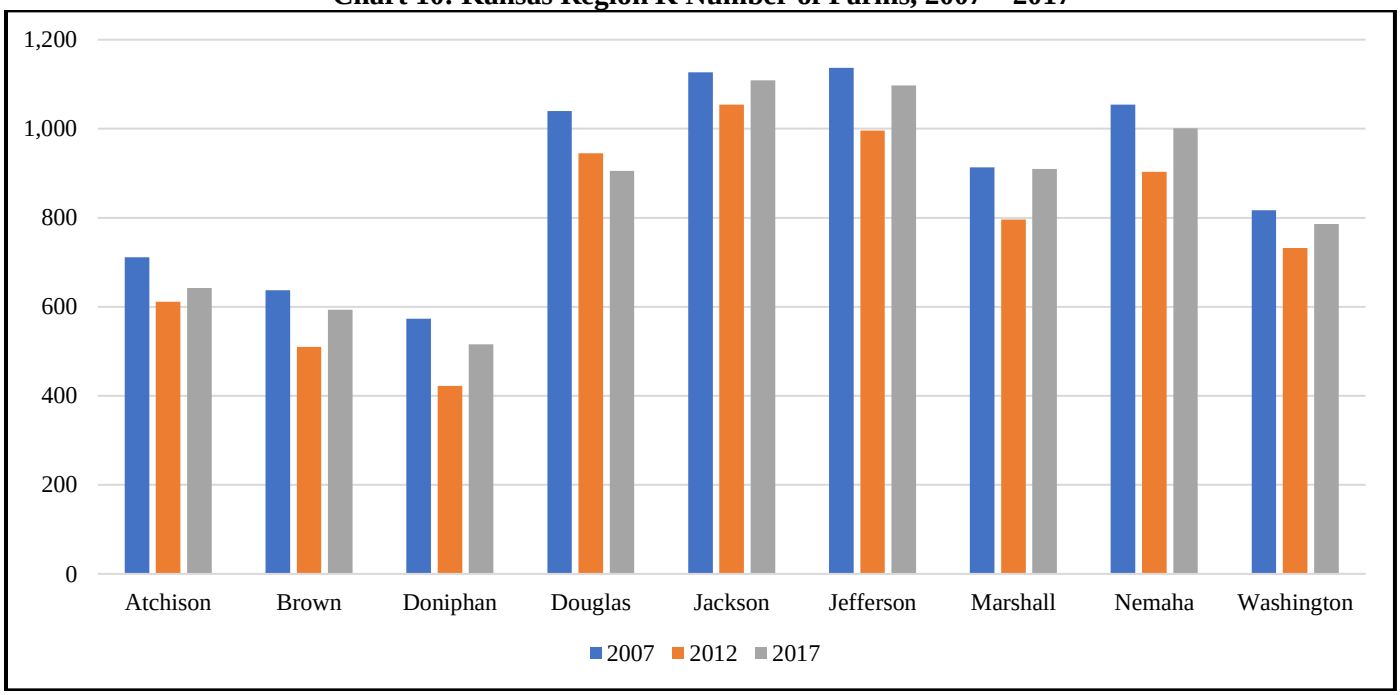
Agriculture forms a very important part of both the economic and social fabric of Kansas Region K. USDA National Agricultural Statistics Service data from 2007, 2012, and 2017 (the latest available data) was used to develop agricultural information for the region, as detailed in the following table and charts:

Table 27: Kansas Region K Regional Agricultural Data

Jurisdiction	Year	Number of Farms	Farm Acreage	Market Value of Products Sold
Kansas Region K	2007	8,009	3,207,764	$819,663,000
	2012	6,969	2,789,498	$$860,437,000
	2017	7,559	2,913,805	$1,015,721,000

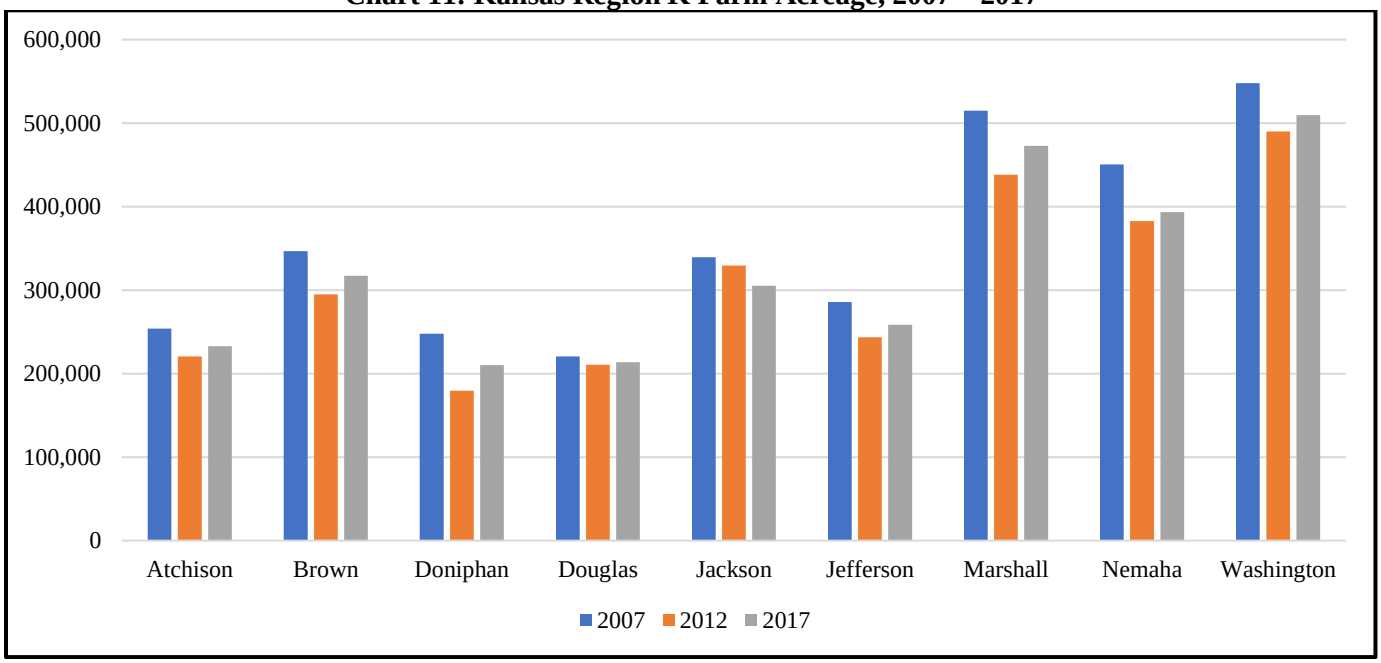
Source: USDA National Agricultural Statistics Service

Chart 10: Kansas Region K Number of Farms, 2007 – 2017



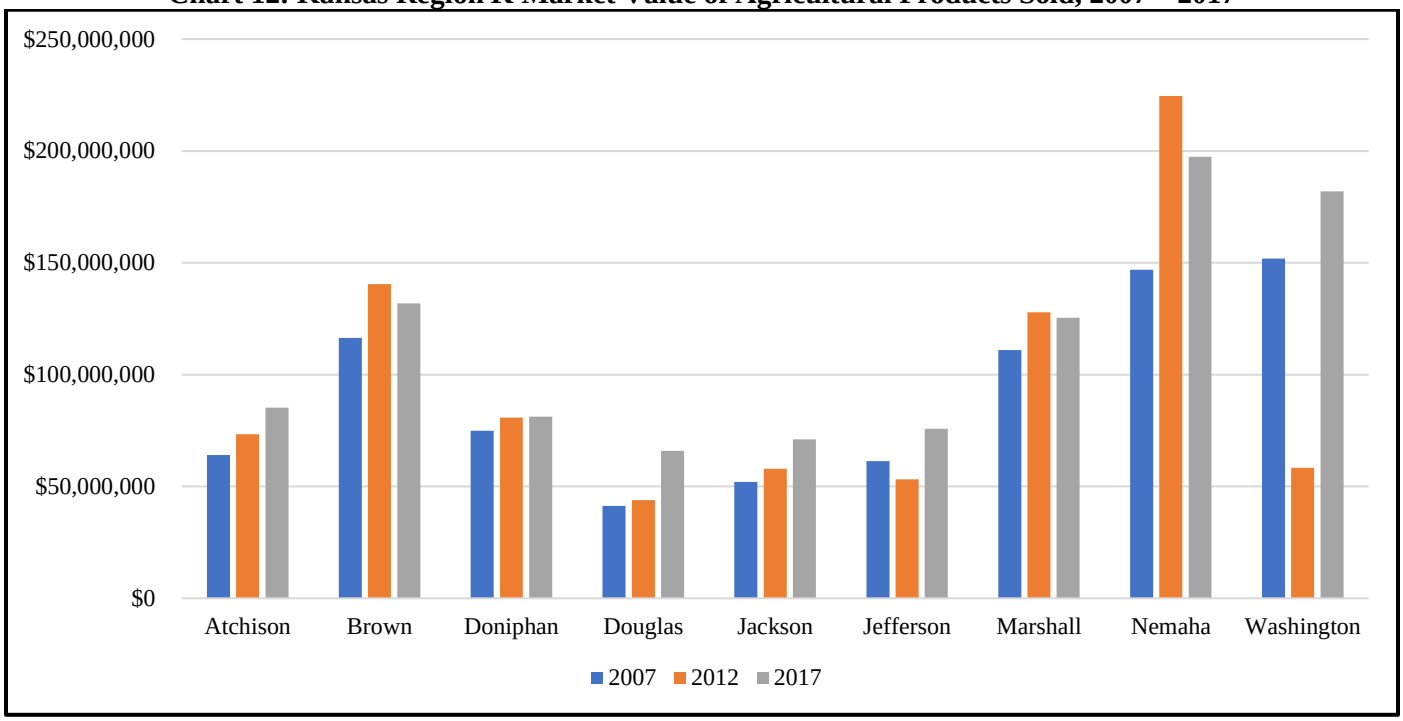
Source: USDA

Chart 11: Kansas Region K Farm Acreage, 2007 – 2017



Source: USDA

Chart 12: Kansas Region K Market Value of Agricultural Products Sold, 2007 – 2017



Source: USDA

The following table breaks down USDA National Agricultural Statistics Service data from 2007, 2012, and 2017 (the latest available data) on a county level:

Table 28: Kansas Region K County Level Agricultural Data

Jurisdiction	Year	Number of Farms	Farm Acreage	Market Value of Products Sold
Atchison County	2007	711	254,101	$63,982,000
	2012	611	220,404	$73,395,000
	2017	642	232,748	$85,204,000
Brown County	2007	637	346,758	$116,368,000
	2012	510	294,888	$140,508,000
	2017	573	317,352	$131,843,000
Doniphan County	2007	422	247,815	$74,956,000
	2012	516	179,549	$80,801,000
	2017	1,040	210,383	$81,227,000
Douglas County	2007	945	220,636	$41,262,000
	2012	905	210,676	$43,882,000
	2017	1,127	213,635	$65,867,000
Jackson County	2007	1,054	339,291	$51,998,000
	2012	1,109	329,244	$57,857,000
	2017	1,137	305,431	$71,039,000
Jefferson County	2007	996	285,803	$61,344,000
	2012	1,097	243,634	$53,131,000
	2017	913	258,703	$75,731,000
Marshall County	2007	796	514,818	$111,011,000
	2012	910	438,438	$127,917,000
	2017	1,054	472,591	$125,395,000
Nemaha County	2007	903	450,508	$146,896,000

Table 28: Kansas Region K County Level Agricultural Data

Jurisdiction	Year	Number of Farms	Farm Acreage	Market Value of Products Sold
	2012	1,001	382,602	$224,602,000
	2017	817	393,331	$197,436,000
Washington County	2007	732	548,034	$151,846,000
	2012	786	490,063	$58,344,000
	2017	711	509,631	$181,979,000

Source: USDA National Agricultural Statistics Service

3.11 Potential Impacts of Climate Change

There is a scientific consensus that climate change is occurring, and recent climate modeling results indicate that extreme weather events may become more common. Rising average temperatures produce a more variable climate system which may result in an increase in the frequency and severity of some extreme weather events including longer and hotter heat waves (and by correlation, an increased risk of wildfires), higher wind speeds, greater rainfall intensity, and increased tornado activity. Where applicable, and with proper scientific evidence, potential climate change factors will be addressed in subsequent sections for relevant identified hazards.

Data from the NOAA NCEI Kansas 2022 State Climate Summary indicates the following concerning the climate change in the state:

- Temperatures have risen approximately 1.5° Fahrenheit since the beginning of the 20th century.
- Recent multiyear periods have been among some of the warmest on record for Kansas, comparable to the extreme heat of the Dust Bowl era of the 1930s.
- Greater warming has occurred in the winter and spring months.
- The frequency of extreme precipitation events has been highly variable but shows a general increase, with the number of 2-inch precipitation events was well above average during the 2015–2020 period.
- Although projections of overall annual precipitation are uncertain, summer precipitation is projected to decrease across the state while winter precipitation is projected to increase.
- The increase in extreme precipitation events has been more pronounced in the eastern part of the state.
- The intensity of future droughts is projected to increase.
- Drought, combined with the extreme summer heat, is expected to have significant negative impacts on crop yields, livestock production, and pasture conditions.
- The frequency and severity of wildfires is projected to increase.

Section 4 – Hazard Identification and Risk Assessment

4.1 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 K. 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 an 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 K can continue to develop a strategy to identify and prioritize mitigation action to defend against these potential risks.

4.2 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 assistance available.

If it is apparent that a Presidential disaster declaration may be necessary to assist in the recovery of an impacted area, Counties within Kansas Region K 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 K:

Table 29: Kansas Region K Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Assistance	Mitigation Grants
DR-4640-KS	3/22/2022	Severe Storms and Straight-Line Winds	Doniphan, Marshall, Nemaha, Washington	$12,159,785	$79,818
DR-4504-KS	3/29/2020	Covid-19	All Kansas Counties	$447,055,679	$6,948,544
DR-4499-KS	8/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Atchison, Doniphan, Jefferson, Marshall, Nemaha, Washington	$51,157,548	$3,331,442
DR-4417-KS	3/20/2019	Severe Storms, Straight-Line Winds, and Flooding	Doniphan	$3,509,374	$221,139
DR-4403-KS	10/19/2018	Severe Storms, Straight-Line Winds, and Flooding	Marshall	$4,545,539	$614,317
DR-4230-KS	7/20/2015	Severe Storms, Tornadoes, Straight-Line Winds and Flooding	Atchison, Brown, Doniphan, Jackson, Jefferson, Marshall, Nemaha, Washington	$11,018,053	
DR-4150-KS	10/22/2013	Severe Storms, Straight-Line Winds, Tornadoes	Washington	$10,135,201	
DR-4035-KS	9/23/2011	Flooding	Atchison, Doniphan	$2,900,592	
DR-4010-KS	7/29/2011	Severe Storms, Straight-Line Winds, Tornadoes and Flooding	Washington	$7,283,729	
DR-1932-KS	8/10/2010	Severe Storms, Flooding and Tornadoes	Atchison, Brown, Doniphan, Jackson, Marshall, Washington	$7,384,786	
DR-1885-KS	3/9/2010	Severe Severe Winter Weathers and Snowstorm	Atchison, Brown, Doniphan, Douglas, Jackson, Jefferson, Marshall, Nemaha, Washington	$15,069,228	
DR-1868-KS	12/23/2009	Severe Severe Winter Weather	Marshall, Washington	$19,988,438	
DR-1849-KS	6/25/2009	Severe Storms, Flooding, Straight-Line Winds, and Tornadoes	Marshall	$11,534,818	
DR-1776-KS	7/9/2008	Severe Storms, Flooding, and Tornadoes	Brown, Jackson	$55,300,511	
DR-1741-KS	2/1/2008	Severe Severe Winter Weathers	Atchison, Brown, Doniphan, Jackson, Jefferson, Marshall, Nemaha, Washington	$227,086,533	
DR-1699-KS	5/6/2007	Severe Storms, Tornadoes, and Flooding	Brown, Doniphan, Douglas, Jackson, Marshall, Nemaha, Washington	$98,286,095	
DR-1638-KS	4/13/2006	Severe Storms, Tornadoes, Straight-Line Winds	Douglas	$4,911,053	
DR-1579-KS	2/8/2005	Severe Severe Winter Weather, Heavy Rains, and Flooding	Atchison, Brown, Douglas, Jackson, Jefferson	$82,381,461	
DR-1402-KS	2/6/2002	Ice Storm	Douglas, Jefferson	$45,020,240	
DR-1258-KS	11/5/1998	Severe Storms and Flooding	Douglas	$9,574,047	
DR-1254-KS	10/14/1998	Severe Storms, Flooding and Tornadoes	Douglas	$6,640,272	

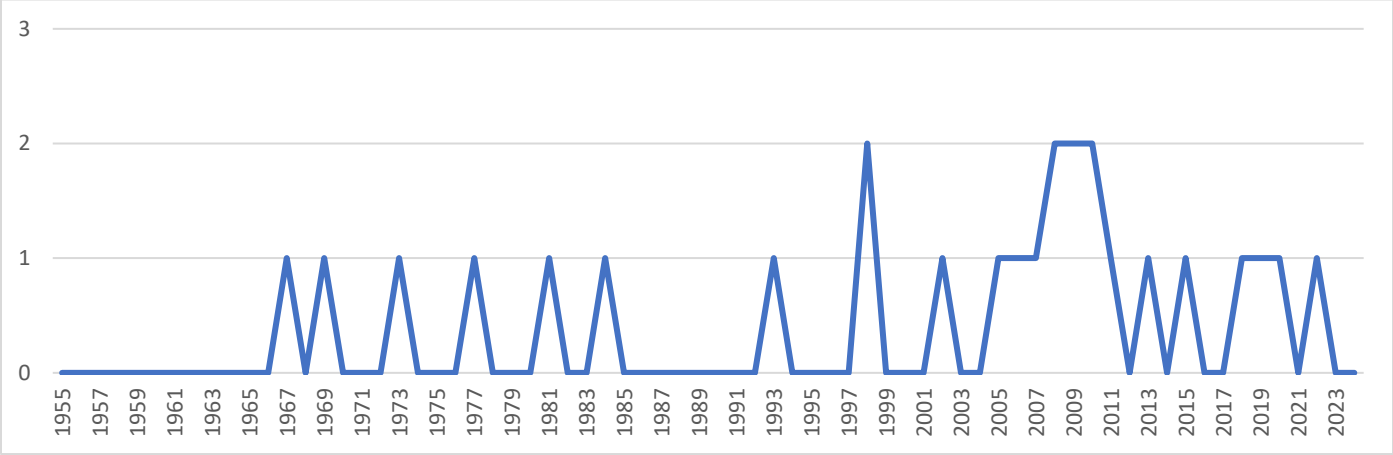
Table 29: Kansas Region K Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Assistance	Mitigation Grants
DR-1000-KS	7/22/1993	Flooding, Severe Storms	Atchison, Brown, Doniphan, Douglas, Jackson, Jefferson, Marshall, Nemaha, Washington	-	
DR-714-KS	6/22/1984	Severe Storms, Tornadoes, and Flooding	Brown, Doniphan, Nemaha	-	
DR-644-KS	7/18/1981	Severe Storms, Flooding, and Tornadoes	Douglas	-	
DR-539-KS	9/20/1977	Severe Storms, Flooding	Atchison, Brown, Doniphan, Jackson, Jefferson, Johnson, Leavenworth, Nemaha, Marshall, Wyandotte	-	
DR-378-KS	5/2/1973	Severe Storms, Flooding	Atchison, Brown, Doniphan, Douglas, Jackson, Jefferson, Marshall, Nemaha, Washington	-	
DR-267-KS	7/15/1969	Tornadoes, Severe Storms, Flooding	Douglas	-	
DR-229-KS	7/18/1967	Tornadoes, Severe Storms, Flooding	Atchison, Doniphan, Douglas, Nemaha, Washington	-	

Source: FEMA

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

Chart 13: Kansas Region K Presidentially Declared Disasters by Year



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 MPC reviewed the historical federal disaster declarations to assist in hazard identification. The following table details Emergency Declarations for Kansas Region K.

Table 30: Kansas Region K Emergency Declarations

Designation	Declaration Date	Incident Type	Counties	Public Assistance
EM-3481-KS	03/13/2020	Kansas Covid-19	All	-
EM-3412-KS	05/28/2019	Flooding	Doniphan, Douglas, Jefferson	-
EM-3324	06/25/2011	Kansas Flooding	Atchinson, Doniphan	-
EM-3282-KS	12/12/2007	Kansas Severe Winter Weathers	All	-
EM-3236-KS	09/10/2005	Hurricane Katrina Evacuation	All	-

Source: FEMA
Note: -: Data unavailable

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. The following table details fire management declarations for Kansas Region K.

Table 31: Kansas Region K Fire Management Declarations

Designation	Declaration Date	Incident Name	Counties	Public Assistance	Emergency Work
FM-5463-KS	04/12/2023	Kansas Haddam Fire	Washington	-	-

Source: FEMA
Note: -: Data unavailable

The Governor of the State of Kansas has declared one Kansas Disaster Declaration during the past five years for Region K. On April 20, 2020 a declaration was issued for the COVID-19 pandemic.

4.3 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 K:

Table 32: Kansas Region K Identified Natural Hazards

Hazard	Included in 2019 HMP	Notes
Agricultural Infestation	Yes	-
Dam or Levee Failure	Yes	-
Drought	Yes	-
Extreme Temperatures	Yes	-
Flood	Yes	-

Table 32: Kansas Region K Identified Natural Hazards

Hazard	Included in 2019 HMP	Notes
Severe Weather	Yes	Combined hail, lightning, and high and thunderstorm winds
Severe Winter Weather	Yes	Renamed from Severe Winter Weather
Tornado	Yes	-
Wildfire	Yes	Renamed with greater focus on wildfires

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

Table 33: Kansas Region K Identified Human Caused and Technological Hazards

Hazard	Included in 2019 HMP	Notes
Cybersecurity Incident	No	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/or geographic improbability, civil unrest, expansive soils, landslide, land subsidence, and radiological incident (hazards identified in the State of Kansas Hazard Mitigation Plan) were not included in the scope of this plan.

4.4 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 K 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 the Kansas Region K jurisdictions view risk and allowed for integration of hazard data into the HMP.

For natural hazards, data from this plan was vetted by local Emergency Managers and participating jurisdictions to ensure it matched local conditions. Additionally, the Kansas Region K 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 HMP.

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

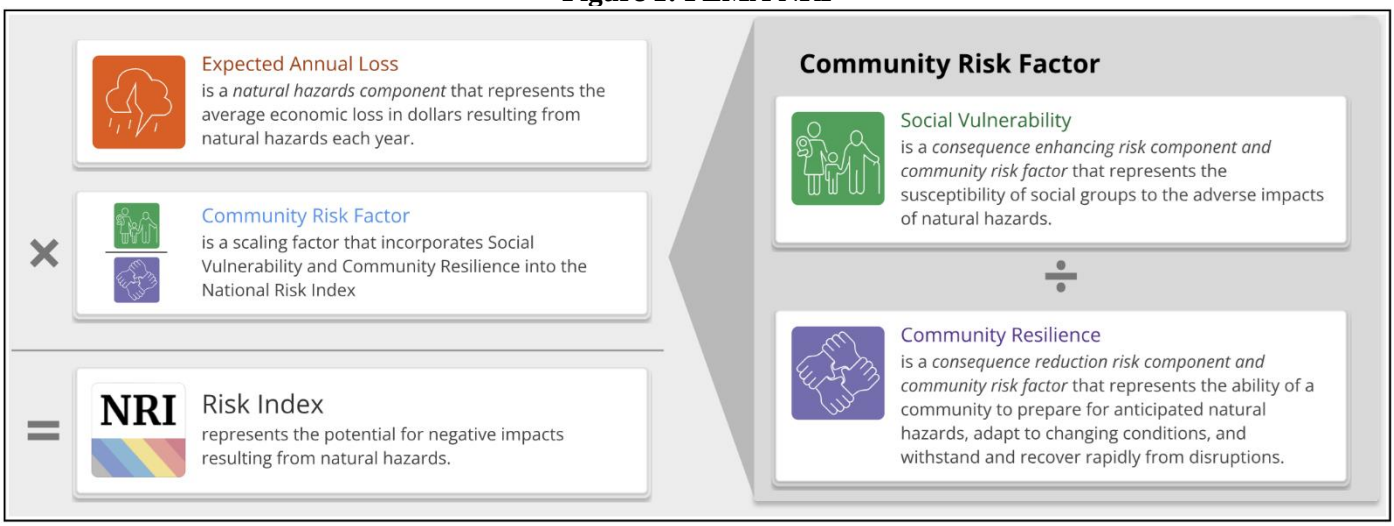
(building, population, or agriculture) expected to be lost due to an occurrence. EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk.

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 1: FEMA NRI



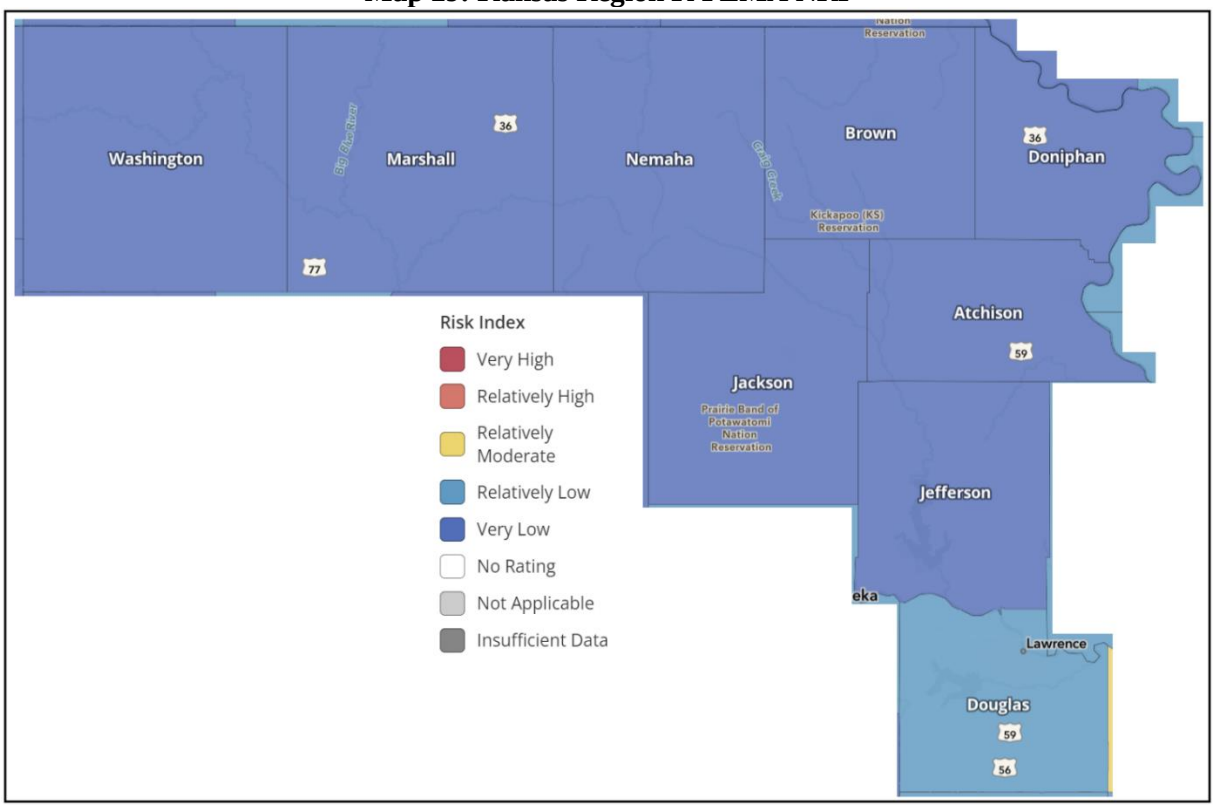
For both the Risk Index and EAL there is a qualitative rating that describes the nature of a community's score in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Because all ratings are relative, there are no specific numeric values that determine the rating.

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 84.32 then its Risk Index value is greater than 84.32% 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.

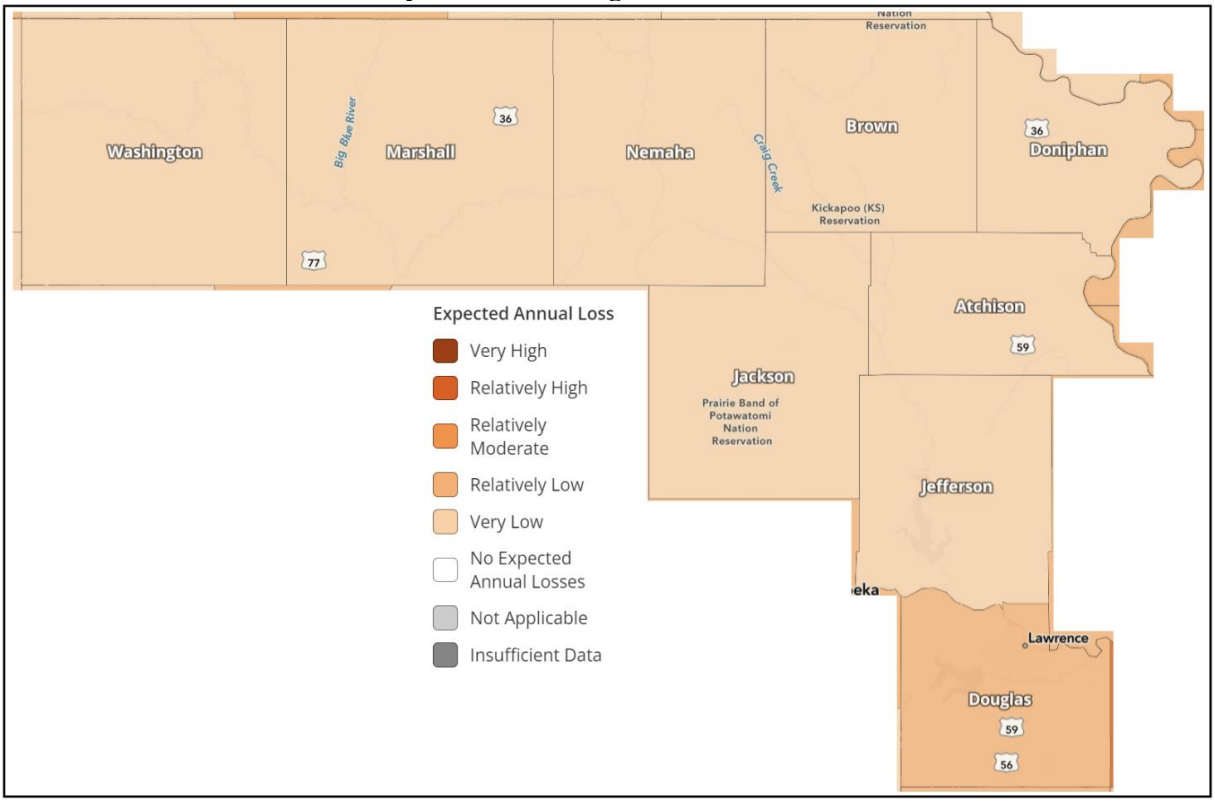
The following maps indicate the composite NRI and EAL for Kansas Region K counties:

Map 29: Kansas Region K FEMA NRI



Source: FEMA NRI

Map 30: Kansas Region K FEMA EAL



Source: FEMA NRI

The following table indicates the FEMA NRI and EAL analysis for each participating Kansas Region K county for all identified natural hazards:

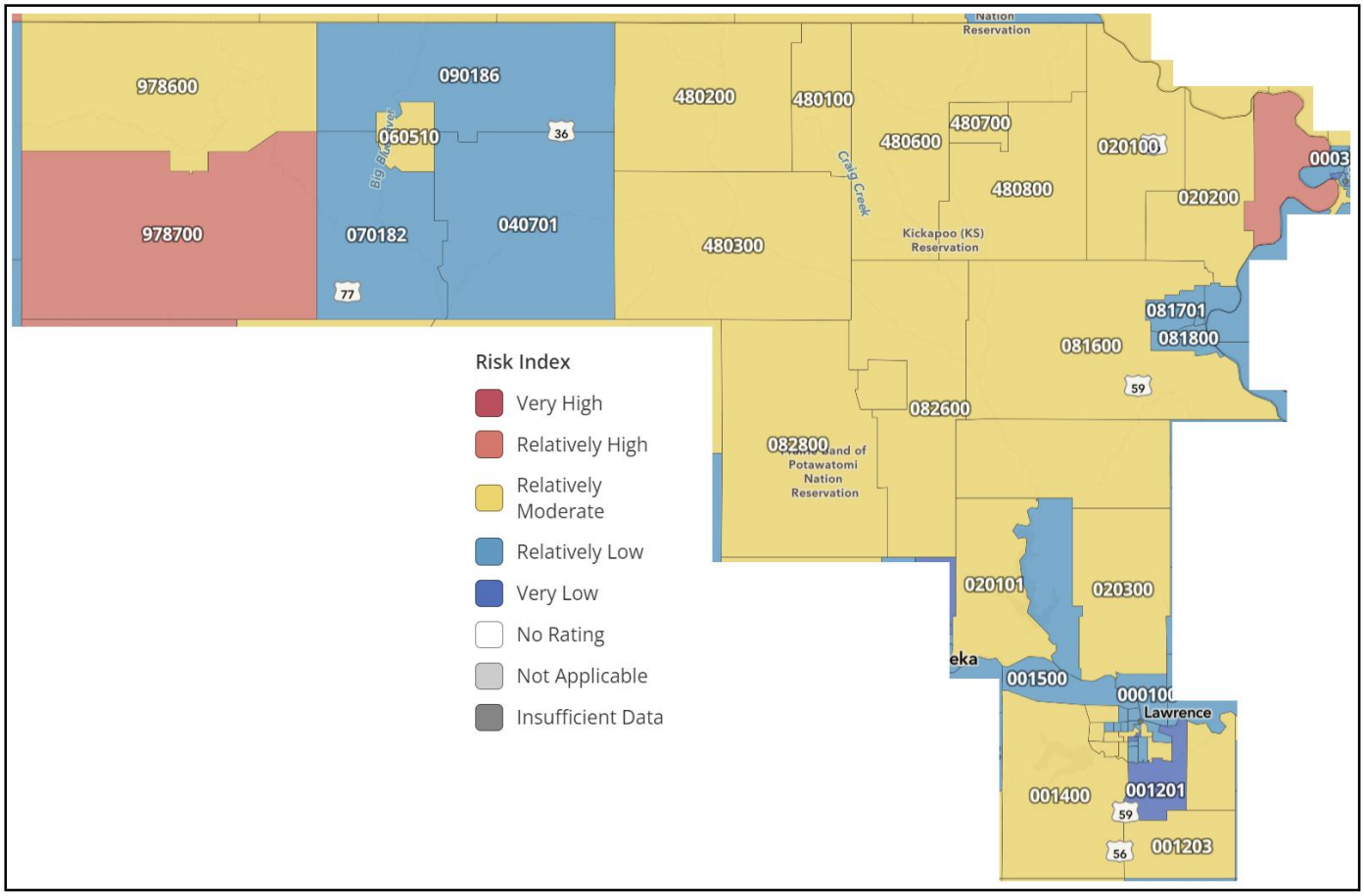
Table 34: Kansas Region K FEMA NRI and EAL for All Natural Hazards

County	Risk Index	EAL
Atchison	Very Low	Very Low
Brown	Very Low	Very Low
Doniphan	Very Low	Very Low
Douglas	Relatively Low	Relatively Low
Jackson	Very Low	Very Low
Jefferson	Very Low	Very Low
Marshall	Very Low	Very Low
Nemaha	Very Low	Very Low
Washington	Very Low	Very Low

Source: FEMA NRI

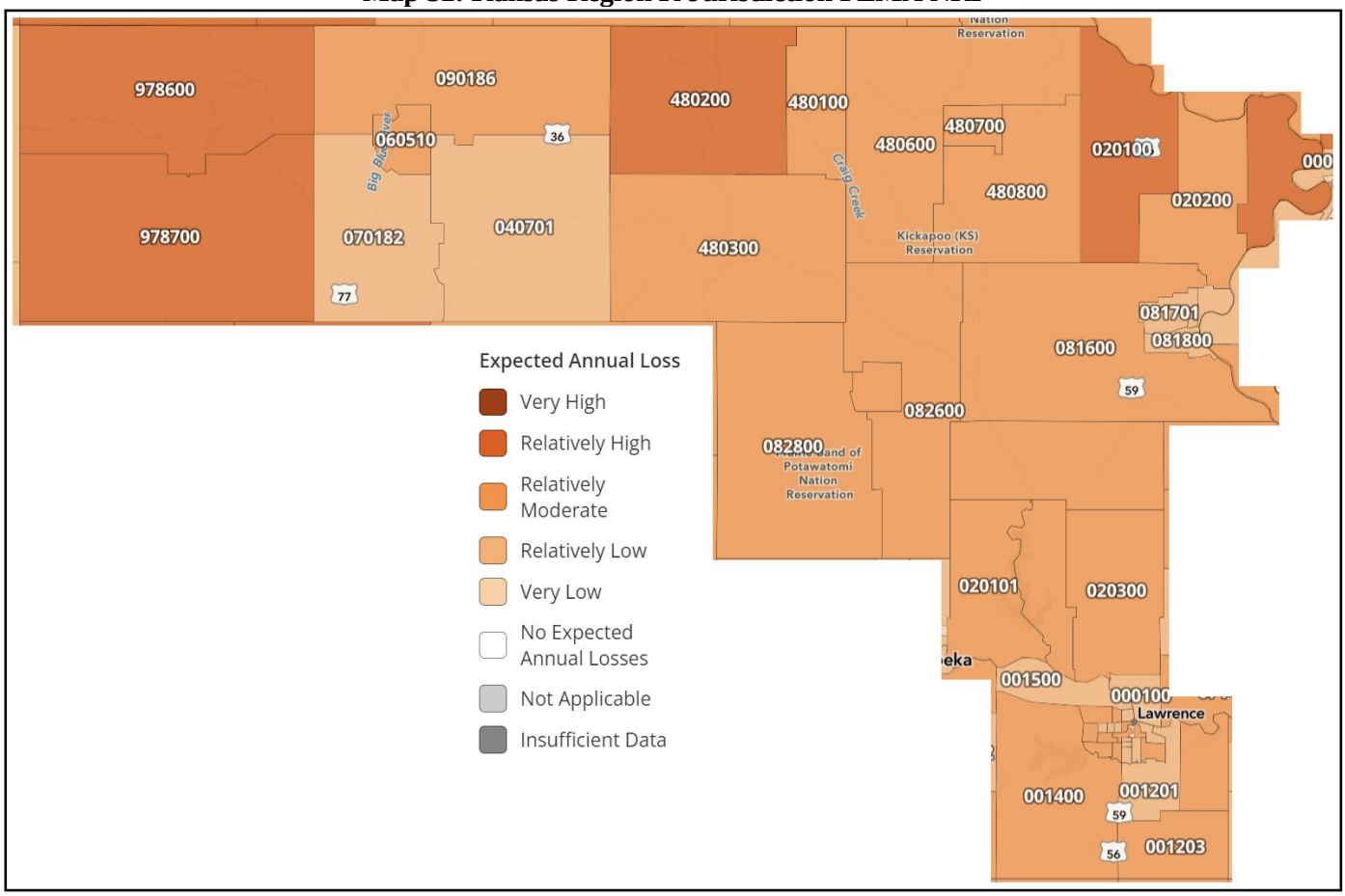
To help understand the risk and vulnerability to the identified hazards in this HMP for participating jurisdictions, risk index and EAL mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions. The following maps indicate the composite NRI and EAL for Kansas Region K census tracts:

Map 31: Kansas Region K Jurisdiction FEMA NRI



Source: FEMA NRI

Map 32: Kansas Region K Jurisdiction FEMA NRI



Source: FEMA NRI

The following hazard specific sections provide NRI and EAL mapping by census tract to visually indicate potential vulnerability and loss. Augmenting these maps, full NRI census tract data is available in Appendix C detailing specific information for each census tract in each Kansas Region K county.

As the FEMA NRI does not provide data concerning human caused and technological caused hazards the hazard rating methodology used on the 2019 Kansas Region K 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 levels of planning significance were identified, as follows:

Table 35: 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 historic 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 in to 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 K.

Table 36: Kansas Region K Technical and Human Caused Hazard Planning Significance

Hazard	Cybersecurity Incident	Hazardous Materials Incident	Infrastructure Failure	Radiological Incident	Terrorism	Transmissible Disease
Atchison	High	Moderate	Moderate	Low	Low	Moderate
Brown	High	Moderate	Moderate	Low	Low	Moderate
Doniphan	High	Moderate	Moderate	Low	Low	Moderate
Douglas	High	Moderate	Moderate	Low	Low	Moderate
Jackson	High	Moderate	Moderate	Low	Low	Moderate
Jefferson	High	Moderate	Moderate	Low	Low	Moderate
Marshall	High	Moderate	Moderate	Low	Low	Moderate
Nemaha	High	Moderate	Moderate	Low	Low	Moderate
Washington	High	Moderate	Moderate	Low	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.

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 K has had no recorded earthquake above Richter Scale Magnitude 3.1, 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 against this hazard in favor of prioritizing other hazards.
- **Expansive Soils:** Information from the United States Geological Service (USGS) Swelling Clays Map of the Conterminous United States indicates that the majority of Kanss Region K has soils with little or no clay, and thus no swelling potential. As such, the MPC opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.

- **Land Subsidence:** There have been no recorded incidences of subsidence events in Kansas Region K. Additionally, geologic maps indicate that the region has minimal Karst topography, a known contributor to subsidence. Due to a lack of documented history and indicated risk, the MPC opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.
- **Landslide:** There have been no recorded damaging landslide events in Kansas Region K. Due to a lack of documented history and indicated risk, the MPC opted to not allocate potential resources or funding to mitigate against 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 a 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.

4.5 Hazard Occurrence and Assessment Data

NOAA's NCEI Storm Events Database was used as the primary source of information for previous occurrences of storm events. Full data sets were used, where applicable, for hazard occurrence and impact data. Where data sets were unavailable for a hazard, local reporting from participating jurisdictions was relied upon.

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 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. 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.

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.

4.6 Jurisdictional Critical Facilities and Assets

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 K maintains critical facility details under separate cover for security purposes. For this HMP, 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 and levee failure and flood). Data concerning critical facilities potentially impacted by these point hazards, as available, is detailed under the respective hazard section.

Each hazard section provides a discussion on potentially vulnerable community lifelines. Community lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security, and include safety, health, energy, communication, transportation, and water systems.

4.7 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 K, 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. Please note that natural hazards are presented in order first, followed by human caused and technological hazards.

4.8 Agricultural Infestation

4.8.1 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.

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.

4.8.2 Location & Extent

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 (KDHE), 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 K:

- Atchison County: 12
- Brown County: 64
- Doniphan County: 17
- Douglas County: 27
- Jackson County: 55
- Jefferson County: 35
- Marshall County: 102
- Nemaha County: 310
- Washington County: 147

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 K is also susceptible to various forms of crop infestations and disease. The following major crops are particularly susceptible to infestation:

- Wheat: Kansas Region K 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.

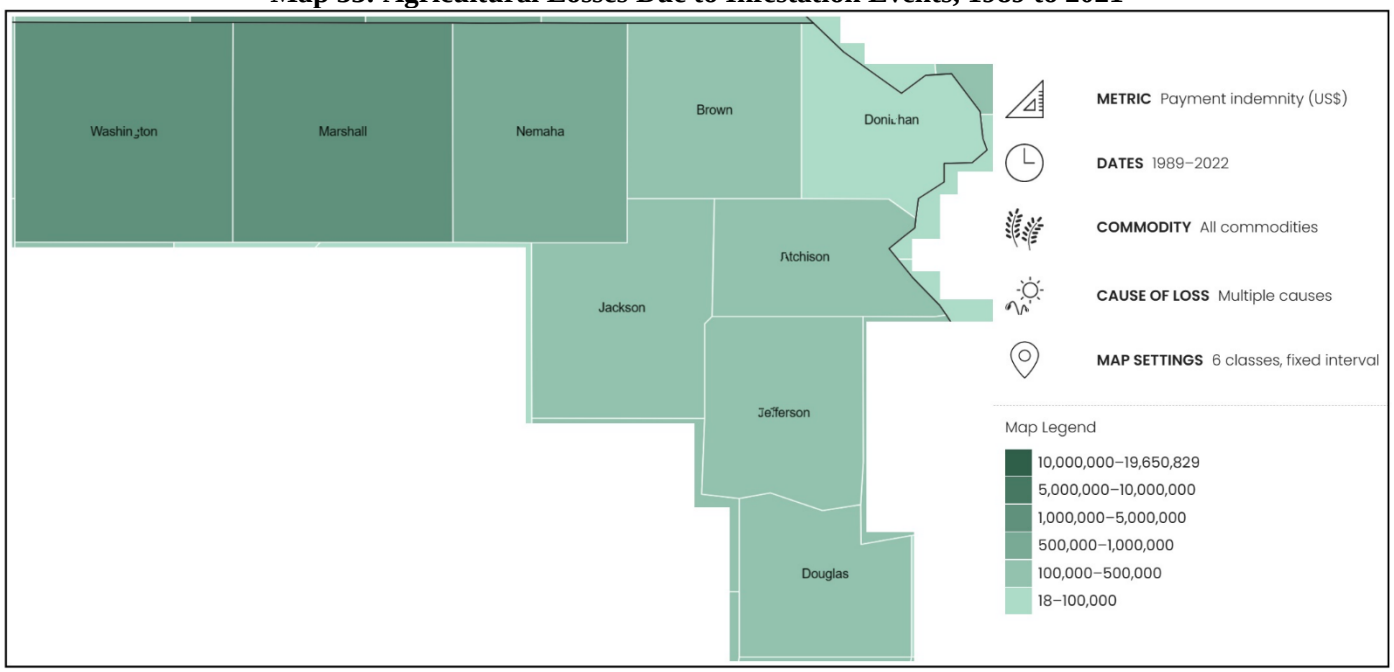
Trees within Kansas Region K are also susceptible to a variety pest and disease including:

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

4.8.3 Previous Occurrences

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 2021:

Map 33: Agricultural Losses Due to Infestation Events, 1989 to 2021



Source: USDA

4.8.4 Probability of Future Incidents

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

- Crop Types: The types of crops grown in Southeast Kansas 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 K 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.

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

Climate change can have several impacts on agricultural infestation in Kansas Region K, 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 K, 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: Climate change can result in shifts in the geographic distribution of pests. Pests that were once uncommon in Kansas Region K may become more prevalent as temperatures become more suitable for their survival and reproduction.
- Altered Disease Dynamics: Climate change 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: Climate change 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: Climate change 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.

4.8.6 Vulnerability and Impact

As illustrated by the following table from the USDA 2017 Census of Agriculture, Kansas Region K has a large agricultural base susceptible to disease and pest infestation:

Table 37: Kansas Region K County Level Agricultural Data

Jurisdiction	Number of Farms	Farm Acreage	Market Value of Products Sold
Atchison County	642	232,748	$85,204,000
Brown County	573	317,352	$131,843,000
Doniphan County	1,040	210,383	$81,227,000
Douglas County	1,127	213,635	$65,867,000
Jackson County	1,137	305,431	$71,039,000
Jefferson County	913	258,703	$75,731,000
Marshall County	1,054	472,591	$125,395,000

Table 37: Kansas Region K County Level Agricultural Data

Jurisdiction	Number of Farms	Farm Acreage	Market Value of Products Sold
Nemaha County	817	393,331	$197,436,000
Washington County	711	509,631	$181,979,000

Source: USDA National Agricultural Statistics Service

Agricultural vulnerabilities can vary depending on the type of infestation, the crops or livestock affected, and instituted control measures, and include:

- Crop and Livestock Losses: One of the most immediate and significant vulnerabilities is the potential for crop and livestock losses. Pests, diseases, and invasive species can cause substantial damage to crops, resulting in reduced yields and economic losses.
- Financial Losses: Infestations can lead to increased production costs, including expenses for pest control measures, pesticides, and treatments. These added costs can strain the financial resources of farmers and agricultural businesses.
- Food Insecurity: Crop and livestock losses due to infestations can threaten food security by reducing the availability of food products.
- Economic Instability: Agricultural infestations can lead to economic instability in rural communities heavily dependent on farming. Reduced incomes for farmers can have cascading effects on local economies, impacting businesses and jobs in related industries.

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.

Efforts to mitigate the vulnerabilities and impacts of infestations include integrated pest management strategies, research and monitoring, early detection systems, education and training for farmers, and sustainable farming practices. Addressing infestations requires a multi-faceted approach that considers economic, environmental, and food security factors.

In addition, 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.
- 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.

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.

Agricultural infestation is not expected to have any impact on Kansas Region K county assets.

Potentially Vulnerable Community Lifelines

Agricultural infestation, whether caused by pests, diseases, or invasive species, would likely have minimal impact on community lifelines, such as safety, health, energy, communication, transportation, and water systems. It is possible that reduced crop yields could contribute to short term food shortages, affecting the overall food security of a community. This can lead to higher temporary dependence on external sources for food, which would likely be unimpacted by an infestation event.

Consequence Analysis

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

Table 38: Agricultural Infestation Consequence Analysis

Subject	Potential Impacts
Health and Safety of the Public	Infestations involving disease vectors can increase the risk of vector-borne diseases.
Health and Safety of Responders	Impact would be minimal as no first response effort is anticipated.

Table 38: Agricultural Infestation Consequence Analysis

Subject	Potential Impacts
Continuity of Operations	Kansas counties 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.

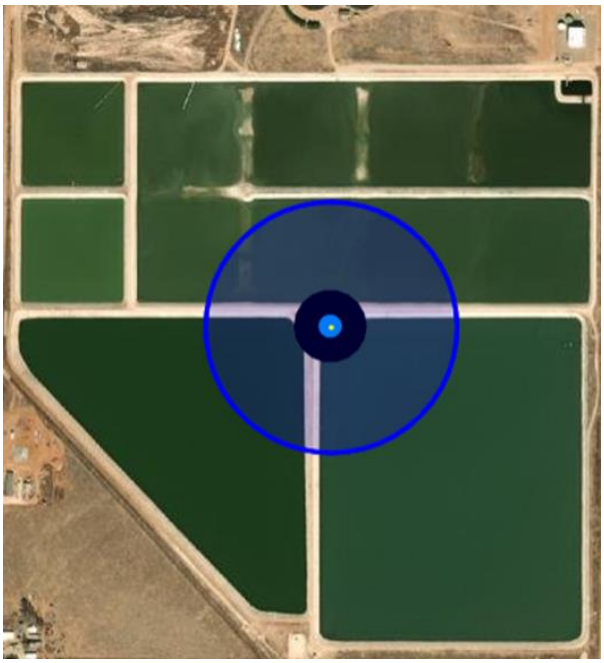
4.8.7 Jurisdictional Risk and Vulnerability

In Kansas, agricultural infestation is considered a state concern due to the heavily agricultural nature of the economy. Data assessing agricultural infestation risk is often presented at the county or state level, and not by individual jurisdictions. As such, a local jurisdiction risk assessment could not be completed. However, agricultural infestation is not expected to have any impact on Kansas Region K jurisdictional infrastructure or facilities.

4.9 Dam or Levee Failure

4.9.1 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
- Terrorism

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. These errors may not become apparent until the levee is put to the test by a flood event.

4.9.2 Location & 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 39: 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	44
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	22
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.	571

Source: KDA-DWR

The following table details dams by county by hazard potential:

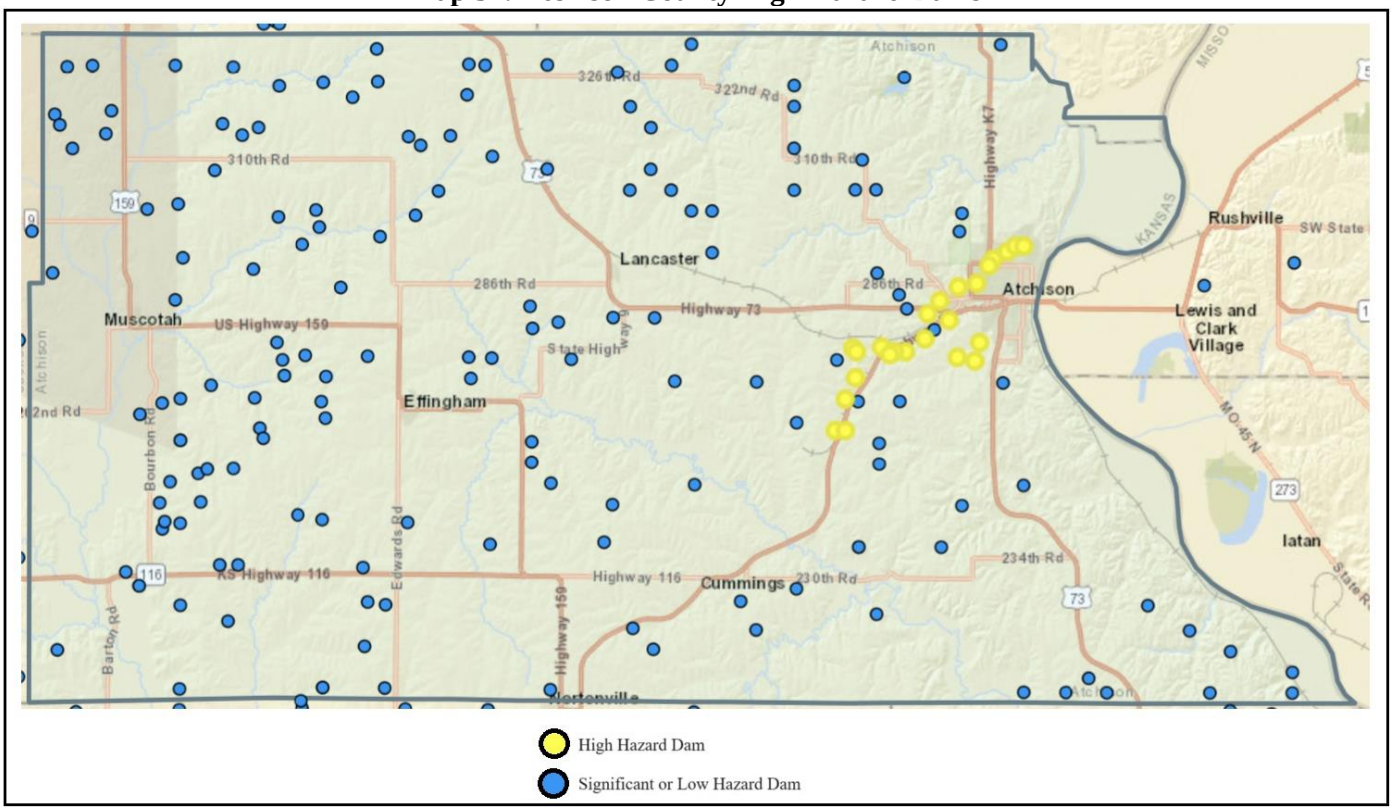
Table 40: Kansas Region K Significant and High Hazard Dams by County

County	Low	Significant	High
Atchison	157	2	24
Brown	224	8	6
Doniphan	100	0	1
Douglas	97	3	12
Jackson	250	7	3
Jefferson	323	3	5
Marshall	128	3	6
Nemaha	208	4	1
Washington	47	1	0

Source: KDA-DWR

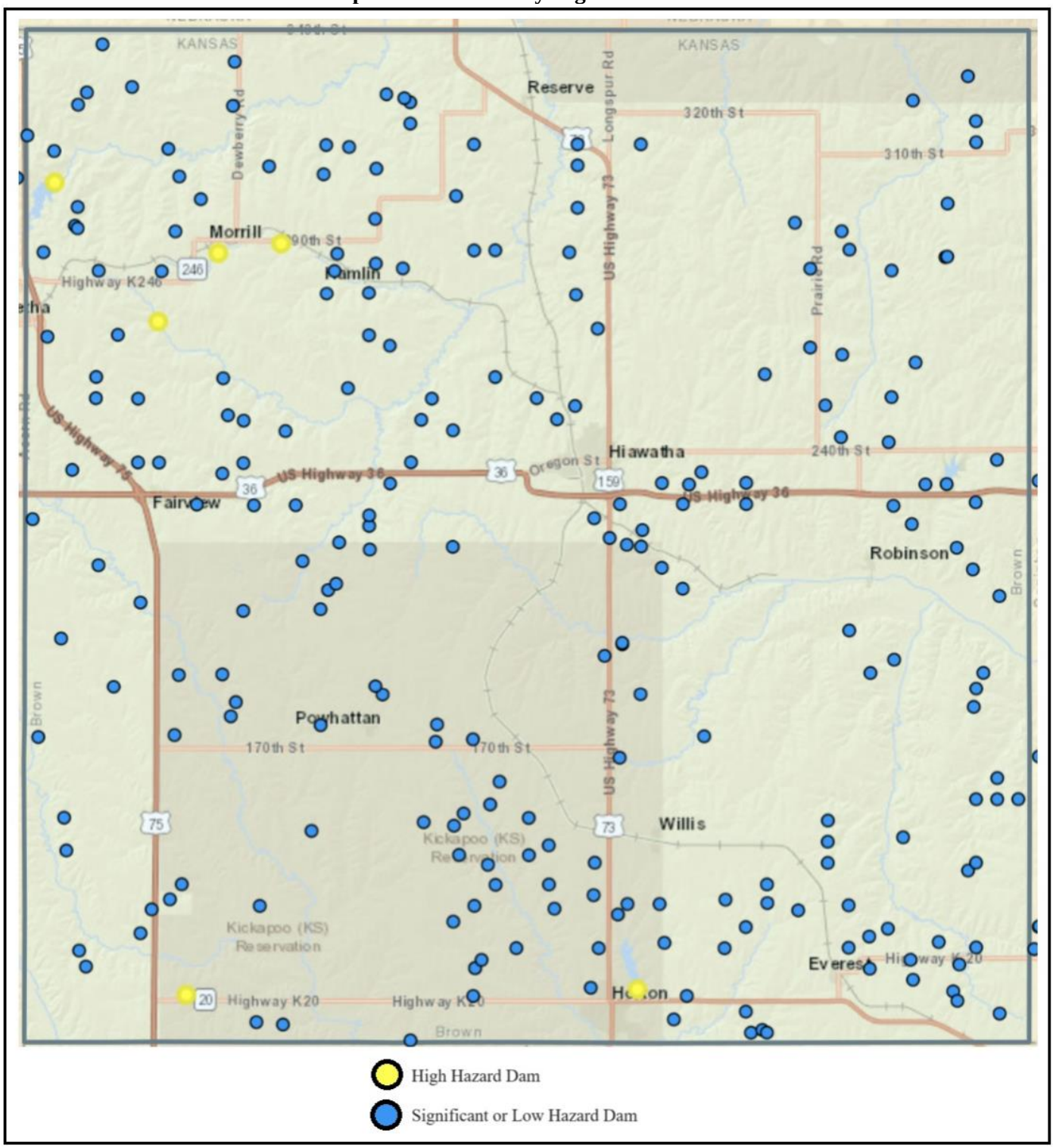
The following maps, from the National Inventory of Dams, indicates the location of high hazard dams within Kansas Region K:

Map 34: Atchison County High Hazard Dams



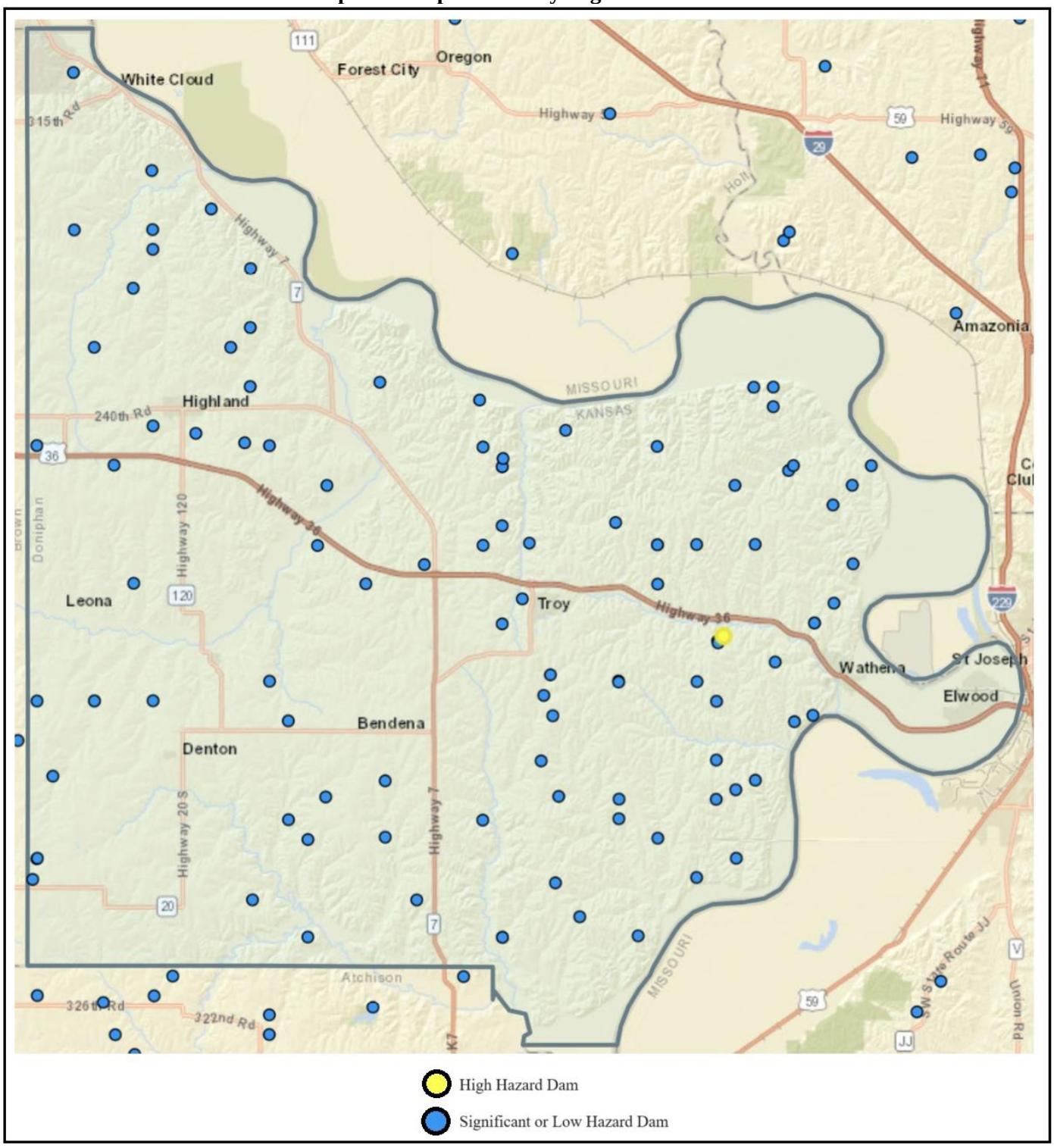
Source: National Inventory of Dams

Map 35: Brown County High Hazard Dams



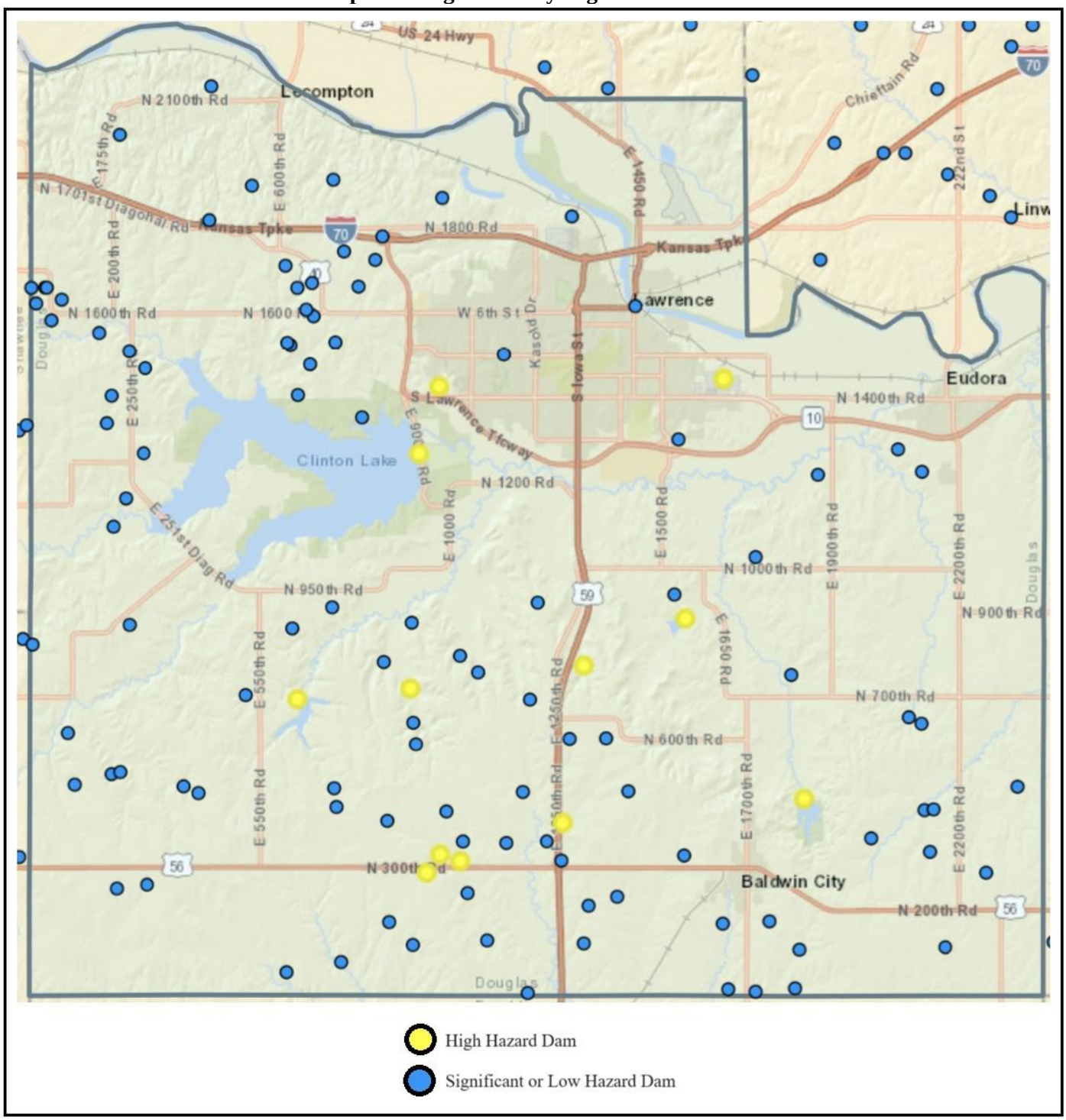
Source: National Inventory of Dams

Map 36: Doniphan County High Hazard Dams



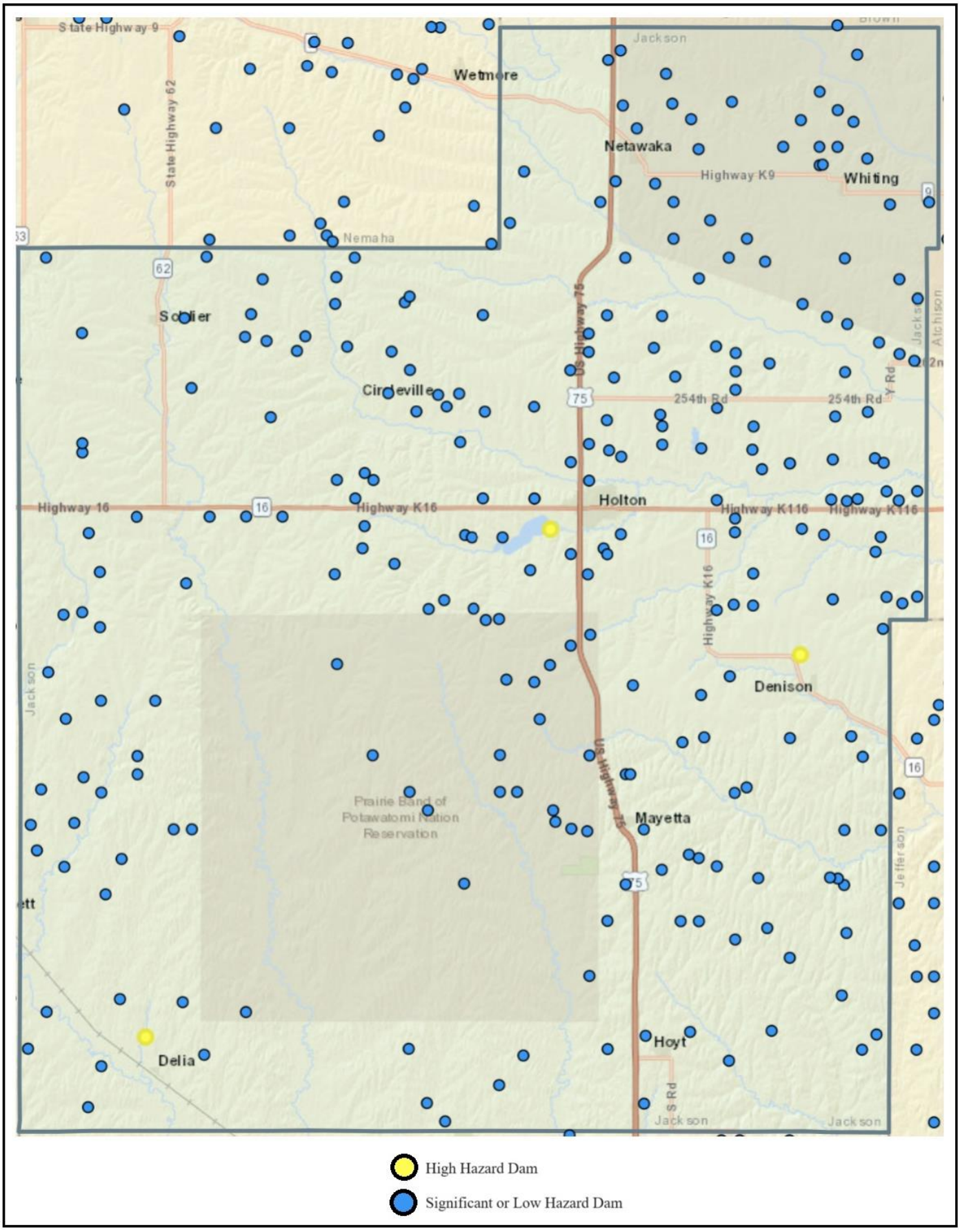
Source: National Inventory of Dams

Map 37: Douglas County High Hazard Dams



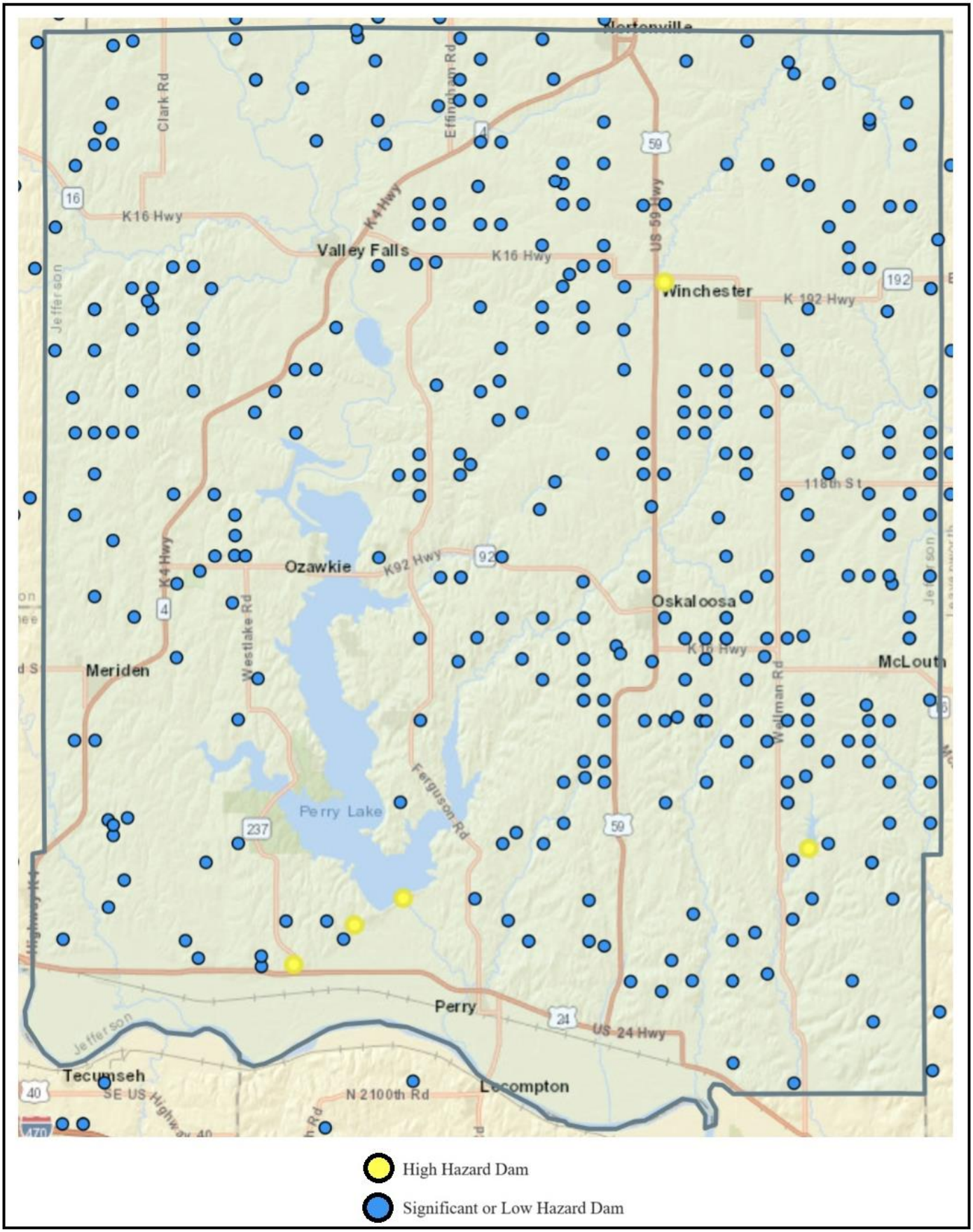
Source: National Inventory of Dams

Map 38: Jackson County High Hazard Dams



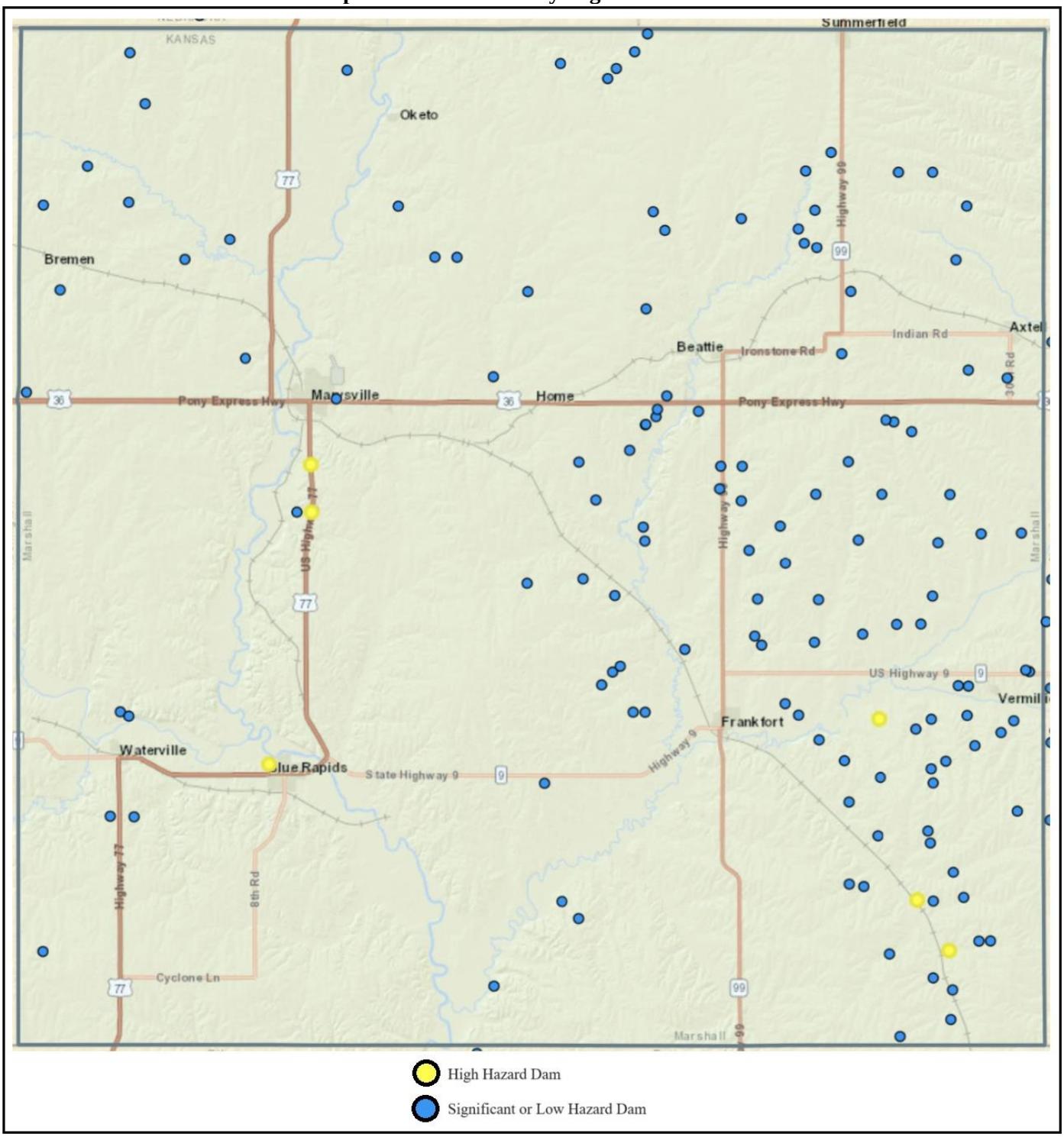
Source: National Inventory of Dams

Map 39: Jefferson County High Hazard Dams



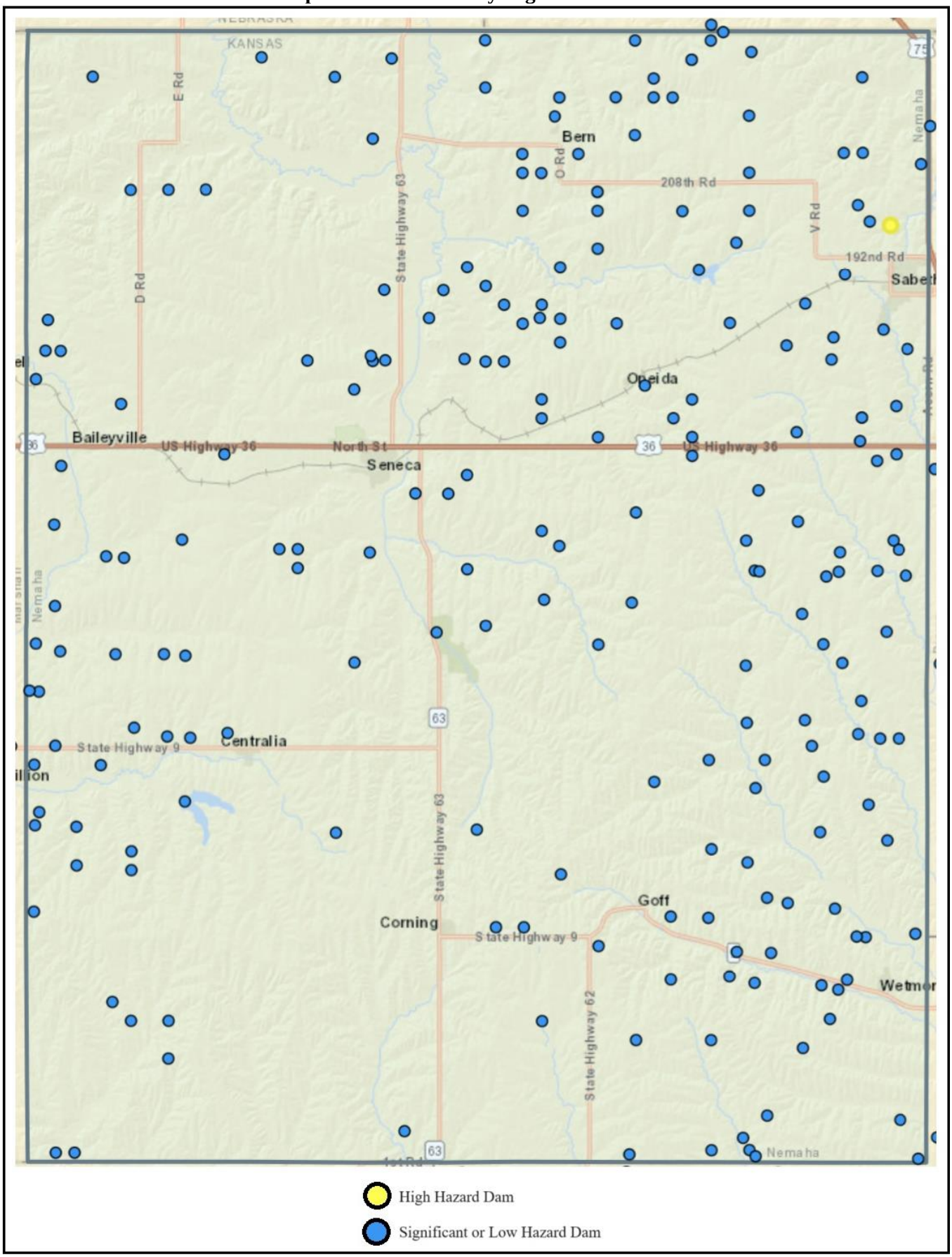
Source: National Inventory of Dams

Map 40: Marshall County High Hazard Dams



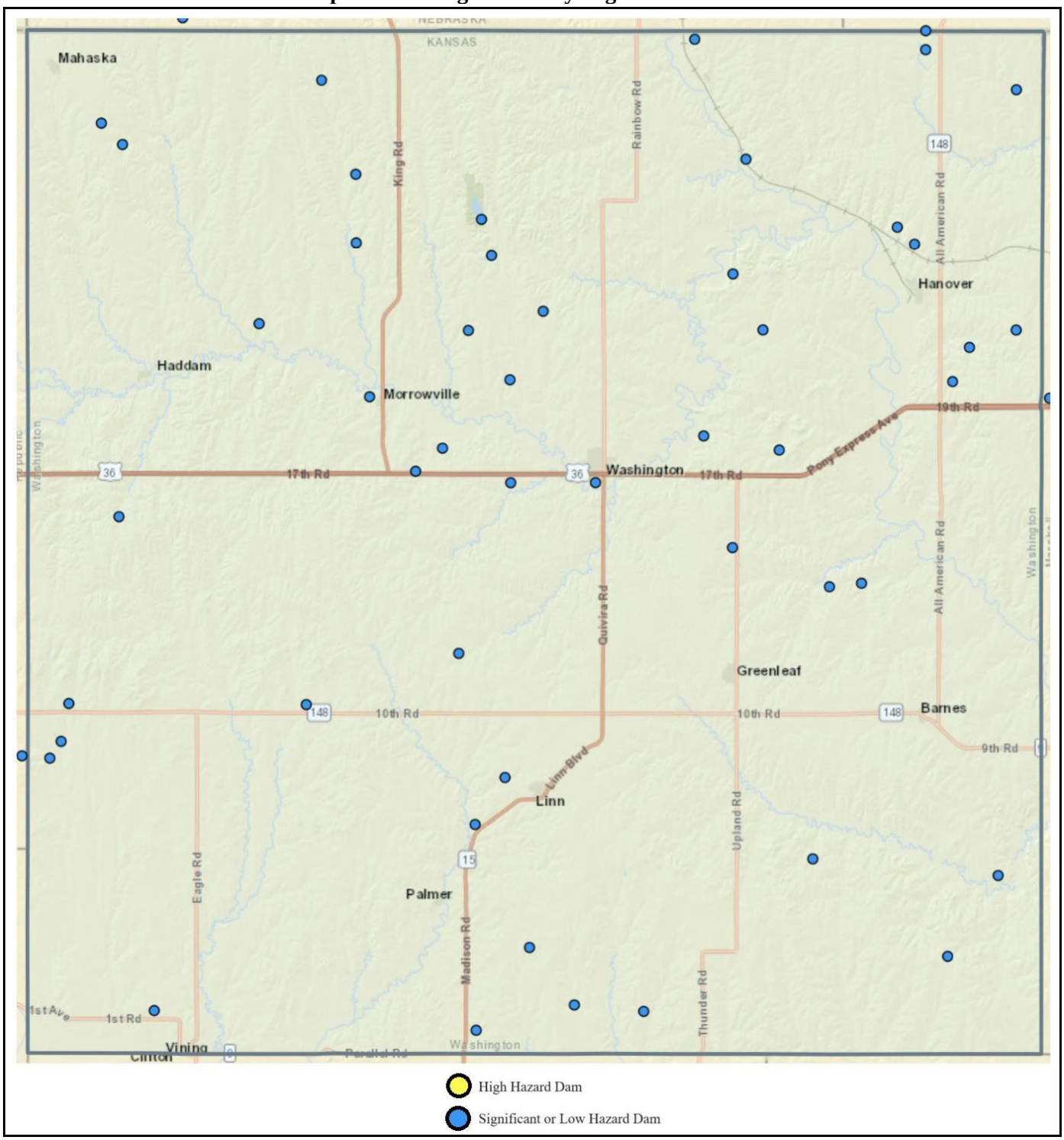
Source: National Inventory of Dams

Map 41: Nemaha County High Hazard Dams



Source: National Inventory of Dams

Map 42: Washington County High Hazard Dams



Source: National Inventory of Dams

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

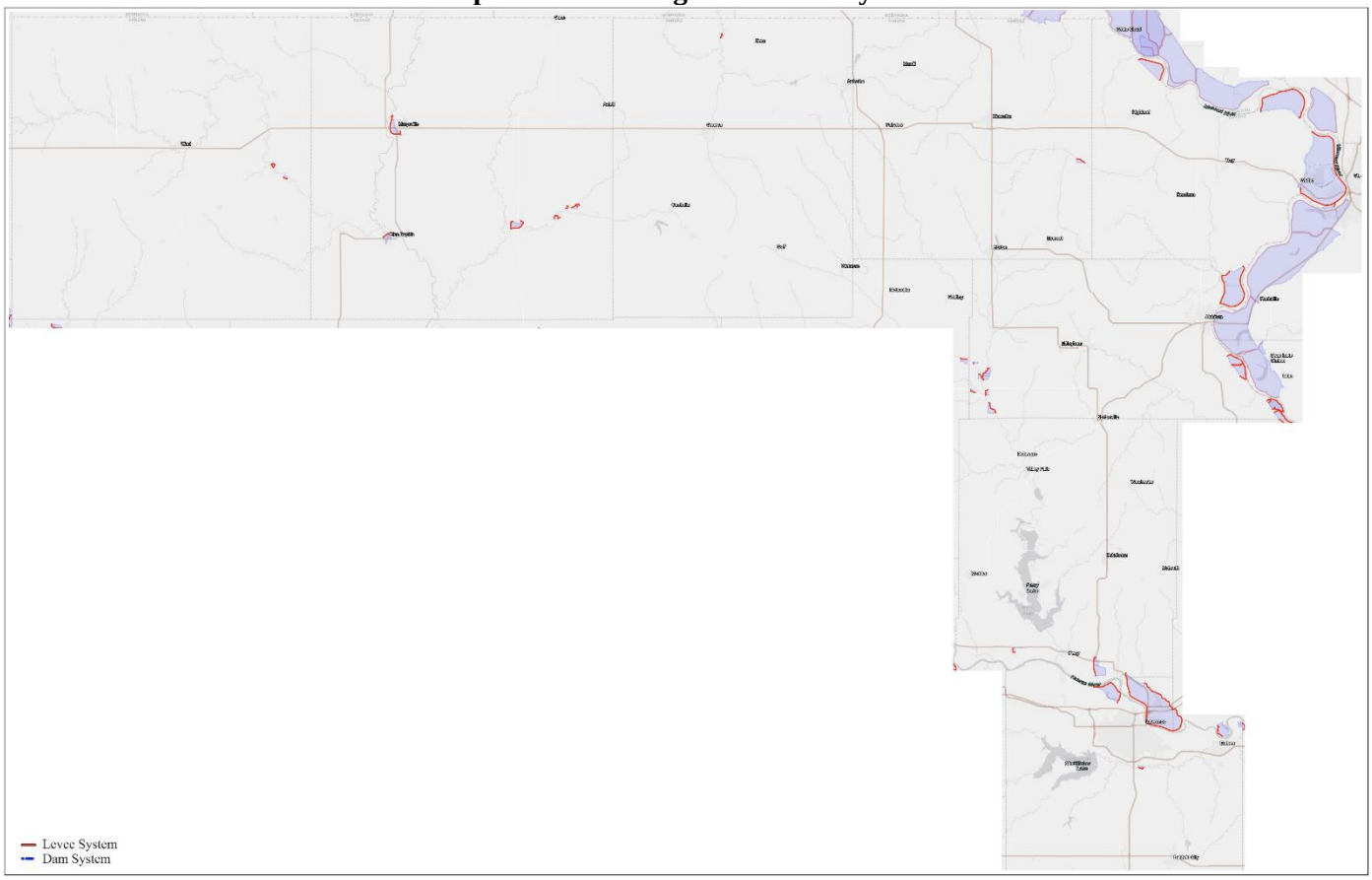
- **Local Levee Districts:** In many cases, local levee districts or authorities are responsible for the construction, maintenance, and operation of levees. These districts are often formed by communities or landowners in areas prone to flooding, and they assess taxes or fees to fund levee projects.

- **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 jurisdictions. 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 map, from the USACE National Levee Database, details the location of major levee systems in Kansas Region K:

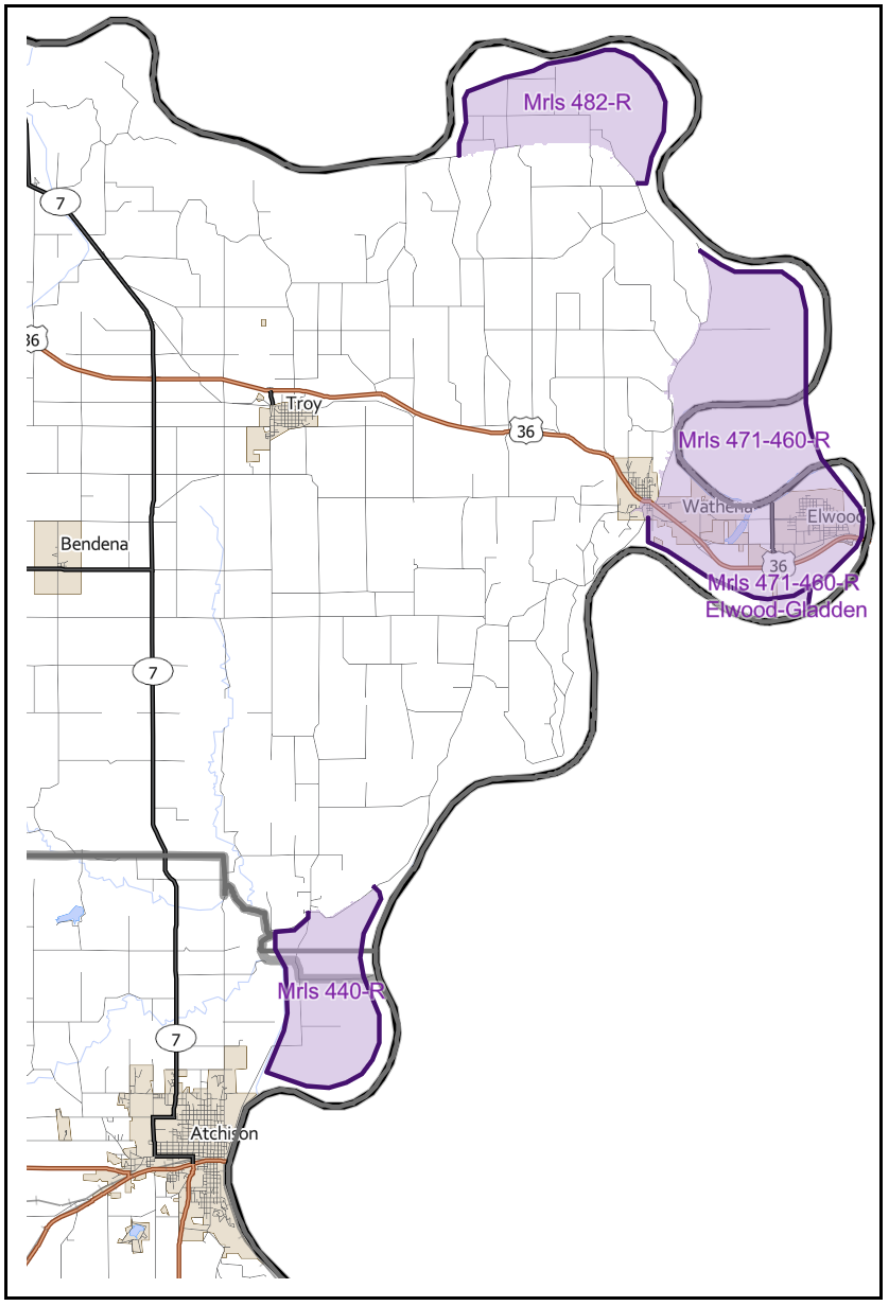
Map 43: Kansas Region K Levee Systems



Source: National Levee Database

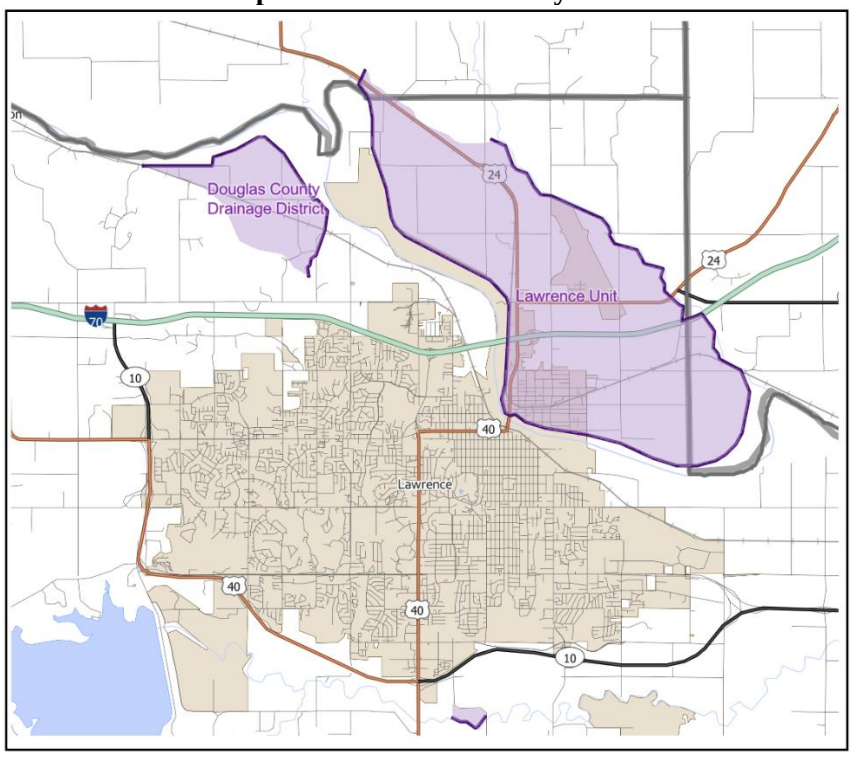
Of particular concern are the levee systems around the Cities of Atchison, Elwood, and Wathena in Atchison County, the City of Lawrence in Marshall County, and the Cities of Blue Rapids, Frankfort, and Marysville in Marshall County. The following maps details the locations of theses levees, and areas protected by these levees:

Map 44: Atchison, Elwood, and Wathena Levee System



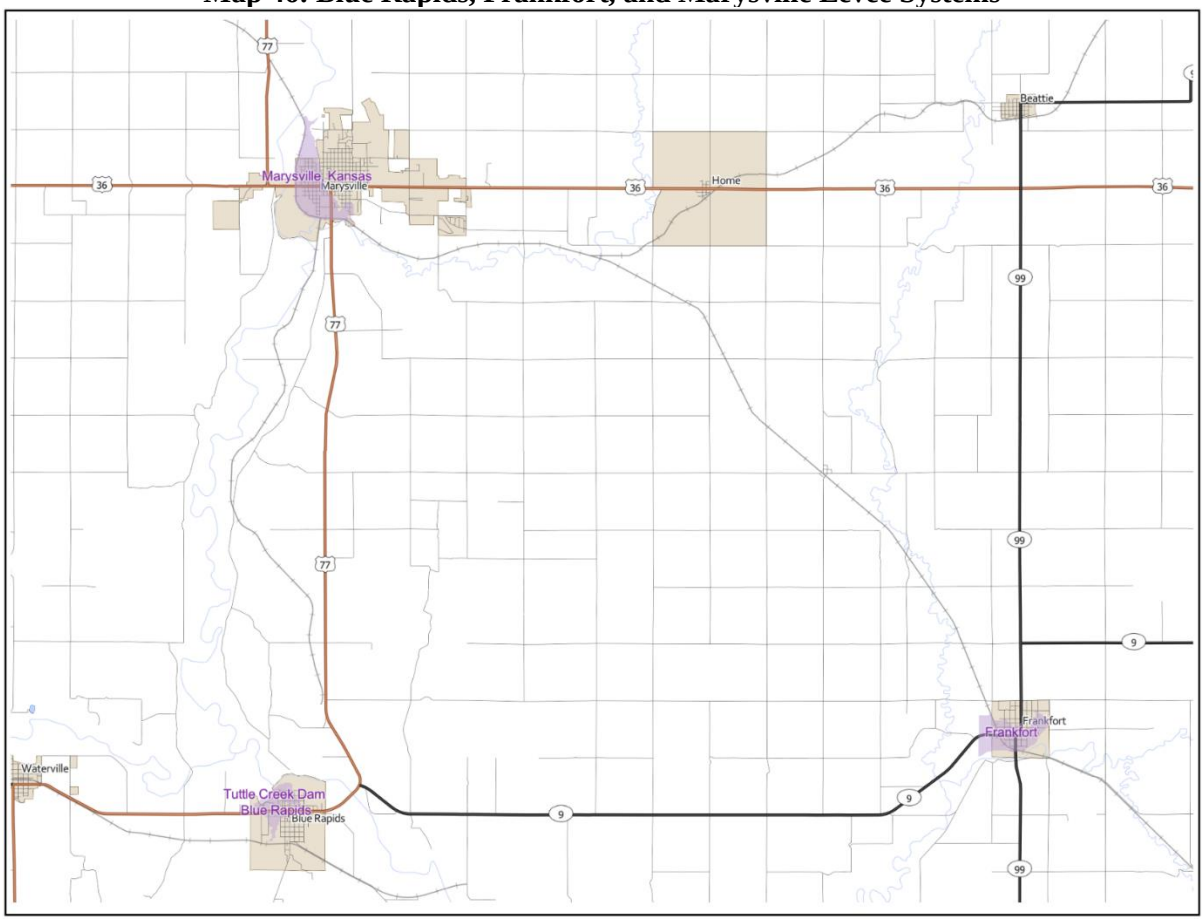
Source: State of Kansas

Map 45: Lawrence Levee Systems



Source: State of Kansas

Map 46: Blue Rapids, Frankfort, and Marysville Levee Systems



Source: State of Kansas

As a subset of data, the following table details known information concerning levees within Kansas Region K identified as providing protection to a populations or structures:

Table 41: Kansas Region K Levee Systems Protecting People and/or Properties

County	Jurisdiction(s)	Name	Waterway	Levee Miles
Atchison	Atchison County	Grape-Bollin-Schwartz Levee Association	Missouri River	4.69
Atchison, Doniphan	Atchison County, Doniphan County	MRLS 440-R	Missouri River	10.6
Doniphan	Elwood, Wathena	MRLS 471-460-R	Missouri River	13.85
	Doniphan County	MRLS 482-R	Missouri River	8.26
Douglas	Douglas County	Douglas County Drainage District	Kansas River	4.08
Douglas, Jefferson	Douglas County, Jefferson County, Lawrence	Lawrence Unit	Kansas River	15.8
Jefferson	Jefferson County	LJF-0018	Stone Horse Creek	1.11
	Jefferson County	Stonehouse Creek Drainage District No. 1	Kansas River	0.89
Marshall	Marshall County, Frankfort	Frankfort, Kansas	Black Vermillion River	3.24
	Marshall County, Marysville	Marysville, Kansas	Big Blue River	3.03
	Blue Rapids, Marshall County	Tuttle Creek Dam Blue Rapids	Blue River	0.91

4.9.3 Previous Occurrences

Data from the National Performance of Dams Program at Stanford University indicates Kansas Region K has had the following reported dam incidents:

Table 42: Kansas Region K Dam Incidents

County	Dam Name	Incident Type	Failure	Incident Date	Deaths
Atchison	Atchison County State Lake	Embankment Slide	No	02/10/1998	None Reported
Brown	Mission Lake	Not Known	Yes	01/01/1925	Not Known
Douglas	KS00310	Erosion/Animal Burrows	No	3/8/2001	None Reported
Douglas	Lake Vaquero	Concrete Deterioration	No	03/14/2001	None Reported
Douglas	Lone Star Lake	Cracking, Embankment Erosion	No	8/15/2001	None Reported

Source: Stanford University National Performance of Dams Program

The following details notable or reported levee failures in Kansas Region K in the past 20 years.

- 2011 Flood: USACE reported that every non-federal levee from Rulo, NE to Wolcott,KS on both sides of the river were either overtopped or breached as a result of this flood. Specifically, the following levees along the Missouri River and tributaries in Leavenworth County were breached.
  - Grape Bollin-Schwartz levee
  - Sherman Airfield Levee (federal levee)—water reached the hangars which had been evacuated.
  - Ft. Leavenworth levee

- Kansas Department of Corrections Levee

- The Levee Repair Working Group of the Missouri River Flood Task Force, established in response to the Missouri River Basin flood of 2011, reported that the following federal and non-federal levees in Kansas were damaged by the flooding.

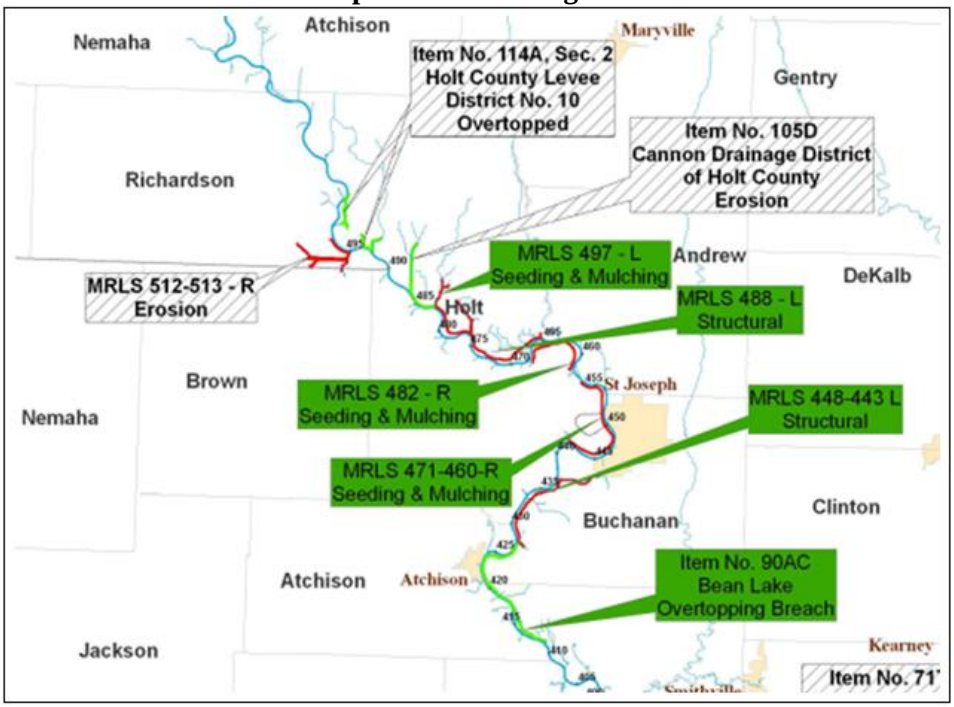
Table 43: 2011 Flooding Damaged Levees

Project Type	Project Name	MR Mile Markers	Location
Federal	MRLS 500-R	501.8 to 496.8	Doniphan
Federal	MRLS 482-R	467.0 to 458.0	Doniphan
Federal	MRLS 471-460-R	456.6 to 441.7	Elwood / St. Joseph
Non-Federal	Henry Pohl Levee	412.3 to 409.9	Atchison
Non-Federal	Grape-Bollin-Schwartz Levee Association	409.9 to 406.2	Leavenworth
Federal	MRLS 440-R	401.35 to 391.2	Atchison

Source: Missouri River Flood Task Force

- **2008 Flooding:** Flooding in 2008 caused minor damage to several Kansas Levees as follows: MRLS 5-12-513 R, MRLS 482-R, MRLS 471-460. The following map shows these levees along with several levees in Missouri that were damaged.

Map 47: 2008 Damage Levees



Source: State of Kansas

4.9.4 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.

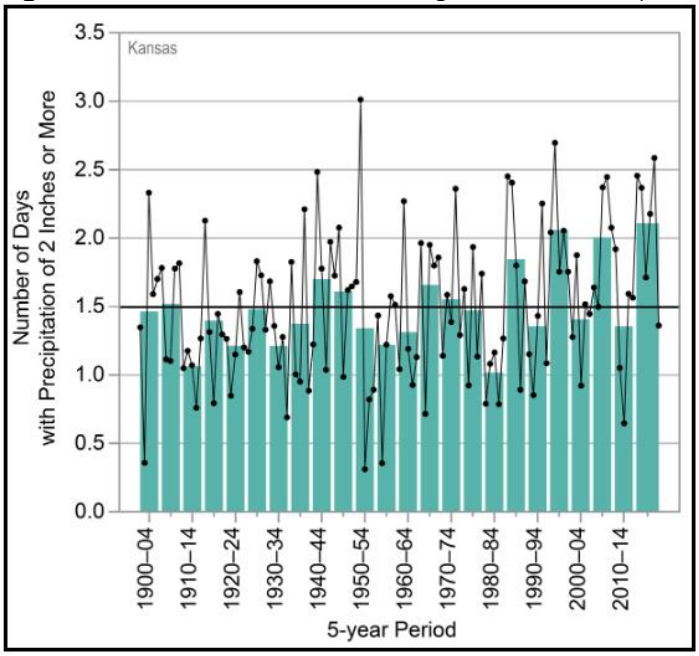
4.9.5 Projected Changes in Hazard Location, Intensity, Frequency, and Duration

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 K 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.

Chart 14: Kansas Region K 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 climate-related 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.
Agricultural Land Use:

4.9.6 Vulnerability and Impact

The National Inventory of Dams documents all known dams in Kansas. The U.S. Army Corps of Engineers (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.
- **Not Available:** Dams for which the condition assessment is restricted to approved government users.

The following table details the nearest jurisdiction, dam number, dam names, Emergency Action Plan (EAP) status, and condition assessment of all high hazard dams in Region K.

Table 44: Kansas Region K High Hazard Dams

County	Nearest Jurisdiction	Dam Name	Condition Assessment
Atchison	Garnett	Cedar Creek Reservoir	Fair
	Garnett	Crystal Lake Dam	Not Rated
Brown	Horton	Mission Lake	Fair
	Morrill	Frd No T-3	Poor
	Morrill	Frd No T-4	Poor
	None	Frd No M-3	Fair
	None	Pony Creek Lake	Satisfactory
	None	15-27	Satisfactory
Doniphan	Wathena	No Name - 488689	Not Rated
Douglas	None	Lone Star Lake	Satisfactory
	None	Frd No 31	Poor
	None	Frd No 28	Fair

Table 44: Kansas Region K High Hazard Dams

County	Nearest Jurisdiction	Dam Name	Condition Assessment
	Lawrence	Frd No 24	Fair
	None	Frd No 26	Fair
	Lawrence	Clinton Dam	
	Baldwin City	Douglas County State Lake Dam	Fair
	None	Dd No 8-5	Poor
	Lawrence	West Pasture Basin Pond	
	Baldwin City	Dd No 7-26	Satisfactory
	None	Site 8-33	Fair
	None	Dd No 8-32	Satisfactory
Jackson	Delia	Frd No 1	Fair
	Holton	Delaware Mpd No 36 (Banner Creek)	Satisfactory
	Denison	Gs Dd No D-34	Satisfactory
Jefferson	Perry	Frd No 1	Poor
	Perry	Frd No 3	Fair
	None	Lake Dabinawa	Satisfactory
	Perry	Perry Dam	
	Winchester	Gigstad	
Marshall	Vermillion	Frd No 11	Satisfactory
	None	Frd No 68	Satisfactory
	Marysville	Us 77 Roadfill Dam	Fair
	Marysville	Us 77 Roadfill Dam	Fair
	None	Frd No 63	Satisfactory
Nemaha	Sabetha	Sabetha Country Club	Poor

Source: National Inventory of Dams

Additionally, there are three federally operated high hazard dams within Kansas Region K. The following table details known information concerning the condition and risk assessment for all federally operated dams:

Table 45: Kansas Region K Federally Operated Dam Condition and Risk Assessments

County	Jurisdiction	Dam Number	Dam Name	EAP	Risk Assessment	Maximum People at Risk	Maximum Buildings at Risk	Maximum Economic Risk
Douglas	Lawrence	KS00026	Clinton Dam	Yes	Low	11,878	3,754	$2,225,842,502
Jefferson	Perry	KS00009	Perry Dam	Yes	Low	107,580	22,502	$14,917,397,857

Source: National Inventory of Dams

For the NFIP, FEMA will only recognize a levee system in its flood risk mapping effort that meet minimum design, operation, and maintenance standards as established by 44 CFR 65.10 – Mapping of Areas Protected by Levee Systems. In general, evaluated levees are assigned to one of these categories:

- Accredited Levee: Area behind the levee is mapped as a moderate risk, with no mandatory flood insurance requirement.
- To Be Accredited: A levee system that has been approved for accreditation.
- Provisionally Accredited Levee (PAL): Area behind the levee is mapped as a moderate risk, with no mandatory flood insurance requirement, for a two-year grace period while compliance with 44 CFR 65.10 is sought
- Non-Accredited Levee: Area behind the levee is mapped according to FEMA protocols, likely resulting in a high-risk area designation and associate flood insurance requirements

- To Be Non-Accredited: A levee system that no longer meets the requirements stipulated in 44 CFR 65.10 and is scheduled to lose accredited status

Additionally, each levee is assigned a risk classification to aid in hazard analysis. The following table details these classifications and suggested actions to be taken:

Table 46: Levee Risk Classification Rating Definitions

Class	Risk Characteristics	Suggested Actions
Very High	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in very high risk.	Based on risk drivers, take immediate action to implement interim risk reduction measures. Increase frequency of levee monitoring, communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning systems and evacuation procedures; and recommend purchase of flood insurance. Support risk reduction actions as very high priority.
High	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in high risk.	Based on risk drivers, implement interim risk reduction measures. Increase frequency of levee monitoring; communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance. Support risk reduction actions as high priority.
Moderate	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in moderate risk.	Based on risk drivers, implement interim risk reduction measures as appropriate. Verify risk information is current and implement routine monitoring program; assure operations and maintenance is up to date; communicate risk characteristics to the community in a timely manner; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance. Support risk reduction actions as a priority.
Low	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in low risk.	Verify risk information is current and implement routine monitoring program and interim risk reduction measures if appropriate; assure operations and maintenance is up to date; communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance. Support risk reduction actions to further reduce risk to as low as practicable.
Very Low	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in very low risk.	Continue to implement routine levee monitoring program, including operation and maintenance, inspections, and monitoring of risk. Communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance.
No Verdict	-	Not enough information is available to assign Risk.

Source: USACE

The following table details, by county and jurisdiction, information from the USACE concerning levee failure risk:

Table 47: Kansas Region K Levee Systems Protecting People and/or Properties

County	Jurisdiction	Name	People at Risk	Structures at Risk	Property Value
Atchison	Atchison County	Grape-Bollin-Schwartz Levee Association	1	0	$71,580

Table 47: Kansas Region K Levee Systems Protecting People and/or Properties

County	Jurisdiction	Name	People at Risk	Structures at Risk	Property Value
Atchison, Doniphan	Atchison County, Doniphan County	MRLS 440-R	13	7	$186,113
Doniphan	Elwood, Wathena	MRLS 471-460-R	2,773	797	$745,782,286
	Doniphan County	MRLS 482-R	7	36	$1,562,630
Douglas	Douglas County	Douglas County Drainage District	16	24	$4,865,634
Douglas, Jefferson	Douglas County, Jefferson County, Lawrence	Lawrence Unit	2,215	1,236	$336,300,410
Jefferson	Jefferson County	LJF-0018	12	6	$3,341,136
	Jefferson County	Stonehouse Creek Drainage District No. 1	93	40	$12,503,575
Marshall	Marshall County, Frankfort	Frankfort, Kansas	336	323	$60,537,620
	Marshall County, Marysville	Marysville, Kansas	754	601	$153,594,889
	Blue Rapids, Marshall County	Tuttle Creek Dam Blue Rapids	241	130	$60,656,198

Source: USACE

The following table offers a summary of this data for each Kansas Region K county:

Table 48: Kansas Region K Levee Failure Population and Structure Risk

County	People	Structures	Value
Atchison	14	7	$257,693
Brown	0	0	$0
Doniphan	2,793	840	$747,531,029
Douglas	2,231	1,260	341,166,044
Jackson	0	0	$0
Jefferson	105	46	$15,844,711
Marshall	1,331	1,054	$274,788,707
Nemaha	0	0	$0
Washington	0	0	$0

Source: USACE

A dam failure can be triggered by various cascading impacts, potentially involving a combination of natural and human-induced factors. The specific causes depend on the type of dam, its construction, maintenance, and the surrounding environment, and may include:

- Hydraulic Loading and Over-Topping: Excessive rainfall, rapid snowmelt, or a combination of both can lead to increased water inflow into the reservoir. If the rate of inflow exceeds the dam's discharge capacity, the water level may rise, leading to over-topping. Over-topping can cause erosion of the dam crest, ultimately resulting in failure.
- Slope Instability and Landslides: Landslides in the dam's vicinity can impact the stability of the dam structure. The sliding of soil or rock materials into the reservoir can displace water, causing waves that may over-top the dam or lead to structural damage.
- Seismic Events: Earthquakes can induce ground shaking, which may compromise the integrity of a dam. Seismic forces can lead to foundation movement, slope instability, or structural failure, resulting in dam failure.

- Foundation Failure: Weaknesses or faults in the dam's foundation can result in structural failure. Prolonged seepage, erosion, or subsurface geological issues can compromise the foundation's ability to support the dam's weight and the reservoir's water pressure.
- Piping and Internal Erosion: Piping occurs when water flows through internal pathways within the dam, gradually eroding and weakening the structure. If left unaddressed, piping can compromise the dam's integrity and lead to failure.
- Dam Aging and Deterioration: Over time, dams may experience aging and deterioration due to various factors such as freeze-thaw cycles, chemical reactions, and exposure to environmental conditions. This aging process can weaken materials and reduce the dam's structural stability.
- Inadequate Maintenance: Poor maintenance practices, including neglecting repairs and inspections, can contribute to the degradation of a dam's components. Cracks, leaks, and other defects left unaddressed can worsen over time, increasing the risk of failure.
- Ice Dam Formation: In cold climates, ice dams can form at the base of a dam or within the reservoir. The accumulation of ice can obstruct the flow of water, leading to over-topping and structural stress.
- Human-Induced Factors: Human activities, such as excavation, construction, or changes in land use near the dam, can influence its stability. Unauthorized modifications or alterations to the dam structure can compromise its integrity.

Additionally, a dam failure can cause a number of rapidly cascading impacts both down and up-stream of the failure. A dam or levee 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 the 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, anxiety, and depression. Witnessing the loss of lives and property can have long-lasting emotional effects on individuals and communities.

The impact of a dam or levee failure event on facilities, including critical facilities, can be wide-ranging. The extent of the impact depends on the proximity of the facilities to the dam and the volume of water released, and may include:

- Structural Damage: Facilities located downstream could sustain severe structural damage. Floodwaters 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.

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.

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. 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.
- Infrastructure Damage and Maintenance: Jurisdictional public works agencies may need to assess and repair damage to roads, bridges, and other critical infrastructure affected by floodwaters and debris resulting from the dam failure. This can strain resources and disrupt transportation networks.
- 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.

Potentially Vulnerable Community Lifelines

A dam of levee failure can impact various community lifelines, critical systems and services that communities rely on for their functioning. 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 49: 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

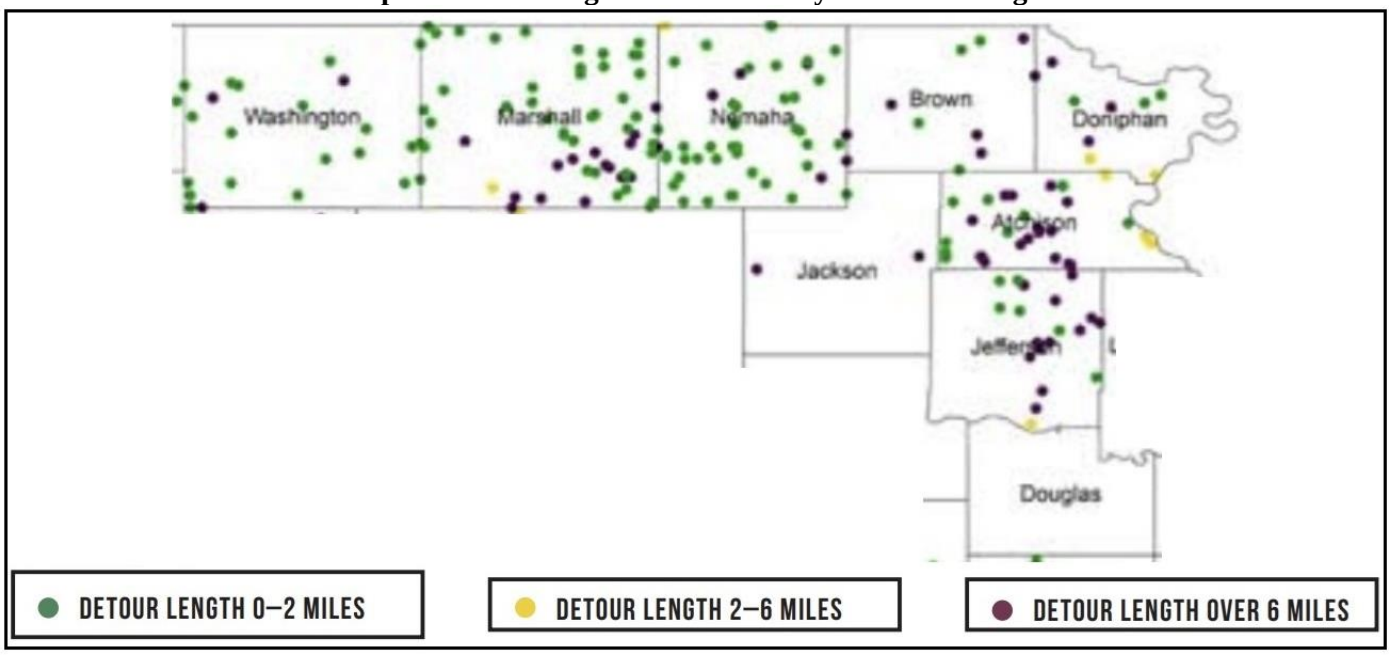
The failure of a dam or levee can have significant and wide-ranging impacts on transportation infrastructure, affecting roads, bridges, railways, and other critical components of transportation systems. However, it is important to note that, as of this plan, neither the State of Kansas or Kansas Region K planning participants have delineated community lifelines and their associated values in dam or levee failure inundation zones. As such, the following discussion does not allow for a determination of specifically vulnerable community lifelines. Potential impacts may include:

- Flooding and Erosion: Dam or levee 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.

The cost to conduct maintenance on a road can vary significantly depending on the types of work required. However, the average estimate for repairs on a per mile basis in 2019 was $14,750 per mile. The cost to replace a road can vary significantly based on several factors, including the type of road, local labor and material costs, the complexity of the project, and the specific requirements of the replacement. As a rough estimate, road construction costs can range from $1,000,000 to $10,000,000 per mile.

Bridges crossing rivers can pose significant concerns during flooding events due to the increased risk of structural failure. Floodwater 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. Of particular concern are structurally deficient bridges, which may be at increased risk of failure during an event. The following map, from the Kansas Department of Transportation, details Kansas Region K structurally deficient bridges:

Map 48: Kansas Region K Structurally Deficient Bridges



Source: State of Kansas

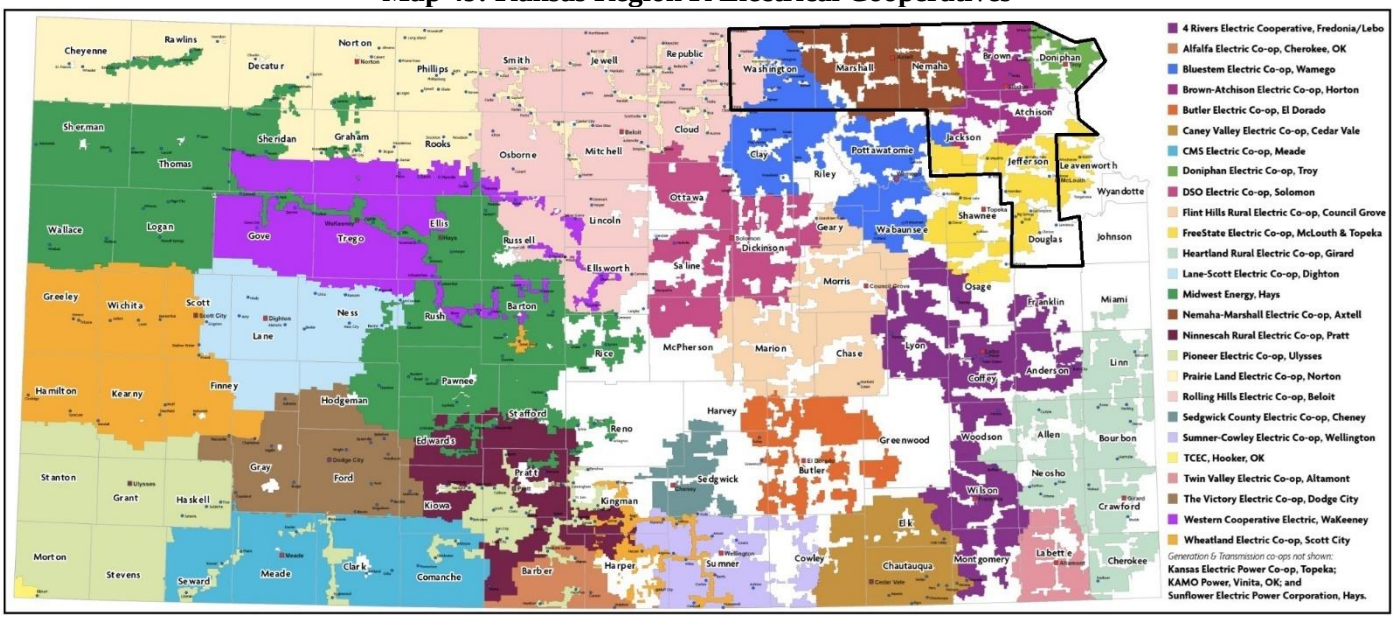
The Kansas Department of Transportation estimates that the cost to repair a structurally deficient bridge is on average $150,000.

The failure of a dam or levee can have significant impacts on power utilities, affecting both the generation and distribution of electrical power. Here are some potential consequences:

- 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.

Kansas Region K and participating jurisdictions use the following electrical utility providers:

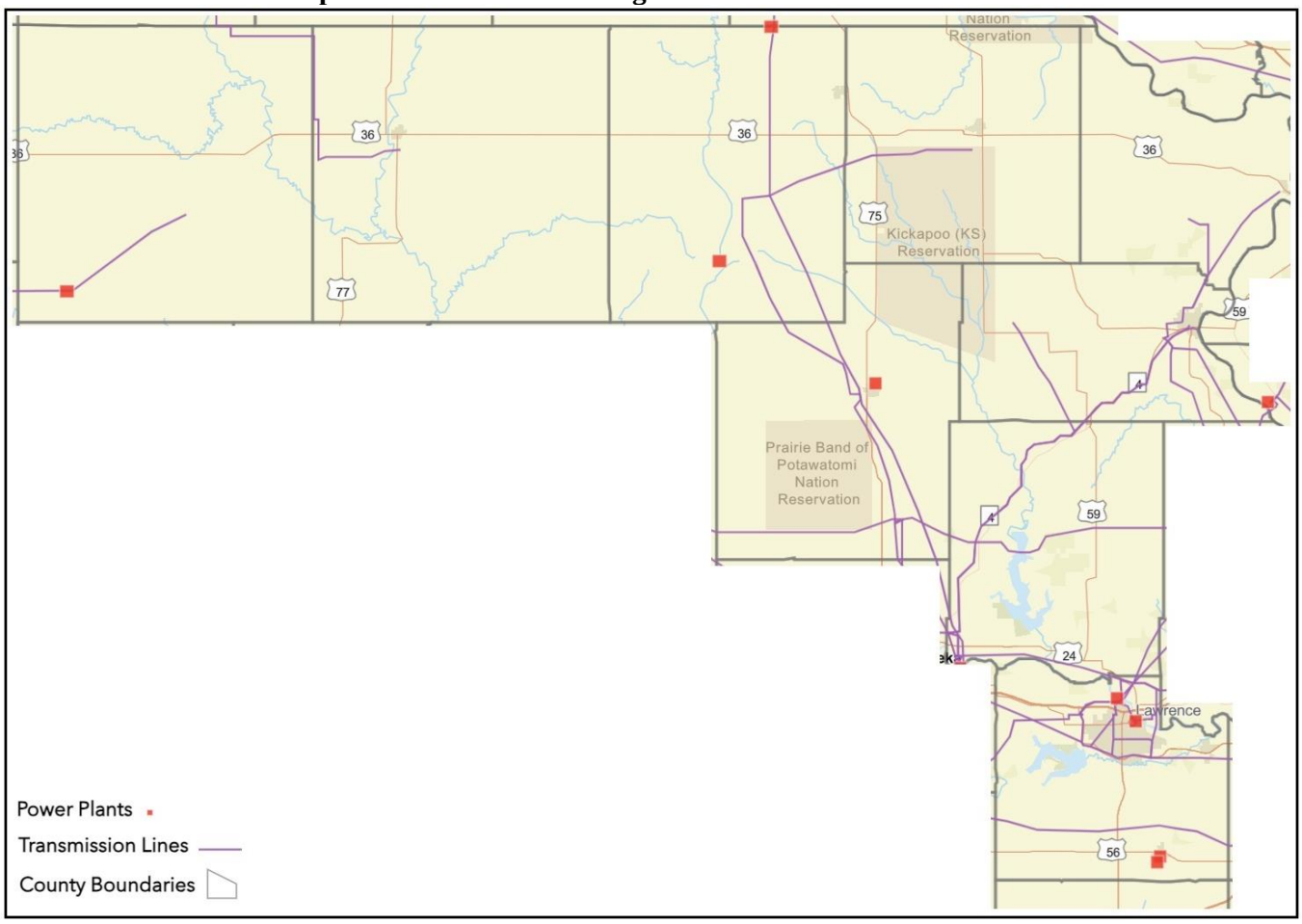
Map 49: Kansas Region K Electrical Cooperatives



Source: State of Kansas

Electricity is generated in Kansas Region K at 13 generation facilities, using biomass, natural gas, petroleum, and wind facilities. The following map, from the U.S. Energy Atlas, details the location of both electrical generating plants and high-capacity transmission lines within Kansas Region K:

Map 50: Electrical Generating Plants and Transmission Lines

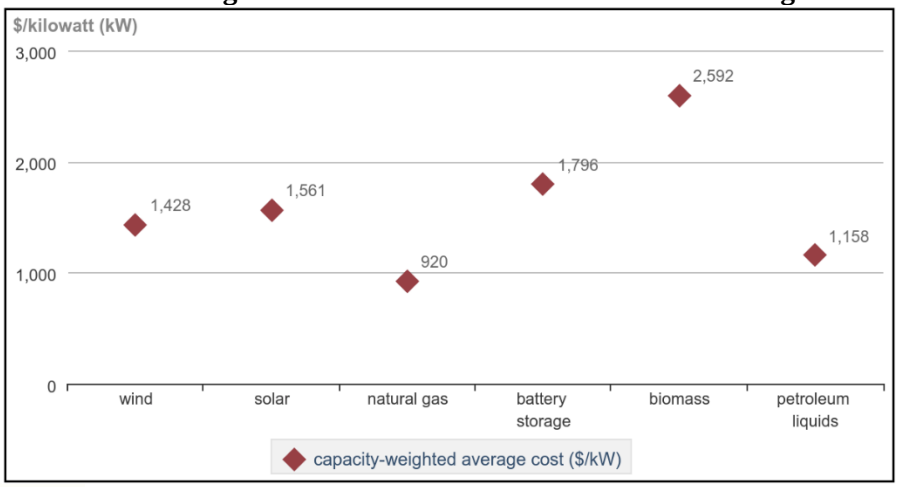


Source: FEMA RAPT

The cost to replace electrical lines can vary widely based on several factors, including the type of electrical lines, the distance of the replacement, local labor and material costs, the complexity of the project, and any specific requirements or challenges involved. Additionally, costs can be significantly different for residential, commercial, or industrial projects. Additionally, urban and rural locations may have varying cost factors. As a rough estimate, the cost to replace electrical lines can range from a few thousand dollars to several thousand dollars per mile.

Data concerning the construction costs of electrical generating plants from the U.S. Energy Information Administration indicates the following average per kW cost, by generating plant type, for new construction:

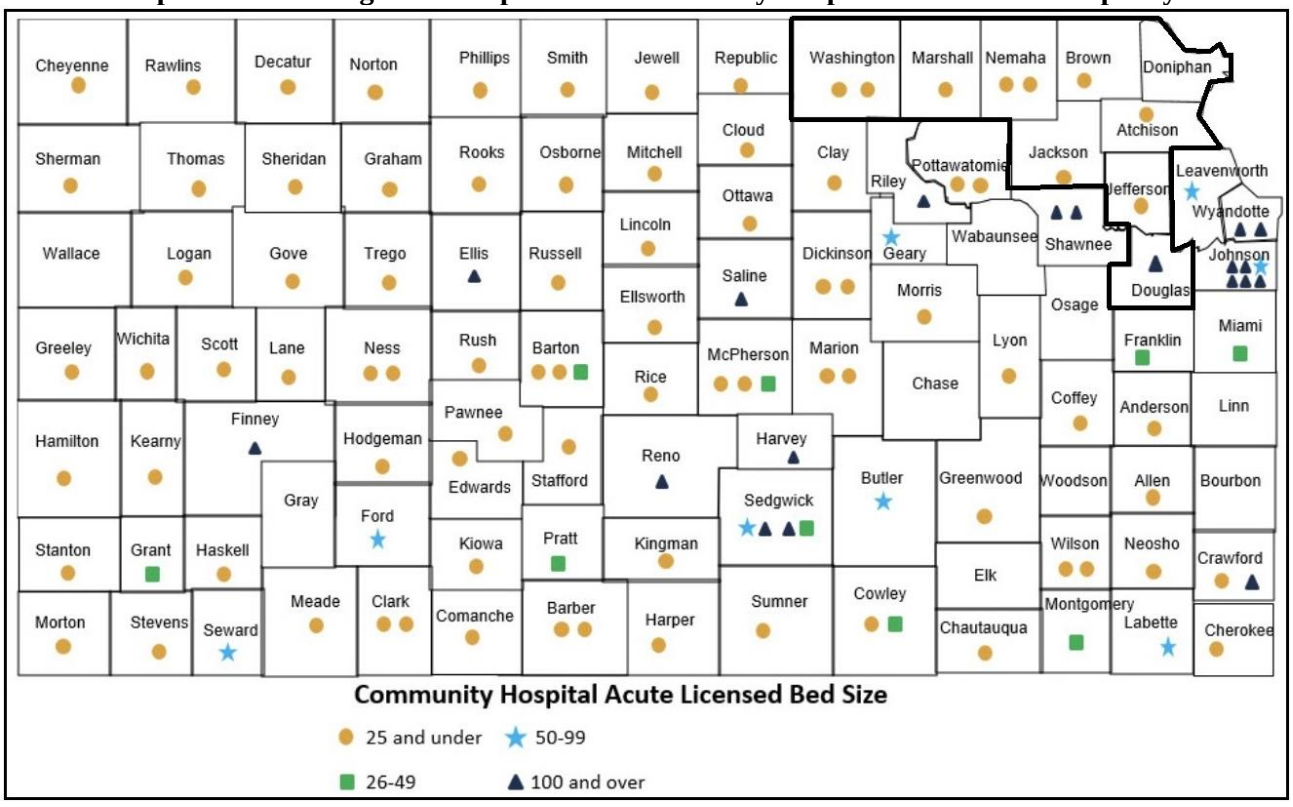
Chart 15: Average Construction Cost of Electrical Generating Plants



Source: U.S. Energy Information Administration

The following map, form the Kansas Hospital Association details the number of hospital beds by county for Kansas Region K:

Map 51: Kansas Region K Hospital Bed Community Hospital Licensed Bed Capacity



Source: Kansas Hospital Association

While these, and other smaller medical facilities, may see a rapid increase in dam or levee failure injuries during an event, it is considered unlikely that this increase will impact or overload the regional capacity except in the case of a catastrophic failure. In the event of a catastrophic failure, patients will need to be transported to adjacent regions to receive treatment.

Consequence Analysis

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

Table 50: 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.
Delivery of Services	Delivery of services may be disrupted due to flood-damaged bridges and roadways. Transit systems may face closures due to public safety concerns. 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 challenges.
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.

4.9.7 Jurisdictional Risk and Vulnerability

To help understand the risk and vulnerability to dam and levee failure events of participating jurisdictions the following tables were developed using available data:

Table 51: Jurisdictional High Hazard Dam Totals

County	Jurisdiction	Number High Hazard Dams	Lowest Rated Condition Assessment
Atchison	Garnett	2	Poor
Brown	Horton	2	Poor
	Morrill	1	Poor
Doniphan	Wathena	1	Not Rated
Douglas	Baldwin City	2	Fair
	Lawrence	3	Fair
Jackson	Delia	1	Fair

Table 51: Jurisdictional High Hazard Dam Totals

County	Jurisdiction	Number High Hazard Dams	Lowest Rated Condition Assessment
	Denison	1	Satisfactory
	Holton	1	Satisfactory
Jefferson	Perry	3	Poor
	Winchester	1	Not Rated
Marshall	Marysville	2	Fair
	Vermillion	1	Satisfactory
Nemaha	Sabetha	1	Poor

Source: National Inventory of Dams

Data concerning the number of people, number of structures, infrastructure, and valuation in identified high hazard dams' inundation areas was not available from either KDA-DWR or KDEM. A process is currently underway to compile this data and is expected to be available with the completion of the 2028 State of Kansas Hazard Mitigation Plan.

The following table details information from the USACE concerning levee failure consequence analysis for jurisdictions within Kansas Region K:

Table 52: Kansas Region K Levee Failure Consequence Analysis

County	Jurisdiction	People at Risk	Structures at Risk	Property Value
Doniphan	Elwood	2,773	797	$745,782,286
	Wathena	2,773	797	$745,782,286
Douglas	Lawrence	2,215	1,236	$336,300,410
Jefferson	City of Jefferson	517	296	$180,000,000
	Florence	351	254	$81,100,000
Marshall	Blue Rapids	241	130	$60,656,198
	Frankfort	336	323	$60,537,620
	Marysville	754	601	$153,594,889

Source: USACE

4.10 Drought

4.10.1 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.

4.10.2 Location and Extent

All of Kansas Region K 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.

Kansas Region K generally has a semi-arid climate, characterized by relatively lower annual precipitation. This climatic condition makes the region more susceptible to drought, especially during periods of below-average rainfall. The demand for water for agricultural irrigation can also stress water resources in the region.

Kansas Region K is part of the Ogallala Aquifer region, a critical groundwater source. Excessive groundwater pumping during drought conditions can lead to aquifer depletion, posing long-term challenges for water availability. Kansas Region K also relies on reservoirs and rivers for water supply, and prolonged drought can lead to reduced water levels and increased competition for available water resources.

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 all Kansas counties. 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:

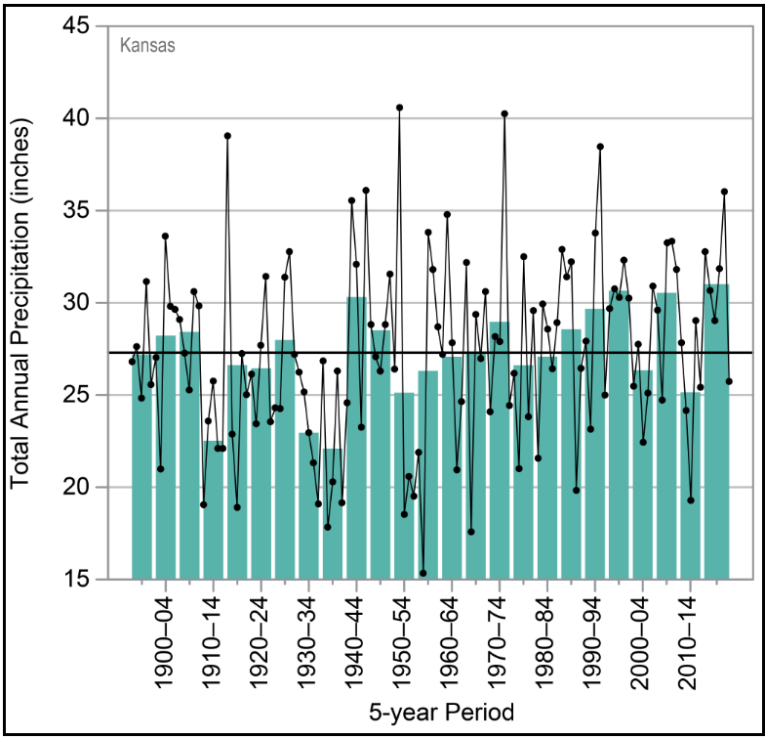
Table 53: U.S. Drought Monitor Categories

Rating	Described Condition
None	No drought conditions
D0	Abnormally Dry
D1	Moderate Drought
D2	Severe Drought
D3	Extreme Drought
D4	Exceptional Drought

Source: U.S. Drought Monitor

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 chart indicates annual precipitation averages for Kansas from 1895 to 2020:

Chart 16: Kansas Region K Observed Annual Precipitation



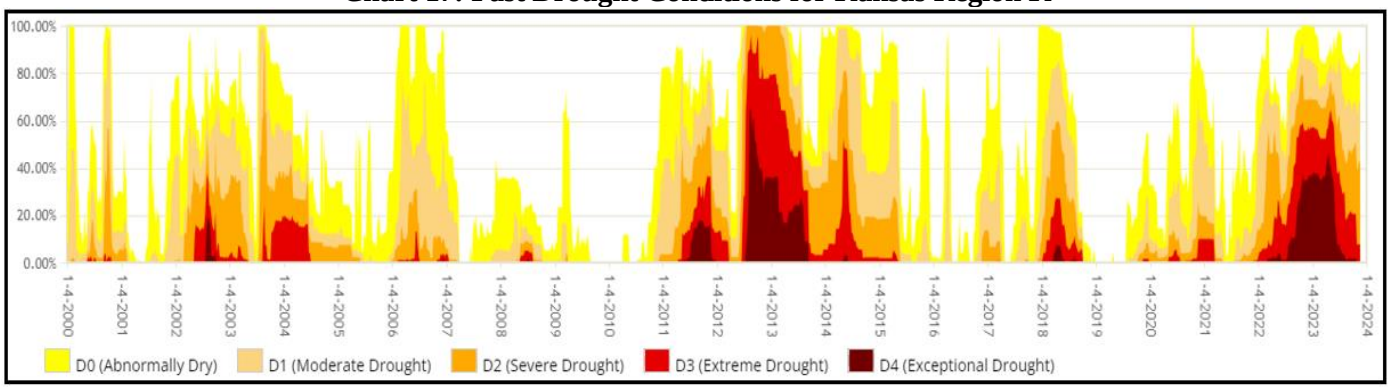
Source: NOAA NCEI State Climate Summary 2022 for Kansas

Current drought conditions, which change weekly based, may be found on the U.S. Drought Monitor website.

4.10.3 Previous Occurrences

Drought is a normal climate pattern that has occurred in varying degrees of length, severity, and size. The following chart, from the U.S. Drought Monitor shows past drought conditions for Kansas Region K:

Chart 17: Past Drought Conditions for Kansas Region K



Source: U.S. Drought Monitor
Note: Represents averaged 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.

Historical data was gathered from the U.S. Drought Monitor weekly reports for 2013 and 2022. This data was compiled and aggregated to provide a yearly estimate of the percentage of Kansas Region K in each Drought Monitor category.

Table 54: Percentage Area in U.S. Drought Monitor Category

Year	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2022	60.4%	39.6%	14.8%	0.4%	0.0%	0.0%
2021	70.4%	27.6%	9.2%	0.0%	0.0%	0.0%
2020	76.7%	23.3%	15.5%	0.6%	0.0%	0.0%
2019	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2018	10.5%	89.5%	64.9%	37.4%	11.4%	0.0%
2017	74.4%	25.6%	0.4%	0.0%	0.0%	0.0%
2016	87.9%	12.1%	0.0%	0.0%	0.0%	0.0%
2015	65.1%	34.9%	5.3%	0.0%	0.0%	0.0%
2014	39.3%	60.7%	21.9%	0.0%	0.0%	0.0%
2013	34.0%	66.0%	37.6%	26.1%	4.2%	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 K:

Table 55: Secretarial Drought Disaster Declarations, 2019 -2023

County	2022	2021	2020	2019
Atchison	2	0	0	0
Brown	0	0	0	0
Doniphan	0	0	0	0
Douglas	2	0	0	0
Jackson	0	0	0	0
Jefferson	1	0	0	0
Marshall	1	1	0	0
Nemaha	1	1	0	0
Washington	0	1	0	0

Source: USDA Farm Service Agency

4.10.4 Probability of Future Events

Historically, drought has affected Kansas Region K on a reoccurring basis. In reviewing historical data from the U.S. Drought Monitor weekly reports for Kansas Region K from 2009 through 2022 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 56: Estimated Weekly Probability of Kansas Region K Being in U.S. Drought Monitor Category

None	D0-D4	D1-D4	D2-D4	D3-D4	D4
61.9%	37.9%	17.0%	6.5%	1.6%	0.0%

Data: U.S. Drought Monitor

Kansas Region K 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 Northeast 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 cope with drought. Developing and implementing the system allows Kansas 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.

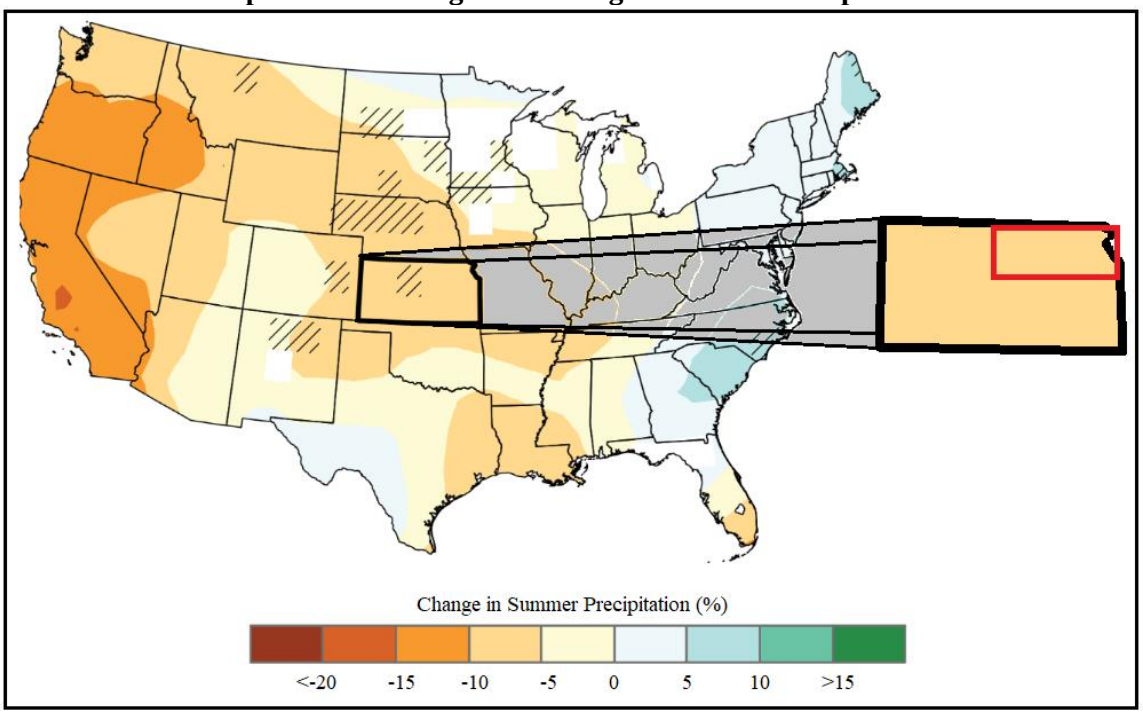
4.10.5 Projected Changes in Hazard Location, Intensity, Frequency, and Duration

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.

Current modelling from the NOAA State Climate Summary 2022 for Kansas suggests that projections of overall annual precipitation are uncertain, summer precipitation is projected to decrease across the state, while winter precipitation is projected to increase. Winter precipitation increases could benefit winter wheat production, but summer drying would have negative impacts on rain-fed summer crops and rangeland. Although increased precipitation is projected, naturally occurring droughts are projected to be more intense because higher temperatures will increase evaporation rates.

The following map indicates the expected annual increase in precipitation for Kansas Region K:

Map 52: Kansas Region K Change in Annual Precipitation



Source: NOAA NCEI State Climate Summary 2022 for Kansas

The NOAA NCEI State Climate Summary 2022 for Kansas indicates that the intensity of future droughts is projected to increase. Although projections of overall precipitation are uncertain, higher temperatures will increase the rate of soil moisture loss during dry spells, leading to more serious conditions during future naturally occurring droughts, including an increase in the occurrence and severity of wildfires.

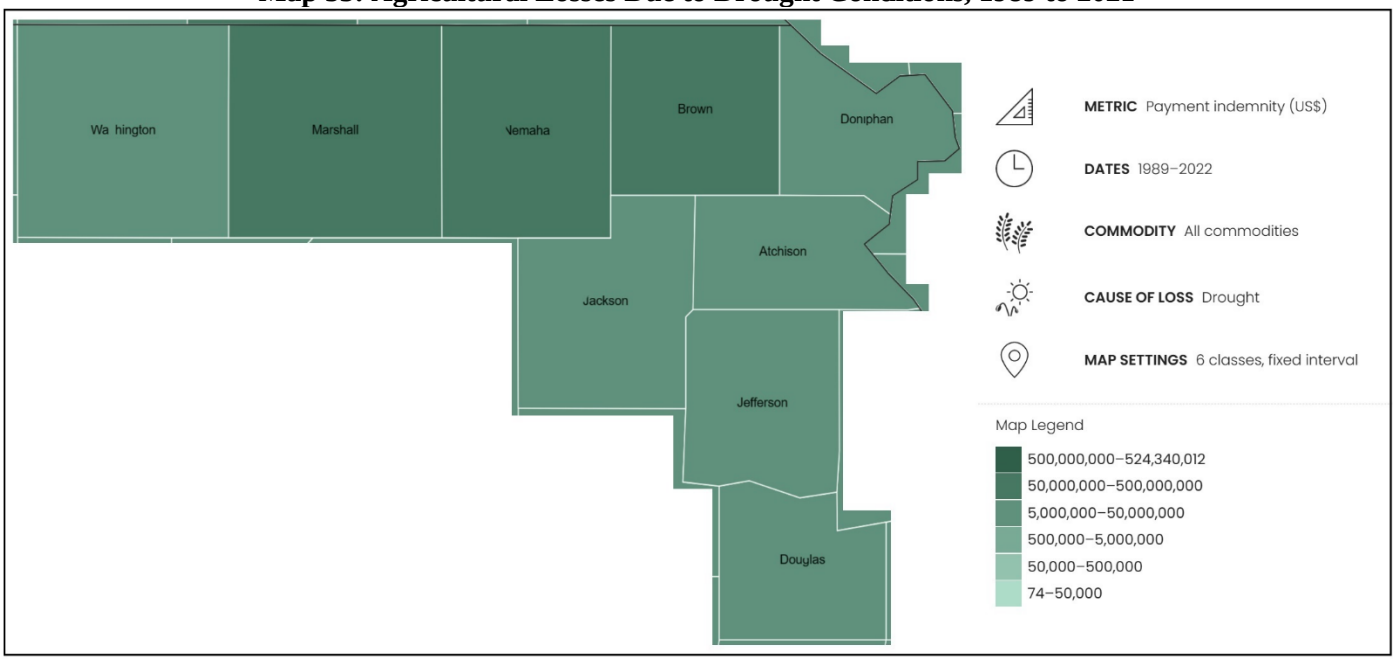
4.10.6 Vulnerability and Impact

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.

In general, critical facilities and infrastructure are not directly vulnerable to losses as a result of drought. However, there is a potential that operations 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.

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 agricultural losses, by county, due to drought conditions from 1989 to 2021:

Map 53: Agricultural Losses Due to Drought Conditions, 1989 to 2021



Source: USDA

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 of the landscape.

Governmental operations, assets, 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. As of this plan, no county facilities or assets have been impacted by drought, and no dollar losses reported.

Potentially Vulnerable Community Lifelines

Water utilities are particularly vulnerable to drought conditions due to the direct impact on water availability and supply. The May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report indicates the following loss values for community lifelines:

Table 57: 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

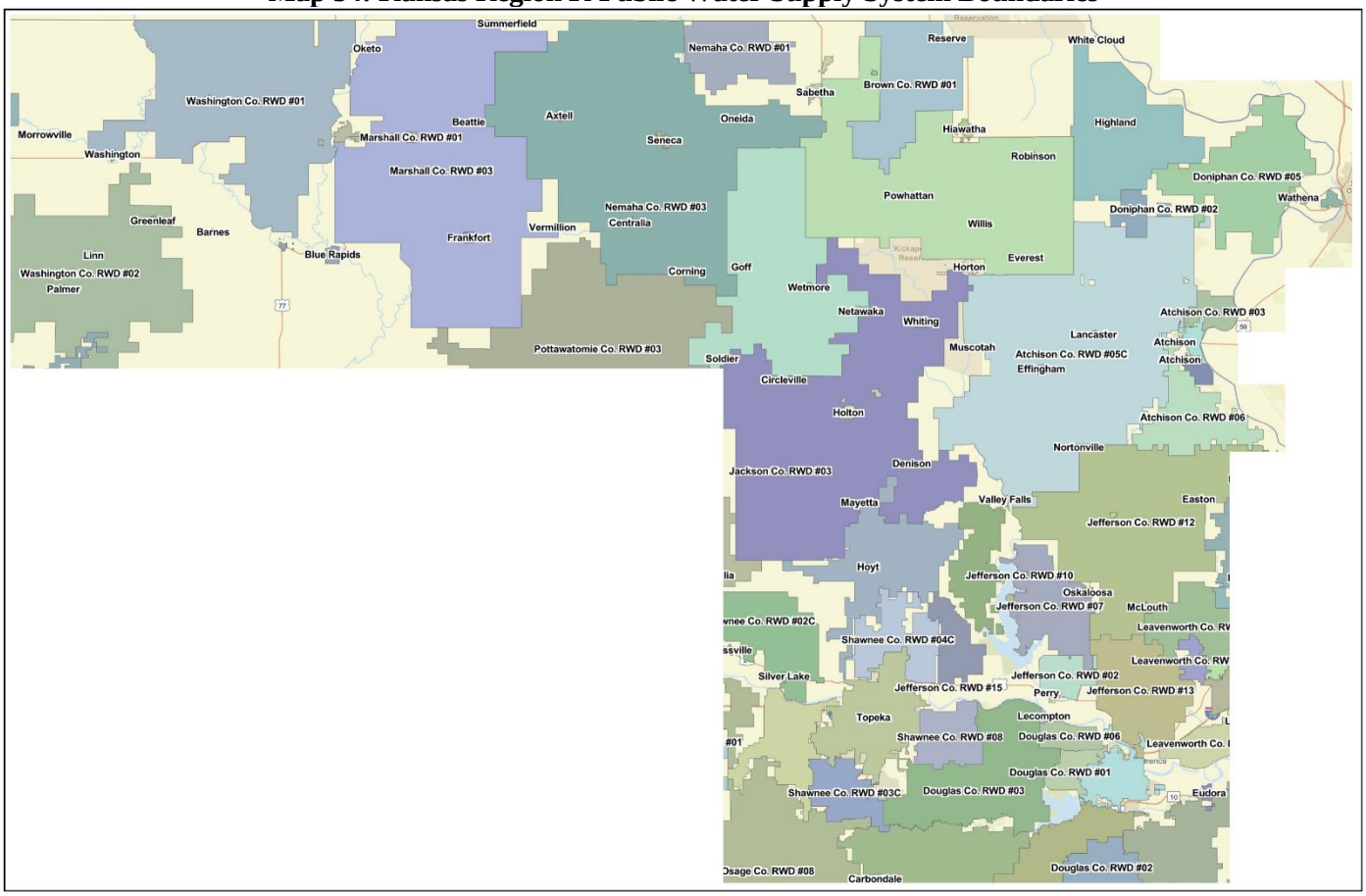
Water utilities can be affected by drought through:

- 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. These restrictions can impact water utilities' revenue and their ability to meet customer demand.

In Kansas Region K, 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 Kansas Department of Health and Environment. Private domestic groundwater wells are not considered public water supply systems. Kanas Region K and participating jurisdictions are covered by the following domestic water suppliers:

Map 54: Kansas Region K Public Water Supply System Boundaries



Source: State of Kansas

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.

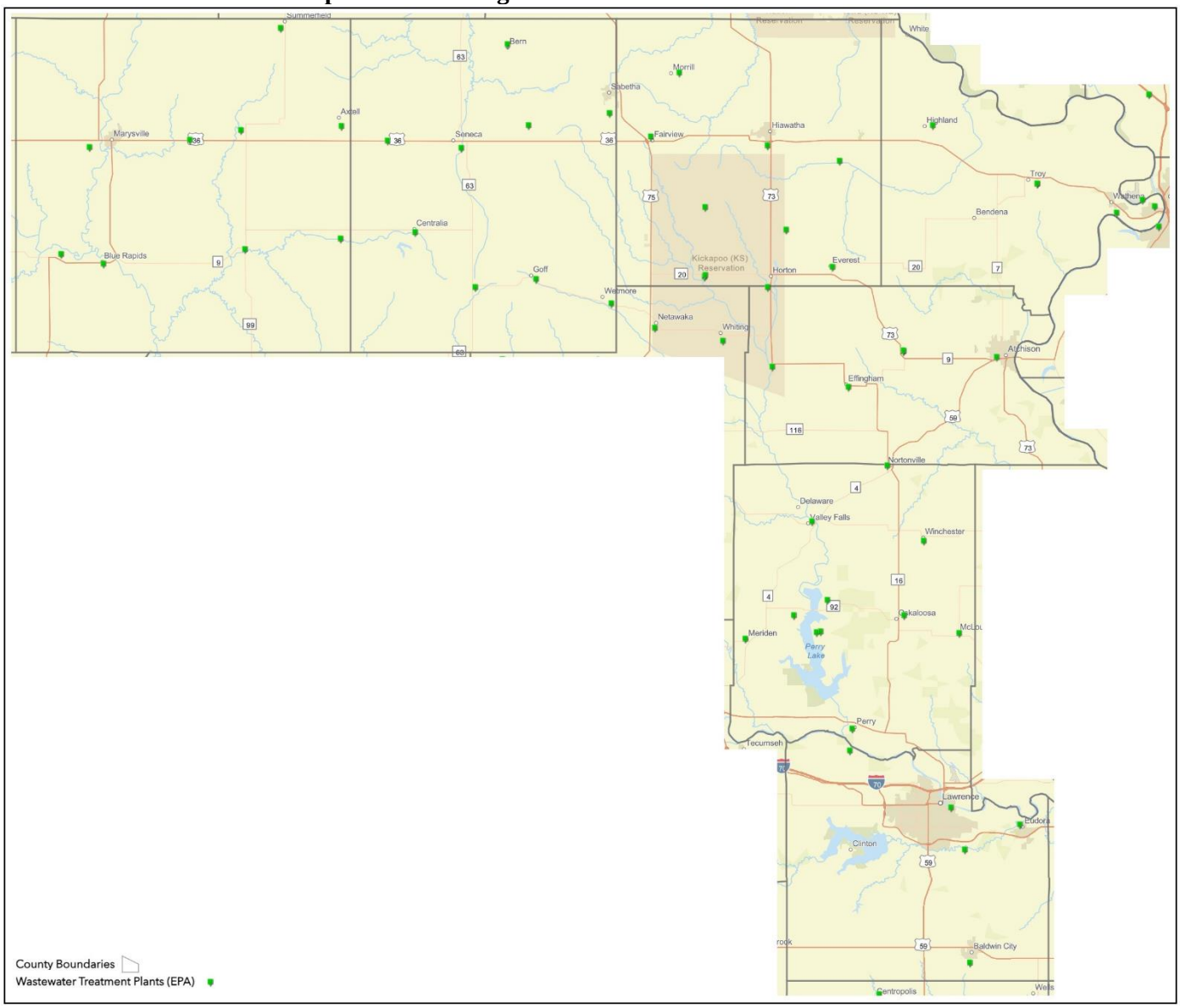
However, it's important to note that this is a general estimate, and actual costs can vary based on geological and hydrogeological conditions and well depth.

Drought can significantly impact wastewater treatment plants in several ways. These can include:

- Reduced Influent Flow: During a drought, water consumption decreases as people conserve water. As a result, the volume of wastewater entering treatment plants decreases. This reduction in influent flow can affect the efficiency of treatment processes designed to handle a certain volume of wastewater.
- Increased Concentration of Pollutants: With less water entering the treatment plant, the concentration of pollutants in the wastewater increases. This can include contaminants like organic matter, nutrients (such as nitrogen and phosphorus), and chemicals. Higher pollutant concentrations can challenge the treatment processes and may require adjustments or additional treatment steps to maintain compliance with regulatory standards.
- Altered Wastewater Characteristics: Drought conditions can change the composition of wastewater. For example, in urban areas, reduced water usage can lead to an increase in the concentration of industrial or commercial waste relative to residential waste. This change in wastewater characteristics may necessitate modifications to treatment processes to effectively treat the altered influent.
- Water Supply for Treatment Processes: Many wastewater treatment processes require water for various purposes, such as dilution, washing, and cooling. During a drought, the availability of water for these purposes may be limited, potentially impacting the efficiency and effectiveness of treatment processes.

The following map identifies wastewater treatment plants in Kansas Region K:

Map 55: Kansas Region K Wastewater Treatment Plants

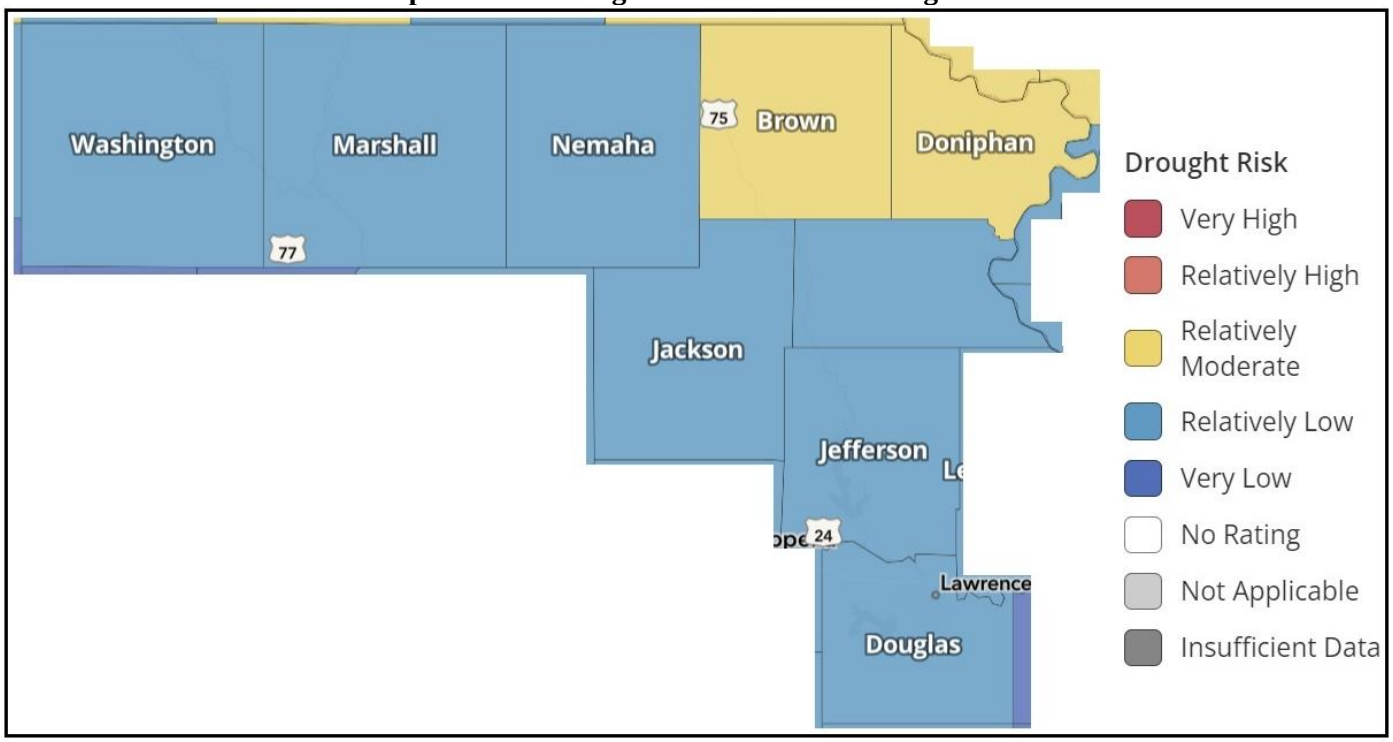


Source: FEMA RAPT

FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from drought:

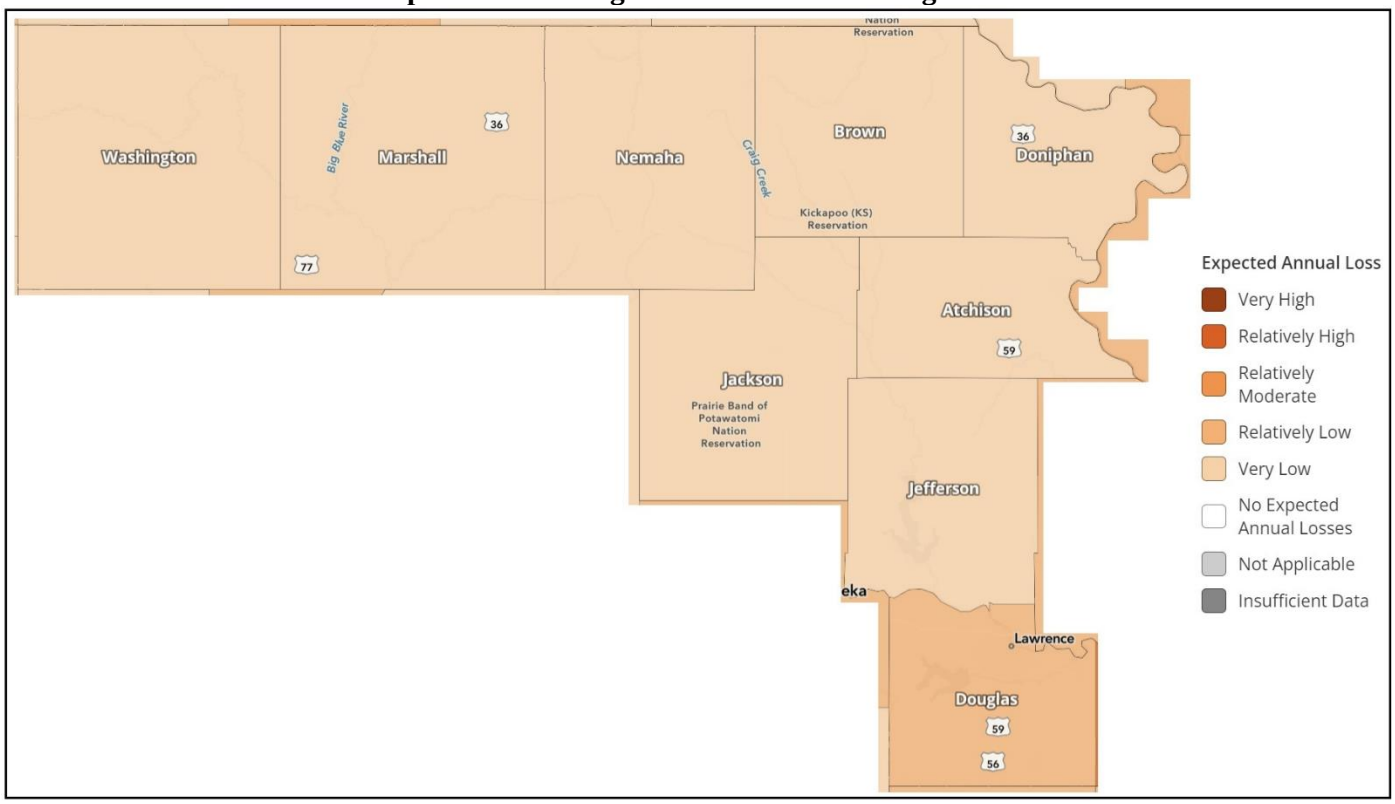
Map 56: Kansas Region K FEMA NRI Drought Risk



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for drought for participating counties within Kansas Region K:

Map 57: Kansas Region K FEMA NRI Drought EAL



Source: FEMA NRI

The following table indicates the FEMA NRI and EAL analysis for each participating Kansas Region K county for drought:

Table 58: Kansas Region K FEMA NRI and EAL for Drought by County

County	Risk Index	EAL
Atchison	Relatively Low	Very Low
Brown	Relatively Moderate	Very Low
Doniphan	Relatively Moderate	Very Low
Douglas	Relatively Low	Relatively Low
Jackson	Relatively Low	Very Low
Jefferson	Relatively Low	Very Low
Marshall	Relatively Low	Very Low
Nemaha	Relatively Low	Very Low
Washington	Relatively Low	Very Low

Source: FEMA NRI

Consequence Analysis

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

Table 59: 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 due to higher concentrations of bacteria. During droughts, dry soils and wildfires increase the

Table 59: Drought Consequence Analysis

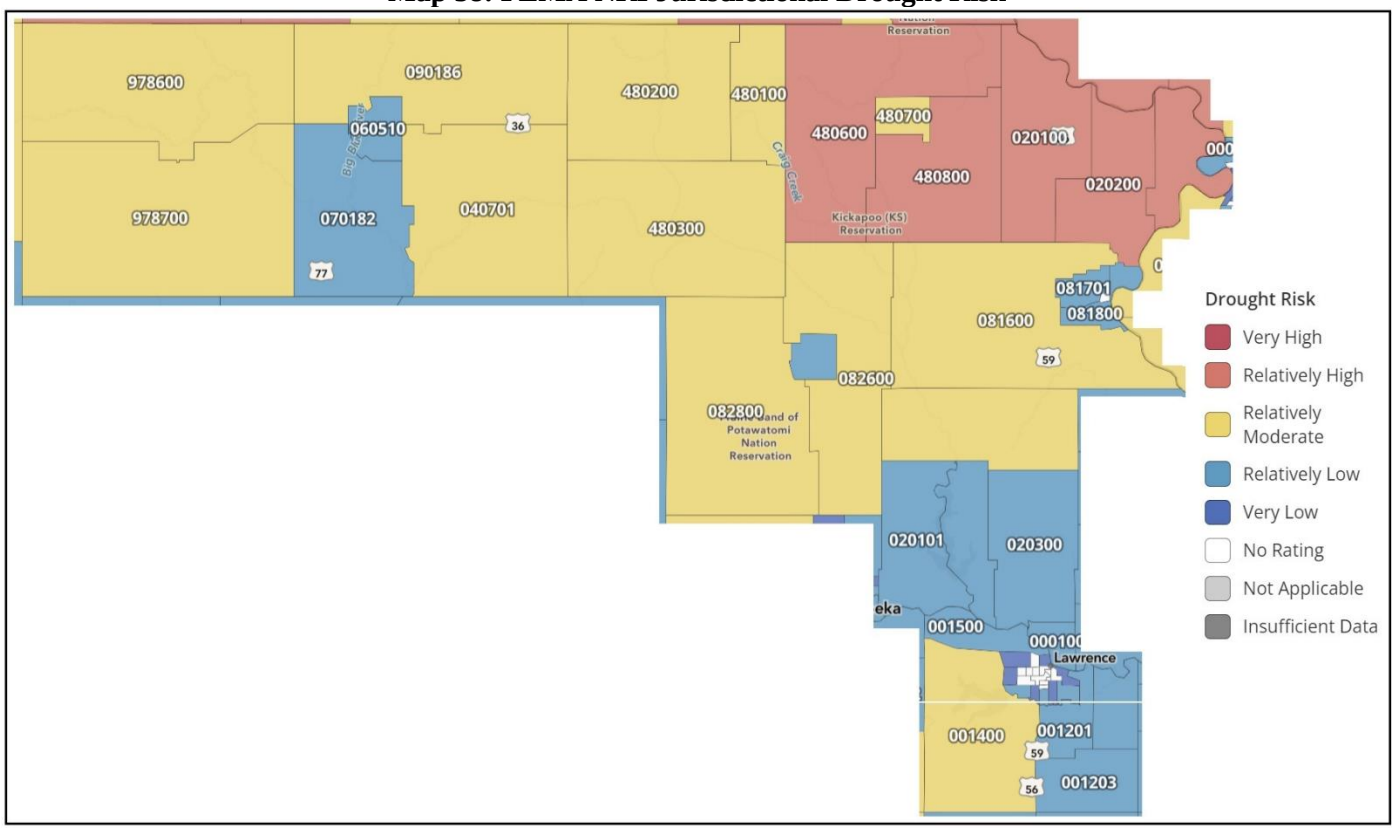
Subject	Potential Impacts
	number of airborne particles, such as pollen and smoke, which can worsen chronic respiratory illnesses.
Impact on Responders	Reduced water availability would likely complicate firefighting efforts in urban and suburban areas where wildfire-fighting tactics such as chemical retardants and controlled burns are less suitable. Some fire suppression equipment requires a minimum level of water pressure to activate. If the drought coincides with 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, this threat may impact an agency's ability to implement their continuity plan based on the hazard's potential to impact power, communications, or water outages. Critical life-saving activities and fire suppression will be directly impacted by these outages.
Delivery of Services	Droughts may impact the delivery of goods and services if there are shortages of raw materials.
Property, Facilities, and Infrastructure	Drought conditions may threaten levels or quality of municipal public water supplies or impact small communities and/or private potable water wells.
Impact on Environment	The potential of drought-related impacts could have significant impacts on supplies of animal feed, livestock, meat and dairy products, and processed grain products, and on crop production. 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 on the local government.
Public Confidence in Governance	Droughts can adversely affect the public, first responders, infrastructure, agriculture, economy, and overall operations. Direct, effective, and timely response by all levels of government is required for public confidence in the state's governance, especially in recognizing and mitigating economic impacts of the drought.

4.10.7 Jurisdictional Risk and Vulnerability

To help understand the risk and vulnerability to drought conditions of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from drought:

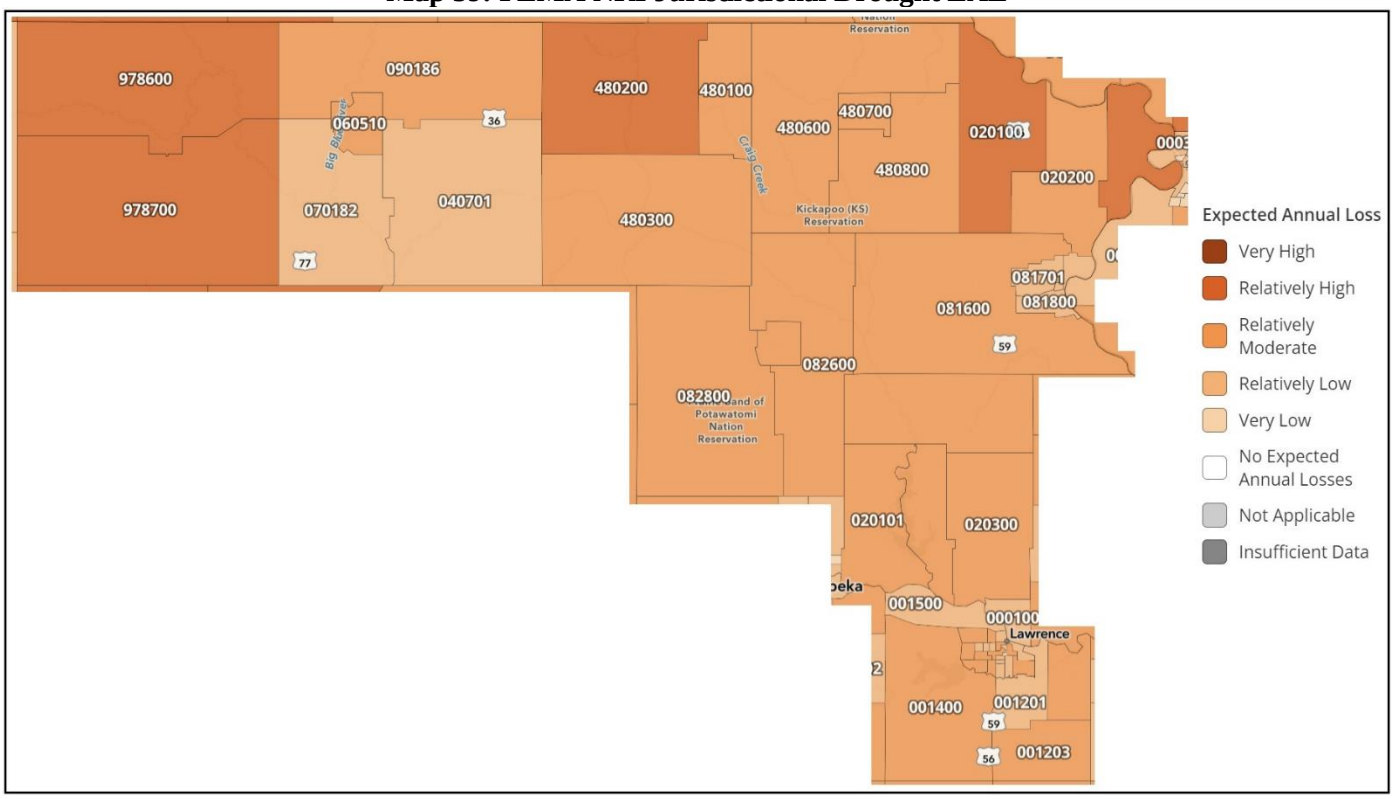
Map 58: FEMA NRI Jurisdictional Drought Risk



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for drought for participating jurisdictions (as indicated by census tract) within Kansas Region K:

Map 59: FEMA NRI Jurisdictional Drought EAL

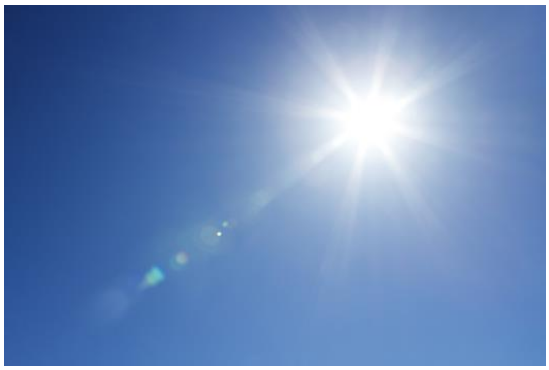


Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

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. Persons 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. Please see Section X for information concerning potentially vulnerable populations.

4.11 Extreme Temperatures



4.11.1 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

4.11.2 Location & Extent

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 K 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 Severe Winter Weather 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 regional temperature norms.

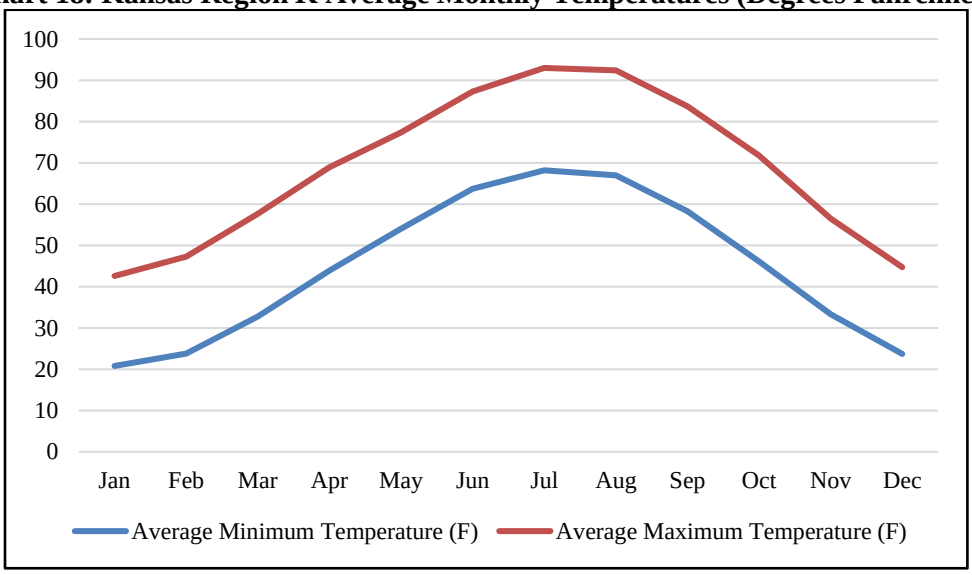
Table 60: Regional Average Temperatures

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Minimum (F)	16.5	21.0	31.0	42.1	52.5	62.9	66.9	65.0	55.5	44.0	31.6	20.6	42.5
Average Maximum (F)	37.2	43.0	54.4	66.6	75.5	85.3	89.7	88.5	80.5	69.3	53.7	40.4	65.3

Source: High Plains Regional Climate Center

The following graph illustrates the above data.

Chart 18: Kansas Region K Average Monthly Temperatures (Degrees Fahrenheit)

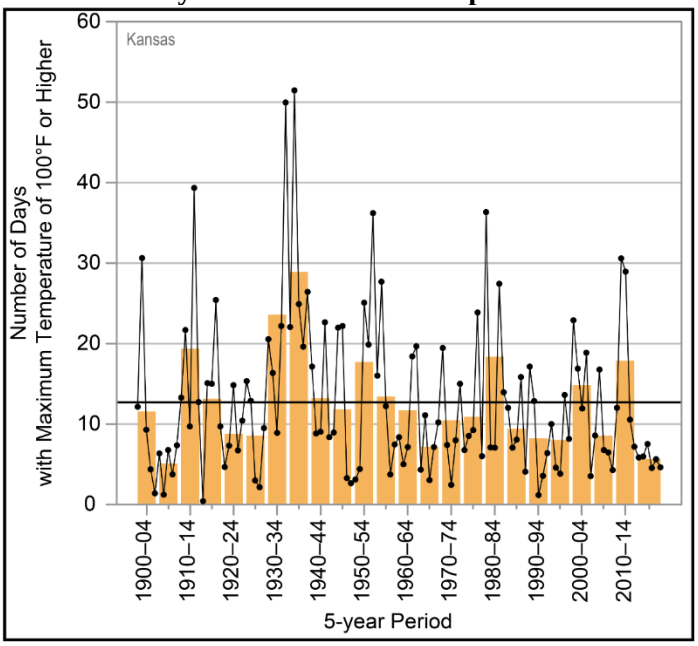


Source: NOAA

4.11.3 Previous Occurrences

The following chart 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.

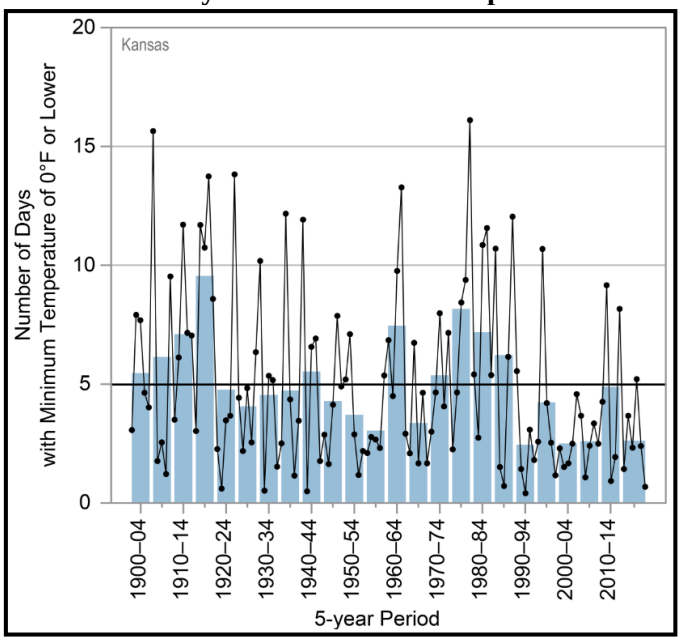
Chart 19: Number of Days with Maximum Temperature of 100° F or Higher



Source: NOAA NCEI State Climate Summary 2022 for Kansas

The following chart 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,

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



Source: NOAA NCEI State Climate Summary 2022 for Kansas

Data from the High Plains Regional Climate Center indicates the following historic high and low temperatures.

Table 61: Kansas Region K Historic Temperatures

County	Historic Low Temperature (F)	Historic High Temperature (F)
Atchison	-28 (1930)	111 (1936)
Brown	-33 (1892)	112 (1936)
Doniphan	-30 (1899)	106 (1954)
Douglas	-21 (1912)	114 (1936)
Jackson	-23 (1989)	110 (1980)
Jefferson	-24 (1989)	110 (1980)
Marshall	-35 (1905)	114 (1911)
Nemaha	-31 (1899)	107 (1901)
Wahsington	-29 (1989)	112 (1954)

Source: High Plains Regional Climate Center

Additionally, data from the NCEI from 2009 through 2023 indicates the following recorded extreme temperature events. As these events tend to cover large areas, they are reported as regional:

Table 62: Kansas Region K NCEI Extreme Temperature Events, 2009 - 2023

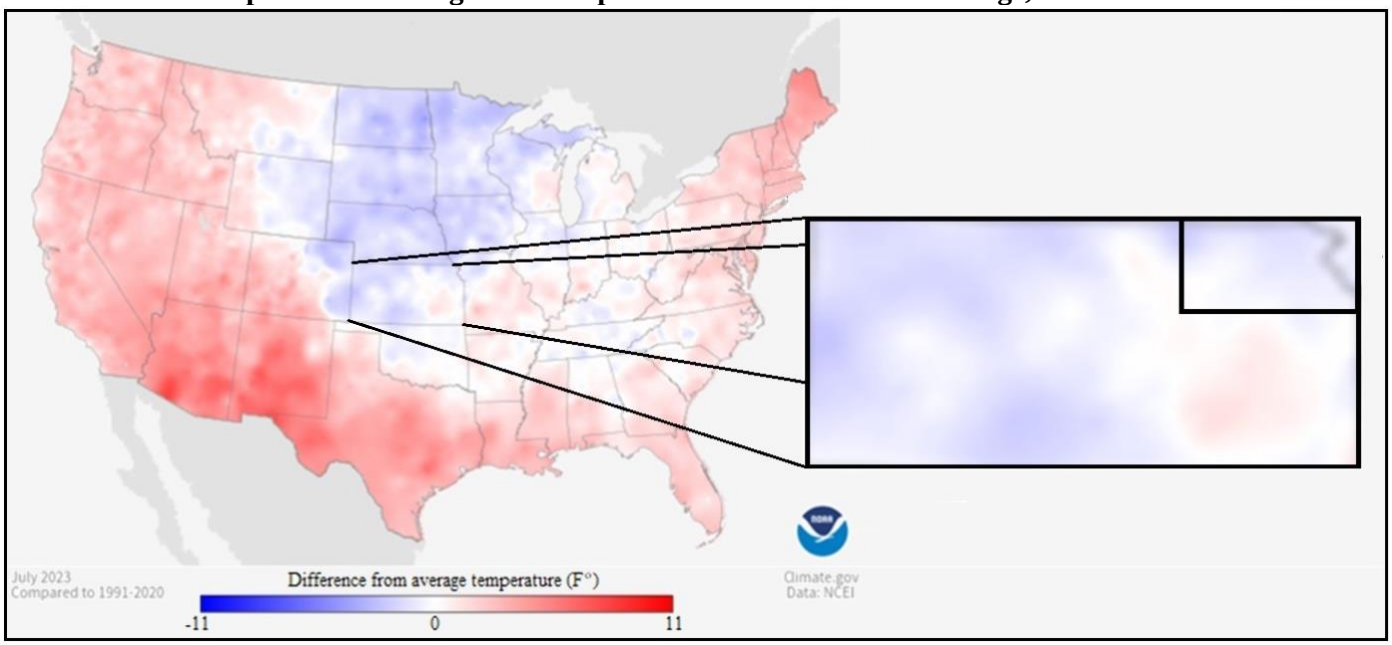
County	Event Type	Number of Events	Property Damage	Deaths	Injuries
Kansas Region K	Cold	6	$0	0	0
	Heat	0	$0	0	0

Source: NOAA NCEI

4.11.4 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 60: Kansas Region K Temperature Difference from Average, 1990 – 2020



Source: NOAA

Temperatures in Kansas Region K 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. number of very cold nights has been mostly below average since 1990.

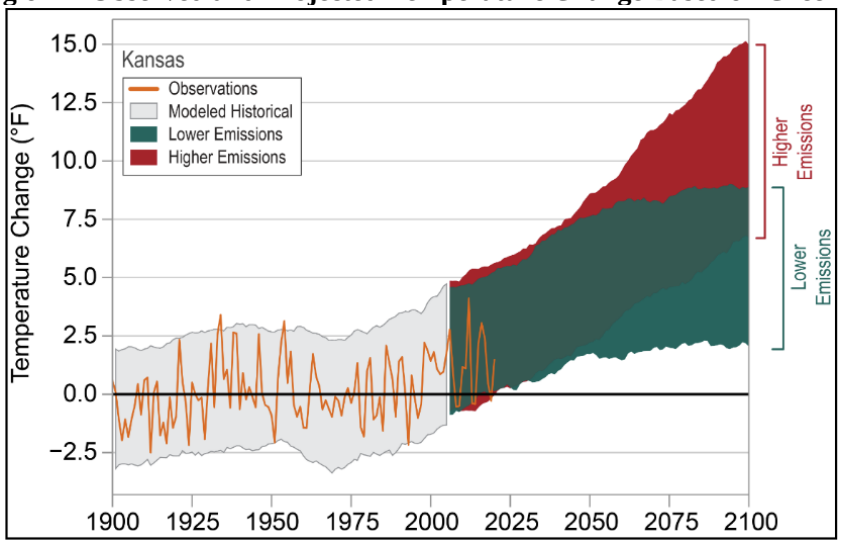
4.11.5 Projected Changes in Location, Intensity, Frequency, and Duration

When discussing extreme temperatures, climate change should be considered as it may markedly change future events. Recent climate modeling results indicate that extreme temperature events may become more common for Kansas Region K, especially heat. Recent multiyear periods have been among some of the warmest on record for Kansas, comparable to the extreme heat of the 1930s, when intense drought exacerbated hot summer conditions. Recent spring temperatures have been above average, which may have implications for crop planting. Summer temperatures have been near or above average since 2000, but there is no long-term trend in very warm nights or extremely hot days, although both are trending slightly above average. The number of very cold nights has been mostly below average since 1990, and the freeze-free season has also lengthened, averaging about nine days longer in this century than the 20th century average.

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 as climate change brings 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 chart indicates the projected temperature change for Kansas Region K 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.

Chart 21: Kansas Region K Observed and Projected Temperature Change Based on Greenhouse Gas Emissions



Source: NOAA NCEI State Climate Summary 2022 for Kansas

4.11.6 Vulnerability and Impact

While difficult to quantify, the impacts of future extreme temperature may have far reaching impacts. The incidence of wildfires increases substantially during extended periods of extreme heat, which in turn places both human and wildlife populations at higher levels of risk. Although environmental impacts are difficult to quantify, losses to plant and animal species, wildlife habitat, and air and water quality, wildfires, degradation of landscape quality, loss of biodiversity, and soil erosion may result from extended periods of extreme temperatures.

A primary concern with this hazard are human health safety issues, as extreme temperatures can be a direct cause of death. Specific at-risk groups include outdoor workers, farmers, young children, and senior citizens. Compounding these concerns is the potential loss of electric power due to increased strain on power generation and distribution due to increased air conditioning or heating needs.

Extreme temperature impacts on humans can be measured for both heat and cold. The following table discusses potential impacts on human health related to excessive heat.

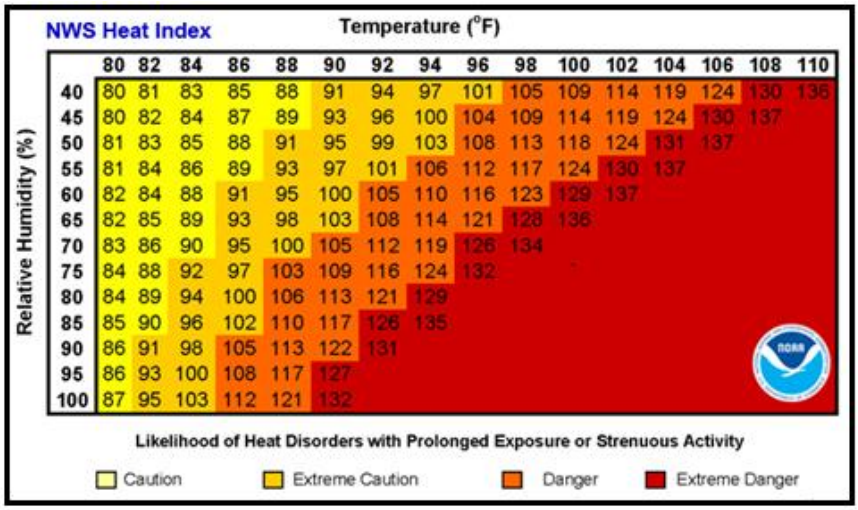
Table 63: Extreme Heat Impacts on Human Health

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 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.

Chart 22: Heat Index



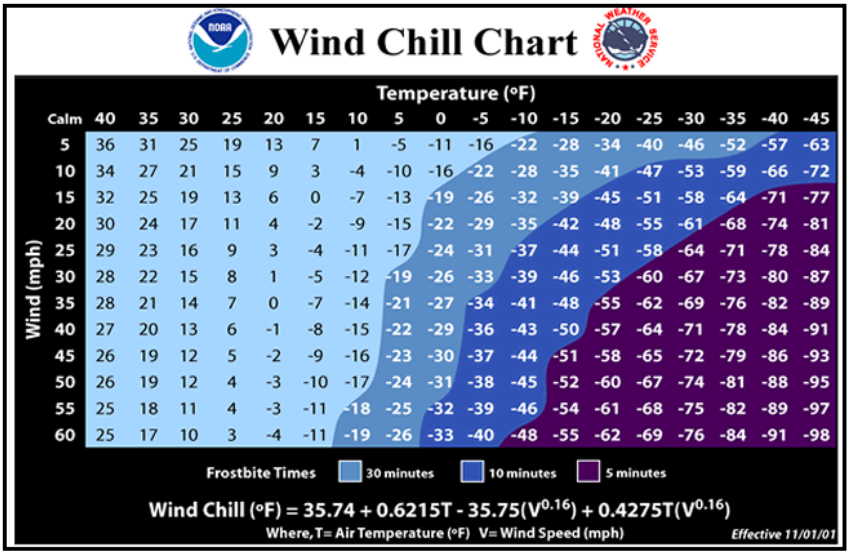
Source: NWS

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 chart shows the difference between the actual air temperature and the perceived temperature due to wind, and amount of time until frostbite occurs.

Chart 23: Wind Chill Chart



Source: NOAA

Extreme heat 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 heat or drought, some assistance may be available to impacted farms or ranches.

Extreme heat conditions can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total agricultural losses, by county, due to extreme conditions from 1989 to 2021:

Map 61: Agricultural Losses Due to Extreme Heat Conditions, 1989 to 2021

Source: USDA

Extreme temperatures can pose various risks to local and county operations, and may include:

- Health and Safety Risks: High temperatures, especially during heatwaves, can pose significant health risks to government employees. Heat-related illnesses such as heat exhaustion and heatstroke can occur, potentially leading to hospitalizations or fatalities. Cold temperatures can also lead to cold-related illnesses and injuries, such as frostbite and hypothermia.
- Emergency Response: Government agencies may need to respond to extreme weather events, such as providing emergency shelter during heatwaves or responding to weather-related accidents and emergencies. These responses can strain resources and personnel.
- Budgetary Impact: The costs associated with responding to and mitigating the effects of extreme temperatures can strain state budgets. This includes expenses related to emergency response, infrastructure repairs, and healthcare.

Potentially Vulnerable Community Lifelines

Extreme temperatures, whether excessively hot or cold, can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that extreme temperatures place on infrastructure, resources, and operational processes. 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 64: 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

Table 64: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)

Category	Loss
Loss of Communications/Information Technology Services	$141

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

Extreme temperatures, whether excessively hot or cold, can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that extreme temperatures place on infrastructure, resources, and operational processes.

Extreme heat and extreme cold can have significant impacts on roads, leading to various issues and challenges. Extreme temperatures can cause the following impacts:

- 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.

The following table, from the Kansas Department of Transportation, indicates the total road miles by county for Kansas Region K:

Table 65: Kansas Region K Road Mileage by County

County	Total Road Miles
Atchison	939
Brown	1,243
Doniphan	736
Douglas	1,404
Jackson	1,245
Jefferson	1,232
Marshall	1,705
Nemaha	1,452
Washington	1,727

Source: Kansas Department of Transportation

The cost to conduct maintenance on a road can vary significantly depending on the types of work required. However, the average estimate for repairs on a per mile basis in 2019 was $14,750 per mile. The cost to replace a road can vary significantly based on several factors, including the type of road, local labor and material costs, the complexity of the project, and the specific requirements of the replacement. As a rough estimate, road construction costs can range from $1,000,000 to $10,000,000 per mile.

Extreme heat and extreme cold can impact electrical utilities in various ways, potentially leading to disruptions in service. These impacts include:

- Power Outages: High temperatures can strain electrical systems, leading to increased demand for cooling systems like air conditioners. This heightened demand can overload power grids, resulting in power outages.

- Transformer Overheating: Transformers, which are crucial components in power distribution, can overheat in extreme temperatures. This can lead to malfunctions, reduced efficiency, or even failures, causing power disruptions.
- Equipment Failure: Electrical equipment, such as cables and switches, may experience higher resistance and increased stress during extreme heat, increasing the likelihood of equipment failures.
- Reduced Efficiency in Power Plants: Power generation facilities may experience reduced efficiency during heatwaves due to elevated ambient temperatures. This can affect the output of power plants and potentially lead to supply shortages.
- 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.
- Communication Disruptions: Both extreme heat and cold can impact communication infrastructure. For example, extreme cold can affect the performance of fiber optic cables, while extreme heat can lead to equipment failures in communication systems.

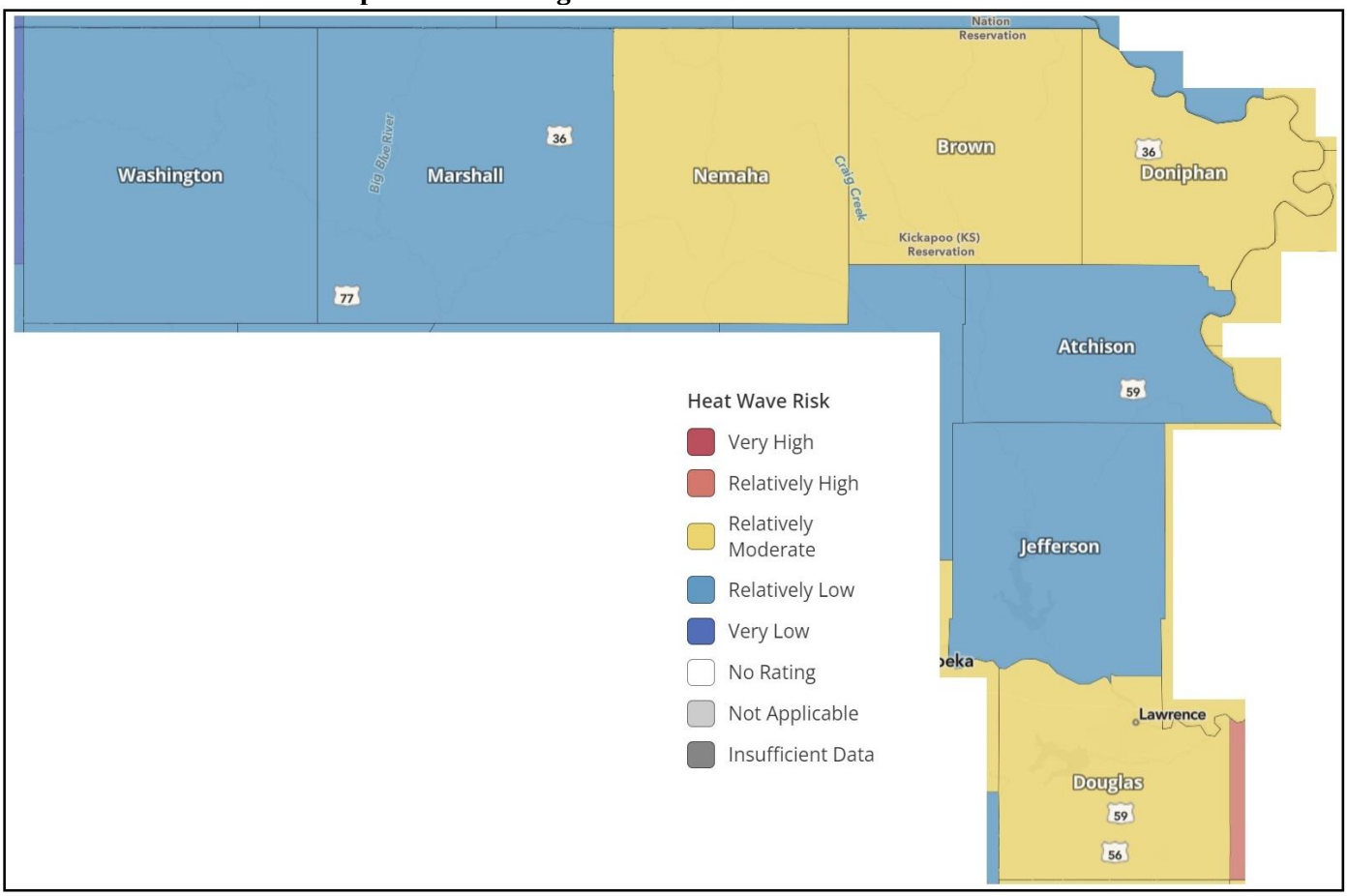
In order to reduce plan duplication, mapping concerning electrical generation plants, high-capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Maps 49 and 50, page 94, and Chart 15, page 95.

Hospitals and other smaller medical facilities may see an increase in heat or cold related illness during an extreme temperature event, but it is considered unlikely that this increase will impact or overload capacity. Hospital capacity mapping may be found on Map 51, page 95. However, extreme temperatures can increase the demand for emergency shelters, particularly in cases of widespread power outages. Setting up and managing these shelters can strain resources.

FEMA NRI

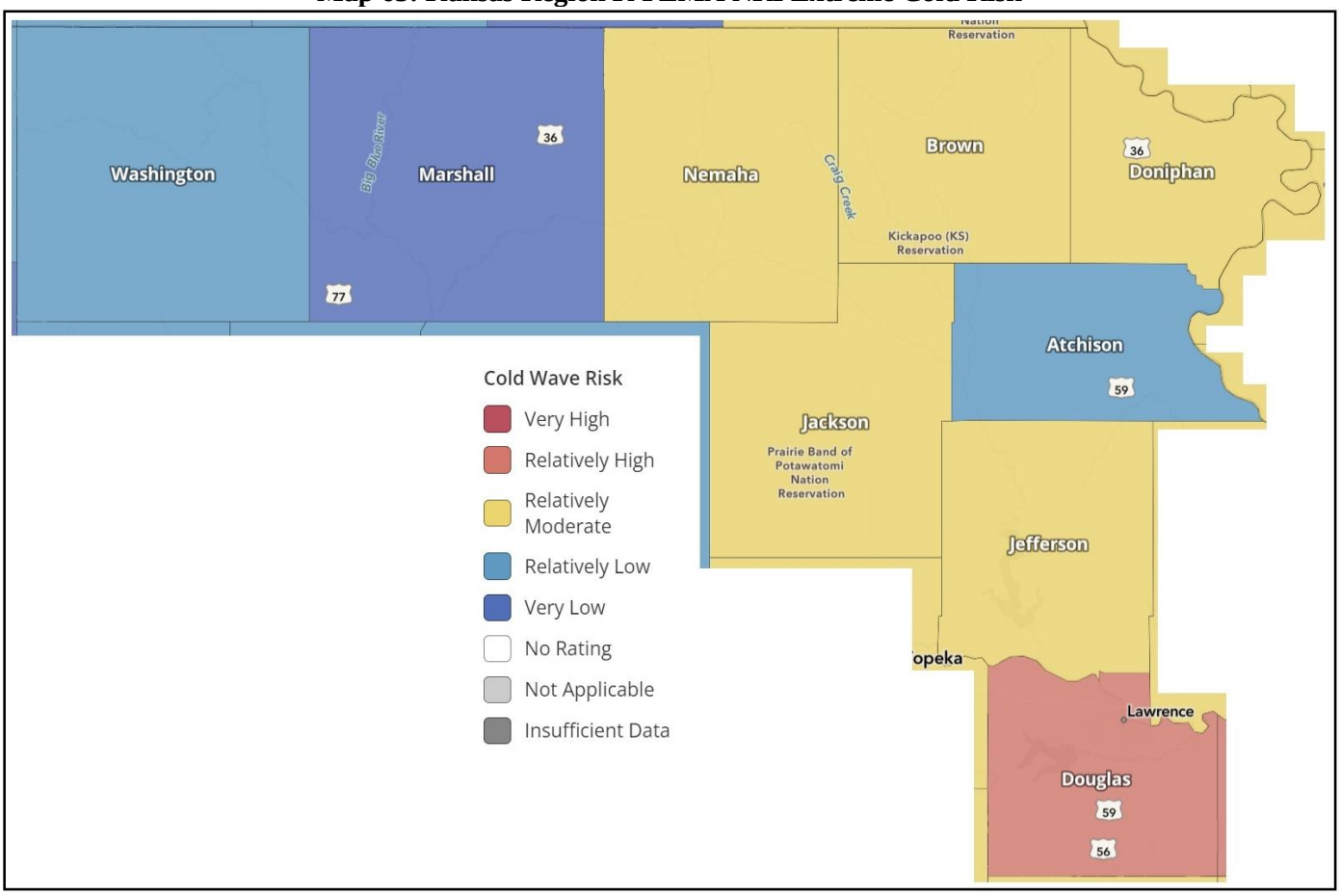
Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from extreme heat and extreme cold:

Map 62: Kansas Region K FEMA NRI Extreme Heat Risk



Source: FEMA NRI

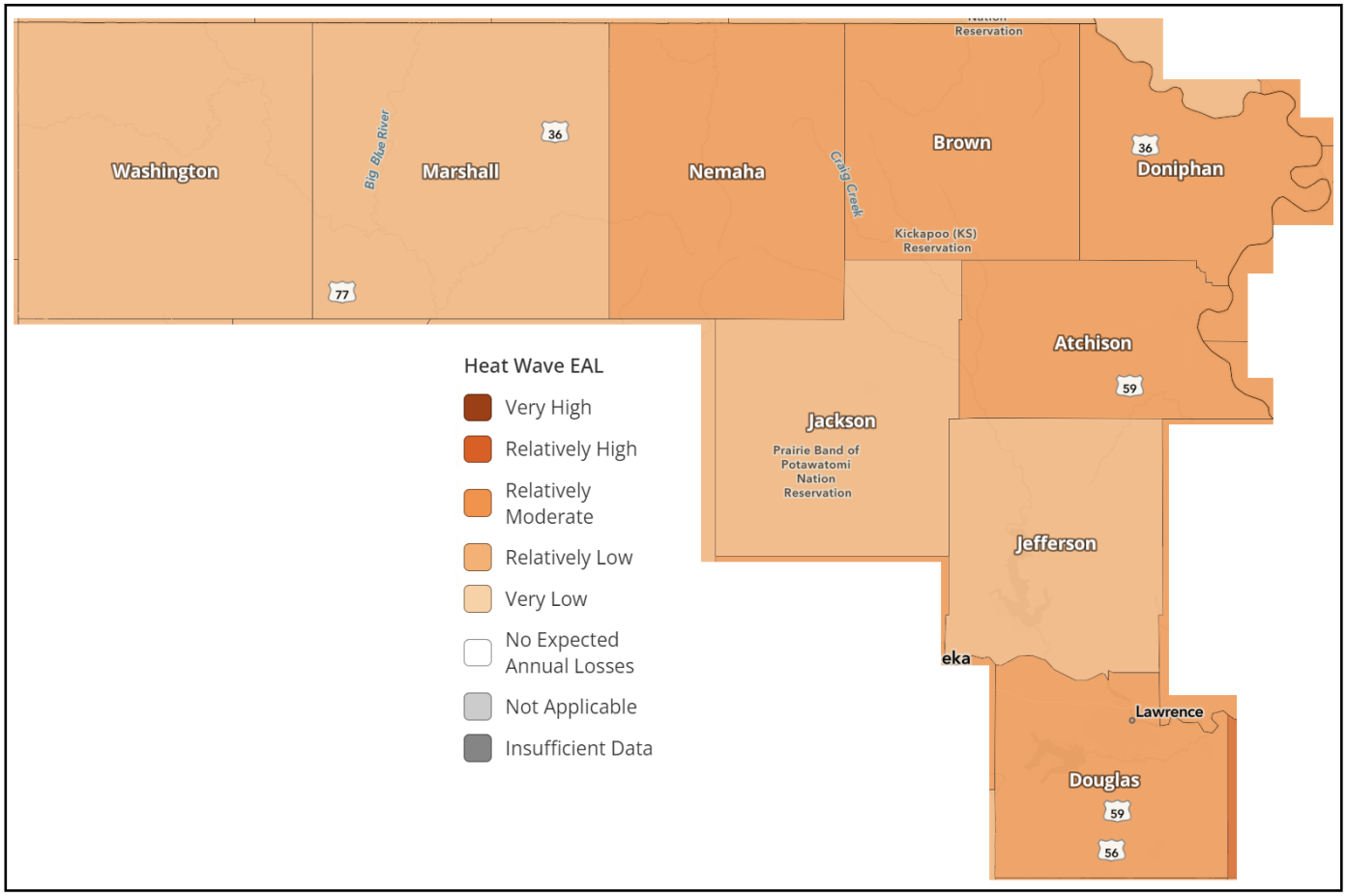
Map 63: Kansas Region K FEMA NRI Extreme Cold Risk



Source: FEMA NRI

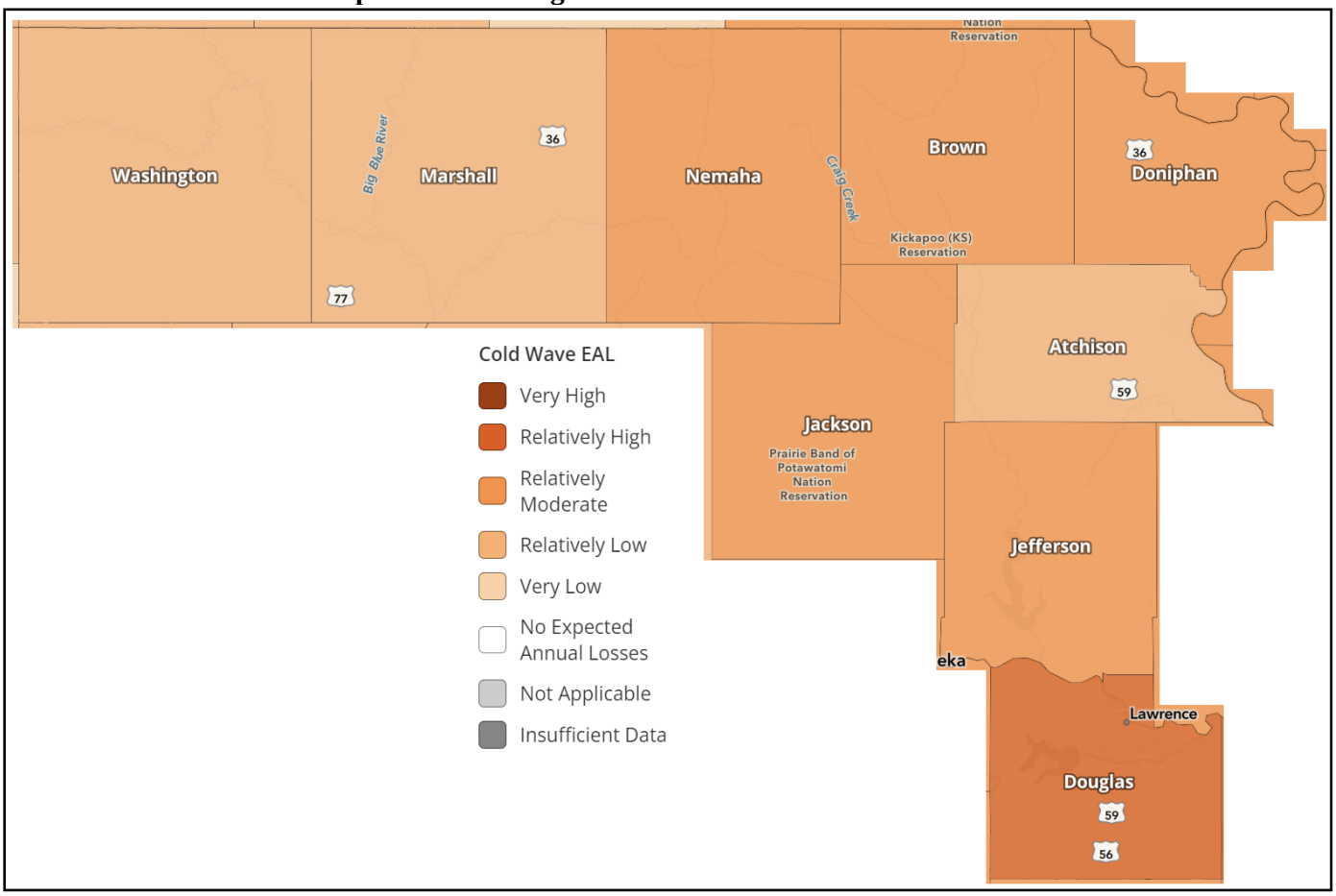
As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for extreme heat and extreme cold for participating counties within Kansas Region K:

Map 64: Kansas Region K FEMA NRI Extreme Heat EAL



Source: FEMA NRI

Map 65: Kansas Region K FEMA NRI Extreme Cold EAL



Source: FEMA NRI

The following tables indicates the FEMA NRI and EAL analysis for each participating Kansas Region K county for extreme heat and extreme cold:

Table 66: Kansas Region K FEMA NRI and EAL for Extreme Heat by County

County	Risk Index	EAL
Atchison	Relatively Low	Relatively Moderate
Brown	Relatively Moderate	Relatively Moderate
Doniphan	Relatively Moderate	Relatively Moderate
Douglas	Relatively Moderate	Relatively Moderate
Jackson	Relatively Low	Relatively Low
Jefferson	Relatively Low	Relatively Low
Marshall	Relatively Low	Relatively Low
Nemaha	Relatively Moderate	Relatively Moderate
Washington	Relatively Low	Relatively Low

Source: FEMA NRI

Table 67: Kansas Region K FEMA NRI and EAL for Extreme Cold by County

County	Risk Index	EAL
Atchison	Relatively Low	Relatively Low
Brown	Relatively Moderate	Relatively Moderate
Doniphan	Relatively Moderate	Relatively Moderate
Douglas	Relatively High	Relatively High
Jackson	Relatively Moderate	Relatively Moderate
Jefferson	Relatively Moderate	Relatively Moderate

Table 67: Kansas Region K FEMA NRI and EAL for Extreme Cold by County

County	Risk Index	EAL
Marshall		Relatively Low
Nemaha	Relatively Moderate	Relatively Moderate
Washington	Relatively Low	Relatively Low

Source: FEMA NRI

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 K residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 68: Extreme Temperature Consequence Analysis

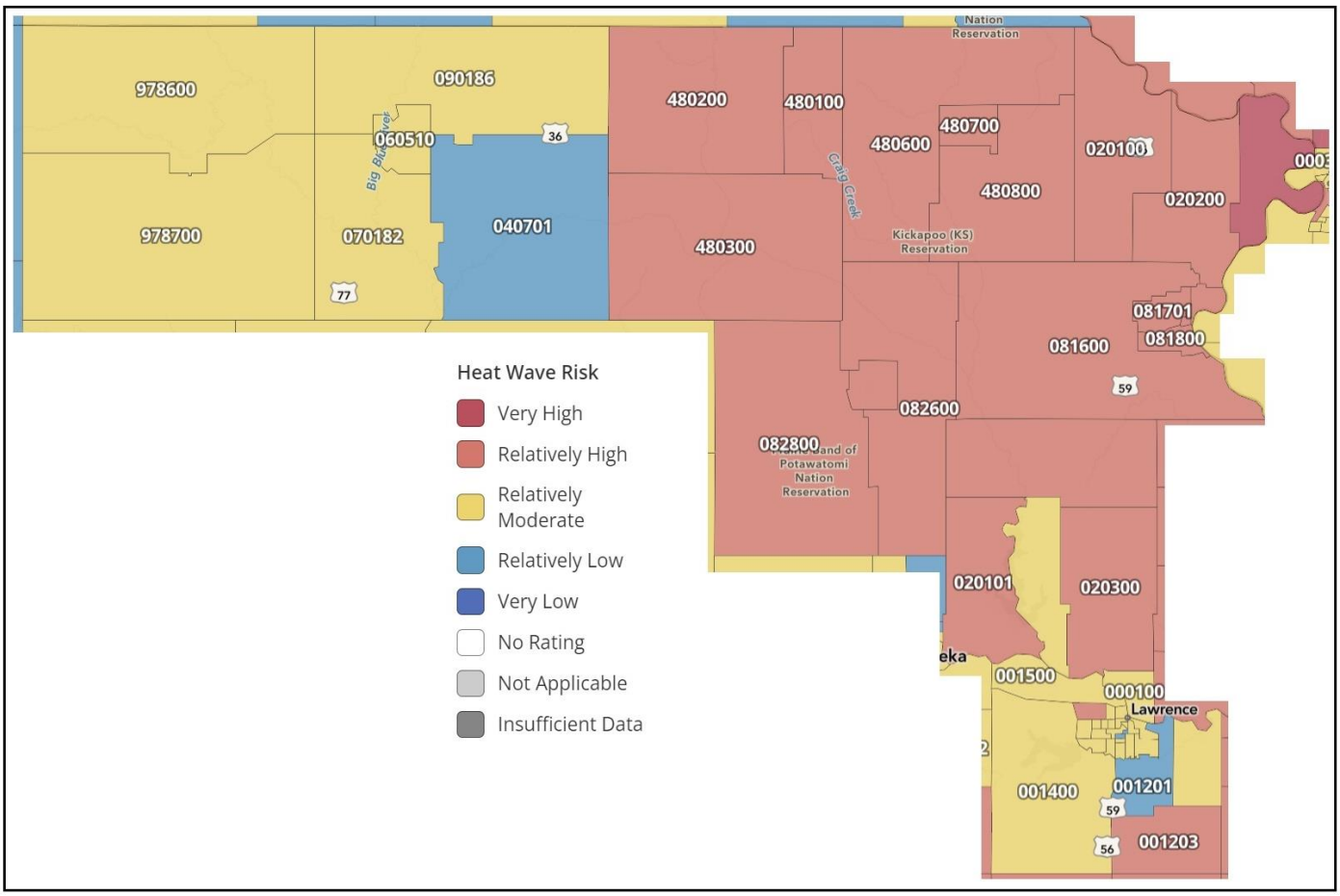
Subject	Potential Impacts
Impact on the Public	Extreme temperatures can have severe consequences for health, particularly for the elderly and young. Loss of electricity may impact heating or air conditioning leading to poorly tolerated indoor temperatures. Physical effects of extreme temperatures can cause major health problems and may lead to injury or death.
Impact on Responders	Without proper mitigation efforts, responders may be susceptible to temperature related illness. Extreme temperatures may also damage instruments or equipment necessary for response activities. First 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 to implement continuity operations due to power outages. If the activation of alternate facilities was required, continuity of operations may be difficult due to lack of computer/network access during 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. Livestock are adversely affected by extreme temperatures and may suffer medical problems or death.
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.

4.11.7 Jurisdictional Risk and Vulnerability

To help understand the risk and vulnerability to extreme temperatures of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

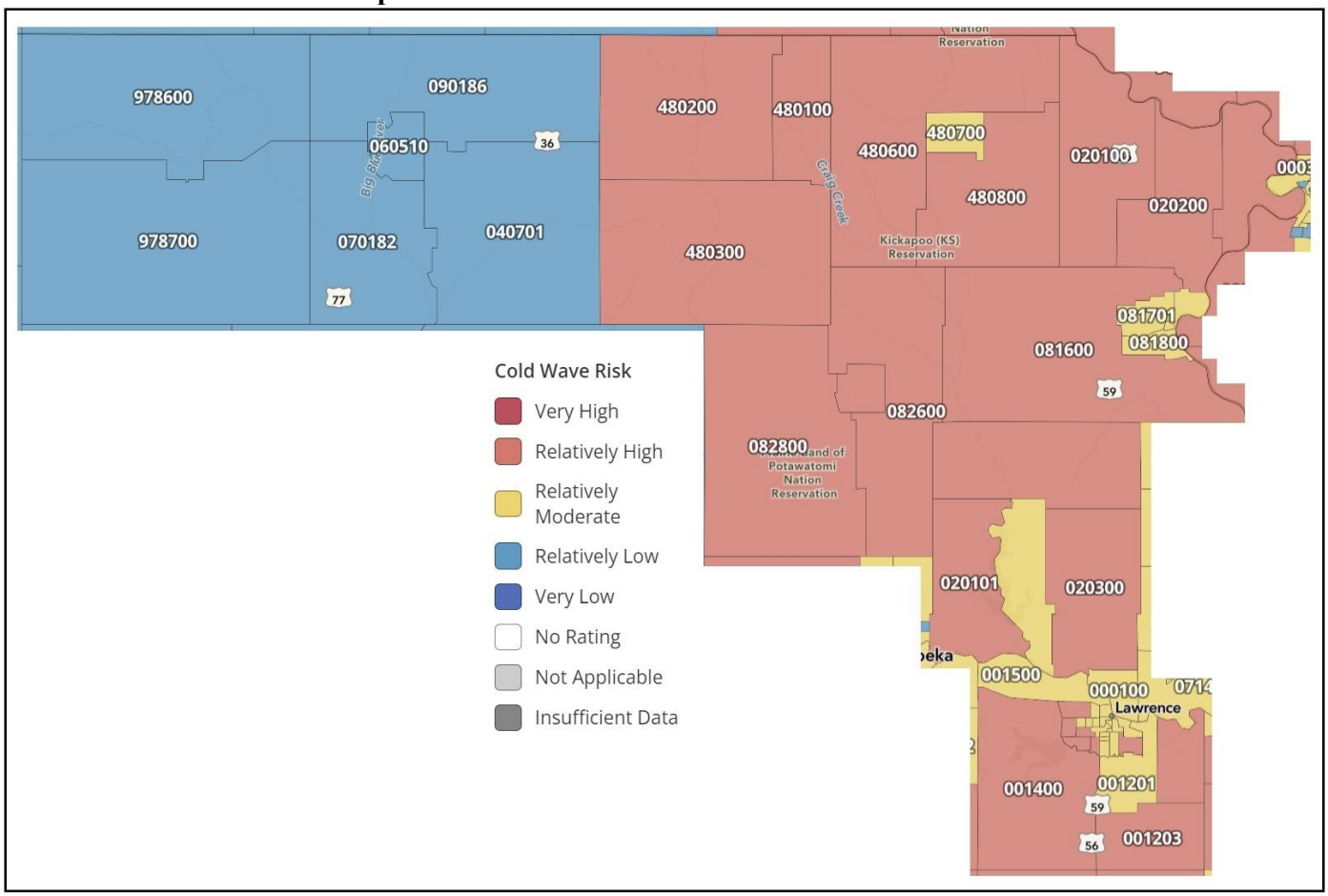
Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from extreme heat and extreme cold events:

Map 66: FEMA NRI Jurisdictional Extreme Heat Risk



Source: FEMA NRI

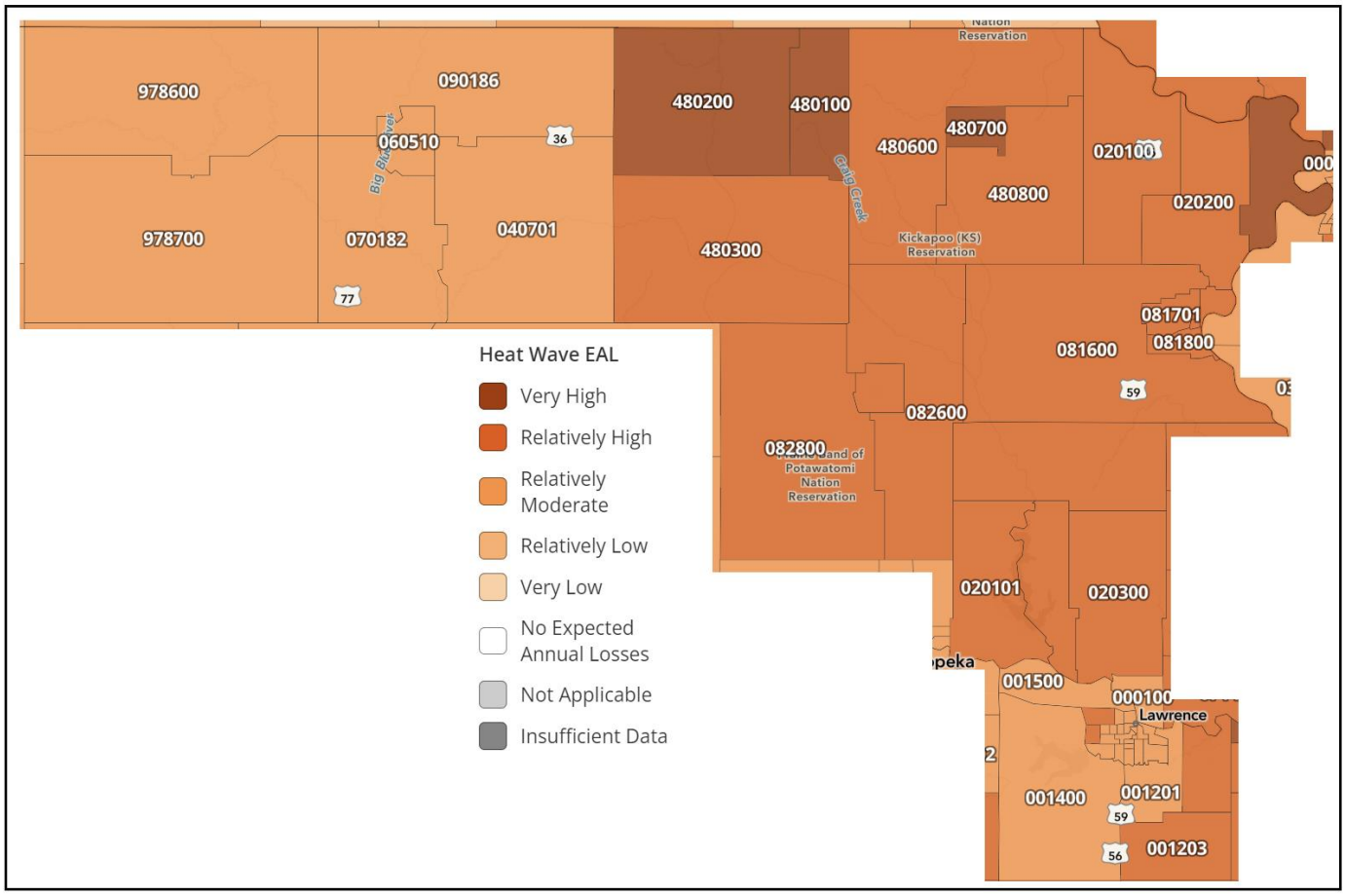
Map 67: FEMA NRI Jurisdictional Extreme Cold Risk



Source: FEMA NRI

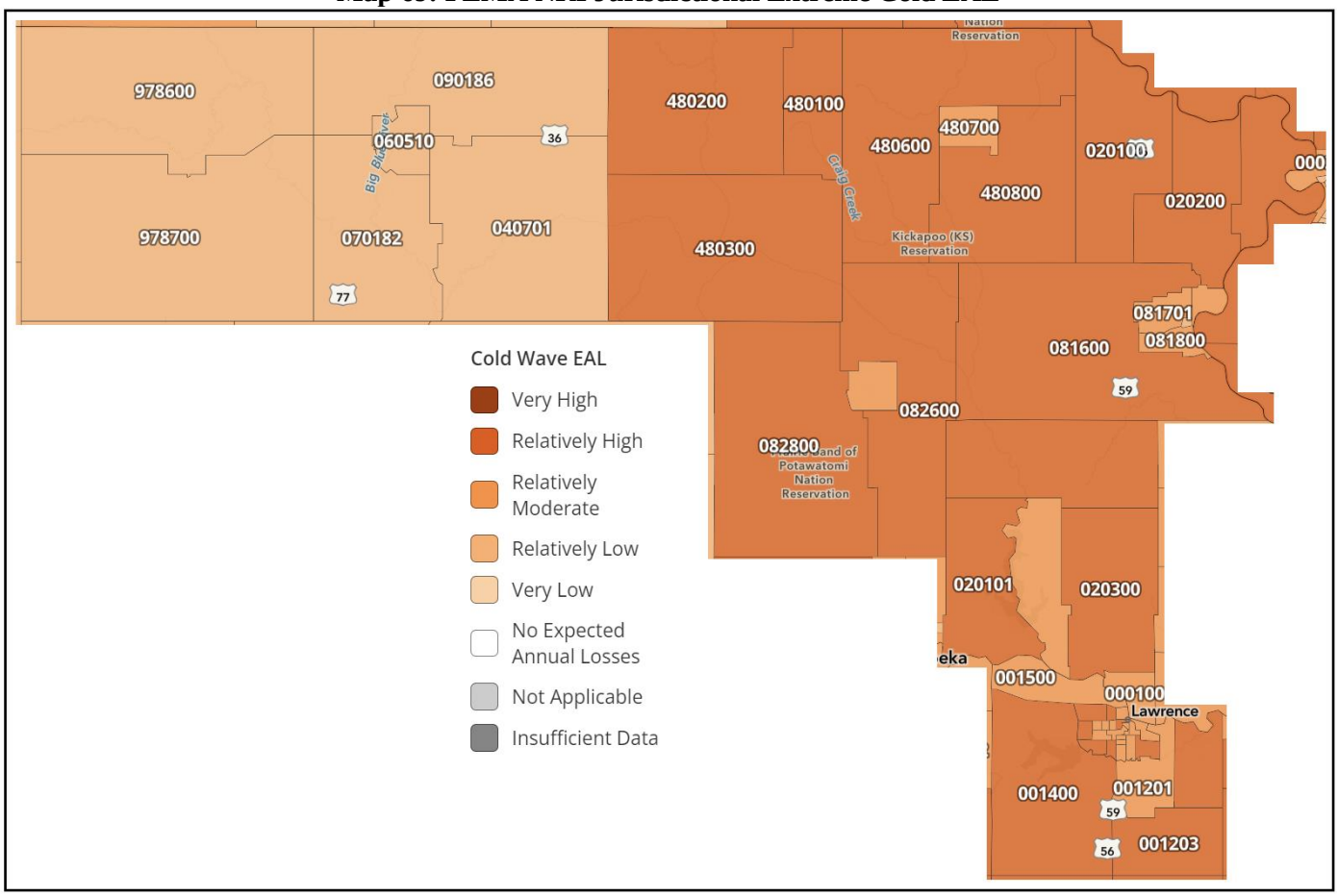
As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for extreme heat and extreme cold for participating jurisdictions (as indicated by census tract) within Kansas Region K:

Map 68: FEMA NRI Jurisdictional Extreme Heat EAL



Source: FEMA NRI

Map 69: FEMA NRI Jurisdictional Extreme Cold EAL



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

Socially vulnerable populations may be more vulnerable to the effects of extreme temperature events due to extremes in age or the inability to heat and cool homes during an event. Please see MAP #for details on vulnerable populations.

4.12 Flood

4.12.1 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.

4.12.2 Location and Extent

A variety of factors affect the severity of flooding within Kansas Region K. These include topography, weather characteristics, development, and geology. Intense flooding will create havoc 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 Kanas Region K is caused by intense and stationary thunderstorms. 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 K, urban flooding has consistently increased due to a number of factors, including the filling for development of natural wetlands and waterways, 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 a1% 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.

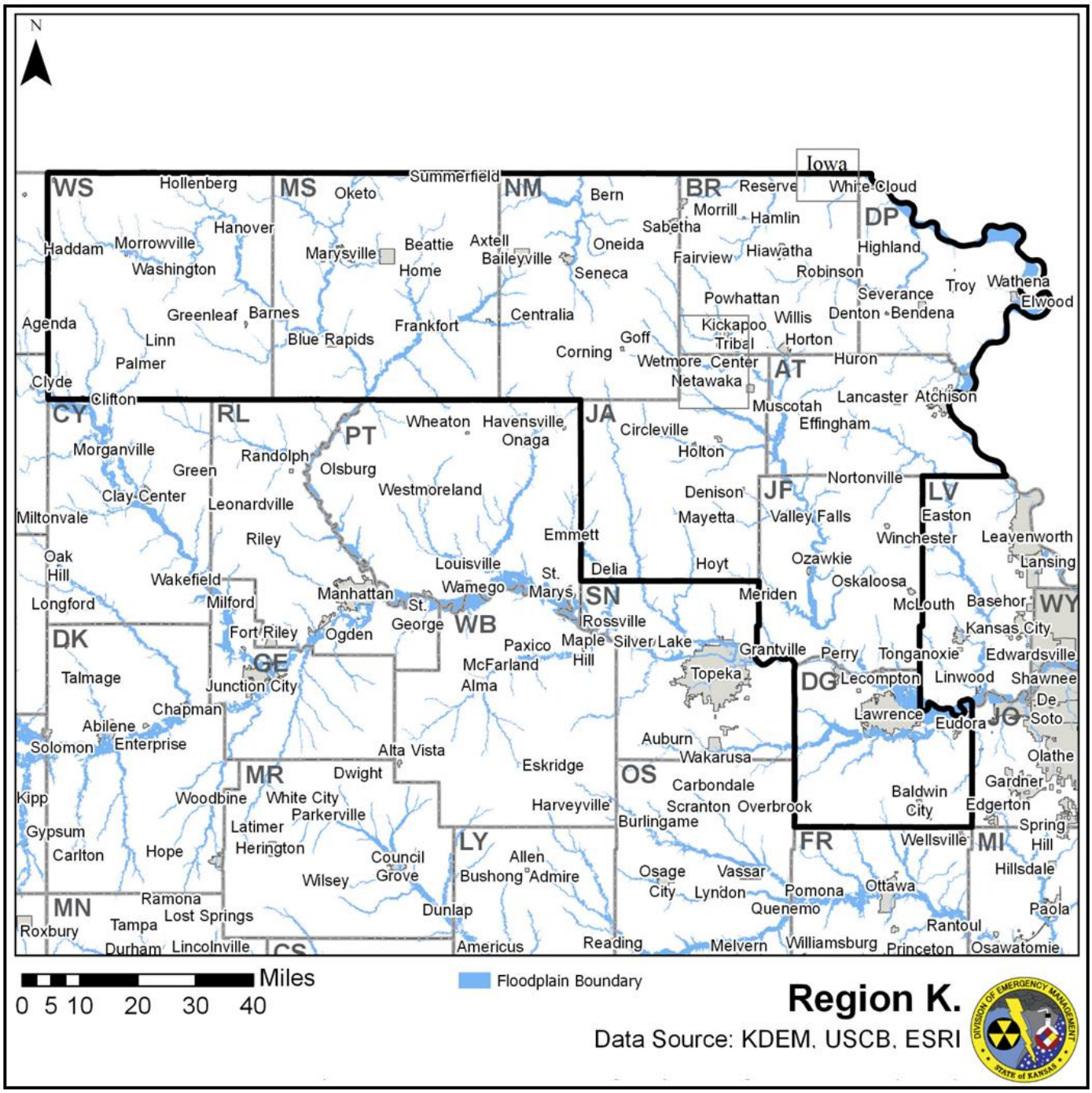
Table 69: Flood Zone Classifications

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

The following map uses FEMA FIRM data to depict the location of identified flood zones within Kansas Region K.

Map 70: Kansas Region K County Flood Zones



Source: KDEM

4.12.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. Kansas Region K has experienced three Presidential Disaster Declarations related to flooding in the past 10 years reflected in the following table.

Table 70: State of Kansas Region K Presidentially Declared Disasters, Flood

Designation	Declaration Date	Incident Type	Counties	Assistance
DR-4499-KS	8/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Atchison, Doniphan, Jefferson, Marshall, Nemaha, Washington	$51,157,548

Table 70: State of Kansas Region K Presidentially Declared Disasters, Flood

Designation	Declaration Date	Incident Type	Counties	Assistance
DR-4417-KS	3/20/2019	Severe Storms, Straight-Line Winds, and Flooding	Doniphan	$3,509,374
DR-4403-KS	10/19/2018	Severe Storms, Straight-Line Winds, and Flooding	Marshall	$4,545,539
DR-4230-KS	7/20/2015	Severe Storms, Tornadoes, Straight-Line Winds and Flooding	Atchison, Brown, Doniphan, Jackson, Jefferson, Marshall, Nemaha, Washington	$11,018,053

Source: FEMA
Note: -: Data unavailable

In addition to the Presidentially Declared Disasters, the following table presents NCEI identified flood events in Kansas from 2013 to 2023:

Table 71: Kansas Region K NCEI Flood Events, 2013 - 2023

County	Event Type	Number of Days with Events	Property Damage	Deaths and Injuries
Atchison	7	$200,000	0	7
	3	$0	0	3
Brown	2	$0	0	2
	7	$0	0	7
Doniphan	5	$100,000	0	5
	4	$0	0	4
Douglas	0	$0	0	0
	15	$550,000	0	15
Jackson	2	$0	0	2
	6	$0	0	6
Jefferson	2	$0	0	2
	10	$0	0	10
Marshall	2	$0	0	2
	14	$0	0	14
Nemaha	0	$0	0	0
	10	$0	0	10
Washington	2	$0	0	2
	3	$0	0	3

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.

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 K:

Table 72: Secretarial Flood Disaster Declarations, 2019 -2023

County	2022	2021	2020	2019
Atchison	0	0	0	4
Brown	0	0	0	2

Table 72: Secretarial Flood Disaster Declarations, 2019 -2023

County	2022	2021	2020	2019
Doniphan	0	0	0	3
Douglas	0	0	0	2
Jackson	0	0	0	1
Jefferson	0	0	0	2
Marshall	0	0	0	1
Nemaha	0	0	0	1
Washington	0	0	0	1

Source: USDA Farm Service Agency

4.12.4 Probability of Future Incidents

Based on historical occurrences, Kansas Region K 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 K.

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 K.

Table 73: Kansas Region K 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
Atchison	7	1	0	0	$200,000	$20,000
Brown	2	<1	0	0	$0	$0
Doniphan	5	1	0	0	$100,000	$10,000
Douglas	0	0	0	0	$0	$0
Jackson	2	<1	1	0	$0	$0
Jefferson	2	<1	0	0	$0	$0
Marshall	2	<1	0	0	$0	$0
Nemaha	0	0	0	0	$0	$0
Washington	2	<1	0	0	$0	$0

Source: NCEI

Table 74: Kansas Region K 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
Atchison	3	<1	0	0	$0	$0
Brown	7	1	0	0	$0	$0
Doniphan	4	<1	0	0	$0	$0
Douglas	15	2	0	0	$550,000	$55,000
Jackson	6	1	0	0	$0	$0
Jefferson	10	1	0	0	$0	$0
Marshall	14	1	0	0	$0	$0
Nemaha	10	1	0	0	$0	$0
Washington	3	<1	0	0	$0	$0

Source: NCEI

4.12.5 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.

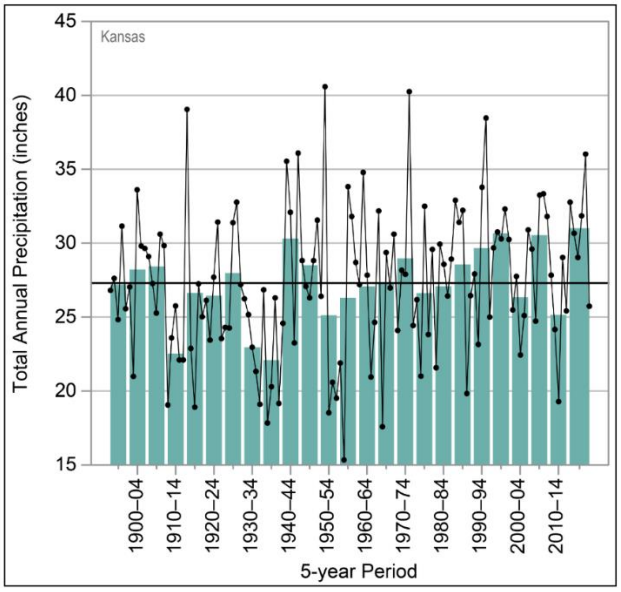
Continued urbanization, deforestation, and changes in land use can alter natural drainage patterns. The conversion of natural landscapes to impervious surfaces, such as roads and buildings, reduces the ability of the land to absorb water, leading to increased runoff and the potential for urban flooding. 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 flowing charts detail the annual precipitation and extreme precipitation events for Kansas Region K:

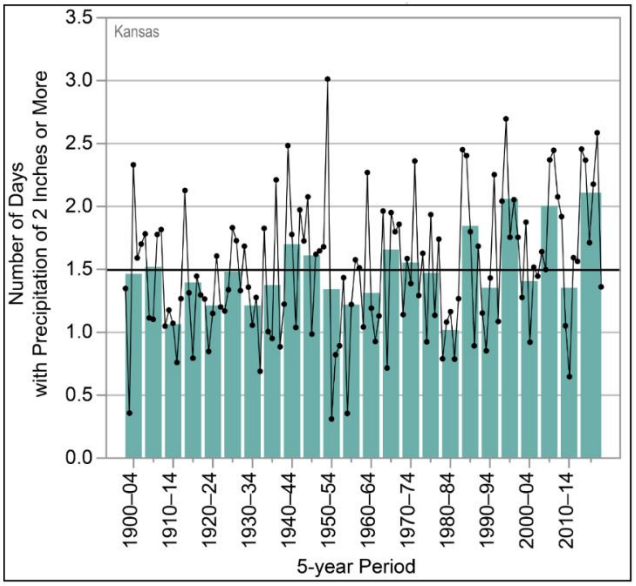
Chart 24: Kansas Total Annual Precipitation



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 K.

Chart 25: Kansas Region K Number of Extreme Precipitation Events (Greater Than 2 Inches)



Source: NOAA NCEI State Climate Summary 2022 for Kansas

4.12.6 Vulnerability and Impact

The results of the Hazus analysis were utilized to estimate potential losses for flooding. The intent of this analysis was to enable Kansas Region K 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 percent 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 weight 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 displaced households, damaged buildings, destroyed buildings, and total economic loss for Kanas Region K:

Table 75: Kansas Region K Hazus Flood Scenario Displaced Population Building Damages

County	Damaged Buildings	Destroyed Buildings	Displaced Households	Total Economic Loss
Atchison	18	0	76	$54,850,000
Brown	3	0	60	$11,000,000
Doniphan	10	0	45	$5,360,000
Douglas	81	1	416	$148,290,000
Jackson	3	0	109	$17,850,000
Jefferson	11	6	118	$41,500,000
Marshall	24	0	95	$32,530,000
Nemaha	2	0	89	$15,470,000
Washington	2	0	54	$13,620,000

Source: FEMA Hazus

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. Expected impacts of flooding on citizens may include:

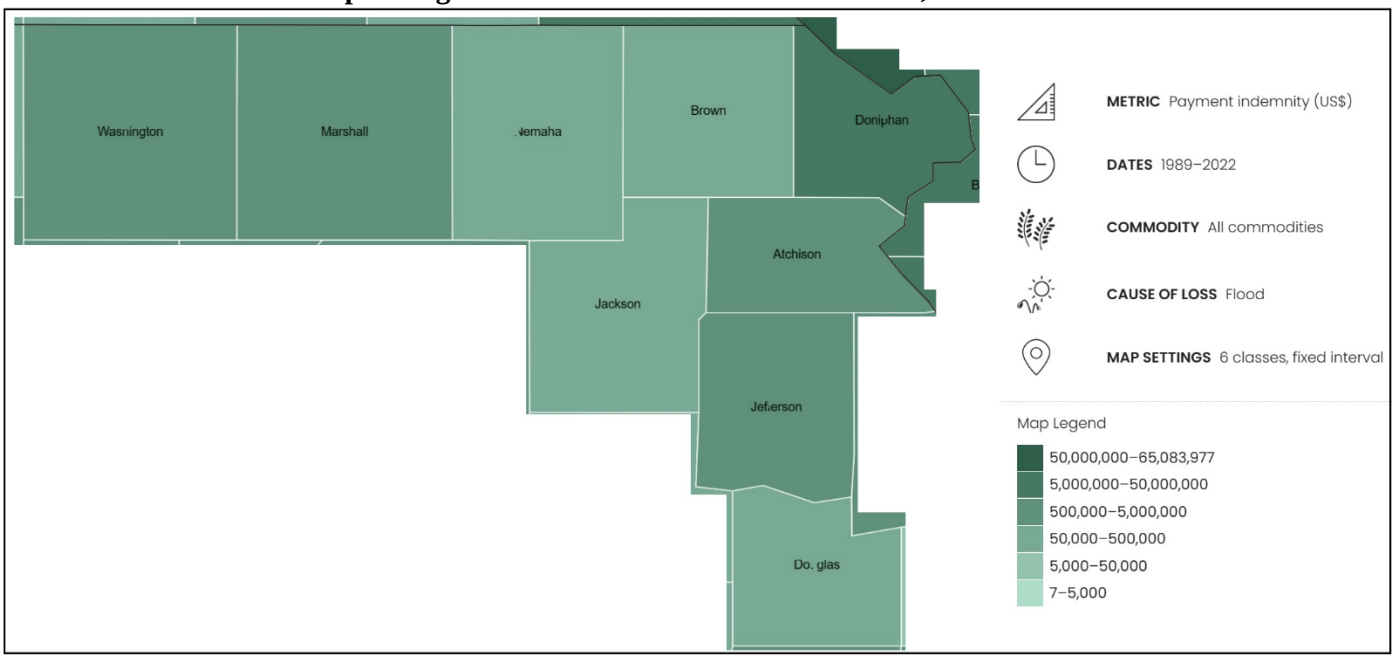
- Loss of Life: Flooding is one of the leading causes of weather-related fatalities worldwide. Fast-rising floodwaters can lead to drowning and other water-related accidents, resulting in the tragic loss of lives.
- Injuries: Floods can cause injuries due to waterborne diseases, contaminated floodwaters, 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 changing.
- 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.
- Long-Term Consequences: Some flood impacts, such as mold growth, structural damage, and land degradation, can have long-term consequences that persist even after the floodwaters recede.

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.

Flood events can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total agricultural losses, by county, due to flood conditions from 1989 to 2021:

Map 71: Agricultural Losses Due to Flood Events, 1989 to 2021



Source: USDA

Floods can pose significant risks to local operations, as they can result in a wide range of immediate and long-term consequences including:

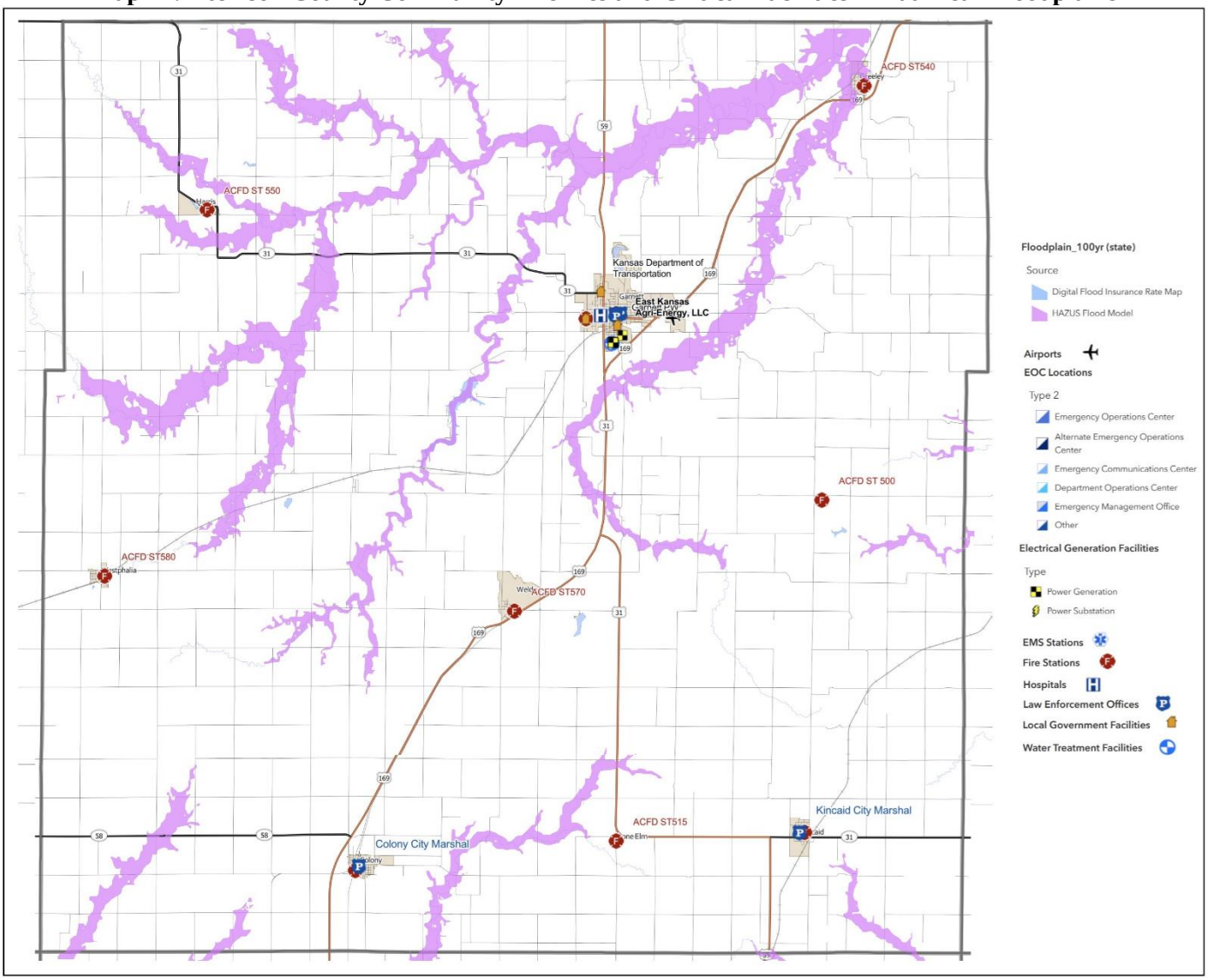
- Emergency Response and Management: Multiple counties and local jurisdictions may be mobilized to respond to floods. They would coordinate rescue operations, evacuations, and disaster response efforts to mitigate immediate risks to human life and property.
- Infrastructure Damage and Maintenance: Transportation and public works departments may need to assess and repair damage to roads, bridges, and other critical infrastructure affected by floodwaters and debris. This can strain resources and disrupt transportation networks.
- Environmental Oversight and Regulation: Health departments mat be responsible for assessing the environmental impact of floods, monitoring water quality, and coordinating cleanup efforts. They may also be involved in addressing long-term environmental consequences.
- Water Resource Management: Water resource agencies may need to manage and allocate water resources differently in the aftermath of floods, especially if the flood affects water supplies, water quality, or flood control systems.
- Public Health and Safety: Public health departments may provide support for public health needs during and after a flood, managing emergency shelters and addressing potential health risks from contaminants or waterborne diseases.
- Long-Term Recovery: County emergency management agencies play a critical role in long-term recovery efforts, including securing federal disaster assistance, providing financial support to affected communities, and helping with the rebuilding and restoration of infrastructure.

Potentially Vulnerable Community Lifelines

Flooding can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that flooding can place on infrastructure, resources, and operational processes.

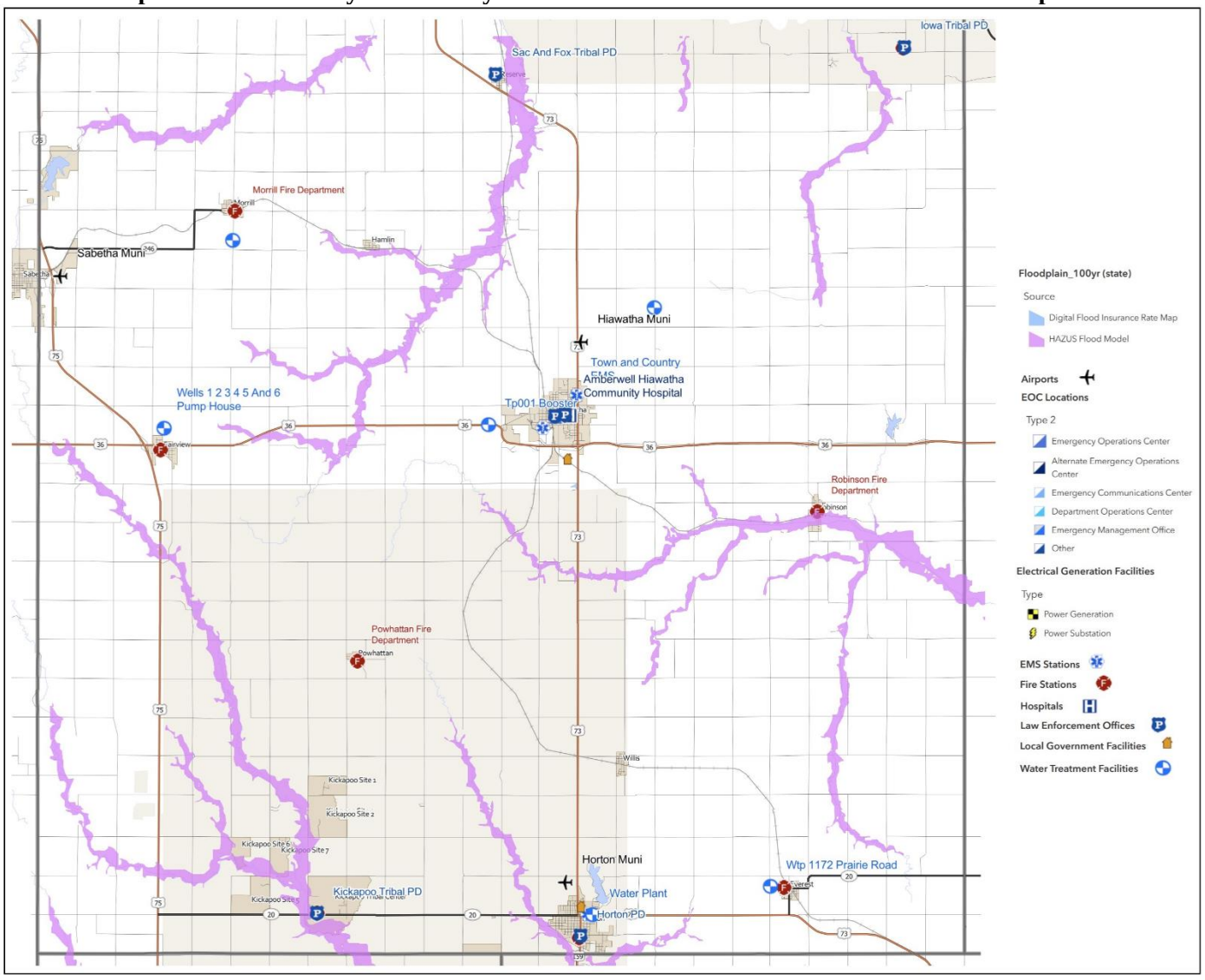
The following maps, generated using the State of Kansas EOPmapper system, detail the location of community lifelines and critical facilities in identified 100-year floodplains:

Map 72: Atchison County Community Lifelines and Critical Facilities in 100-Year Floodplains



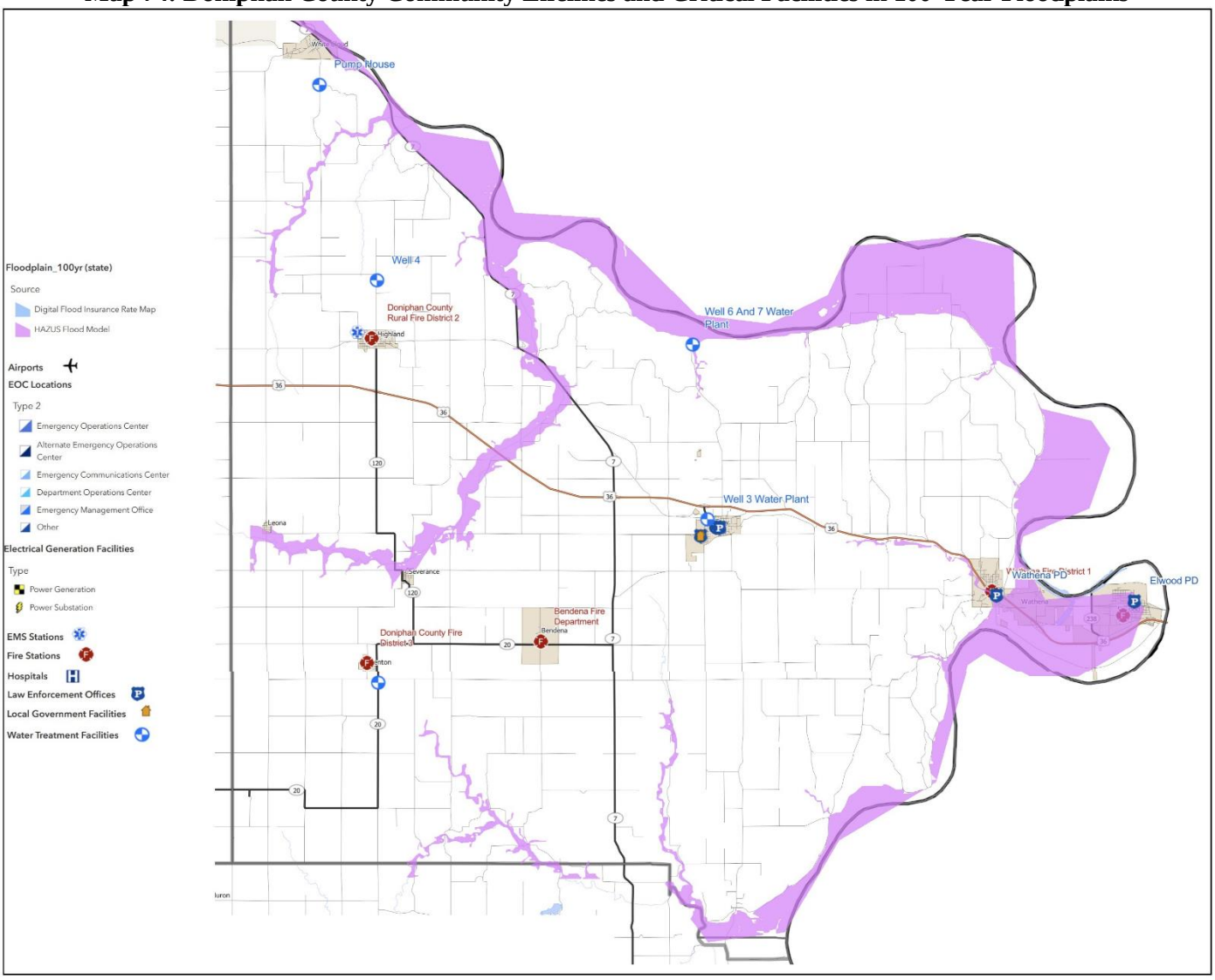
Source: KDEM

Map 73: Brown County Community Lifelines and Critical Facilities in 100-Year Floodplains



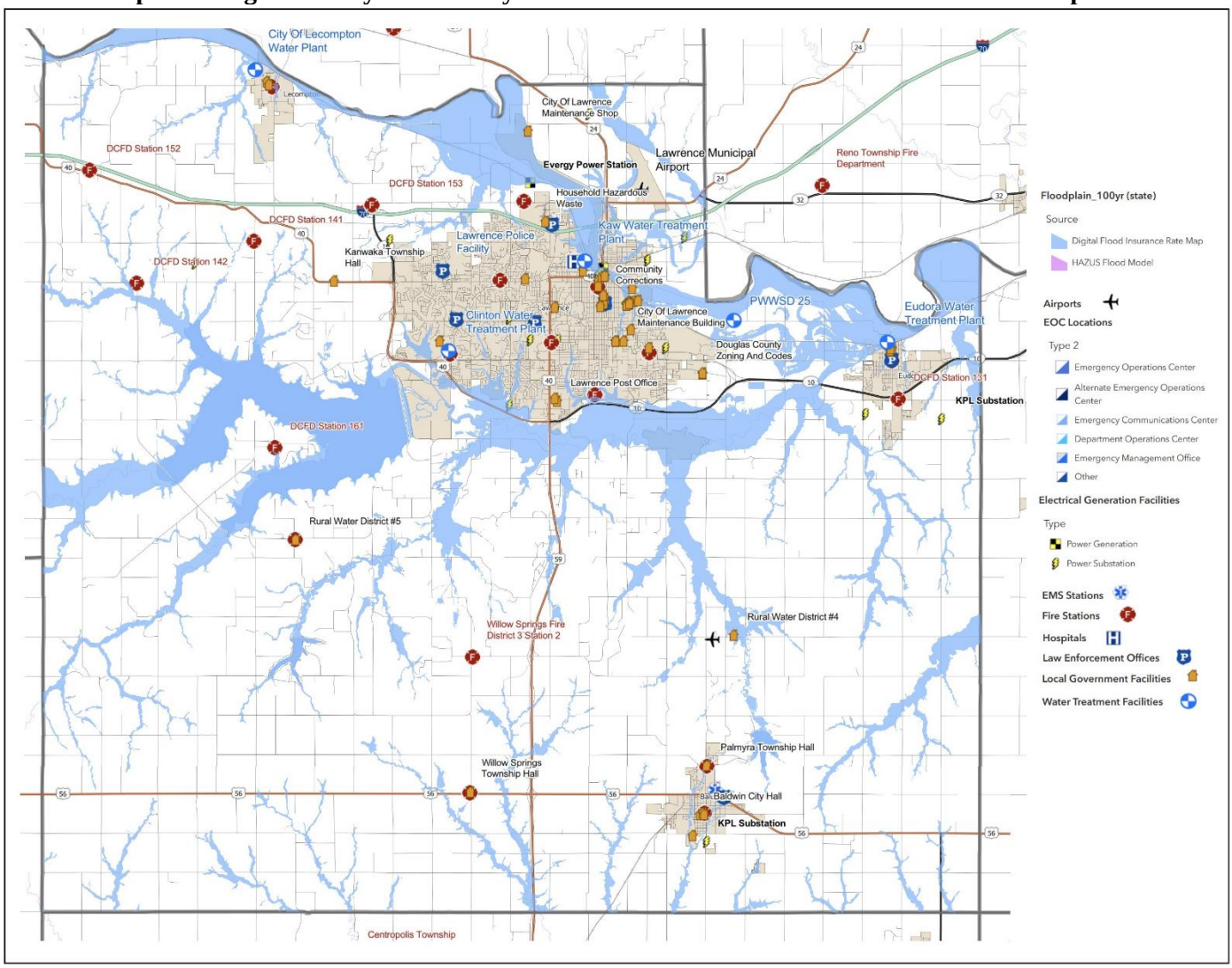
Source: KDEM

Map 74: Doniphan County Community Lifelines and Critical Facilities in 100-Year Floodplains



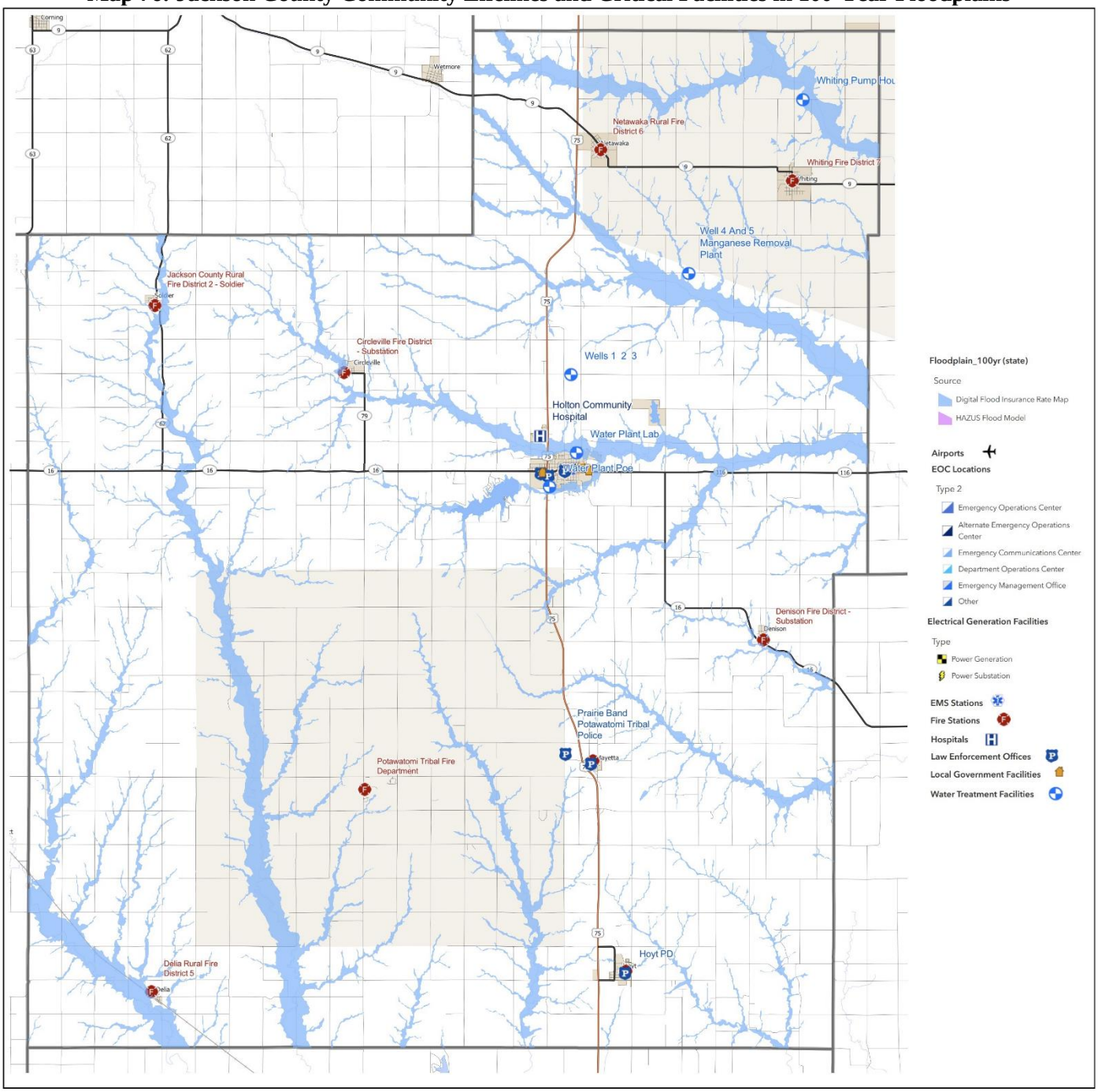
Source: KDEM

Map 75: Douglas County Community Lifelines and Critical Facilities in 100-Year Floodplains



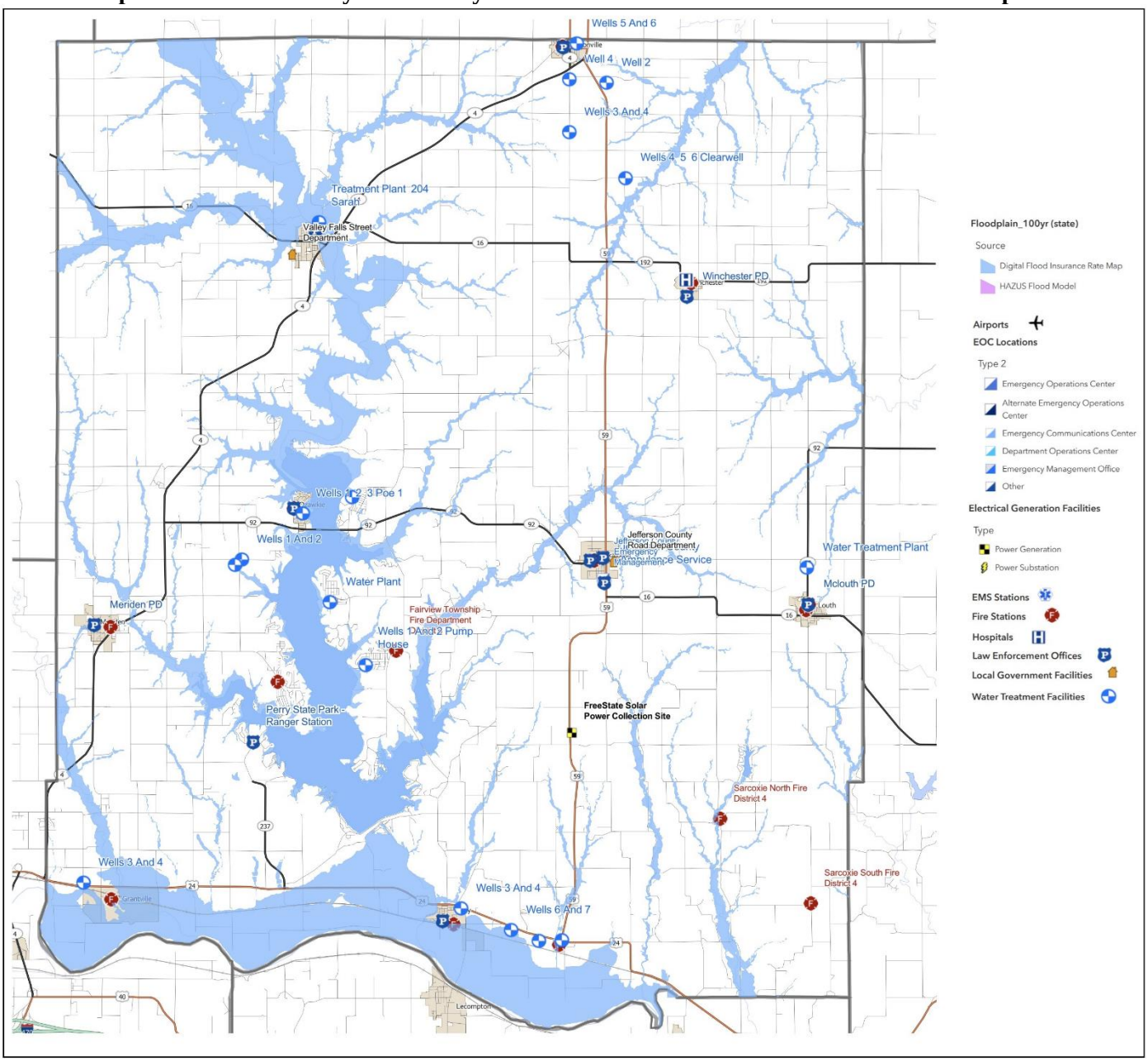
Source: KDEM

Map 76: Jackson County Community Lifelines and Critical Facilities in 100-Year Floodplains



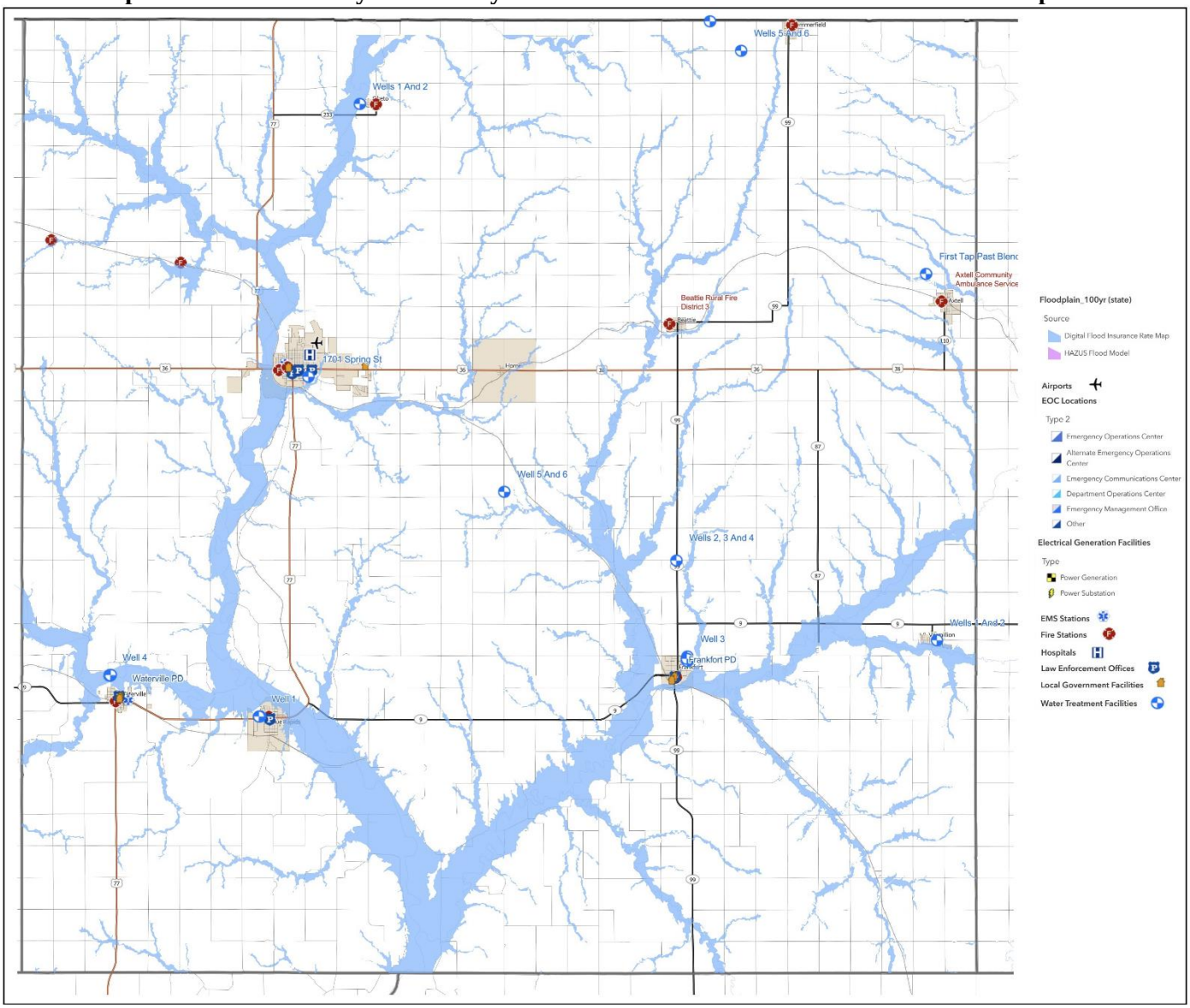
Source: KDEM

Map 77: Jefferson County Community Lifelines and Critical Facilities in 100-Year Floodplains



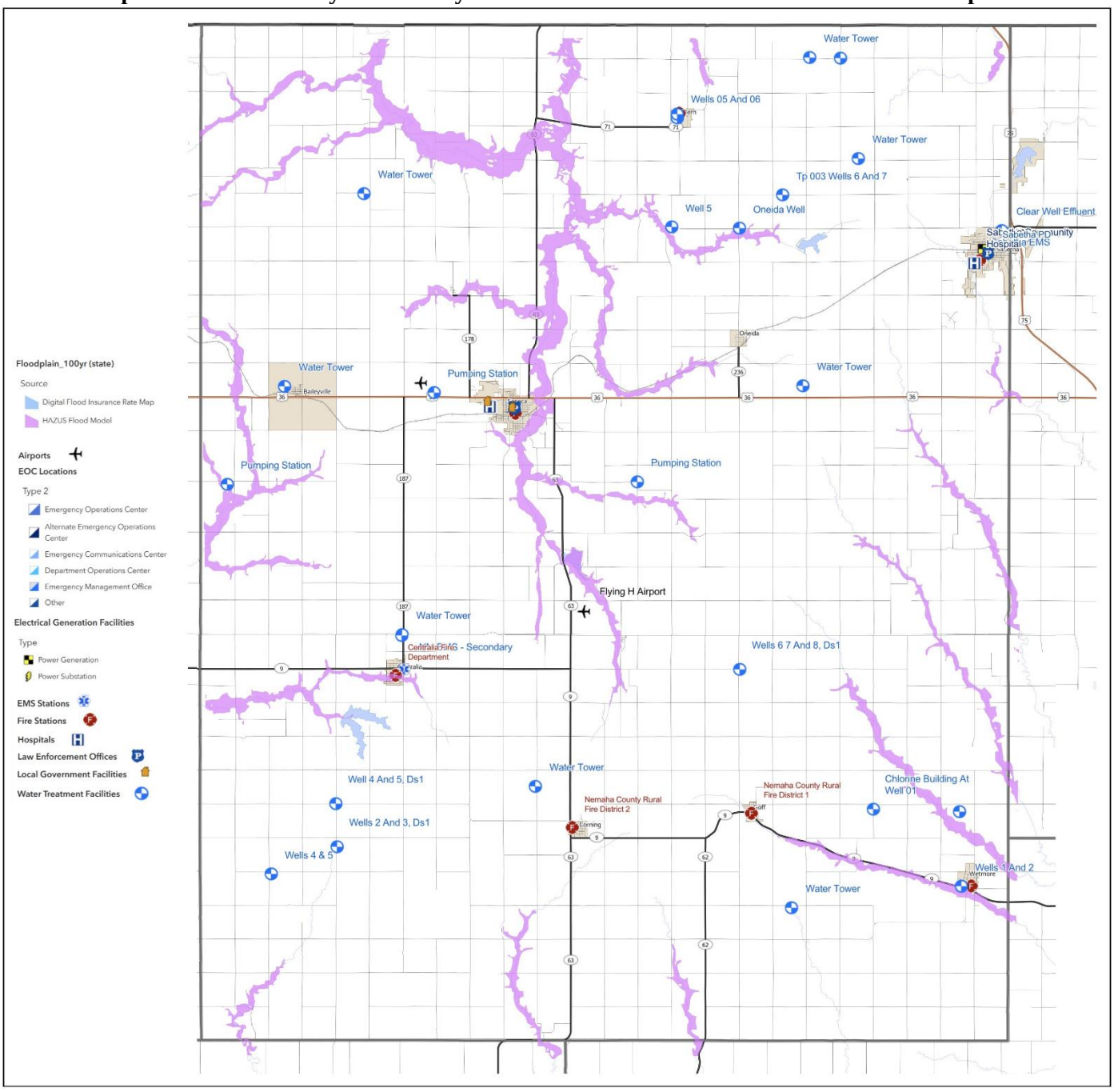
Source: KDEM

Map 78: Marshall County Community Lifelines and Critical Facilities in 100-Year Floodplains



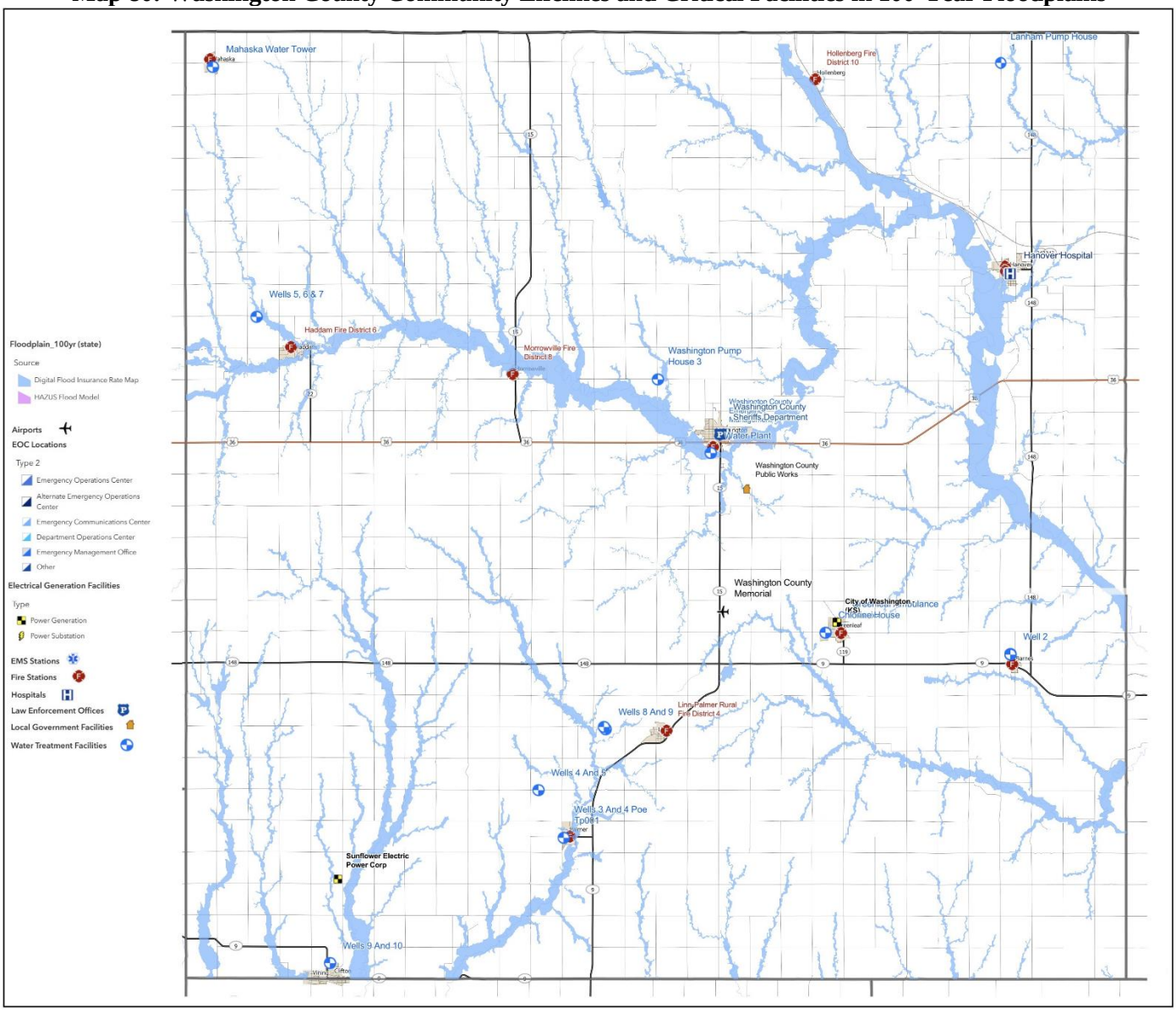
Source: KDEM

Map 79: Nemaha County Community Lifelines and Critical Facilities in 100-Year Floodplains



Source: KDEM

Map 80: Washington County Community Lifelines and Critical Facilities in 100-Year Floodplains



Source: KDEM

Flooding can have significant and widespread impacts on road infrastructure. The extent of the damage depends on factors such as the severity and duration of the flood, the type of flooding (river overflow, flash flooding), and the design and resilience of the road infrastructure. Impacts may include:

- Structural Damage: Floodwaters can erode road surfaces, weaken foundations, and damage bridges and culverts. The force of flowing water can undermine the structural integrity of roads and cause washouts.
- Road Surface Erosion: The erosion caused by floodwaters can remove the top layer of road surfaces, leading to potholes, cracks, and a general deterioration of the road condition.
- Subsidence and Sinkholes: The infiltration of water into road foundations can cause subsidence or create sinkholes.
- Debris Accumulation: Floodwaters often carry debris such as logs, branches, and sediment. The accumulation of debris on roads can impede drainage systems, block culverts, and hinder the flow of water.
- Road Closures: Flooding can result in the closure of roads due to safety concerns. High water levels, washouts, or structural damage may make roads impassable, leading to disruptions in transportation.
- Loss of Road Markings and Signs: Floodwaters can wash away road markings and signs, reducing visibility and creating safety hazards for motorists.

- Long-Term Damage: Even after floodwaters recede, long-term damage to road infrastructure may persist. Subsurface waterlogging, soil destabilization, and residual structural weaknesses can contribute to ongoing deterioration.

The cost to conduct maintenance on a road can vary significantly depending on the types of work required. However, the average estimate for repairs on a per mile basis in 2019 was $14,750 per mile. The cost to replace a road can vary significantly based on several factors, including the type of road, local labor and material costs, the complexity of the project, and the specific requirements of the replacement. As a rough estimate, road construction costs can range from $1,000,000 to $10,000,000 per mile. In order to reduce plan duplication, mapping concerning roads and bridges can be found in MAP #.

Flooding can have substantial and often severe impacts on electrical utilities, disrupting power generation, transmission, and distribution systems. The consequences of flooding on electrical utilities can vary depending on factors such as the depth and duration of the flooding and the type of infrastructure affected, and may include:

- Substation and Power Plant Damage: Floodwaters can inundate electrical substations and power plants, damaging critical equipment such as transformers, switchgear, and control systems. Substantial damage to these facilities can lead to prolonged outages.
- Electrical Equipment Short-Circuits: Water infiltration into electrical equipment can cause short-circuits, leading to equipment failure and potentially causing fires. This can result in widespread power outages and safety hazards.
- Transmission Line Disruptions: Floodwaters can impact the stability of transmission towers and lines. Structural damage or collapse of transmission infrastructure can disrupt the flow of electricity over long distances.
- Distribution Network Damage: Localized flooding can damage distribution infrastructure, including power lines, poles, and transformers. This can lead to outages in specific neighborhoods or communities.
- Transformer Submersion: Floodwaters can submerge transformers, which are critical components in power distribution. Submersion can cause these transformers to malfunction or fail, leading to service interruptions.
- Underground Cable Damage: Underground power cables can be damaged by flooding, especially in areas with subterranean infrastructure. Water infiltration can compromise cable insulation, leading to electrical faults and outages.
- Loss of Fuel Supply: Natural gas power plants may face challenges in maintaining a stable fuel supply if transportation routes are disrupted due to flooding.

In order to reduce plan duplication, mapping concerning electrical generation plants, high-capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Maps 49 and 50, page 94, and Chart 15, page 95.

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 76: Kansas Region K Hazus Flood Scenario Number of Critical Facilities Damaged or Impacted

County	Emergency Operations Centers	Fire Stations	Hospitals	Police Stations	Schools
Atchison	0	0	0	0	0
Brown	0	0	0	0	0
Doniphan	0	0	0	0	0
Douglas	0	0	0	0	0
Jackson	0	0	0	0	0
Jefferson	0	0	0	0	0
Marshall	0	0	0	0	0
Nemaha	0	0	0	0	0
0Washington	0	0	0	0	0

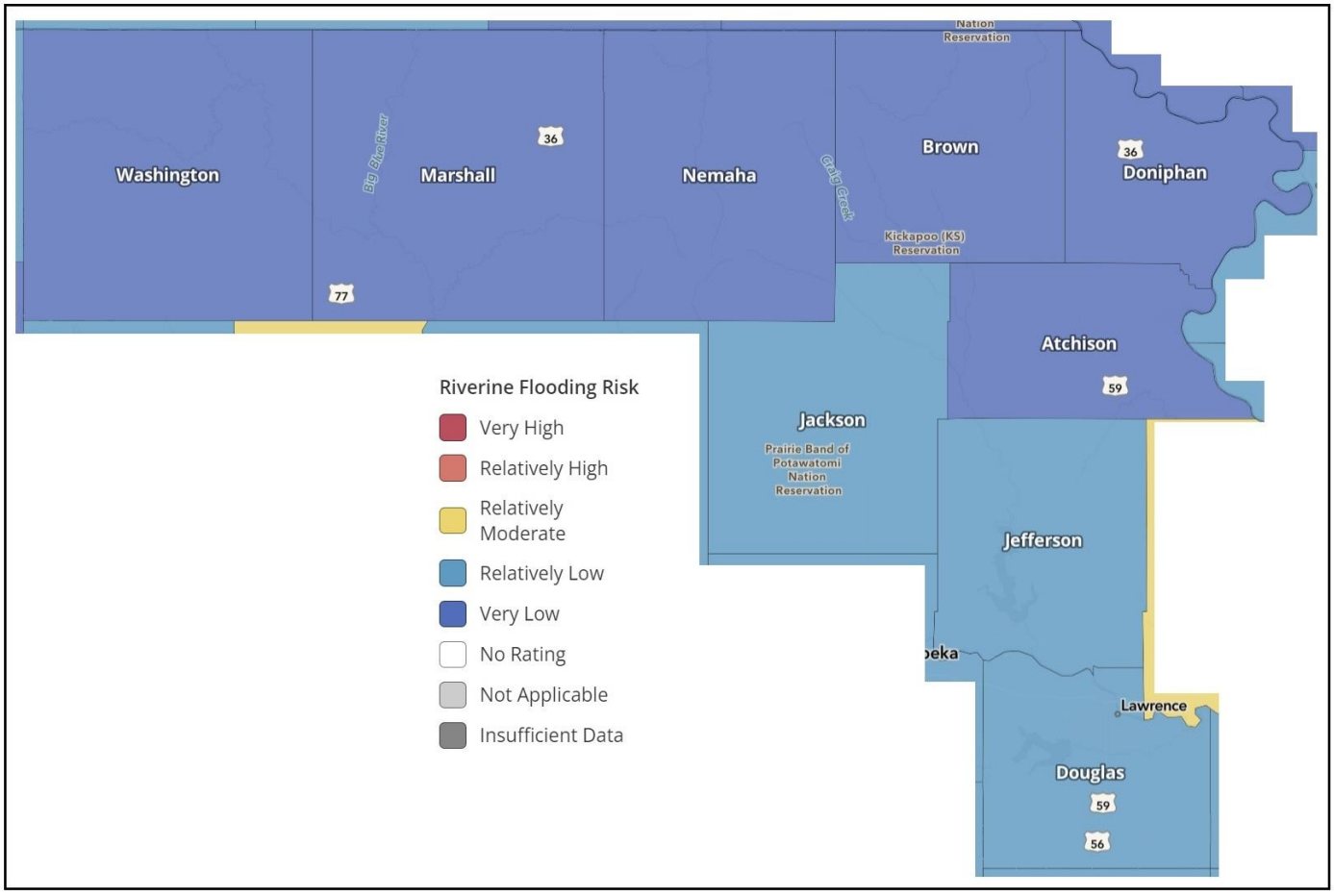
Source: FEMA Hazus

Hospitals and other smaller medical facilities may see an increase in flood related during an event, but it is considered unlikely that this increase will impact or overload capacity. Hospital capacity mapping may be found in Map 51, page 95.

FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from flood:

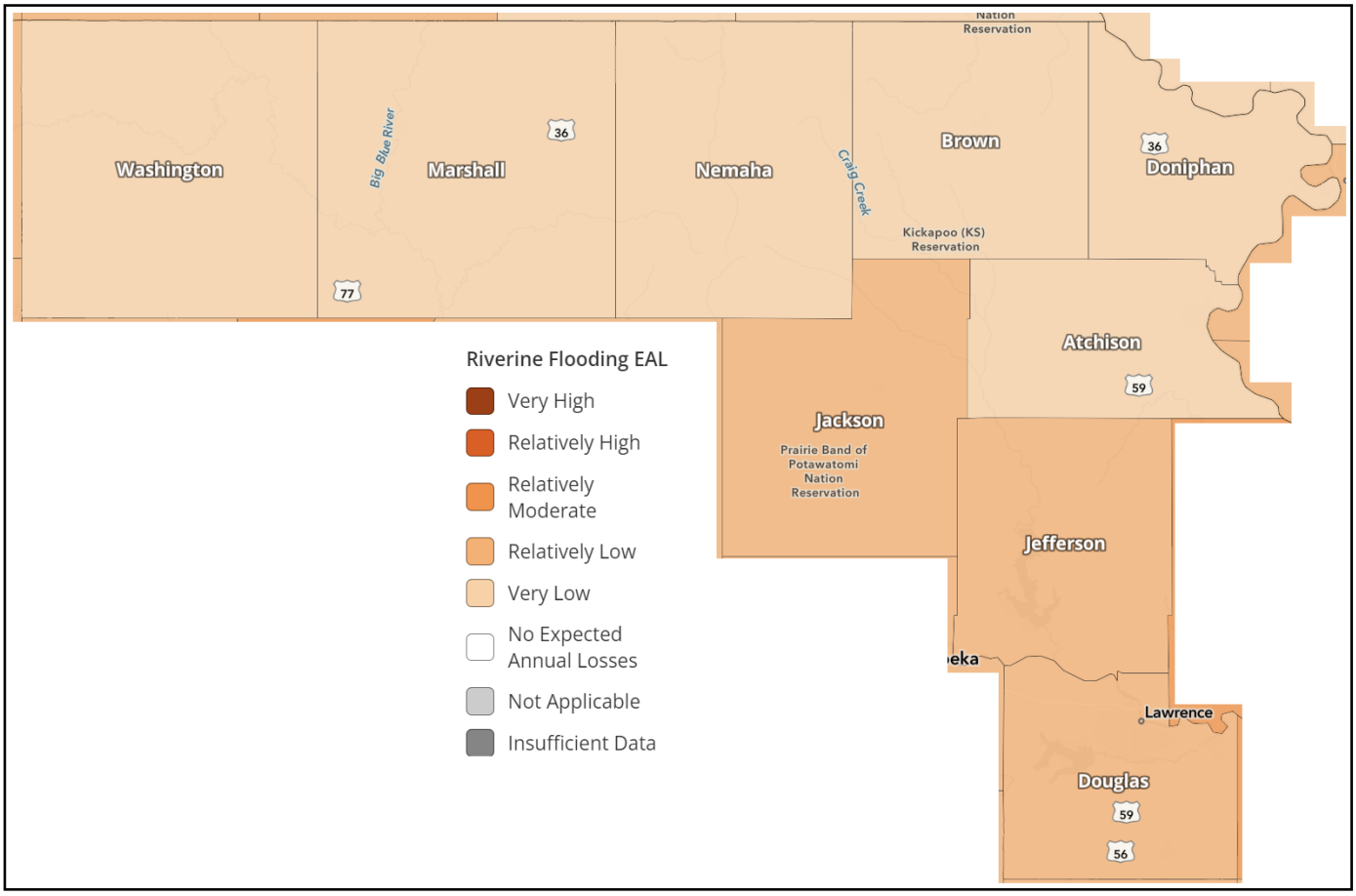
Map 81: Kansas Region K FEMA NRI Flood Risk



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for floods for participating counties within Kansas Region K:

Map 82: Kansas Region K FEMA NRI Flood EAL



Source: FEMA NRI

The following table indicates the FEMA NRI and EAL analysis for each participating Kansas Region K county for flood:

Table 77: Kansas Region K FEMA NRI and EAL for Flood by County

County	Risk Index	EAL
Atchison	Very Low	Very Low
Brown	Very Low	Very Low
Doniphan	Very Low	Very Low
Douglas	Relatively Low	Relatively Low
Jackson	Relatively Low	Relatively Low
Jefferson	Relatively Low	Relatively Low
Marshall	Very Low	Very Low
Nemaha	Very Low	Very Low
Washington	Very Low	Very Low

Source: FEMA NRI

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 K residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 78: Flood Consequence Analysis

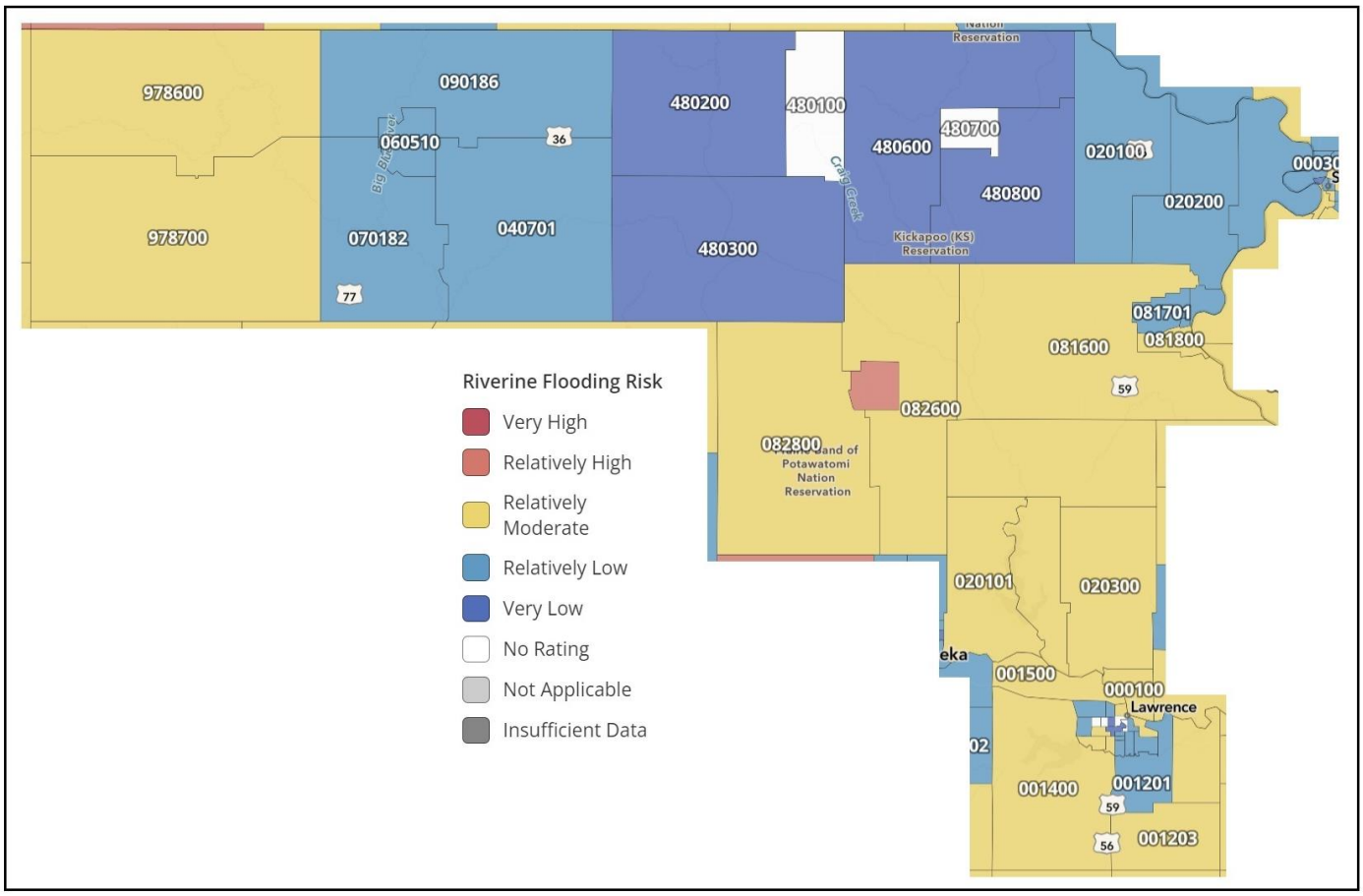
Subject	Potential Impacts
Impact on the Public	Significant flooding events can lead to the damage and loss of homes, property, and businesses. Flash flooding and excessive rainfall may lead to dangerous conditions on roadways. Closures of medical facilities is a major public health concern if flooding 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 as necessary based on the situation. Floods which create power outages, debris damage, and road closures are not uncommon. This threat may impact an agency's ability to maintain continuity of operations based on the incidents impact on power, communications and the potential to damage equipment and records within primary and alternate facilities.
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 which could impact the freedom of movement or provision of utilities. Water sources can become contaminated. Water and sewer systems may be disrupted. Solid-waste collection and disposal may also be impacted, causing dangerous public health risks.
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. Efficiency in response and recovery operations is critical in keeping public confidence high.

4.12.7 Jurisdictional Risk and Vulnerability

To help understand the risk and vulnerability to flooding of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from floods:

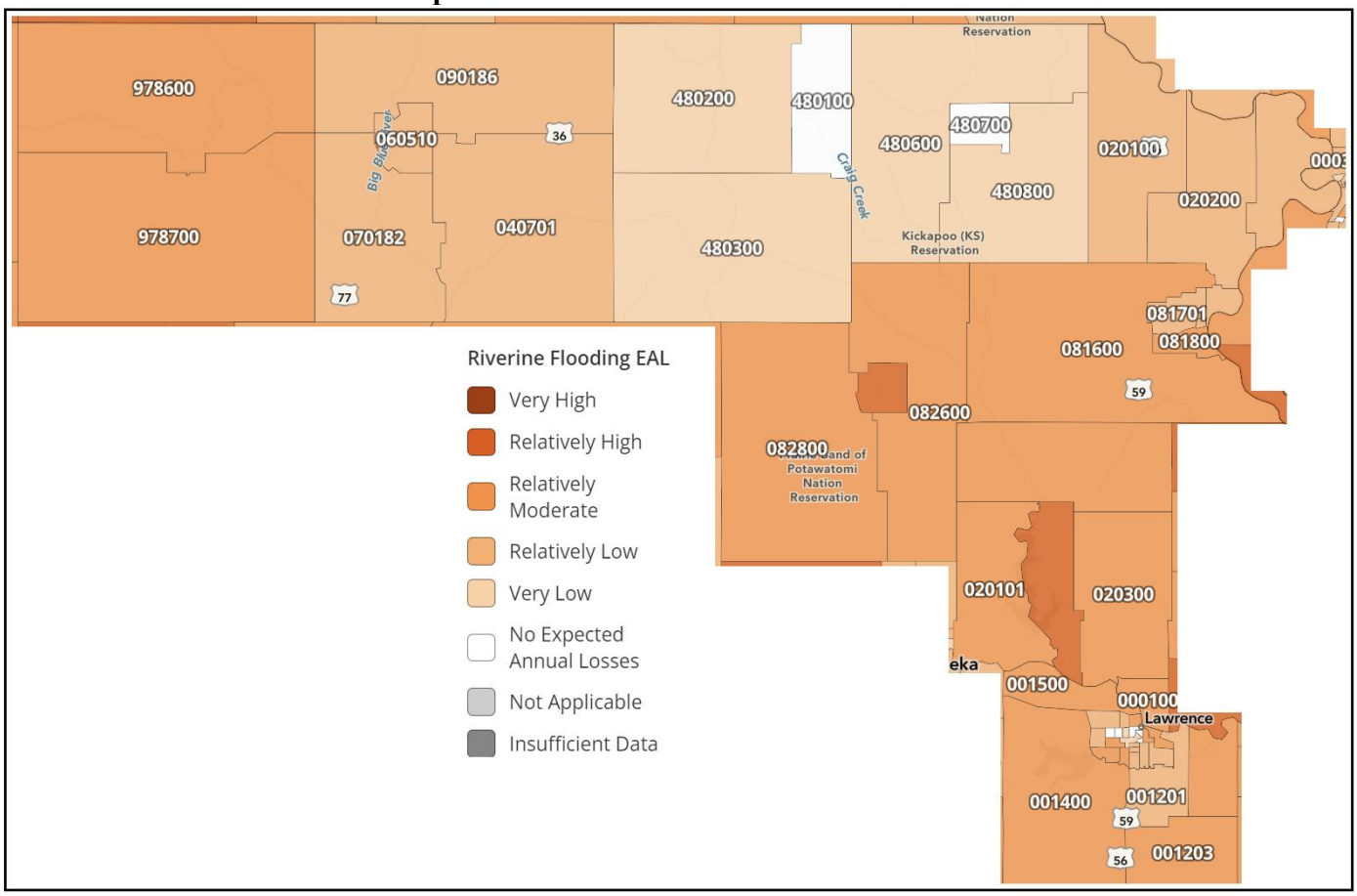
Map 83: FEMA NRI Jurisdictional Flood Risk



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for floods for participating jurisdictions (as indicated by census tract) within Kansas Region K:

Map 84: FEMA NRI Jurisdictional Flood EAL



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

4.12.8 National Flood Insurance Program and Community Rating System 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 79: Kansas Region K NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
Atchison County			
Atchison County	5/31/1977	12/1/2007	9/3/2014
Atchison	2/8/1974	6/1/1978	9/3/2014
Effingham	2/1/1974	9/3/2014	(NSFHA)
Lancaster	None	9/3/2014	(NSFHA)
Muscotah	11/22/1974	9/3/2014	9/3/2014
Brown County			
Brown County	5/17/1977	9/1/1987	6/1/2022
Everest	None	6/1/2022	(NSFHA)
Fairview	11/8/1974	6/1/2022	06/01/22(M)
Hiawatha	2/8/1974	6/1/2022	6/1/2022
Horton	2/15/1974	6/1/2022	6/1/2022

Table 79: Kansas Region K NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
Robinson	11/29/1974	5/1/1990	06/01/22(M)
Doniphan County			
Doniphan County	6/3/1977	6/1/1978	6/1/1978
Elwood	6/28/1974		(NSFHA)
Highland	4/23/1976	9/1/2011	09/01/11(L)
Leona	12/20/1974	1/7/1977	01/07/77(M)
Troy	2/15/1974		(NSFHA)
Douglas County			
Douglas County	6/17/1977	3/2/1981	6/1/2022
Baldwin City	2/15/1974	1/2/1980	6/1/2022
Eudora	1/9/1974	1/16/1981	8/5/2010
Lawrence	8/13/1976	3/2/1981	9/2/2015
Lecompton	1/23/1974	3/15/1979	8/5/2010
Jackson County			
Jackson County	5/31/1977	12/15/1989	5/3/2010
Circleville	12/20/1974	5/3/2010	5/3/2010
Delia	8/30/1974	5/3/2010	5/3/2010
Denison	None	5/3/2010	(NSFHA)
Holton	2/22/1974	1/16/1981	5/3/2010
Hoyt	12/20/1974	5/3/2010	(NSFHA)
Mayetta	11/8/1974	5/3/2010	(NSFHA)
Netawaka	11/22/1974	5/3/2010	(NSFHA)
Jefferson County			
Jefferson County	8/16/1977	9/4/1991	12/17/2010
Mc Louth	3/22/1974	11/4/2009	11/04/09(M)
Meriden	11/5/1976	11/4/2009	11/04/09(M)
Nortonville	3/1/1974	11/4/2009	11/04/09(M)
Oskaloosa	5/24/1974	11/4/2009	11/04/09(M)
Ozawkie	None	11/4/2009	(NSFHA)
Perry	12/7/1973	3/2/1981	11/4/2009
Valley Falls	10/10/1975	11/4/2009	11/04/09(M)
Marshall County			
Marshall County *	6/28/1977	5/1/1990	5/16/2017
Axtell	3/26/1976	5/16/2017	05/16/17(M)
Beattie	8/29/1975	5/16/2017	05/16/17(M)
Blue Rapids	3/26/1976	11/1/2011	5/16/2017
Frankfort	1/23/1974	9/27/1985	5/16/2017
Marysville	12/7/1973	12/1/1977	5/16/2017
Summerfield	7/2/1976	5/16/2017	(NSFHA)
Nemaha County			
Nemaha County *	7/5/1977	8/19/1985	9/29/2022
Rolla	3/26/1976		
Centralia	5/24/1974	9/1/1986	9/29/2022
Corning	None	9/29/2022	(NSFHA)
Goff	11/8/1974	9/29/2022	09/29/22(M)
Seneca	2/8/1974	9/27/1985	9/29/2022
Washington County			
Barnes	8/22/1975	11/18/2015	11/18/15(M)

Table 79: Kansas Region K NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
Hanover	7/18/1975	9/27/1985	11/18/2015
Morrowville	12/6/1974	11/18/2015	11/18/15(M)

Notes: NSFHA: No Special Flood Hazard Area - All Zone C
(L): Original FIRM by letter - All Zone A, C and X
(M): No elevation determined - All Zone A, C and X

The CRS is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the NFIP. In CRS communities, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community's efforts that address the three goals of the program:

- Reduce and avoid flood damage to insurable property
- Strengthen and support the insurance aspects of the National Flood Insurance Program
- Foster comprehensive floodplain management•

The following Region K jurisdictions are currently participating in the CRS:

Table 80: Kansas Region K CRS Communities

Jurisdiction	County	CRS Entry Date	Current Class	SFHA Discount
Douglas County	Douglas	10/1/2013	4/1/2023	10
Lawrence	Douglas	10/1/2004	10/1/2022	8
Jefferson County	Jefferson	5/1/2015	5/1/2015	7

Source: FEMA

4.12.9 FEMA Flood Policy and Loss Data

Kansas Region K 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 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 K:

Table 81: Kansas Region K NFIP Coverage

Jurisdiction	Number of Policies in Force	Total Coverage
Atchison County		
Atchison County	5	$911,800
Atchison	4	$1,030,000
Doniphan County		
Doniphan County	55	$17,537,500
Elwood	119	$25,313,900
Wathena	16	$3,122,800
Douglas County		
Douglas County	63	$18,572,300
Baldwin City	19	$3,641,700
Eudora	18	$2,754,900
Lawrence	250	$62,344,900
Lecompton	2	$534,500
Unknown	10	$1,748,000
Jackson County		
Jackson County	8	$1,800,100
Holton	2	$270,000
Jefferson County		

Table 81: Kansas Region K NFIP Coverage

Jurisdiction	Number of Policies in Force	Total Coverage
Jefferson County	35	$6,016,900
Perry	25	$6,142,200
Unknown	1	$275,000
Marshall County		
Marshall County	4	$219,000
Marysville	1	$70,000
Nemaha County		
Centralia	4	$410,200
Sabetha	1	$42,000
Seneca	2	$420,000
Washington County		
Washington County	5	$466,000
Hanover	2	$401,000

Source: FEMA Flood Insurance Data and Analytics

The following table details the change in the number of NFIP coverage from 2013 to 2023 for Kansas Region K:

Table 82: Kansas Region K NFIP Coverage Changes

	2013	2018	2023	Percentage Change 2013 - 2023
Number of Policies	955	681	651	-31.8%
Amount of Coverage	$178,703,000	$145,365,800	$ 154,044,700	-13.8%

Source: FEMA

4.12.10 Repetitive Loss Structures

A high priority for Kansas Region K is the mitigaion of, and/or the reduction of losses to, Repetitive Loss (RL) and Severe Repetitive Loss (SRL) structures. The NFIP defines a RL 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. An SRL 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 information concerning RL identified properties in Kansas Region K:

Table 83: Kansas Region K RL Properties

County	Jurisdiction	NFIP Insured	Total Losses	Total Paid
Doniphan	Doniphan County	No	2	$6,784
	Doniphan County	No	2	$4,917
	Elwood	No	2	$123,000
	Elwood	No	2	$13,931
	Elwood	No	2	$8,760
	Elwood	No	2	$24,662

Table 83: Kansas Region K RL Properties

County	Jurisdiction	NFIP Insured	Total Losses	Total Paid
Douglas	Douglas County	Yes	4	$105,026
	Douglas County	Yes	3	$39,346
	Douglas County	Yes	2	$28,266
	Baldwin City	No	2	$32,464
	Baldwin City	Yes	2	$34,692
	Baldwin City	Yes	2	$7,608
	Eudora	Yes	3	$56,084
	Lawrence	No	7	$46,877
	Lawrence	No	3	$25,184
Jefferson	Jefferson County	No	2	$48,416
	Jefferson County	No	2	$63,824

Source: KDEM

The following table details information concerning SRL identified properties in Kansas Region K:

Table 84: Kansas Region K SRL Properties

County	Jurisdiction	NFIP Insured	Total Losses	Total Paid
Douglas	Douglas County	Yes	2	$28,266

Source: KDEM

4.13 Severe Weather

4.13.1 Hazard Description

Severe Weather comprise the hazardous and damaging weather effects often found in violent storm fronts. 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 severe weather effects 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 have been so consistent throughout modern history that much of the vulnerability is mitigated. However, this section is not concerned with everyday wind, lightning in the sky, or mild precipitation. This section is concerned with common storm elements when they behave such that they pose a threat to property and life.

4.13.2 – Location and Extent

Severe Weather can rapidly descend on an area, but in many cases are predictable. Most weather forecasts focus on more than just temperature but on quickly changing conditions that may lead to the onset of severe storms. All of Kansas Region K is susceptible to Severe Weather.

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 85: 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
1	Quarter Size	Increased glass damage, damage begins to bodies of vehicles

Table 85: Hail Size Comparison and Damage Descriptions

Diameter (inches)	Size Description	Potential Damage Impacts
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.

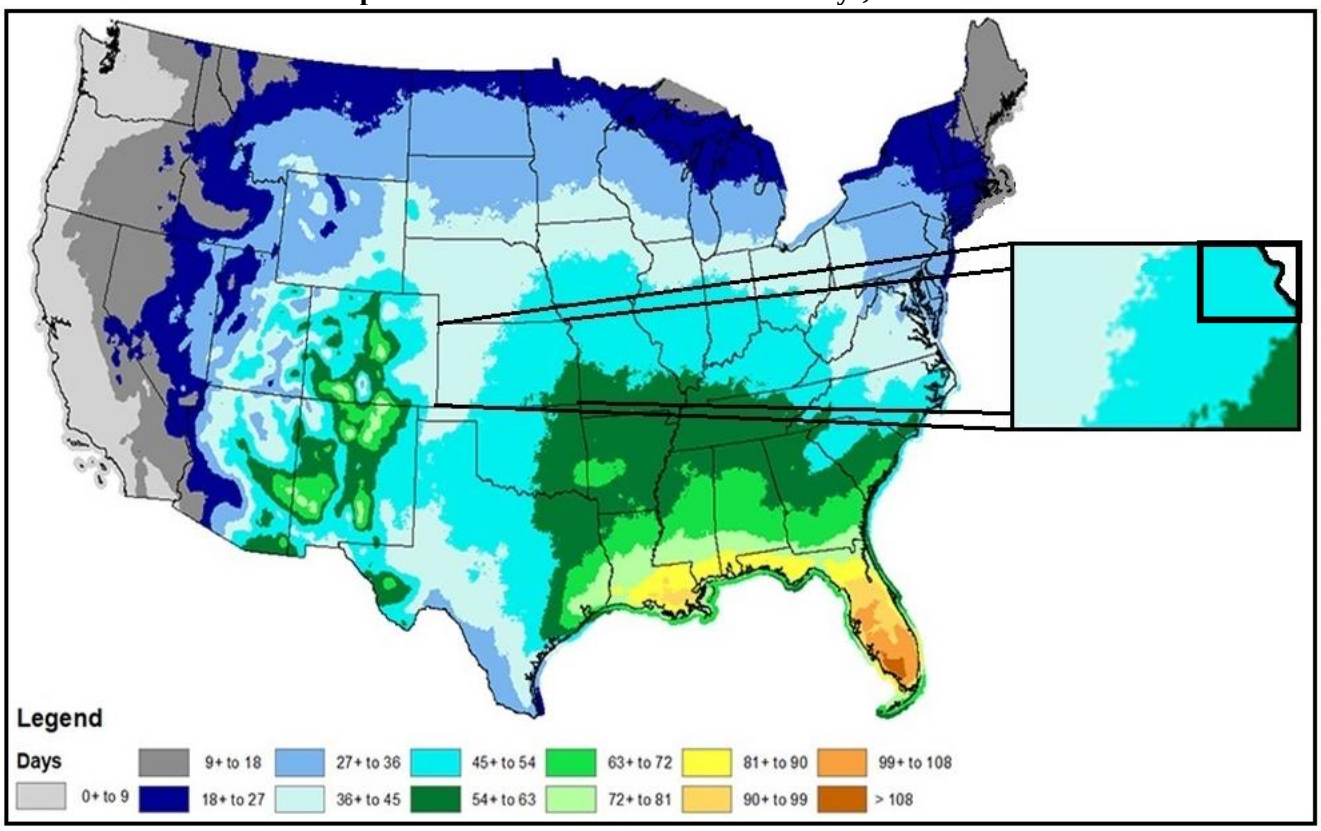
Table 86: Beaufort Scale

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 widespread and frequent nature of thunderstorms makes hail, lightning, and high wind a relatively common occurrence for Kansas Region K. The following map, from NOAA, indicates annual mean thunderstorm days from 1993 to 2018.

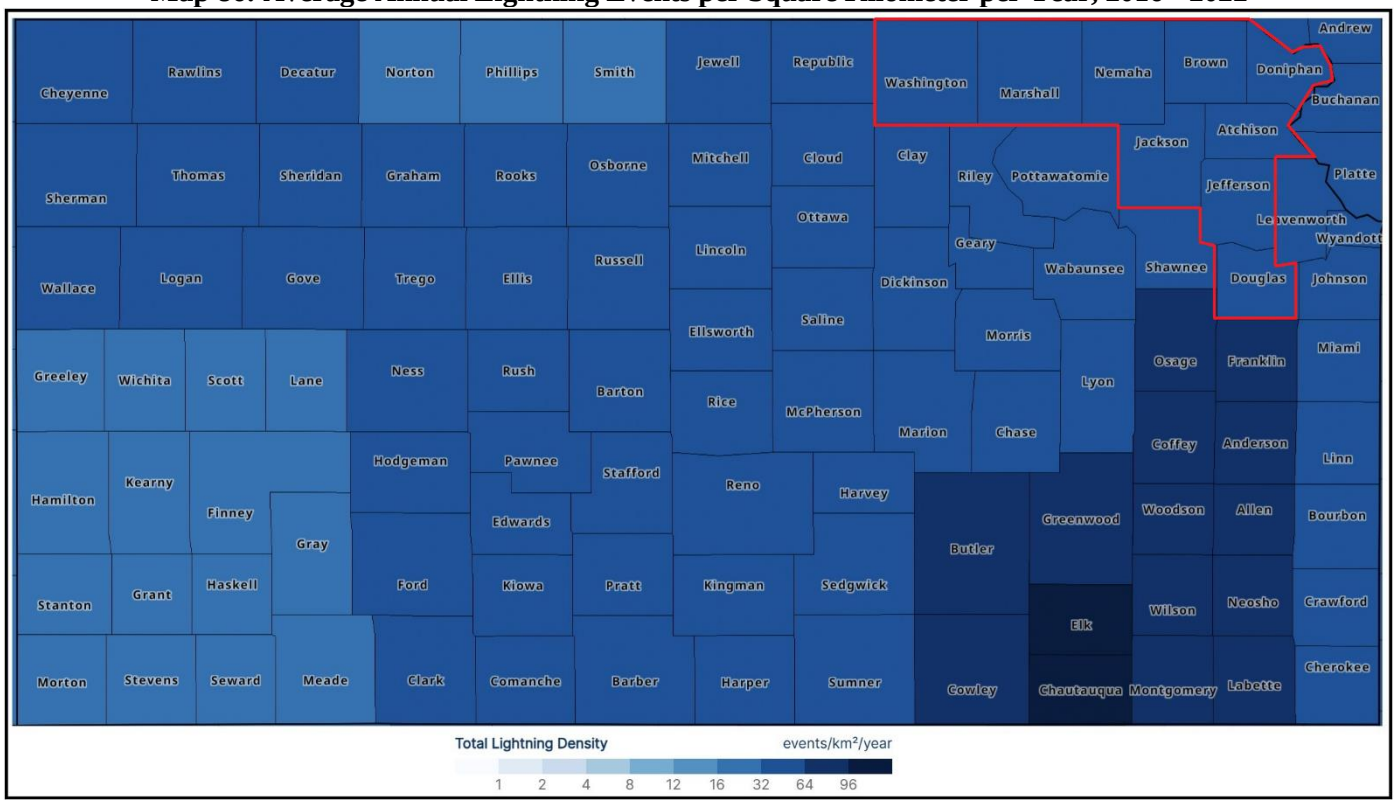
Map 85: Annual Mean Thunderstorm Days, 1993-2018



Source: NOAA

The following map, from Vaisala, indicates the average annual light events per square kilometer per year for Kansas Region K.

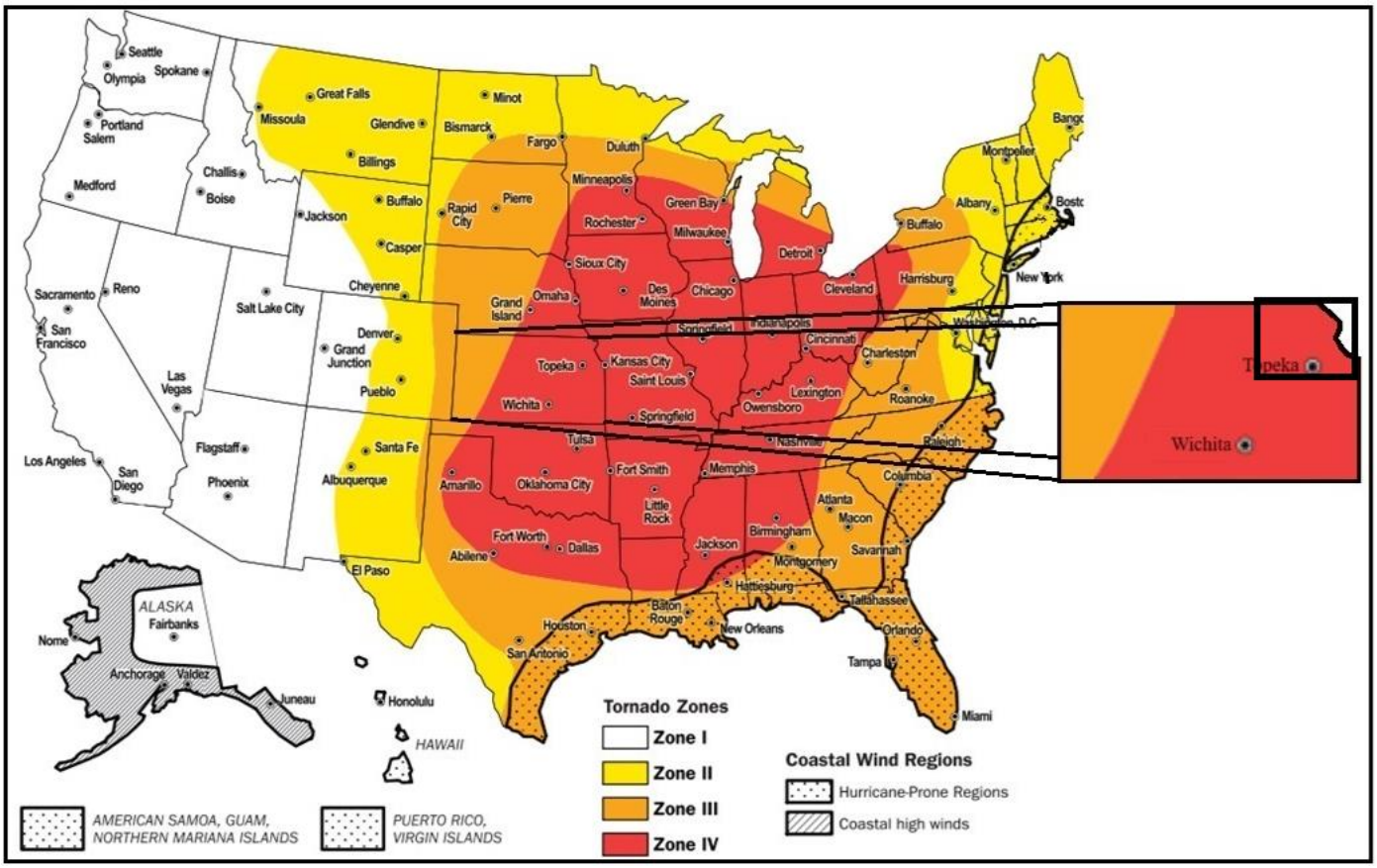
Map 86: Average Annual Lightning Events per Square Kilometer per Year, 2016 - 2022



Source: Vaisala

The following maps from FEMA indicate the highest possible expected wind speeds for Kansas Region K.

Map 87: Wind Zones



Source: FEMA

4.13.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. Kansas Region K has experienced three Presidential Disaster Declarations related to flooding in the past 10 years reflected in the following table.

Table 87: Kansas Region K Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Assistance
DR-4640-KS	3/22/2022	Severe Storms and Straight-Line Winds	Doniphan, Marshall, Nemaha, Washington	$12,159,785
DR-4499-KS	8/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Atchison, Doniphan, Jefferson, Marshall, Nemaha, Washington	$51,157,548
DR-4417-KS	3/20/2019	Severe Storms, Straight-Line Winds, and Flooding	Doniphan	$3,509,374
DR-4403-KS	10/19/2018	Severe Storms, Straight-Line Winds, and Flooding	Marshall	$4,545,539
DR-4230-KS	7/20/2015	Severe Storms, Tornadoes, Straight-Line Winds and Flooding	Atchison, Brown, Doniphan, Jackson, Jefferson, Marshall, Nemaha, Washington	$11,018,053

In addition to the Presidentially Declared Disasters, the following table presents NCEI identified Severe Weather events and the resulting damage totals in Kansas Region K from 2014 to 2023:

Table 88: NCEI Kansas Region K Severe Weather Events

County	Event Type	Number of Days with Events	Property Damage	Deaths and Injuries
Atchison	Hail	19	$0	0
	Lightning	0	$0	0
	Winds	13	$0	0
Brown	Hail	23	$0	0
	Lightning	0	$0	0
	Winds	17	$0	0
Doniphan	Hail	12	$0	0
	Lightning	0	$0	0
	Winds	15	$0	0
Douglas	Hail	23	$0	0
	Lightning	0	$0	0
	Winds	47	$0	0
Jackson	Hail	28	$0	0
	Lightning	0	$0	0
	Winds	25	$0	0
Jefferson	Hail	23	$0	0
	Lightning	0	$0	0
	Winds	41	$0	0
Marshall	Hail	33	$0	0
	Lightning	0	$0	0
	Winds	32	$0	0
Nemaha	Hail	22	$0	0
	Lightning	0	$0	0
	Winds	33	$0	0
Washington	Hail	31	$0	0
	Lightning	0	$0	0
	Winds	25	$0	0

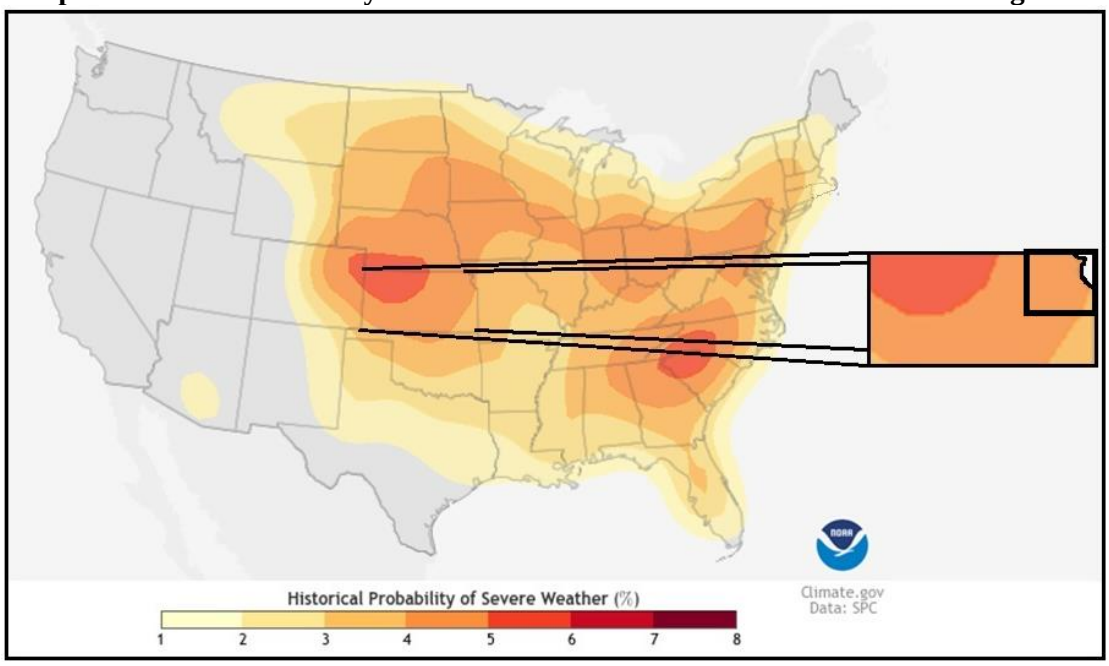
Source: NCEI

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.

4.13.4 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 from NOAA indicates that Kansas Region K can expect between 27 – 45severe 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 88: Historic Probability of a Severe Weather Summer Event In Kansas Region K



Source: NOAA

Based on historical occurrences, Kansas Region K 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 K.

Table 89: Kansas Region K 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
Atchison	19	2	0	0	$0	$0
Brown	23	2	0	0	$0	$0
Doniphan	12	1	0	0	$0	$0
Douglas	23	2	0	0	$0	$0
Jackson	28	3	0	0	$0	$0
Jefferson	23	2	0	0	$0	$0
Marshall	33	3	0	0	$0	$0
Nemaha	22	2	0	0	$0	$0
Washington	31	3	0	0	$0	$0

Source: NCEI

Table 90: Kansas Region K 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
Atchison	0	0	0	0	$0	$0
Brown	0	0	0	0	$0	$0
Doniphan	0	0	0	0	$0	$0
Douglas	0	0	0	0	$0	$0
Jackson	0	0	0	0	$0	$0
Jefferson	0	0	0	0	$0	$0
Marshall	0	0	0	0	$0	$0
Nemaha	0	0	0	0	$0	$0
Washington	0	0	0	0	$0	$0

Source: NCEI

Table 91: Kansas Region K 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
Atchison	13	1	0	0	$0	$0
Brown	17	2	0	0	$0	$0
Doniphan	15	2	0	0	$0	$0
Douglas	47	5	0	0	$0	$0
Jackson	25	3	0	0	$0	$0
Jefferson	41	4	0	0	$0	$0
Marshall	32	3	0	0	$0	$0
Nemaha	33	3	0	0	$0	$0
Washington	25	3	0	0	$0	$0

Source: NCEI

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

Climate change can have several impacts on Severe Weather, although the precise details can vary depending on regional climate patterns and other factors. In general, it is believed that climate change can alter the timing and seasonality of Severe Weather. In some cases, this may mean more severe weather events occurring earlier or later in the year.

Climate change can lead to increased temperatures and moisture levels in the atmosphere, which can provide favorable conditions for the development of Severe Weather. This can result in a higher frequency of Severe Weather events and an increase in their intensity. As a result of increased temperatures, warmer air can hold more moisture, leading to increased rainfall during Severe Weather. This can elevate the risk of flash flooding, particularly in areas prone to heavy precipitation. Changes in atmospheric circulation patterns associated with climate change can lead to stronger winds within thunderstorms. This can result in more powerful wind gusts, increasing the risk of wind damage and downed trees and power lines.

Climate change can influence the conditions necessary for hail formation. Warmer temperatures at the surface and greater instability in the atmosphere can contribute to larger and more damaging hailstones. Additionally, changes in atmospheric conditions can affect the frequency and distribution of lightning strikes. More lightning can increase the risk of wildfires in dry regions.

It is important to note that while there is evidence linking climate change to changes in weather patterns that can influence Severe Weather, predicting specific events remains changing. Climate models provide valuable insights into long-term trends, but individual severe weather events are influenced by a complex interplay of factors.

4.13.6 Vulnerability and Impact

Severe Weather 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, 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 result 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.

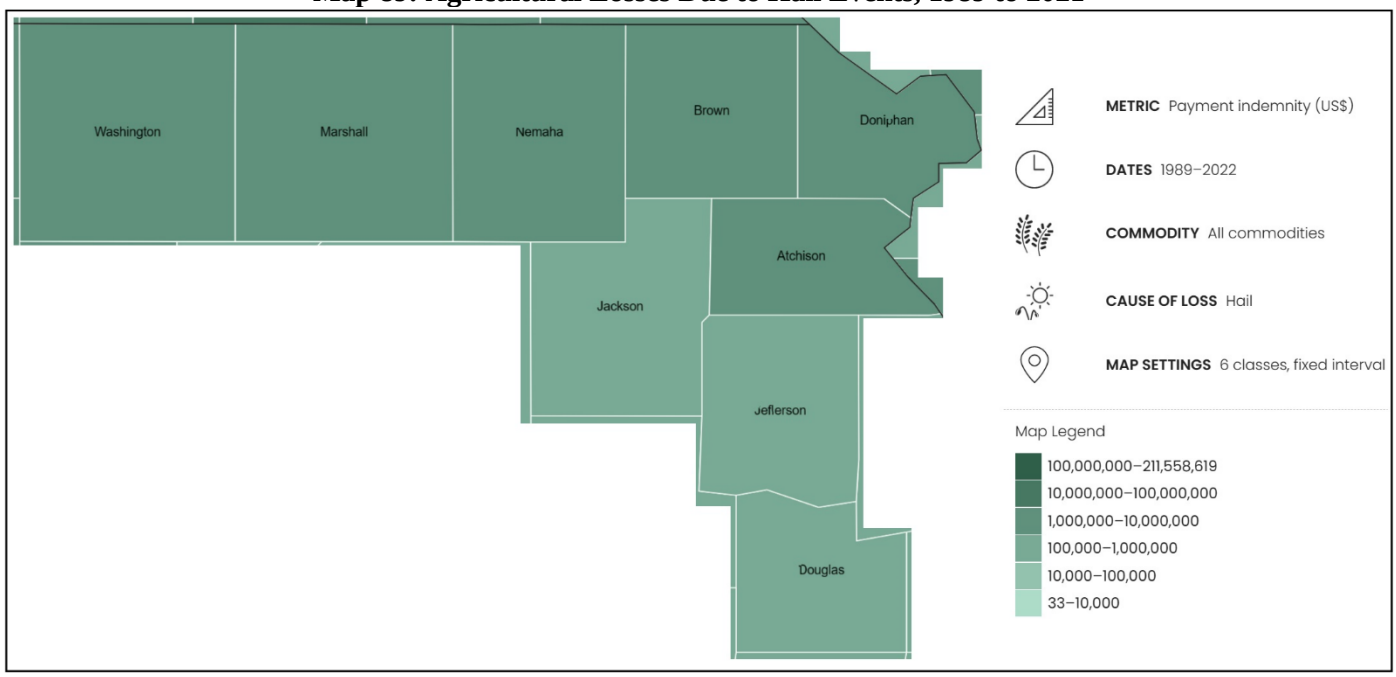
All facilities within Kansas Region K can be impacted by Severe Weather, including critical facilities. However, the location and construction of the facility will have a significant impact on the vulnerability. In general, older structures would be at higher risk of negative impacts. Some of the potential 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.
- Transportation Disruptions: Heavy rain, strong winds, and flooding can damage roads, bridges, and transportation networks. This can lead to transportation disruptions, accidents, and delays, affecting the movement of goods and people.
- Airport Closures: Severe weather can force the closure of airports due to safety concerns, affecting air travel and cargo shipments.
- Water and Wastewater Systems: Severe storms can overwhelm water treatment plants and wastewater facilities, leading to contamination and water supply disruptions. Flooding can also damage water infrastructure.
- Critical Facilities: Hospitals, emergency response centers, and other critical facilities may be affected by power outages, flooding, and damage to infrastructure. This can impact the ability to provide essential services during and after the storm.
- Energy Generation: Severe weather can disrupt energy generation facilities, such as wind farms and solar installations, and damage conventional power plants. This can affect the availability of electricity.
- Safety Risks: Damage to infrastructure can pose safety risks to workers and the public. FAtchison power lines, damaged buildings, and debris can be hazardous.

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 produce 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.

Hail events can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total agricultural losses, by county, due to hail events from 1989 to 2021:

Map 89: Agricultural Losses Due to Hail Events, 1989 to 2021



Source: USDA

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: Lightning strikes 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 fAtchison trees. This can impact the ability of government employees to commute to work and can disrupt the delivery of goods and services.
- Emergency Response: Severe Weather may require the activation of emergency response plans. This can strain resources and personnel, especially if the storms lead to widespread damage or evacuations.
- Loss of Records and Data: Flooding or equipment damage can result in the loss of important records and data stored in government buildings. This can have legal and operational implications.
- Budgetary Impact: The costs associated with repairing and restoring government buildings and infrastructure after Severe Weather can strain budgets.

Potentially Vulnerable Community Lifelines

Severe Weather can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that severe weather conditions place on infrastructure, resources, and operational processes. 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 92: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)

Category	Loss
Loss of Electrical Service	$199
Loss of Communications/Information Technology Services	$141

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

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.

In order to reduce plan duplication, mapping concerning electrical generation plants, high-capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Maps 49 and 50, page 94, and Chart 15, page 95.

Communications systems within Kansas Region K may have an increased vulnerability to Severe Weather events. Of particular concern are 911 and dispatch systems. All jurisdictions are served by a 911 and dispatch system, providing direct dispatching for:

- Law Enforcement
- Emergency Medical Services
- Fire

Severe storms can disrupt this 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.
- Loss of Backhaul Connectivity: Severe 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: 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. The following data, from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency, indicates cost ranges for communications system components:

Table 93: 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	$-$$$	-
Software and Data Storage	Global information system, emergency notifications, monitoring, call answering, database access, Automatic Vehicle Locator	$-$$	-

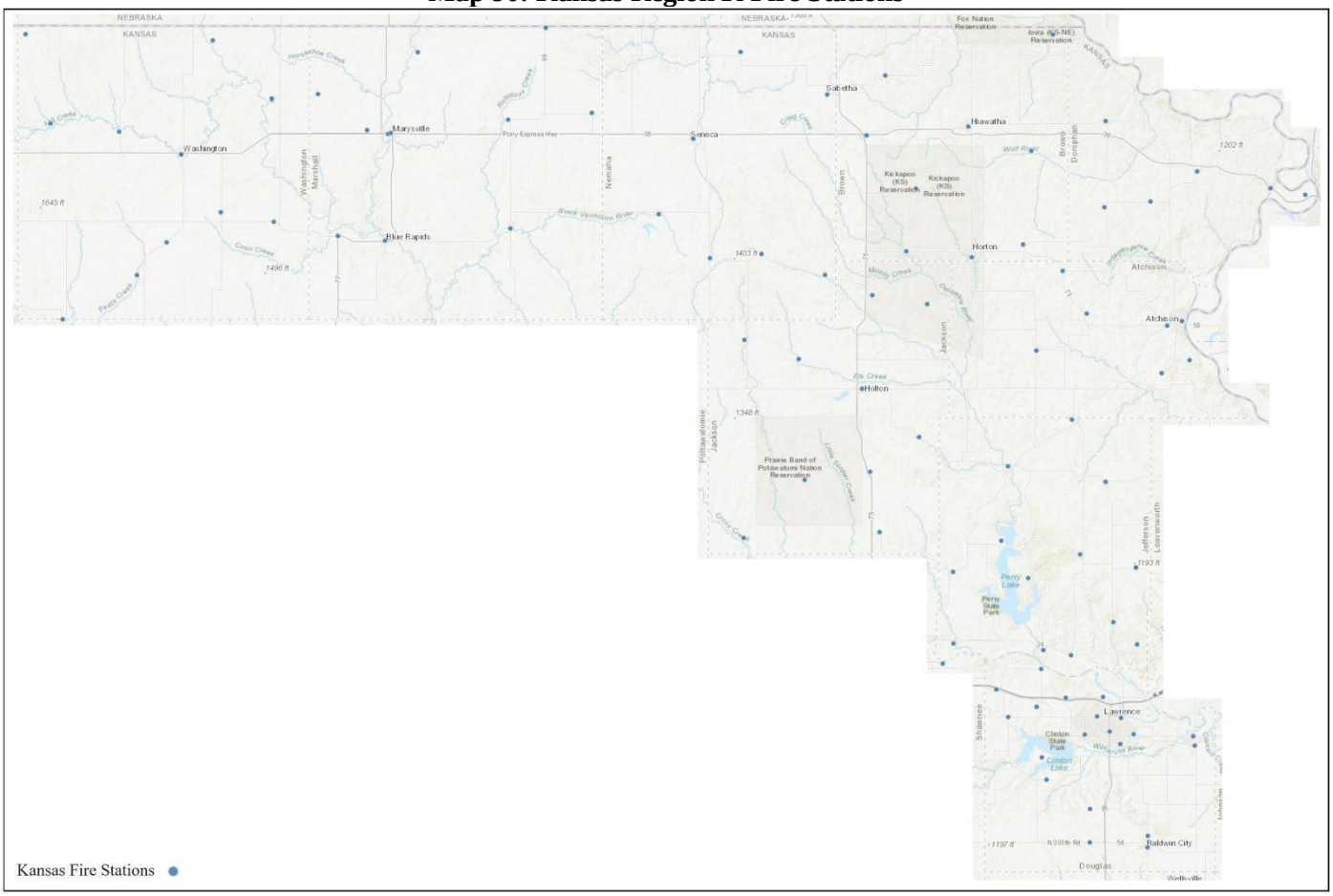
Source: U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency

Severe Weather can have various impacts on emergency response efforts, affecting the ability of emergency services to effectively manage and address the consequences of the storm. Some potential impacts include:

- Increased Call Volume: Severe weather events typically result in a surge in emergency calls, overwhelming call centers and emergency hotlines. This can lead to delays in response times and increased stress on emergency services.
- Infrastructure Damage: High winds associated with Severe Weather can cause trees and power lines to fall, leading to road blockages and posing safety hazards. Infrastructure damage may slow down emergency response and increase the complexity of rescue operations.
- Search and Rescue Challenges: Storms can generate debris, making search and rescue operations more changing. Flooded areas may hide hazards beneath the water surface, and strong winds can complicate helicopter or drone operations.
- Evacuations: Severe Weather may necessitate evacuations, requiring emergency responders to manage shelters for displaced individuals. Providing adequate shelter, food, and medical care becomes a priority.
- Resource Allocation: Emergency response agencies must strategically allocate resources to address the most urgent needs during and after a Severe Weather. This includes deploying personnel, equipment, and supplies to the most affected areas.

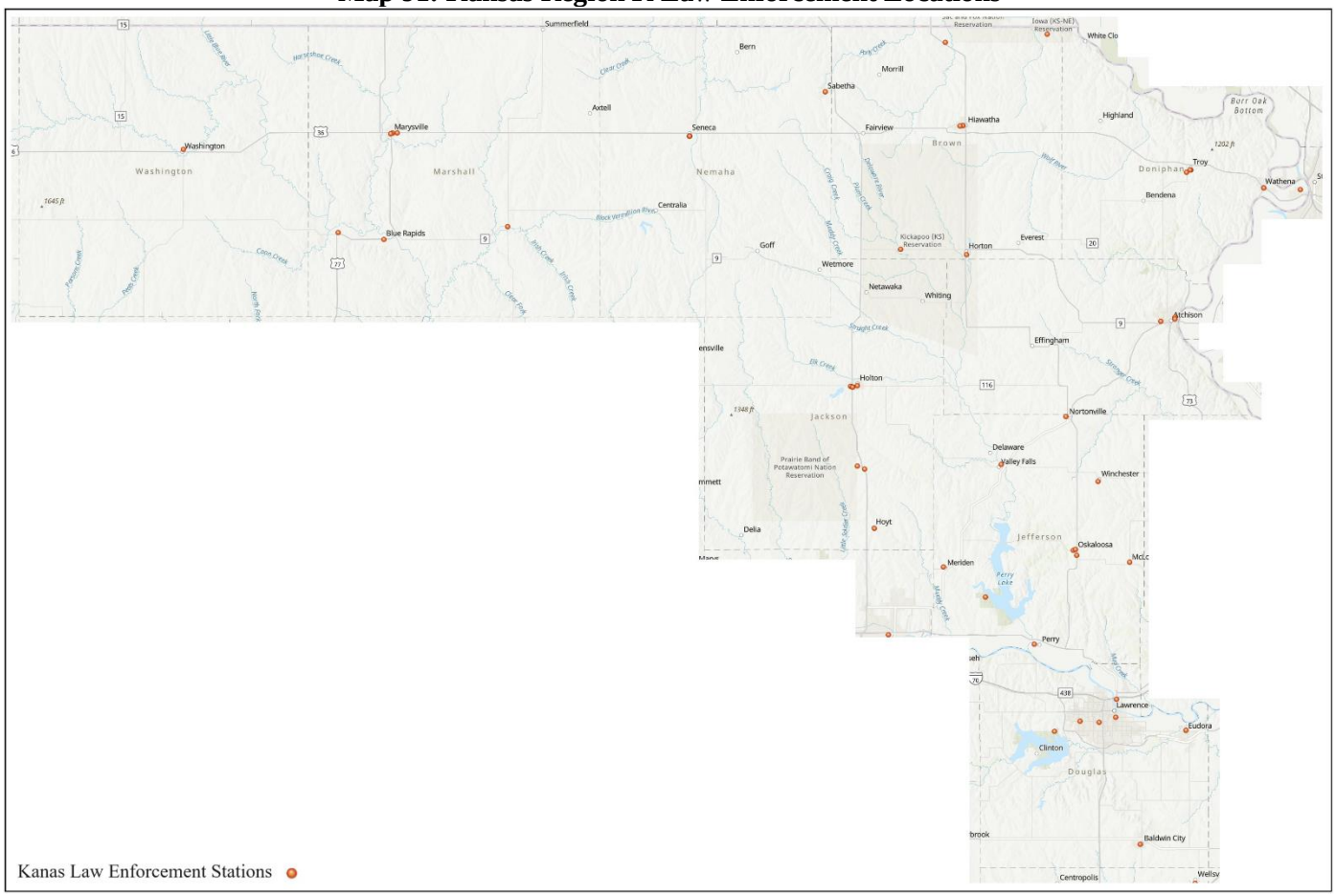
The following map, from the State of Kansas Geoportal, details the location of fire stations throughout Kansas Region K:

Map 90: Kansas Region K Fire Stations



Source: State of Kansas GIS

Map 91: Kansas Region K Law Enforcement Locations



Source: State of Kansas GIS

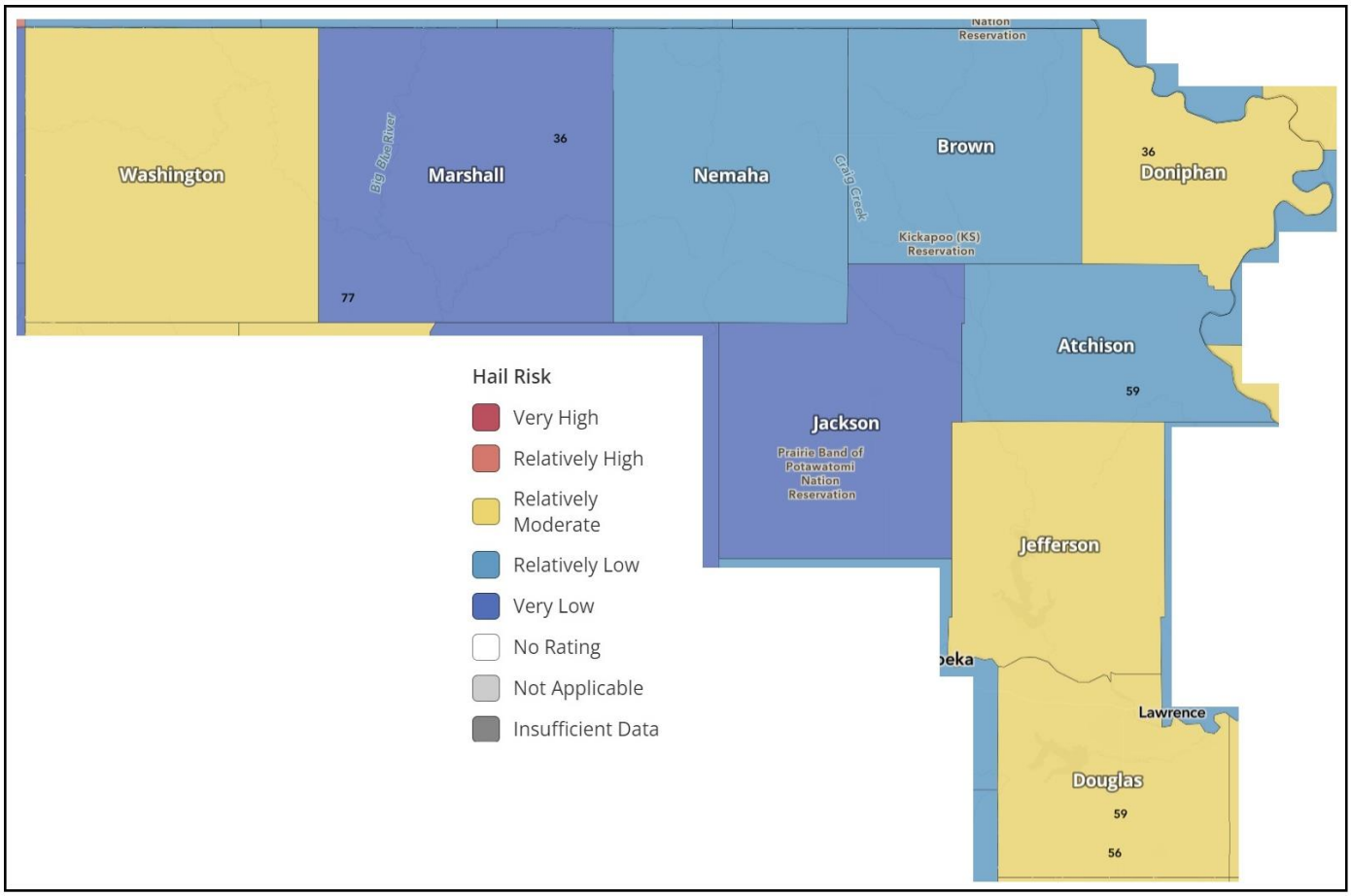
Hospitals and other smaller medical facilities may see an increase in Severe Weather related injuries during an event, but it is considered unlikely that this increase will impact or overload capacity. Hospital capacity mapping may be found in MAP #.

Severe Weather can increase the demand for emergency shelters, particularly in cases of widespread power outages. Setting up and managing these shelters can strain resources.

FEMA NRI

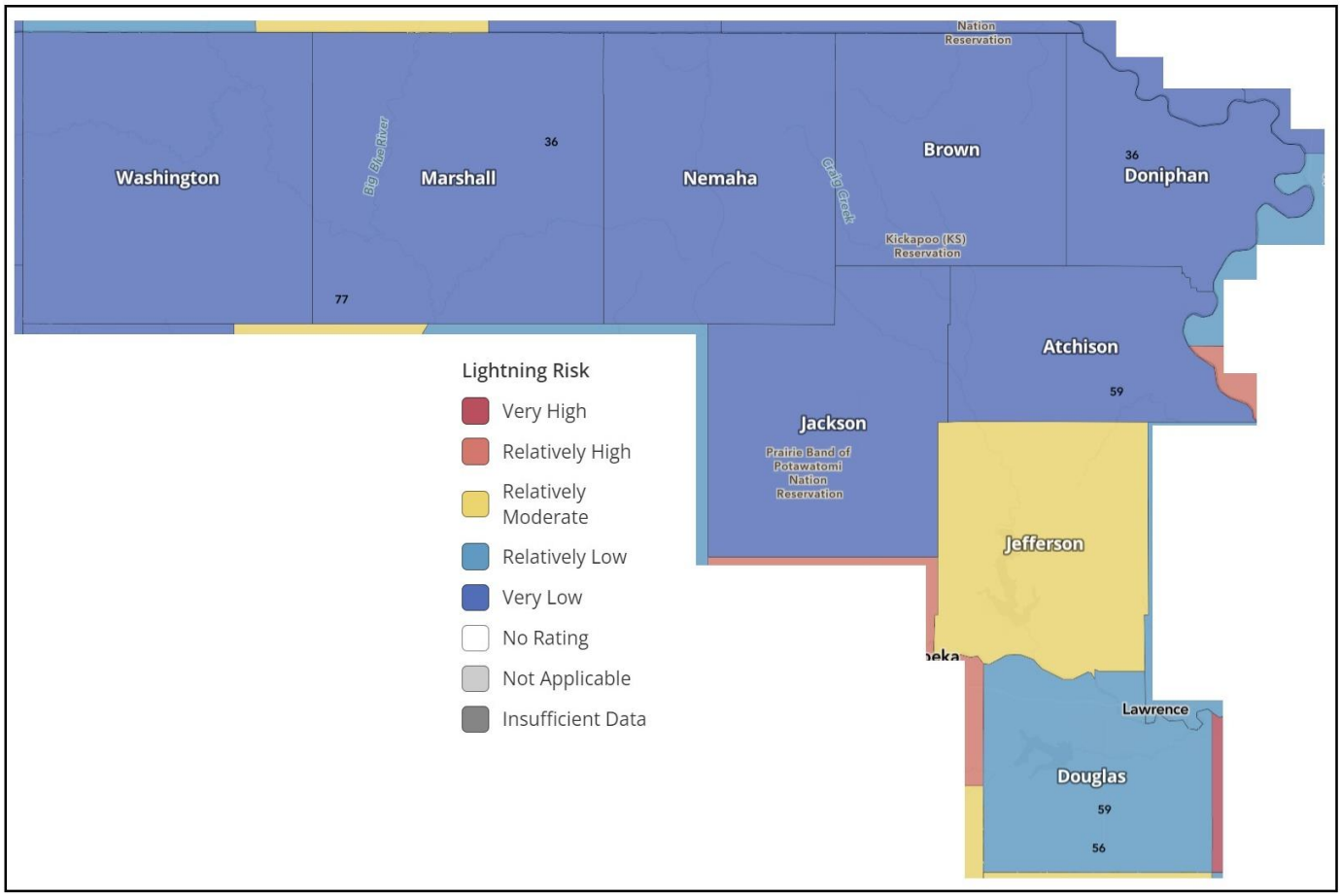
Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from the components of Severe Weather (hail, lightning, and strong winds):

Map 92: Kansas Region K FEMA NRI Hail Risk



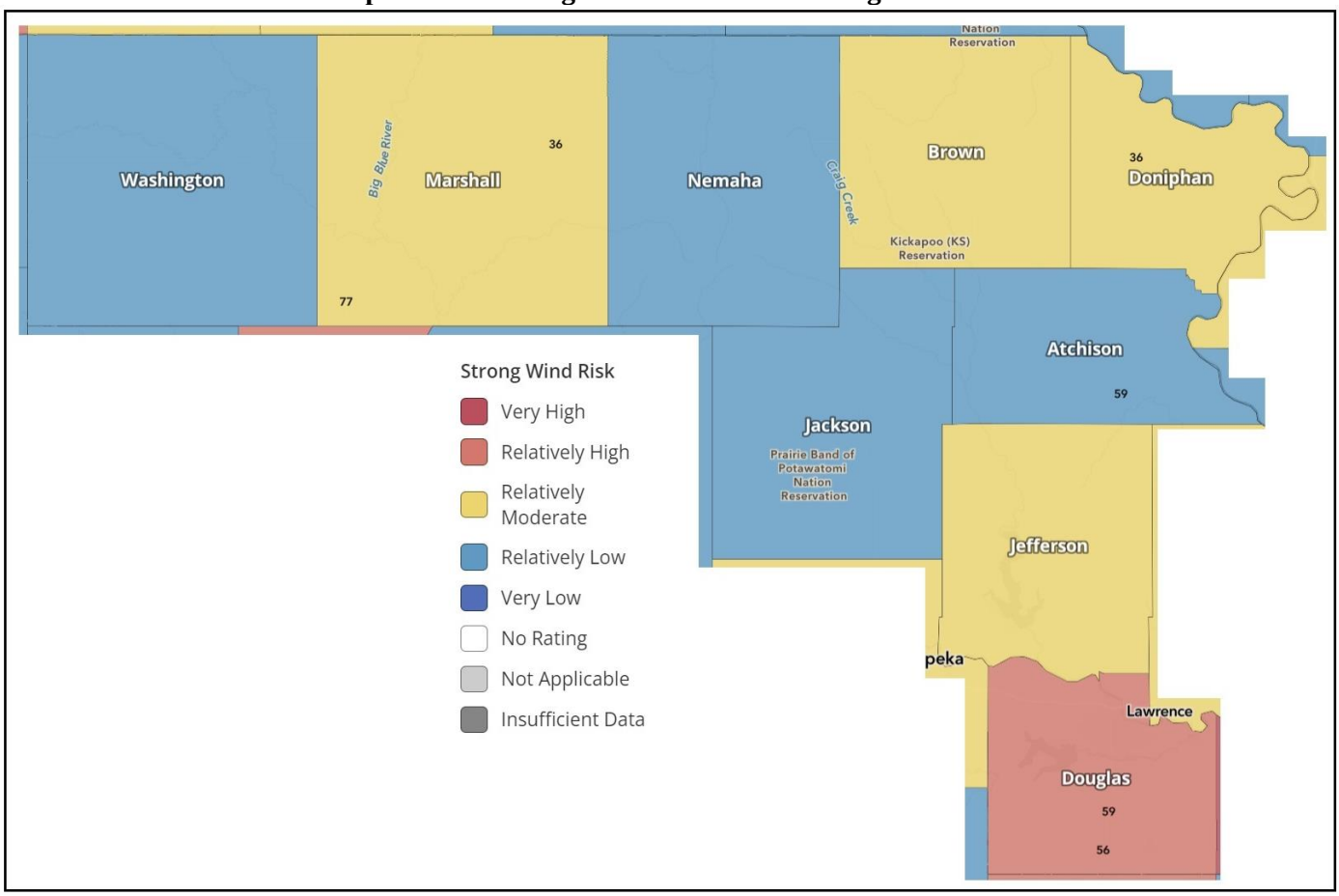
Source: FEMA NRI

Map 93: Kansas Region K FEMA NRI Lightning Risk



Source: FEMA NRI

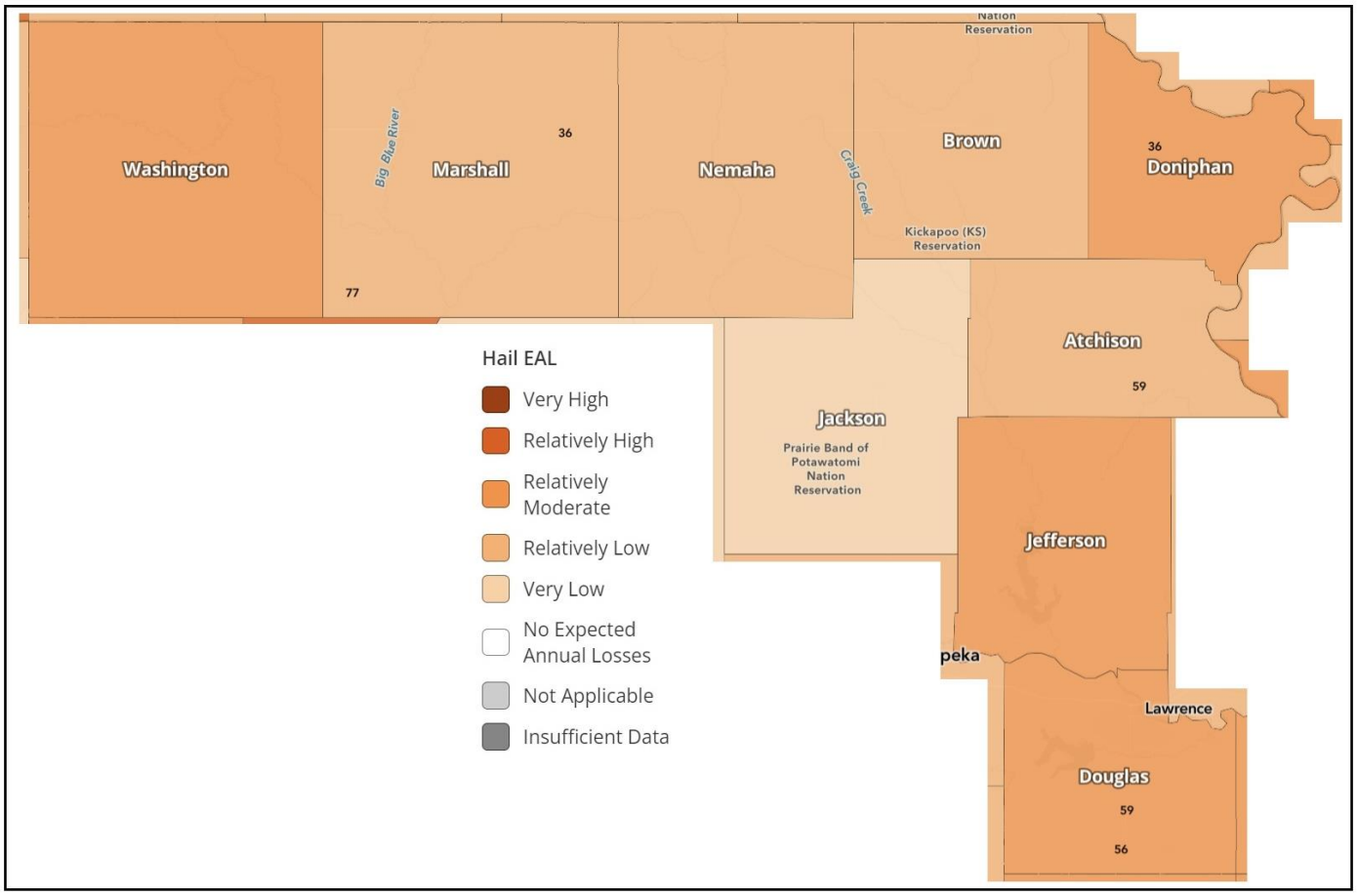
Map 94: Kansas Region K FEMA NRI Strong Wind Risk



Source: FEMA NRI

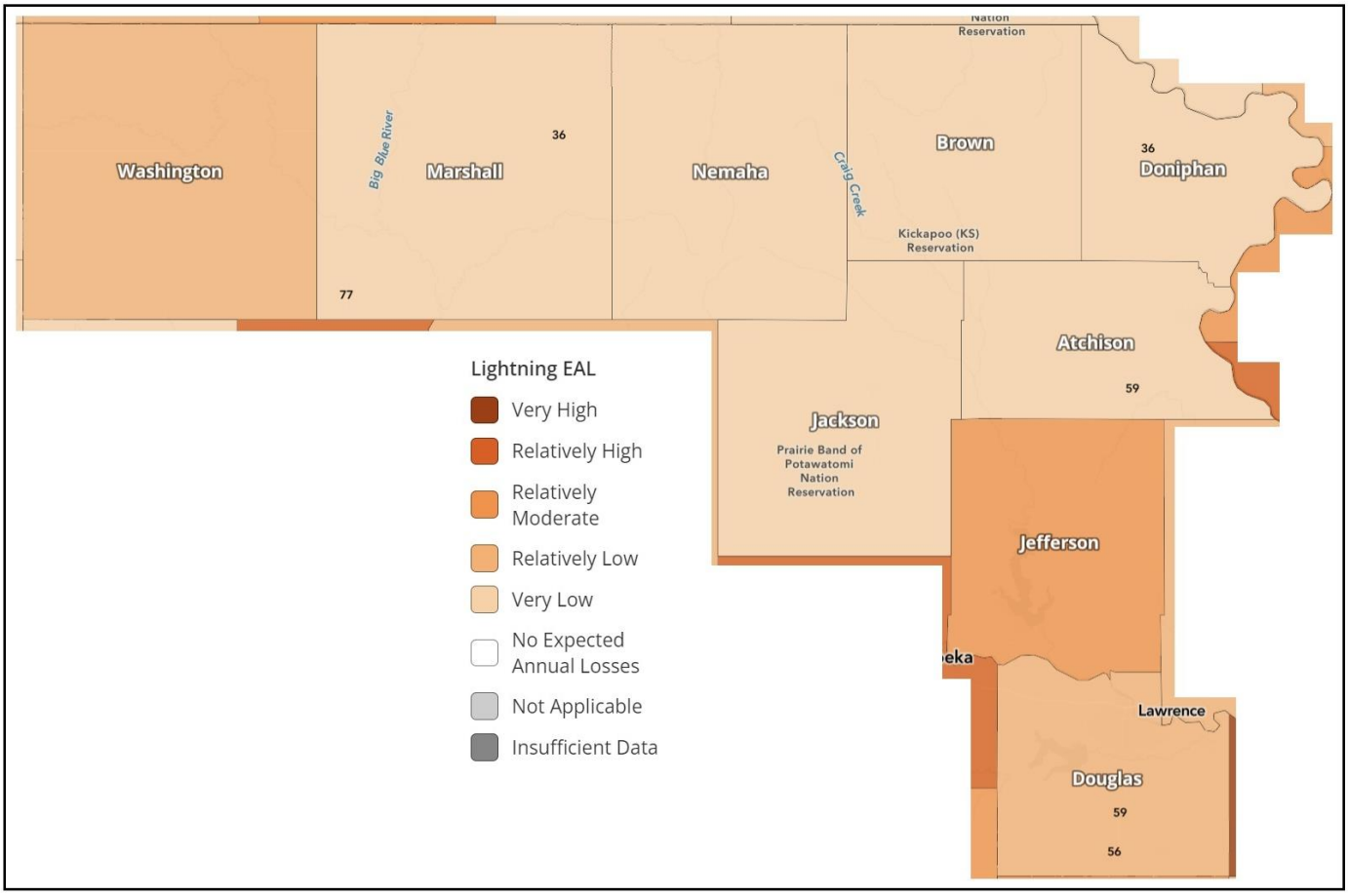
As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for the components of Severe Weather (hail, lightning, and strong winds) for participating counties within Kansas Region K:

Map 95: Kansas Region K FEMA NRI Hail EAL



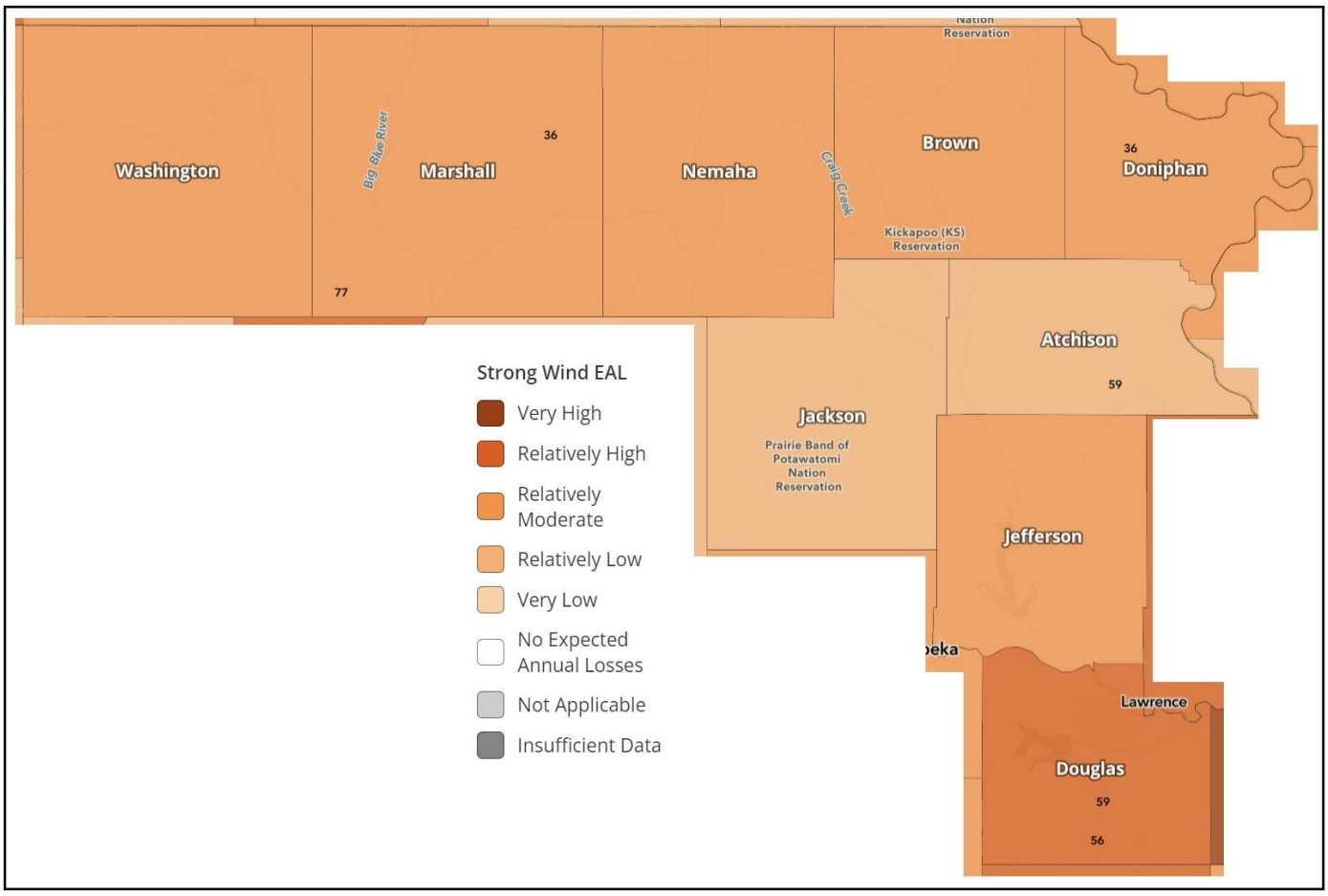
Source: FEMA NRI

Map 96: Kansas Region K FEMA NRI Lightning EAL



Source: FEMA NRI

Map 97: Kansas Region K FEMA NRI Strong Wind EAL



Source: FEMA NRI

The following tables indicates the FEMA NRI and EAL analysis for each participating Kansas Region K county for extreme heat and extreme cold:

Table 94: Kansas Region K FEMA NRI and EAL for Hail by County

County	Risk Index	EAL
Atchison	Relatively Low	Relatively Low
Brown	Relatively Low	Relatively Low
Doniphan	Relatively Moderate	Relatively Moderate
Douglas	Relatively Moderate	Relatively Moderate
Jackson	Very Low	Very Low
Jefferson	Relatively Moderate	Relatively Moderate
Marshall	Very Low	Relatively Low
Nemaha	Relatively Low	Relatively Low
Washington	Relatively Moderate	Relatively Moderate

Source: FEMA NRI

Table 95: Kansas Region K FEMA NRI and EAL for Lightning by County

County	Risk Index	EAL
Atchison	Very Low	Very Low
Brown	Very Low	Very Low
Doniphan	Very Low	Very Low
Douglas	Relatively Low	Relatively Low
Jackson	Very Low	Very Low
Jefferson	Relatively Moderate	Relatively Moderate
Marshall	Very Low	Very Low
Nemaha	Very Low	Very Low
Washington	Very Low	Relatively Low

Source: FEMA NRI

Table 96: Kansas Region K FEMA NRI and EAL for Strong Wind by County

County	Risk Index	EAL
Atchison	Relatively Low	Relatively Low
Brown	Relatively Moderate	Relatively Moderate
Doniphan	Relatively Moderate	Relatively Moderate
Douglas	Relatively High	Relatively High
Jackson	Relatively Low	Relatively Low
Jefferson	Relatively Moderate	Relatively Moderate
Marshall	Relatively Moderate	Relatively Moderate
Nemaha	Relatively Low	Relatively Moderate
Washington	Relatively Low	Relatively Moderate

Source: FEMA NRI

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 K residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 97: 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 proper 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 continuity of operations due to power outages, flooding, and wind damage. If the activation of alternate facilities was required, travel may be difficult as well as computer/network access due to long-term power outages caused by severe weather.
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. Goods, equipment, and vehicles may become damaged during transport.
Property, Facilities, and Infrastructure	Power lines and power generators are most at risk from severe weather and impacts could result in isolated power outages or full-scale blackouts. Building and vehicle damage can occur from hail and other debris created by severe weather. Properties and

Table 97: Severe Weather Consequence Analysis

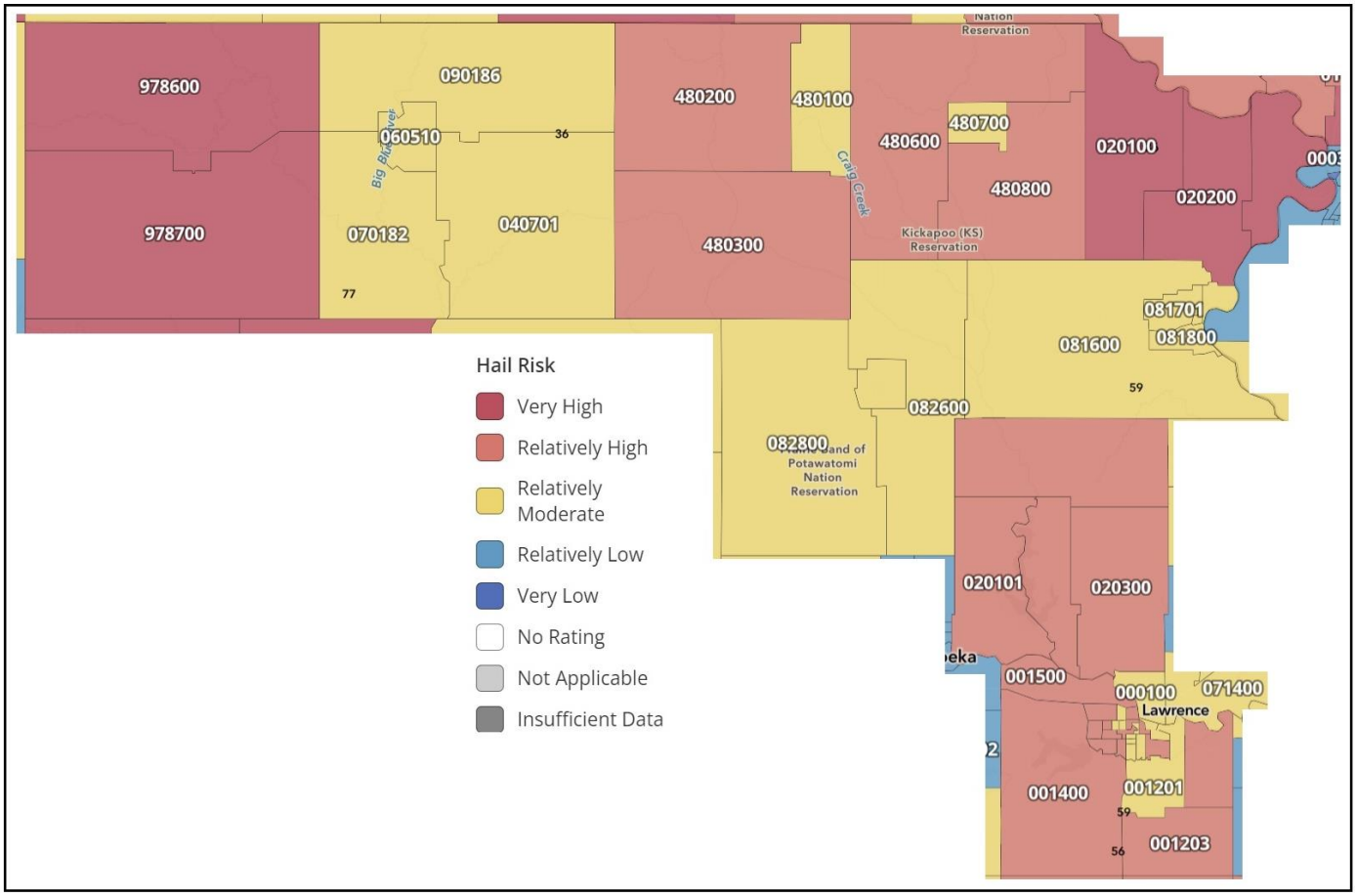
Subject	Potential Impacts
	critical facilities also may face foundational and physical damage due to flooding, lightning strike, or excessive winds, delaying response and recovery operations.
Impact on Environment	Waste and debris from damage treatment infrastructure or hazardous materials facilities could contaminate sources of water and food. Debris can impact and contaminate wildlife and natural areas. Lightning strikes may also ignite fires, leading to destruction of agricultural crops, critical ecosystems, and natural habitats.
Economic Conditions	Flooding, high winds, lightning, and hail can stress state and local resources. Even if some of the costs can be recouped through federal reimbursements (federal disaster declaration), 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.

4.13.7 Jurisdictional Risk and Vulnerability

To help understand the risk and vulnerability to severe weather of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

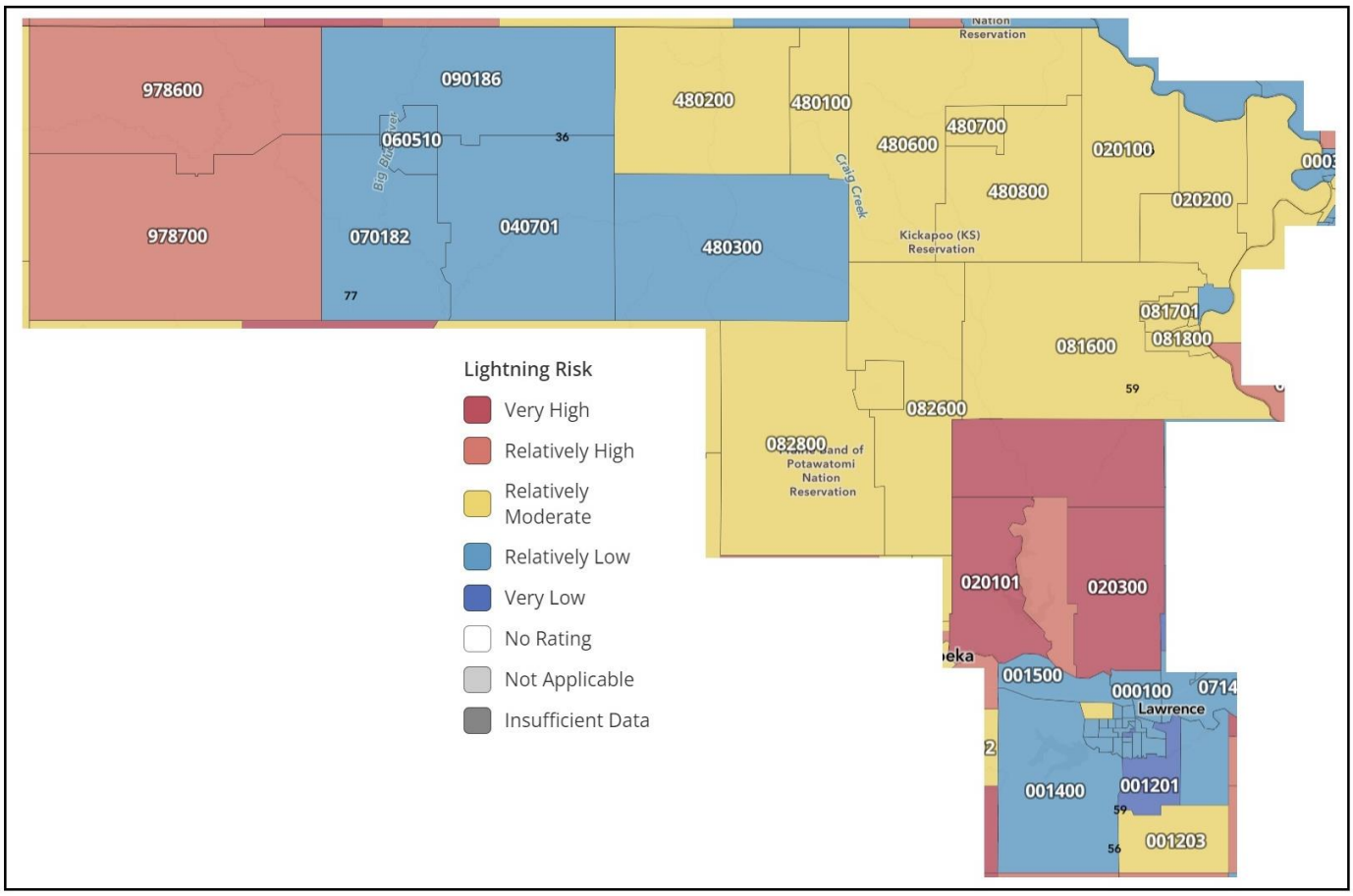
Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from the components of Severe Weather (hail, lightning, and strong winds):

Map 98: FEMA NRI Jurisdictional Hail Risk



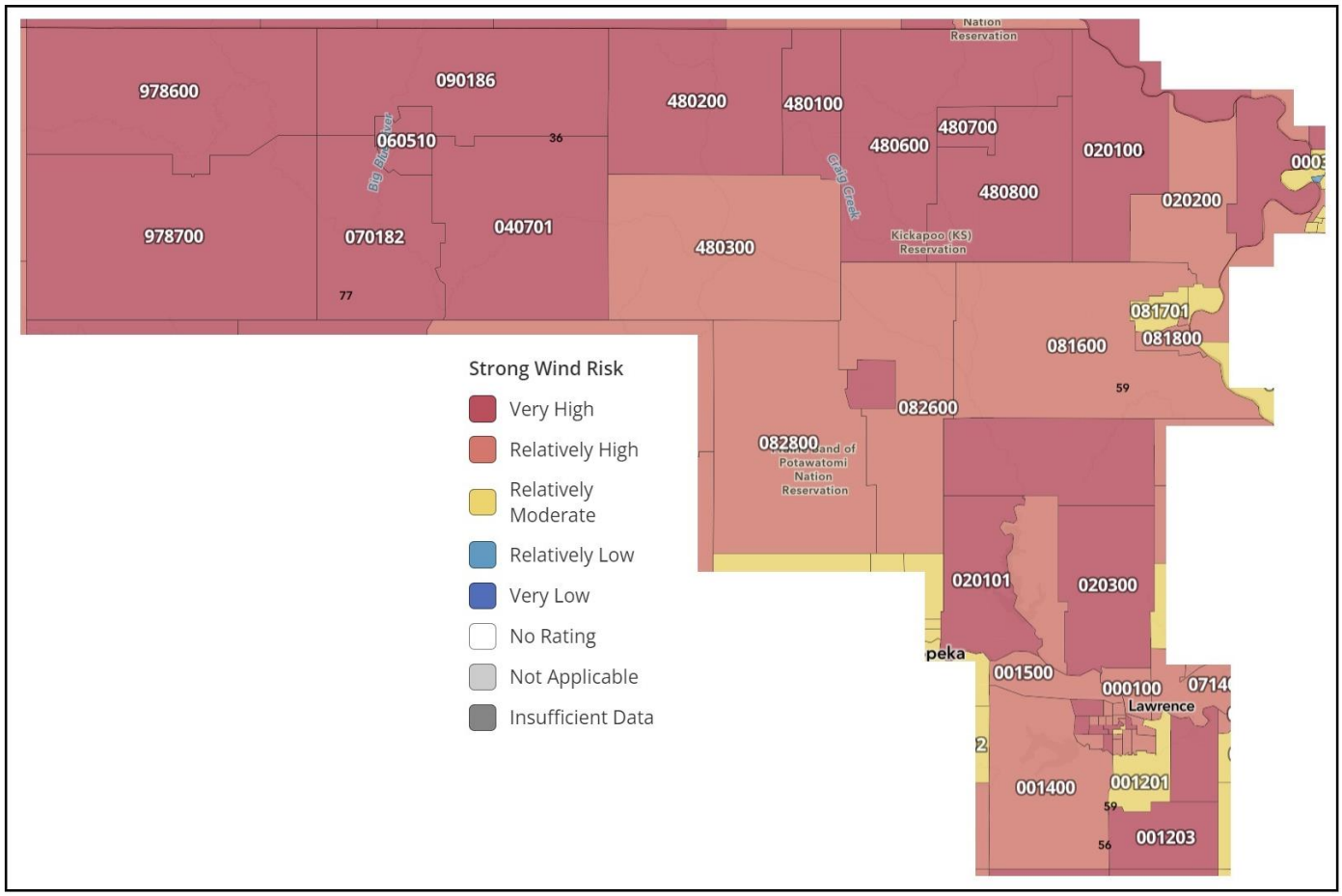
Source: FEMA NRI

Map 99: FEMA NRI Jurisdictional Lightning Risk



Source: FEMA NRI

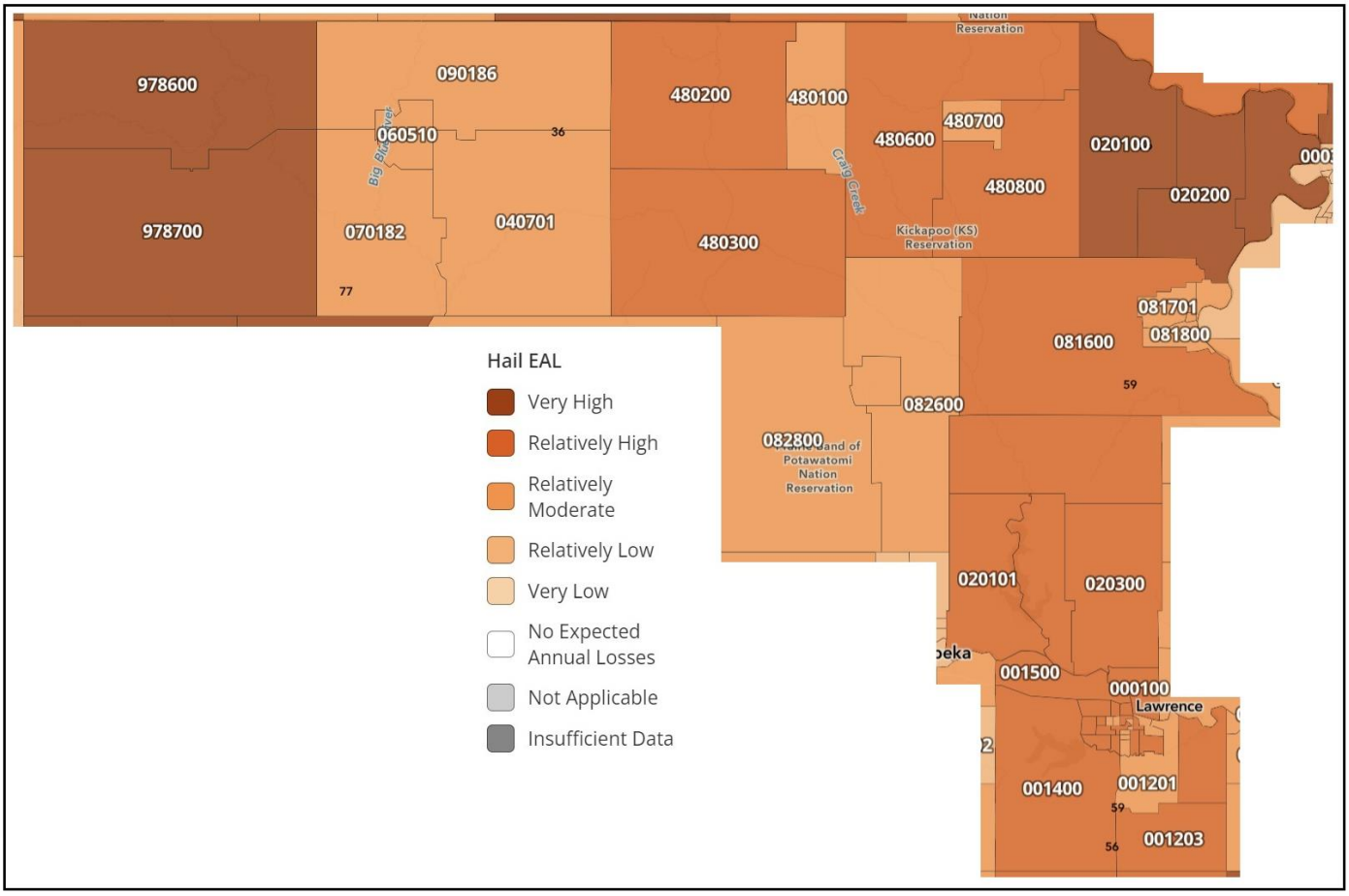
Map 100: FEMA NRI Jurisdictional Strong Wind Risk



Source: FEMA NRI

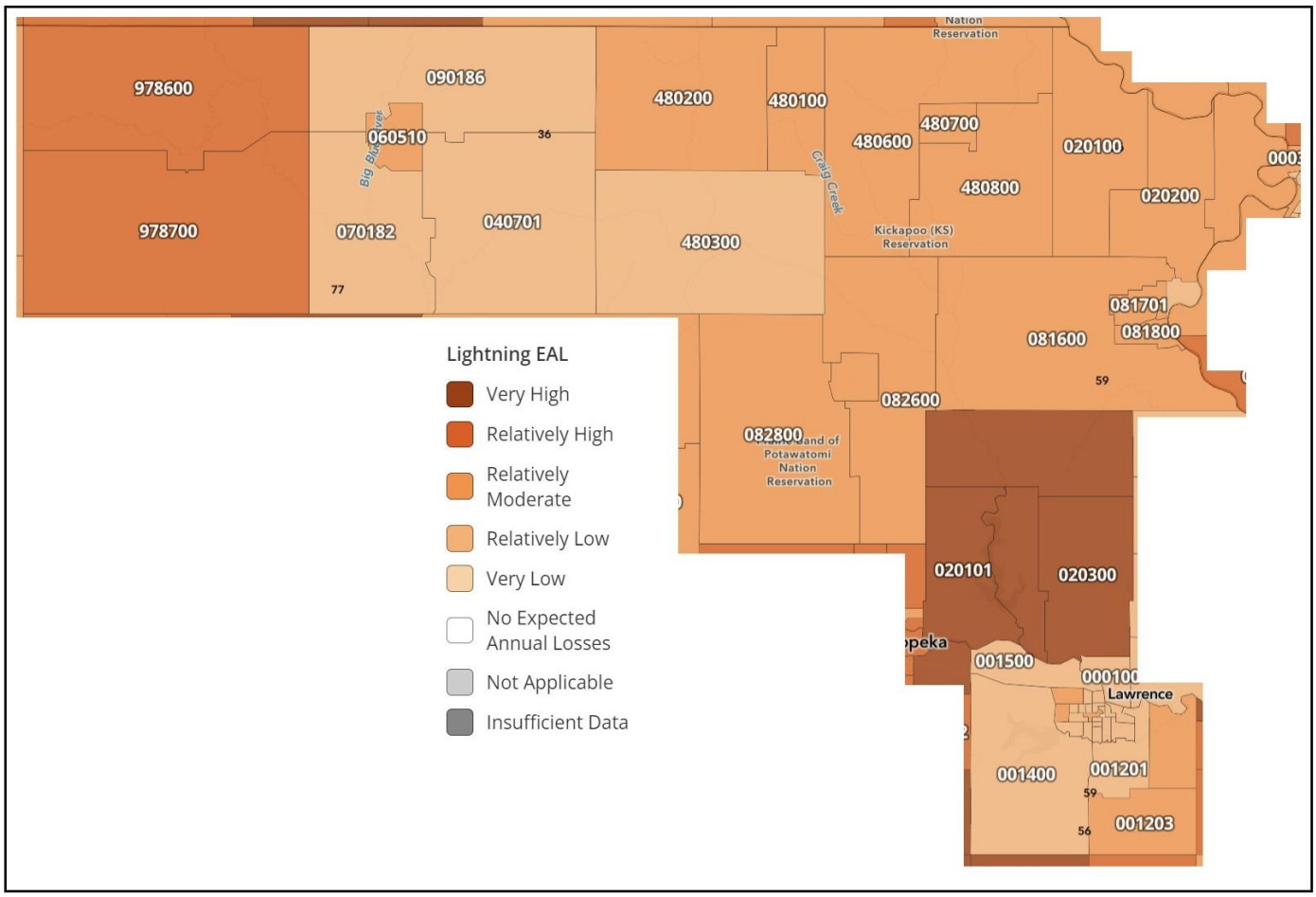
As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for the components of Severe Weather (hail, lightning, and strong winds) for participating jurisdictions (as indicated by census tract) within Kansas Region K:

Map 101: FEMA NRI Jurisdictional Hail EAL



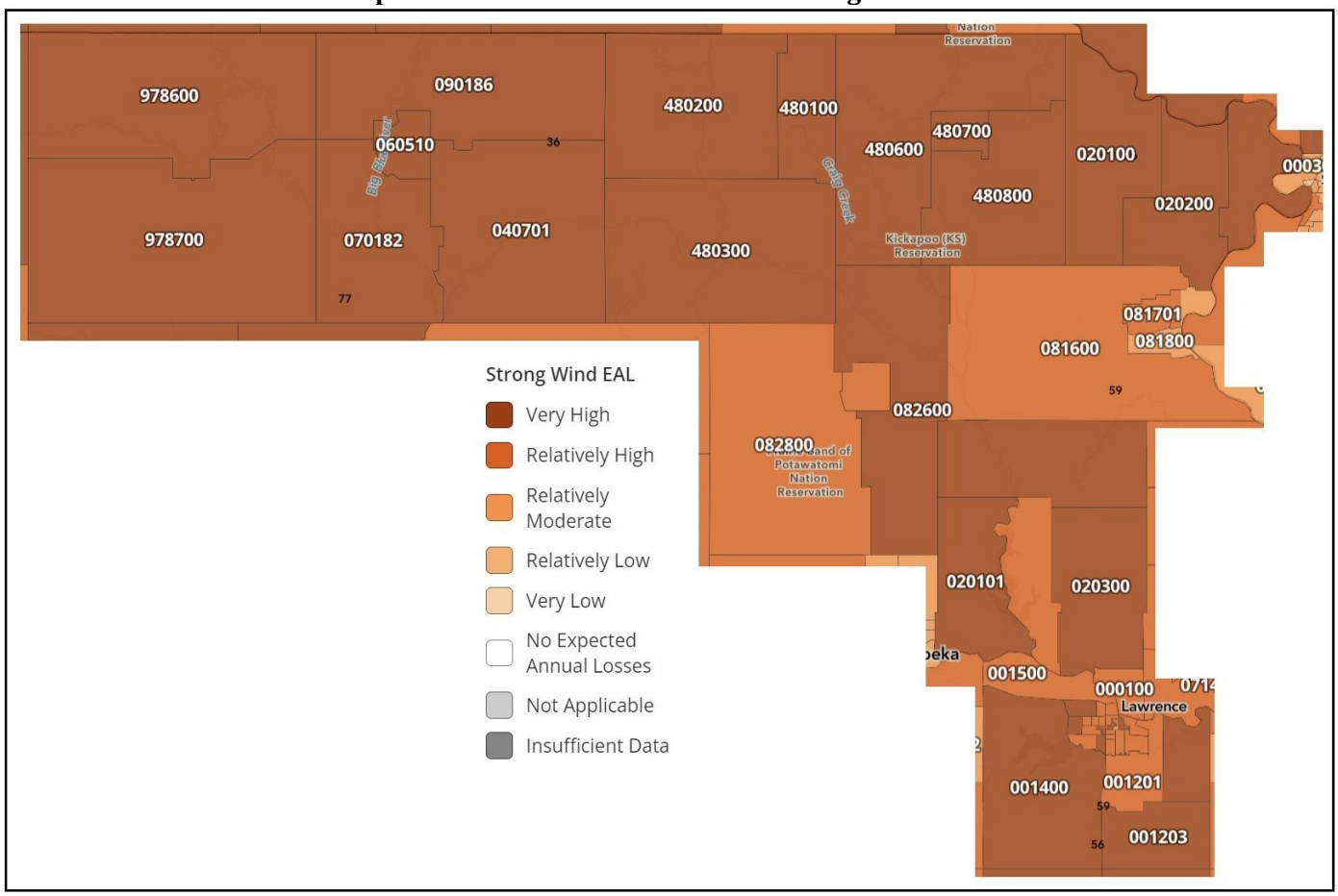
Source: FEMA NRI

Map 102: FEMA NRI Jurisdictional Lightning EAL



Source: FEMA NRI

Map 103: FEMA NRI Jurisdictional Strong Wind EAL



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

Kansas Region K citizens living in mobile homes may have an increased vulnerability to Severe Weather. Please see section 3.6 for more details on the percentage of mobile homes for each participating county.

4.14 Severe Winter Weather

4.14.1 Hazard Description

A Severe Winter Weather encompasses multiple effects caused by winter weather. Included are strong winds, ice storms, heavy or prolonged snow, sleet, and extreme temperatures. Severe Winter Weathers can be increasingly hazardous in areas and regions that only see Severe Winter Weathers intermittently.

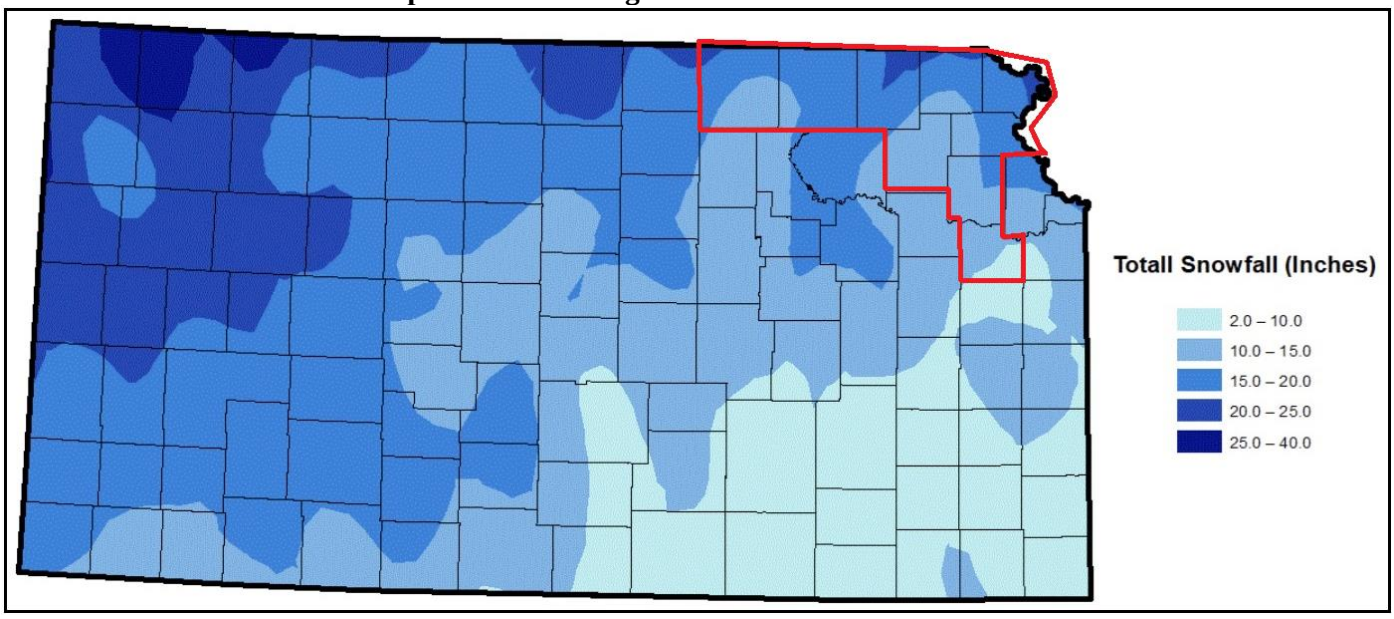
This plan defines Severe Winter Weathers as a combination of the following winter weather effects as defined by NOAA and the NWS.

- **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 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.
- **Severe Winter Weather:** 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.

4.14.2 – Location and Extent

Severe Winter Weathers occur regularly throughout Kansas Region K. These events occur on a large geographic scale, often affecting multiple counties, regions, and states. Severe Winter Weathers typically form with warning and are often anticipated. Like other large storm fronts, the severity of a storm is not as easily predicted and when it is, the window of notification is up to few hours to under an hour. Although meteorologists estimate the amount of snowfall a Severe Winter Weather 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 Kansas State University indicates that the average annual snowfall for Kansas Region K:

Map 104: Kansas Region K 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 K. 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 98: 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.

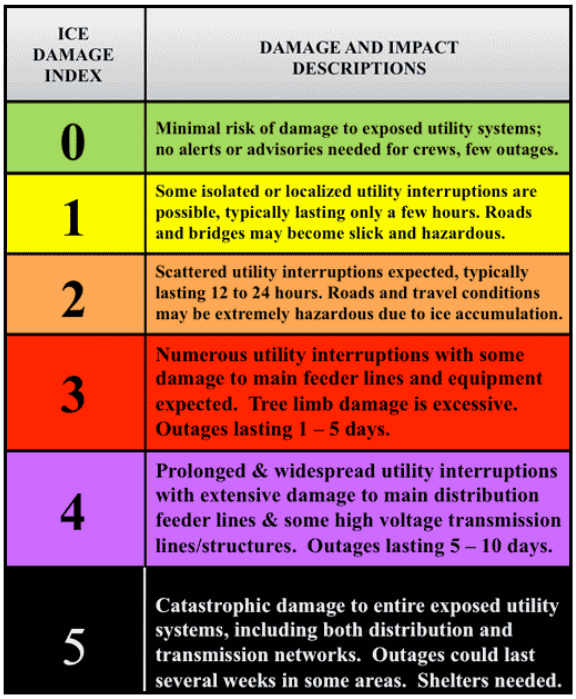
Source: NOAA

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 2: 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

4.14.3 Previous Occurrence

The following table presents NCEI identified ice storm and Severe Winter Weather events and the resulting damage totals in Kansas Region K from 2014 to 2023. This data is presented regionally as these storms tend to cover large areas.

Table 99: NCEI Kansas Region K Severe Winter Weather Events

Region	Event Type	Number of Days with Events	Property Damage	Deaths and Injuries
Kansas Region K	Blizzard	8	$0	0
	Ice Storm	4	$0	0
	Severe Winter Weather	17	$0	0

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.

4.14.4 Probability of Future Events

Predicting the probability of Severe Winter Weather occurrences is tremendously changing due to the large number of factors involved and the random nature of formation. Data from NOAA and the NWS indicate that Kansas Region K can expect an average annual snowfall of between two to 15 inches per year.

Based on historical occurrences, Kansas Region K will continue to experience severe Severe Winter Weather events on an annual basis. The following table, using data from the NCEI, indicates the yearly probability of a severe Severe Winter Weather event, the number of deaths or injuries, and estimated property damage for each county in Kansas Region K.

Table 100: Kansas Region K NCEI Severe Winter Weather 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	8	1	0	0	$0	$0
Ice Storm	4	<1	0	0	$0	$0
Severe Winter Weather	17	2	0	0	$0	$0

Source: NCEI

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

Climate change can lead to greater variability in precipitation patterns. In Kansas Region K, this may result in more erratic Severe Winter Weathers with periods of heavy snowfall followed by rain or freezing rain. These mixed precipitation events can make Severe Winter Weathers more changing to predict and can lead to a greater risk of ice accumulation. Additionally, Kansas Region K may experience milder winters as average temperatures rise due to climate change. While this could lead to a decrease in the frequency of traditional snowstorms, it may also increase the likelihood of Severe Winter Weathers that produce mixed precipitation, including freezing rain and sleet. Warmer temperatures can lead to a higher snowfall threshold, meaning that storms that would have produced snow in the past may now bring more rain or a mix of precipitation types. This can affect the accumulation of snow in the state. Changes in atmospheric circulation patterns associated with climate change can influence the tracks of Severe Winter Weathers. This could lead to a shift in the amounts of heavy snowfall, ice, and other winter weather hazards in Kansas Region K.

4.14.5 Vulnerability and Impact

All of Kansas Region K 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.

Extremely cold temperatures are 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: Severe Winter Weathers 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.

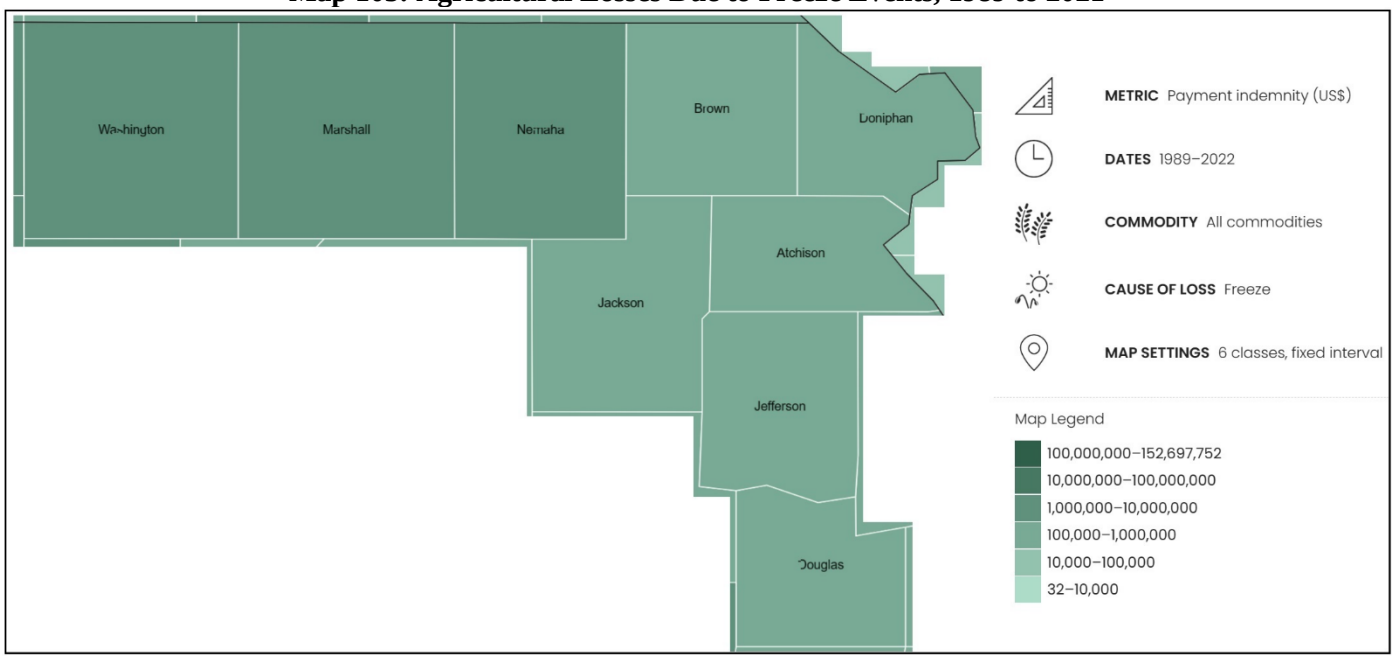
Severe Severe Winter Weathers can have significant and wide-ranging impacts on facilities, and may include:

- Power Outages: Severe Severe Winter Weathers can cause power outages by bringing down power lines, causing ice accumulation on electrical infrastructure, or overloading the electrical grid due to increased demand for heating. Critical facilities such as hospitals, emergency response centers, and data centers may rely on backup generators to maintain essential operations during outages.
- Communication Disruptions: Ice and freezing rain can damage communication infrastructure, including cell towers, telephone lines, and data centers, leading to disruptions in phone and internet services. This can hinder emergency communication and coordination, affecting critical response efforts.
- Transportation Disruptions: Snow and ice accumulation on roads, runways, and railways can disrupt transportation networks, leading to travel delays, accidents, and closures. Critical facilities may face challenges in receiving essential supplies and personnel during and after the storm.
- Water Supply Interruptions: Freezing temperatures can cause water pipes to burst, leading to water supply interruptions and damage to water infrastructure. Critical facilities such as hospitals and emergency response centers rely on a continuous supply of clean water for various purposes, including patient care and firefighting.
- Wastewater Systems: Cold temperatures can affect wastewater treatment plants, leading to potential operational disruptions and contamination risks.
- Fuel Supply Disruptions: Snow and ice can disrupt fuel supply chains, leading to shortages of gasoline, diesel, and heating oil. Critical facilities may rely on fuel for backup power generators and heating systems.
- Property Damage: Severe Severe Winter Weathers can result in property damage, including roof collapses due to heavy snow accumulation, ice damming, and frozen pipes.

Severe Winter Weathers 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.

Severe winter weather conditions can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total agricultural losses, by county, due to freeze events from 1989 to 2021:

Map 105: Agricultural Losses Due to Freeze Events, 1989 to 2021



Source: USDA

Severe winter weather can pose risks to local operations and can disrupt government functions and strain resources. Some of the risks to operations include:

- Transportation Disruptions: Snow and ice accumulation on roads and highways can hinder transportation, making it difficult for state agencies and personnel to travel and respond to emergencies. RIDOT must allocate resources to plow and salt roads, clear snow and ice, and repair potholes caused by freezing and thawing. These efforts are costly and resource intensive.
- School Closures: Severe Winter Weathers often lead to school closures, which can affect state-run education programs and services. State agencies may need to coordinate with school districts to ensure the safety of students.
- Emergency Response and Public Safety: Severe Winter Weathers can result in increased demands for emergency services, including responses to traffic accidents, medical emergencies, and stranded motorists. State and local agencies must allocate additional resources to address these needs.
- Economic Impact: Severe Winter Weathers can result in economic losses due to reduced economic activity, transportation disruptions, property damage, and increased spending on emergency response and recovery efforts.
- Emergency Shelter Operations: Local jurisdictions may need to operate or coordinate emergency shelters during Severe Winter Weathers to provide shelter and resources to vulnerable populations, including those experiencing homelessness.
- Resource Allocation: State agencies must allocate resources, including personnel, equipment, and stockpiled supplies, to support emergency response efforts and maintain public services.
- Communication Challenges: Severe Winter Weathers can disrupt communication networks, hindering the ability of state agencies to communicate internally and with the public. This can impact emergency notifications and coordination efforts.
- Budgetary Impact: The costs associated with snow removal, road maintenance, emergency response efforts, and infrastructure repair can strain state budgets.
- Governance and Administrative Challenges: State government offices and facilities may experience closures or reduced staffing during severe winter weather, affecting administrative functions, regulatory processes, and public services.

Potentially Vulnerable Community Lifelines

Extreme cold temperatures often associated with winter weather can impact various community lifelines, critical systems, and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that winter weather places on infrastructure, resources, and operational processes. 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 101: 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

Severe Winter Weathers can have significant impacts on road infrastructure, creating changing conditions for transportation and necessitating proactive measures for maintenance and safety. Severe Winter Weathers can impact road infrastructure:

- 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 Severe Winter Weathers 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. Severe Winter Weathers can stress these structures, potentially leading to structural issues over time.

The following table, from the Kansas Department of Transportation, indicates the total road miles by county for Kansas Region K, all of which require plowing and maintenance during winter weather events:

Table 102: Kansas Region K Road Mileage by County

County	Total Road Miles
Atchison	939
Brown	1,243
Doniphan	736
Douglas	1,404
Jackson	1,245
Jefferson	1,232
Marshall	1,705
Nemaha	1,452
Washington	1,727

Source: Kansas Department of Transportation

In smaller counties 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.

Extreme Conditions or Emergencies: During Severe Winter Weathers or blizzards, the cost of snow removal can escalate significantly due to increased demand for services, overtime wages for workers, and the need for additional equipment and resources. In such cases, costs could exceed $100,000 or even reach into the millions for major metropolitan areas.

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 Weathers can impact electrical utilities in various ways, potentially leading to disruptions in service. These impacts include:

- Power Outages: High temperatures can strain electrical systems, leading to increased demand for cooling systems like air conditioners. This heightened demand can overload power grids, resulting in power outages.
- Equipment Failure: Electrical equipment, such as cables and switches, may experience higher resistance and increased stress during extreme heat, increasing the likelihood of equipment failures.
- Reduced Efficiency in Power Plants: Power generation facilities may experience reduced efficiency during heatwaves due to elevated ambient temperatures. This can affect the output of power plants and potentially lead to supply shortages.
- 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.

In order to reduce plan duplication, mapping concerning electrical generation plants, high-capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Maps 49 and 50, page 94, and Chart 15, page 95.

Severe Winter Weathers 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 Winter Weathers 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.
- Road Closures: Severe Winter Weathers can lead to the closure of roads due to snow accumulation, ice, and hazardous conditions. This can limit access for emergency vehicles and impede the evacuation of residents.
- Communication Disruptions: Snow and ice 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, including ice storms, 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 winter conditions. Exposure to 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 Weathers 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.
- Logistical Challenges: Snow accumulation and icy conditions may create logistical challenges for the transportation of supplies, equipment, and personnel to affected areas, hindering the overall effectiveness of emergency response efforts.
- Increased Demand for Services: Severe Winter Weathers 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.

In order to reduce plan duplication, mapping concerning fire and police infrastructure may be found in Map 90, page 170 and Map 91, page 171.

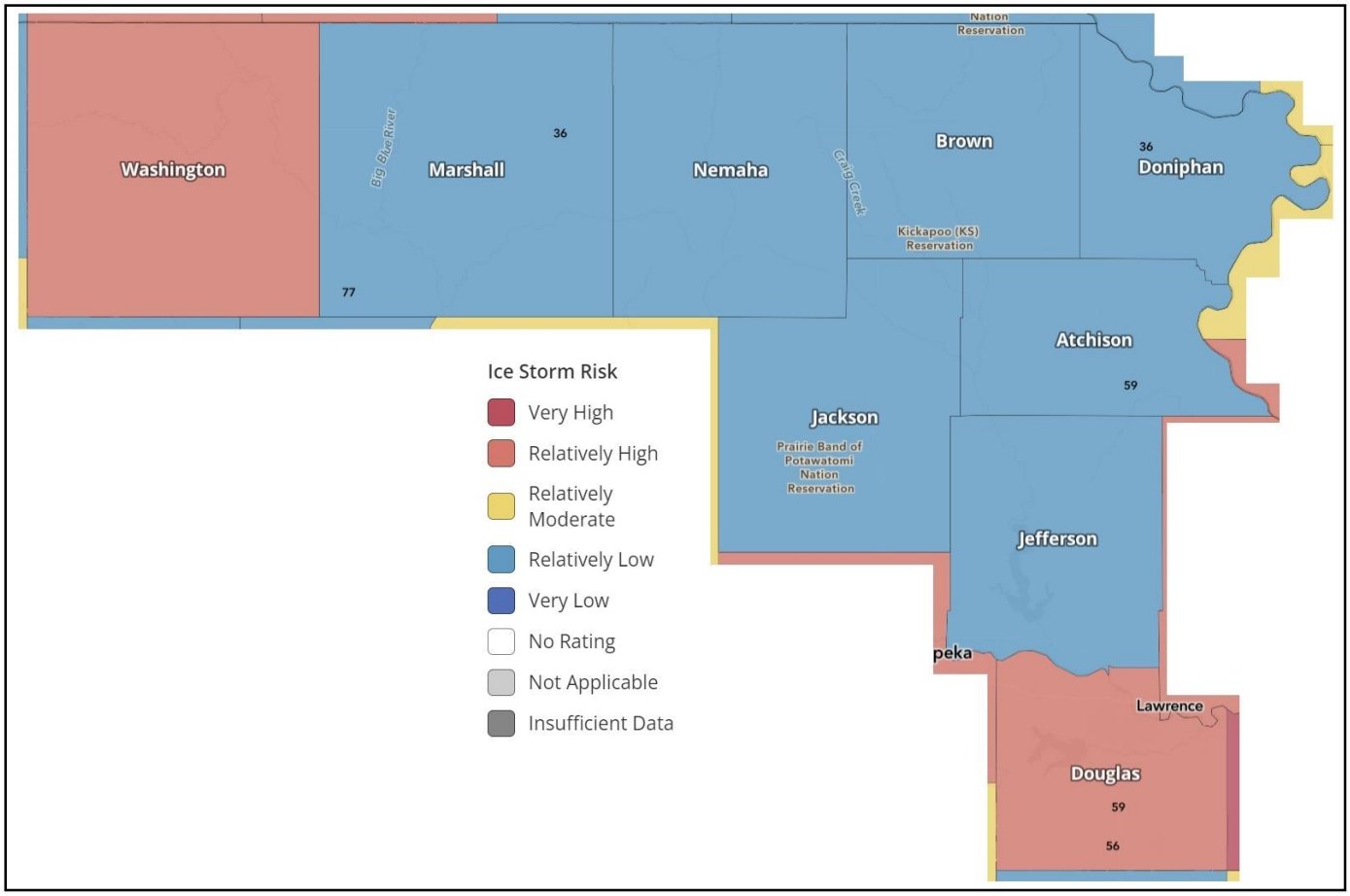
Hospitals and other smaller medical facilities may see an increase in Severe Winter Weather related injuries during an event, but it is considered unlikely that this increase will impact or overload capacity. Hospital capacity mapping may be found in Map, page 95.

Severe Winter Weathers can increase the demand for emergency shelters, particularly in cases of widespread power outages. Setting up and managing these shelters can strain resources.

FEMA NRI

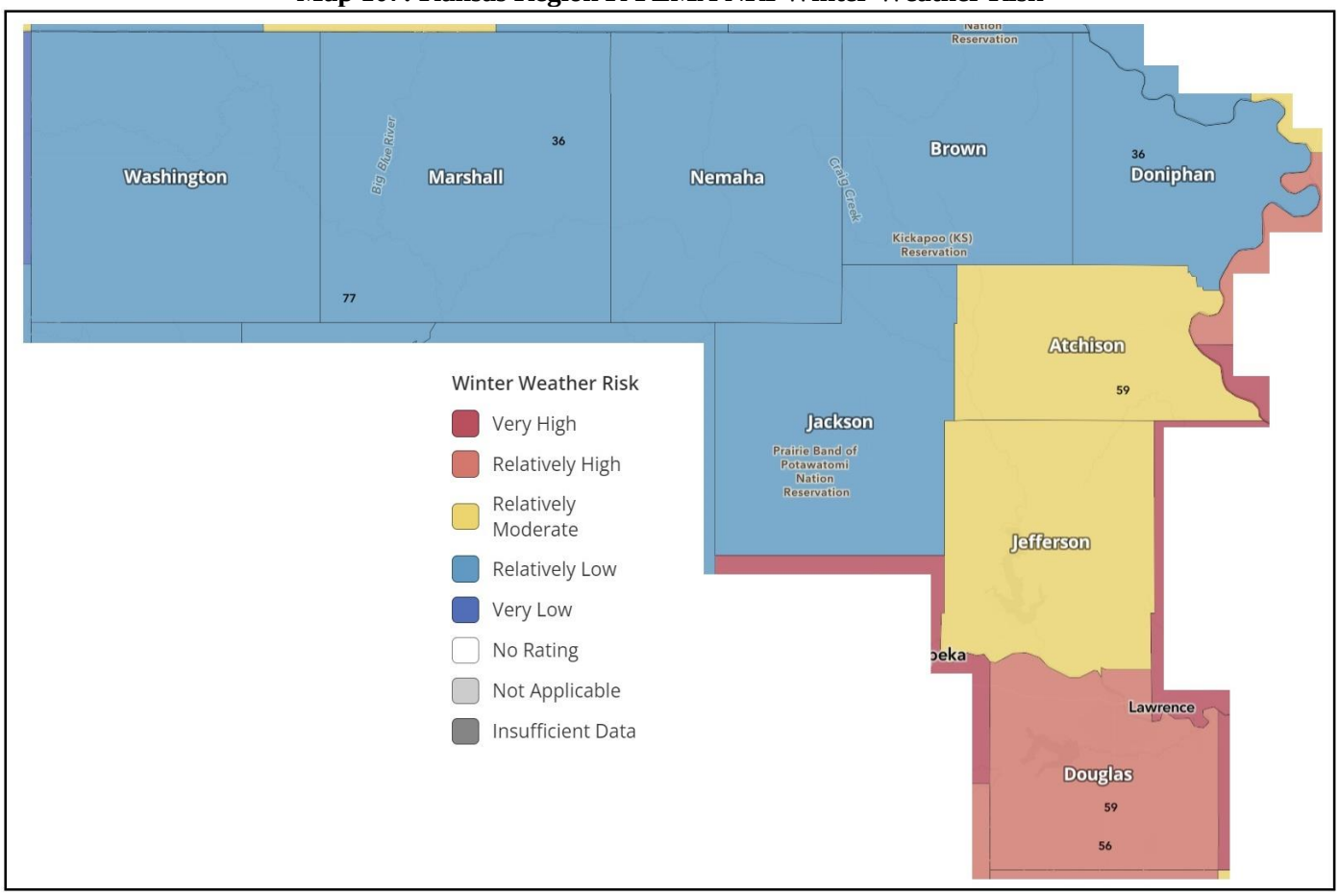
Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from ice storms and winter weather:

Map 106: Kansas Region K FEMA NRI Ice Storm Risk



Source: FEMA NRI

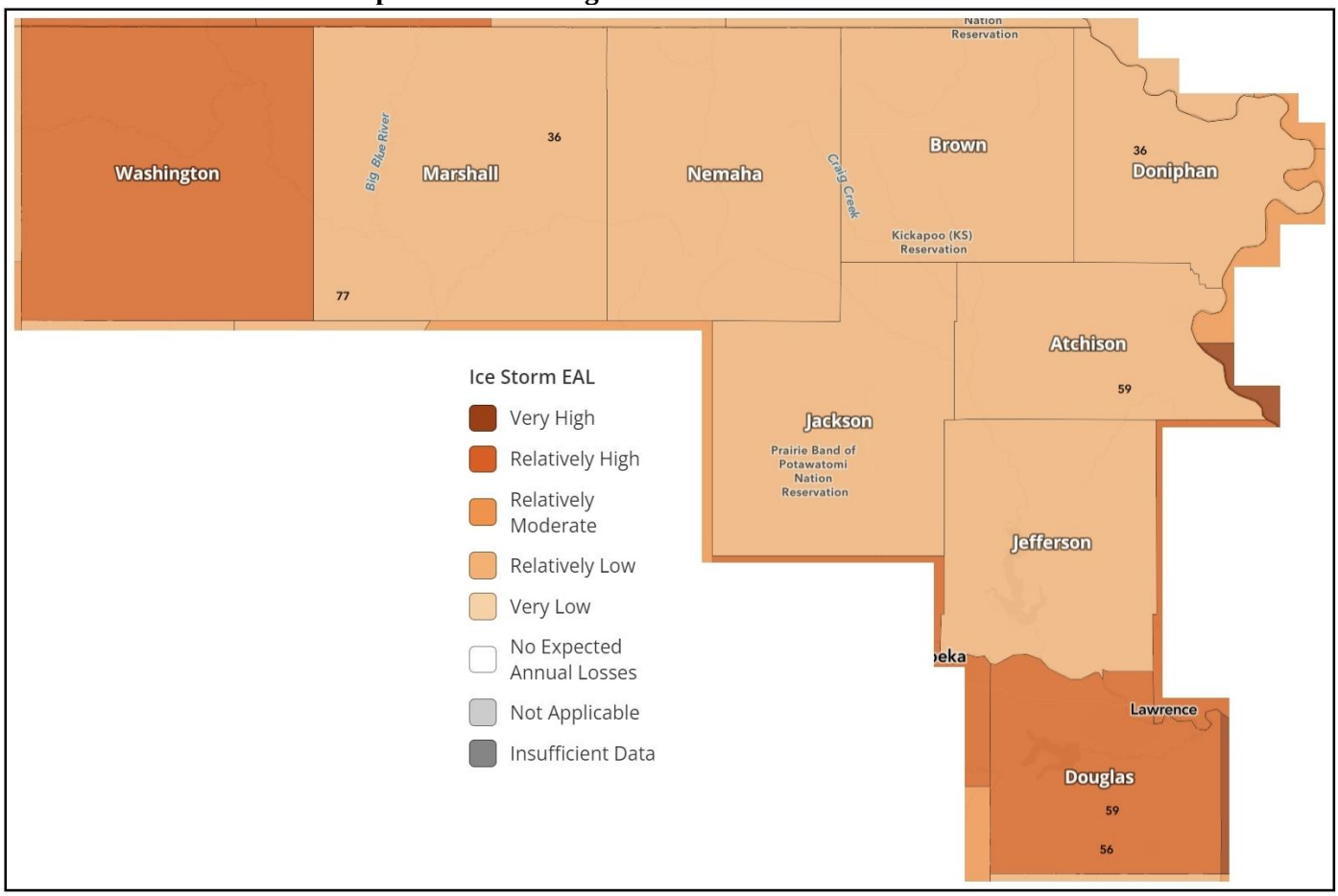
Map 107: Kansas Region K FEMA NRI Winter Weather Risk



Source: FEMA NRI

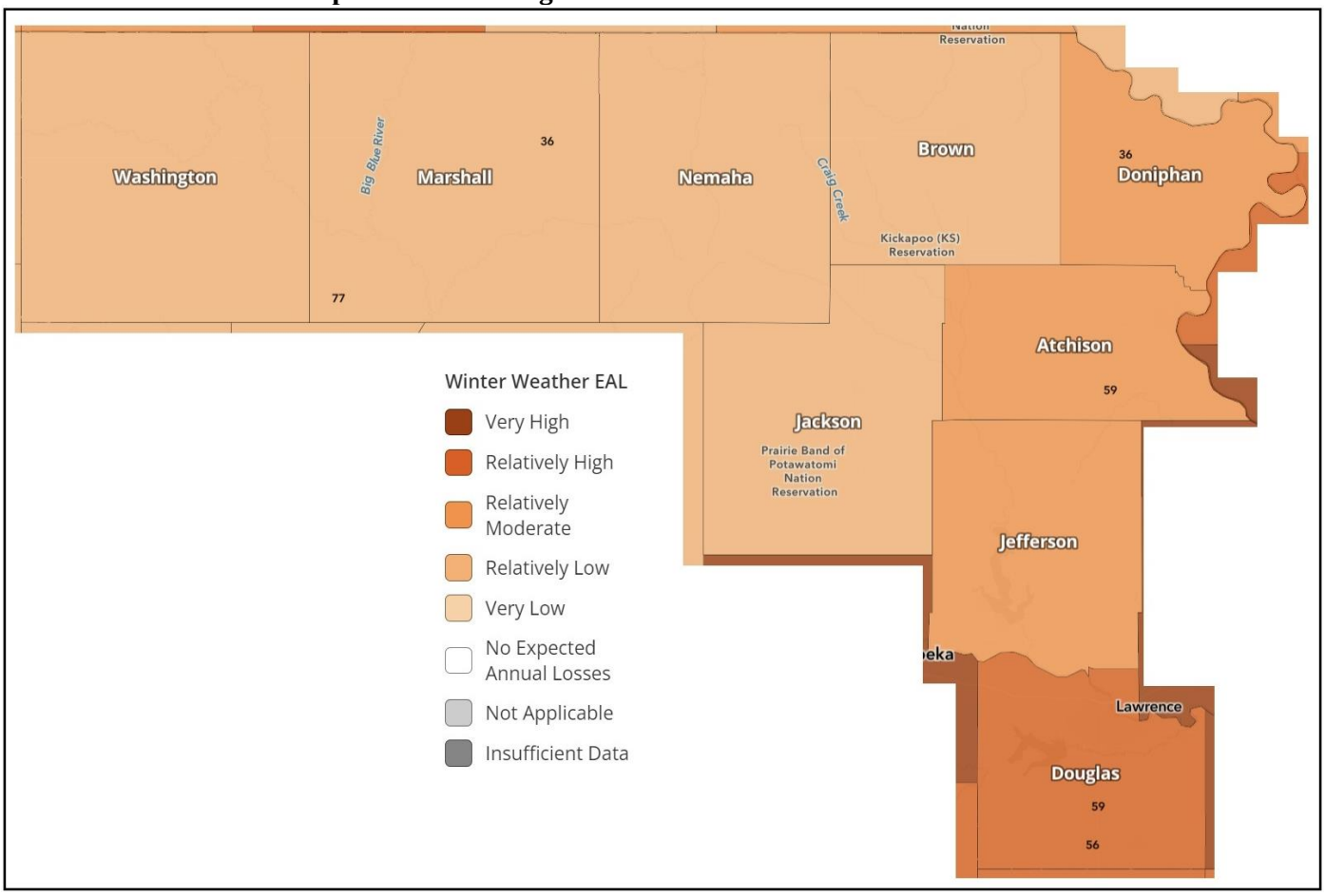
As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for ice storms and winter weather for participating counties within Kansas Region K:

Map 108: Kansas Region K FEMA NRI Ice Storm EAL



Source: FEMA NRI

Map 109: Kansas Region K FEMA NRI Winter Weather EAL



Source: FEMA NRI

The following tables indicates the FEMA NRI and EAL analysis for each participating Kansas Region K county for winter weather events:

Table 103: Kansas Region K FEMA NRI and EAL for Ice Storm by County

County	Risk Index	EAL
Atchison	Relatively Low	Relatively Low
Brown	Relatively Low	Relatively Low
Doniphan	Relatively Low	Relatively Low
Douglas	Relatively High	Relatively High
Jackson	Relatively Low	Relatively Low
Jefferson	Relatively Low	Relatively Low
Marshall	Relatively Low	Relatively Low
Nemaha	Relatively Low	Relatively Low
Washington	Relatively High	Relatively High

Source: FEMA NRI

Table 104: Kansas Region K FEMA NRI and EAL for Winter Weather by County

County	Risk Index	EAL
Atchison	Relatively Moderate	Relatively Moderate
Brown	Relatively Low	Relatively Low
Doniphan	Relatively Low	Relatively Moderate
Douglas	Relatively High	Relatively High
Jackson	Relatively Low	Relatively Low
Jefferson	Relatively Moderate	Relatively Moderate
Marshall	Relatively Low	Relatively Low
Nemaha	Relatively Low	Relatively Low
Washington	Relatively High	Relatively Low

Source: FEMA NRI

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 K residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 105: 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 a 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 snow fall, 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.

Table 105: Severe Winter Weather Consequence Analysis

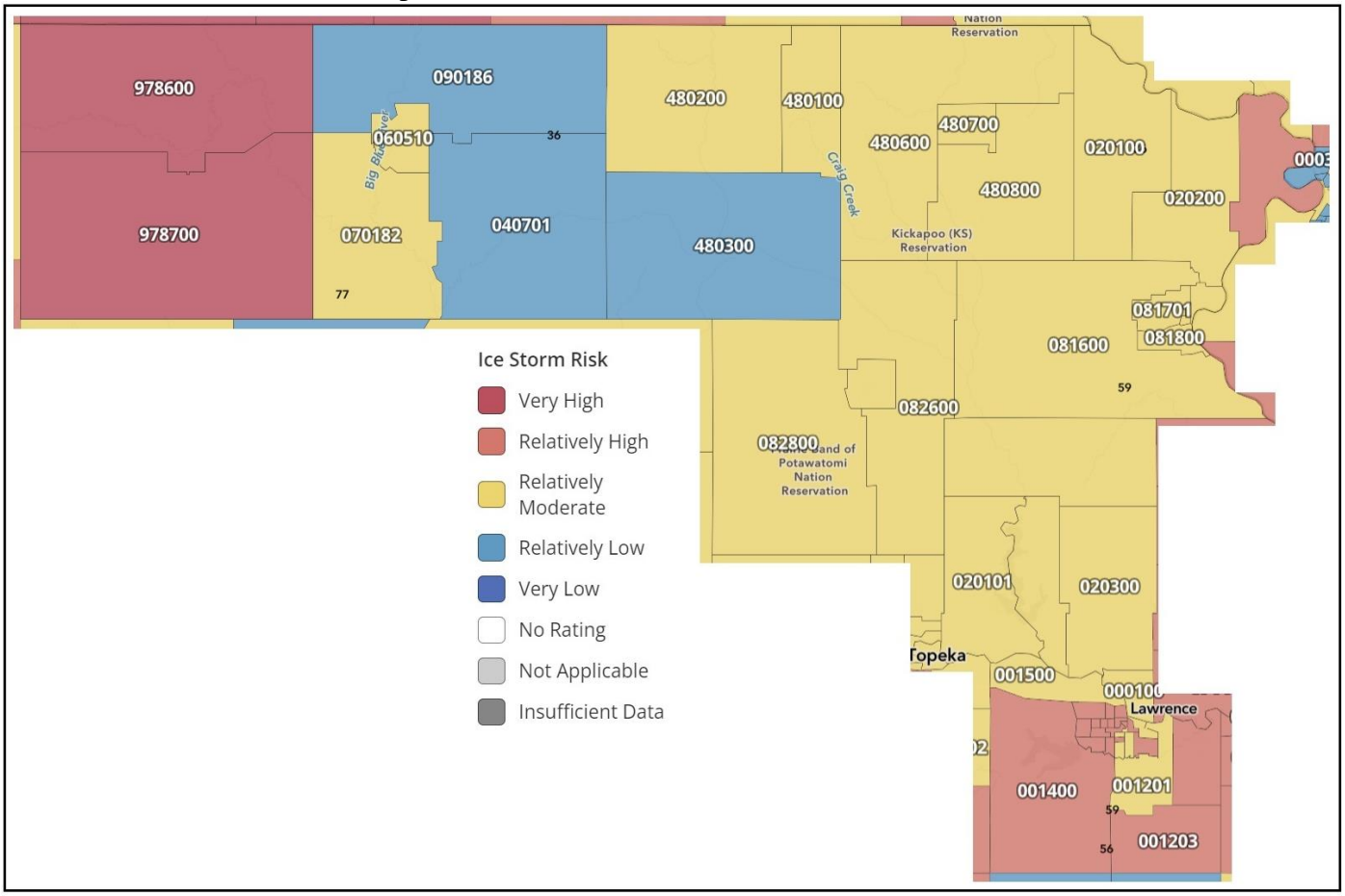
Subject	Potential Impacts
Public Confidence in Governance	The public's confidence in governance is affected by immediate local and state response through direct and effective actions. Efficiency in response and recovery operations is critical in keeping public confidence high.

4.14.8 Jurisdictional Risk and Vulnerability

To help understand the risk and vulnerability to severe winter weather of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

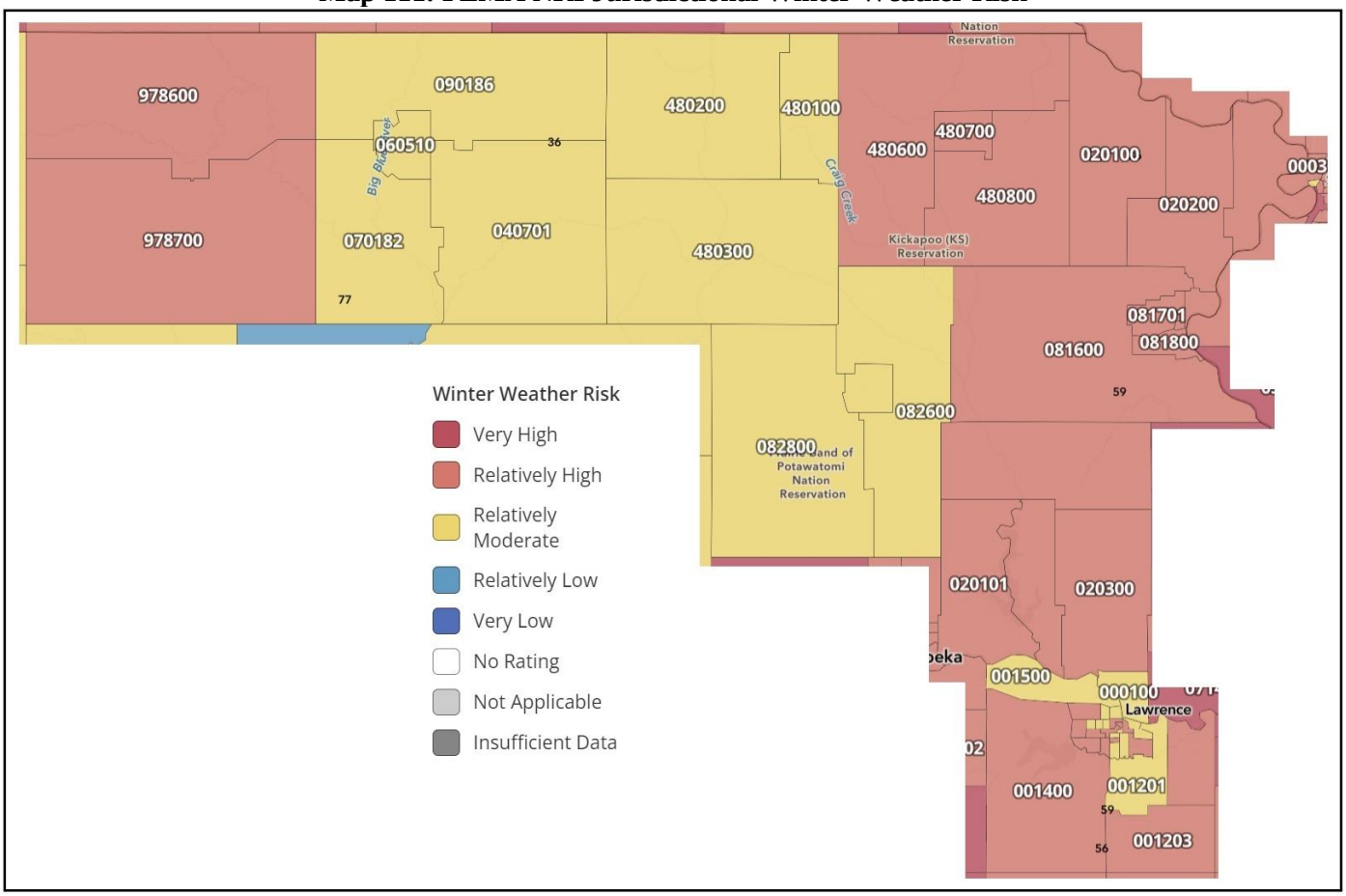
Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from ice storms and winter weather events:

Map 110: FEMA NRI Jurisdictional Ice Storm Risk



Source: FEMA NRI

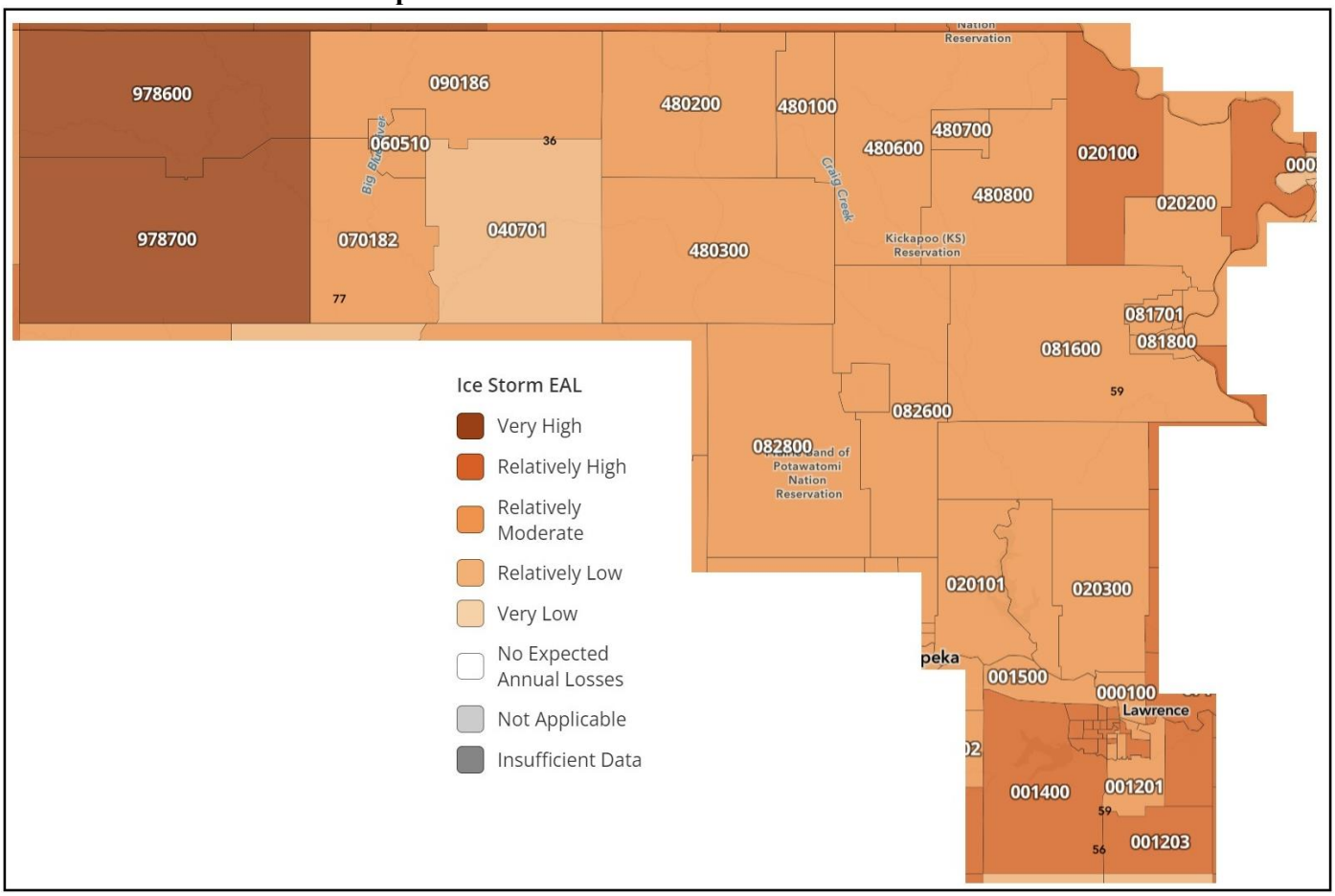
Map 111: FEMA NRI Jurisdictional Winter Weather Risk



Source: FEMA NRI

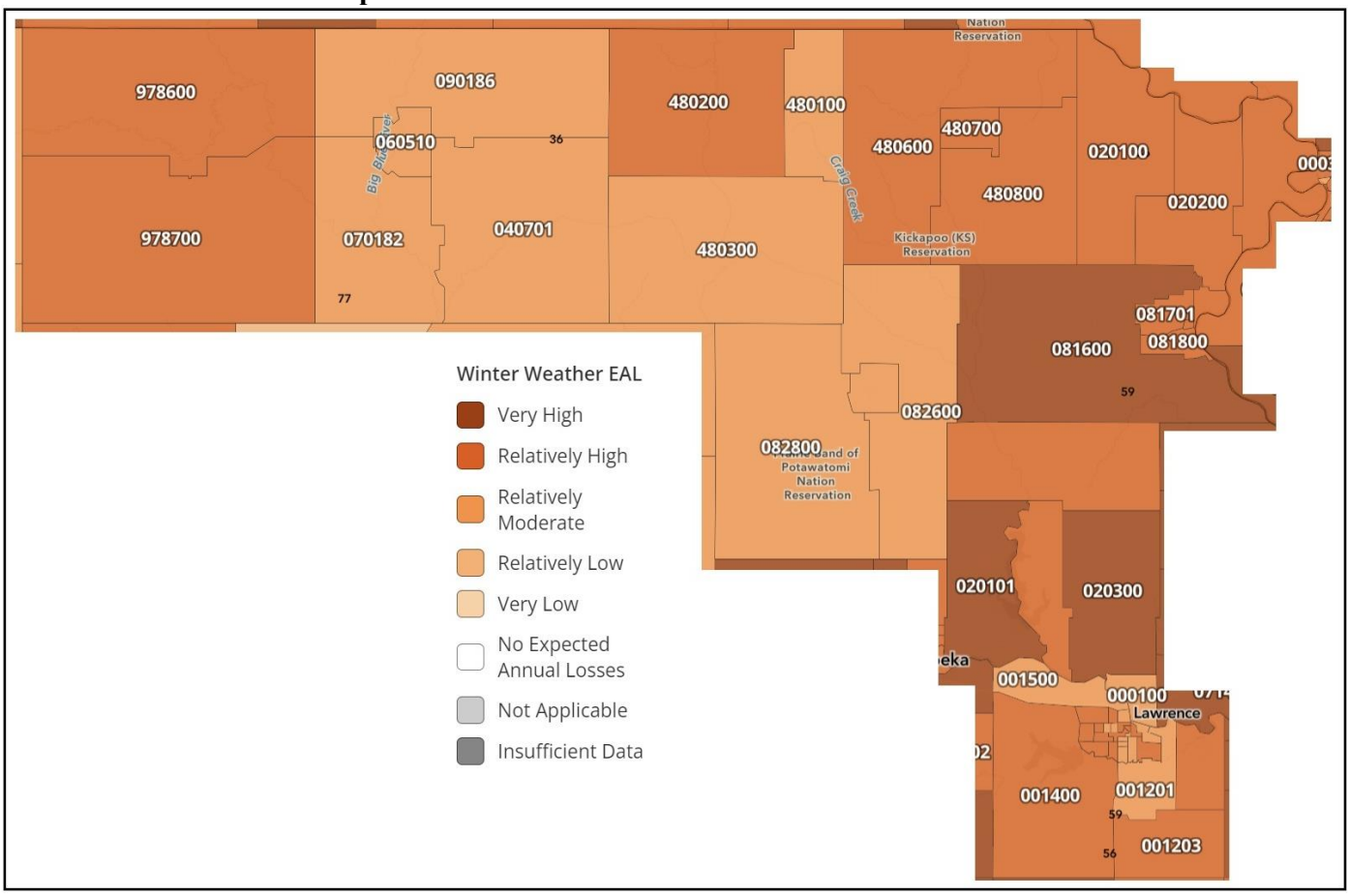
As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for ice storms and winter weather for participating jurisdictions (as indicated by census tract) within Kansas Region K:

Map 112: FEMA NRI Jurisdictional Ice Storm EAL



Source: FEMA NRI

Map 113: FEMA NRI Jurisdictional Winter Weather EAL



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

Low temperatures associated with Severe Winter Weathers can pose various risks to local facilities and assets, and may include:

- Power Grid Strain: Cold temperatures can lead to increased demand for electricity. This can strain the power grid, potentially causing power outages, which can disrupt government operations, including the functioning of critical infrastructure such as hospitals, emergency services, and data centers.
- Infrastructure Stress: Buildings and infrastructure can suffer damage due to low temperatures. Extreme cold can freeze and damage pipes, leading to water leaks and flooding when temperatures rise.
- Transportation Disruptions: Extreme cold can result in icy road conditions and reduce visibility, making travel hazardous.

Socially vulnerable populations may be more vulnerable to the effects of Severe Winter Weather events due to extremes in age or the inability to heat and cool homes during an event. Please see MAP #for details on vulnerable populations.

4.15 Tornadoes

4.15.1 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 cloud or, in rare cases, the base of a cumulus cloud. 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 cloud 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.

4.15.2 – Location and Extent

Tornadoes can strike anywhere in Kansas Region K. 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.

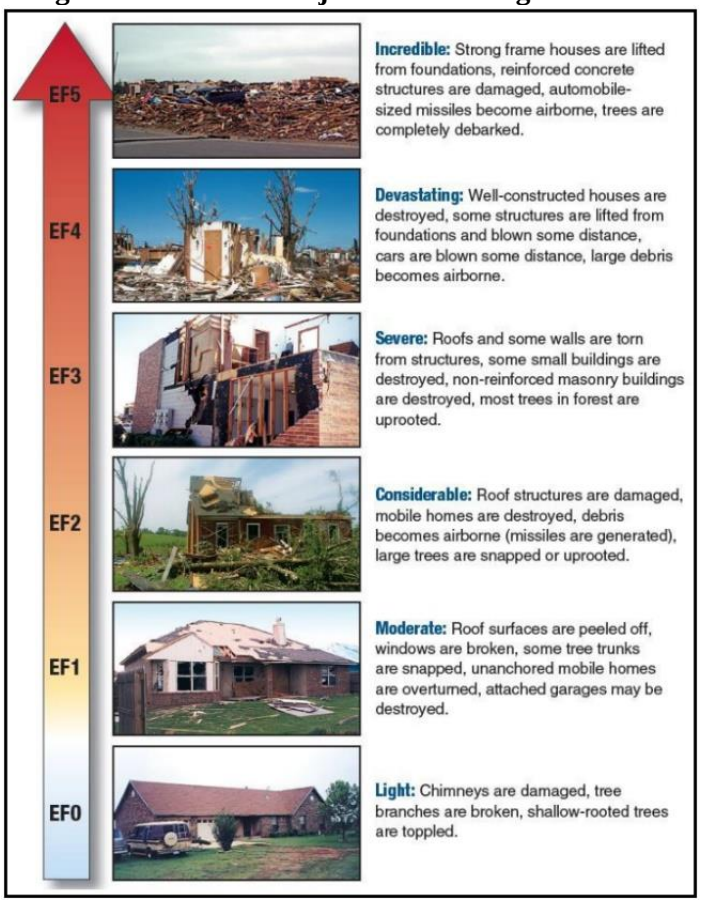
Since 2007, the United States uses the Enhanced Fujita (EF) Scale to categorize tornadoes. The scale correlates wind speed values per F level and provides a rubric for estimating damage.

Table 106: 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

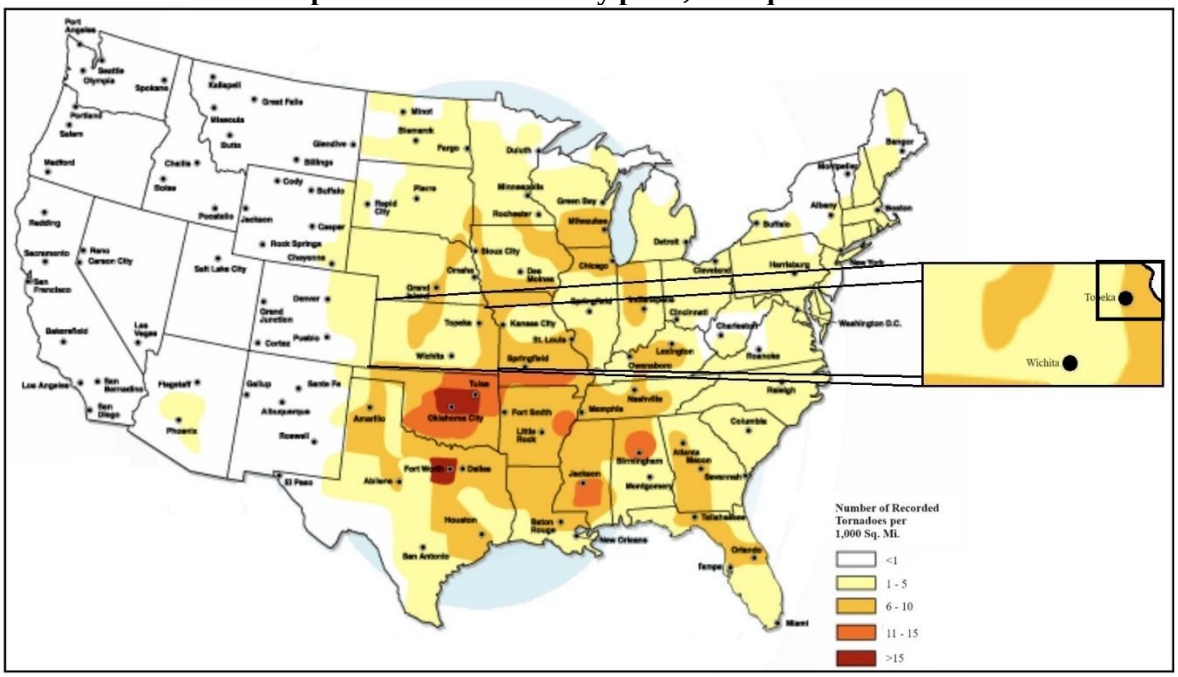
Figure 3: Enhanced Fujita Scale Damage Estimates



Source: FEMA

The following map, from FEMA, indicates tornado activity per 1,000 square miles for Kansas Region K.

Map 114: Tornado Activity per 1,000 Square Miles



Source: FEMA

4.15.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. The following table details Presidential Disaster Declarations related to tornadoes over the past 10 years:

Table 107: Kansas Region K Presidentially Declared Disasters

Designation	Declaration Date	Incident Type	Counties	Assistance
DR-4499-KS	8/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Atchison, Doniphan, Jefferson, Marshall, Nemaha, Washington	$51,157,548
DR-4230-KS	7/20/2015	Severe Storms, Tornadoes, Straight-Line Winds and Flooding	Atchison, Brown, Doniphan, Jackson, Jefferson, Marshall, Nemaha, Washington	$11,018,053

The following table presents NCEI identified tornado events and the resulting damage totals in Kansas Region K from 2014 to 2023.

Table 108: Kansas Region K Tornado Events

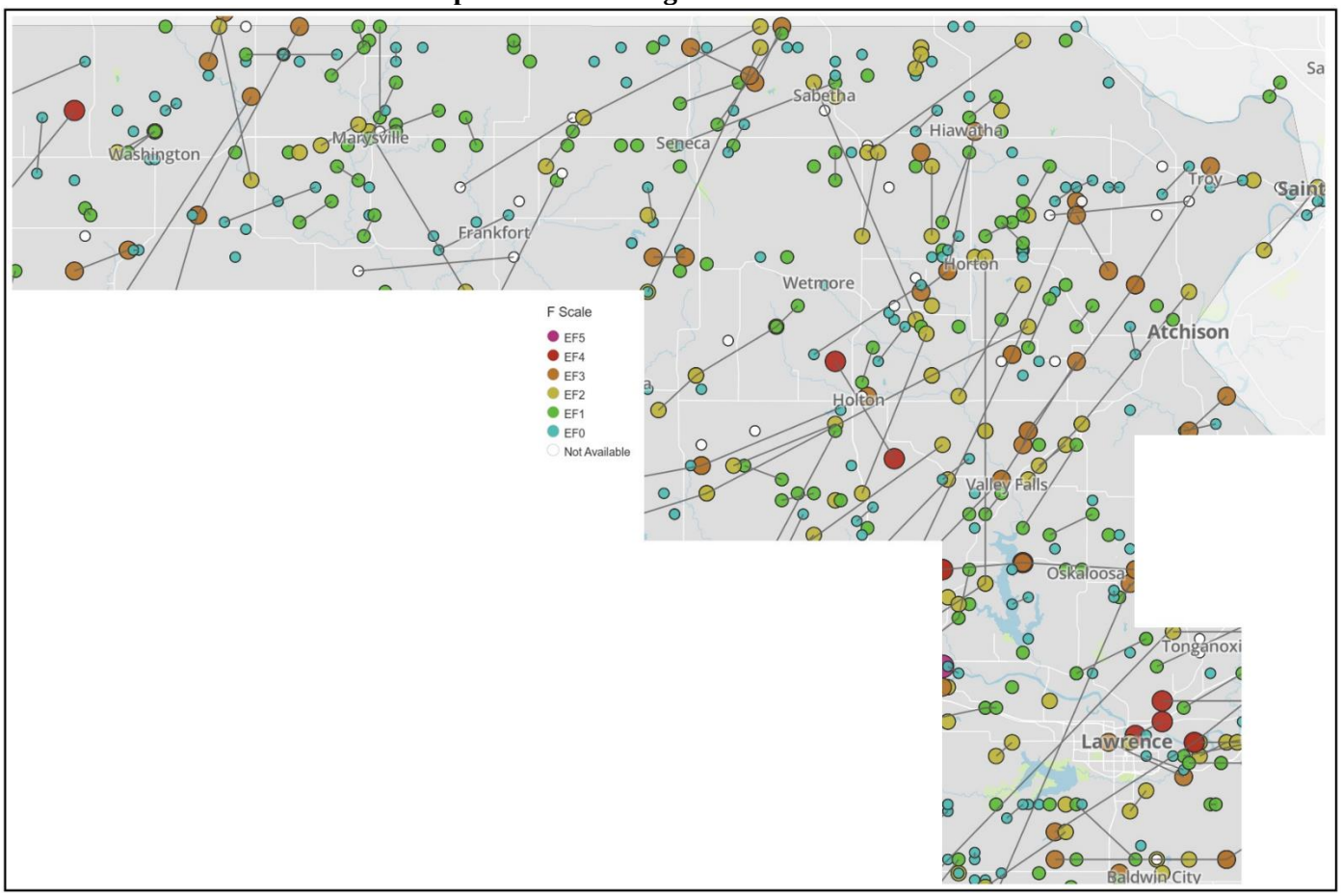
County	Number of Events	Property Damage	Deaths or Injuries	Highest Rated Tornados	Number of EF2 or Greater Tornadoes
Atchison	1	$0	0	EF1	0
Brown	4	$0	0	EF2	1
Doniphan	1	$0	0	EF0	0
Douglas	3	$0	16	EF3	2
Jackson	4	$0	0	EF2	1
Jefferson	2	$0	0	EF1	0
Marshall	7	$0	0	EF2	1
Nemaha	4	$0	2	EF3	3
Washington	4	$0	0	EF1	0

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.

NOAA has been tracking tornadoes in Kansas for decades. This following map, which contains data from 1950 to 2023, pinpoints where tornadoes have touched down and traces its path.

Map 115: Kansas Region K Tornado Paths



Source: NOAA

4.15.4 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 K 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 K.

Table 109: Kansas Region K 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
Atchison	1	<1	0	0	$0	$0
Brown	4	<1	0	0	$0	$0
Doniphan	1	<1	0	0	$0	$0
Douglas	3	<1	16	2	$0	$0
Jackson	4	<1	0	0	$0	$0
Jefferson	2	<1	0	0	$0	$0
Marshall	7	1	0	0	$0	$0
Nemaha	4	<1	2	0	$0	$0
Washington	4	<1	0	0	$0	$0

Source: NCEI

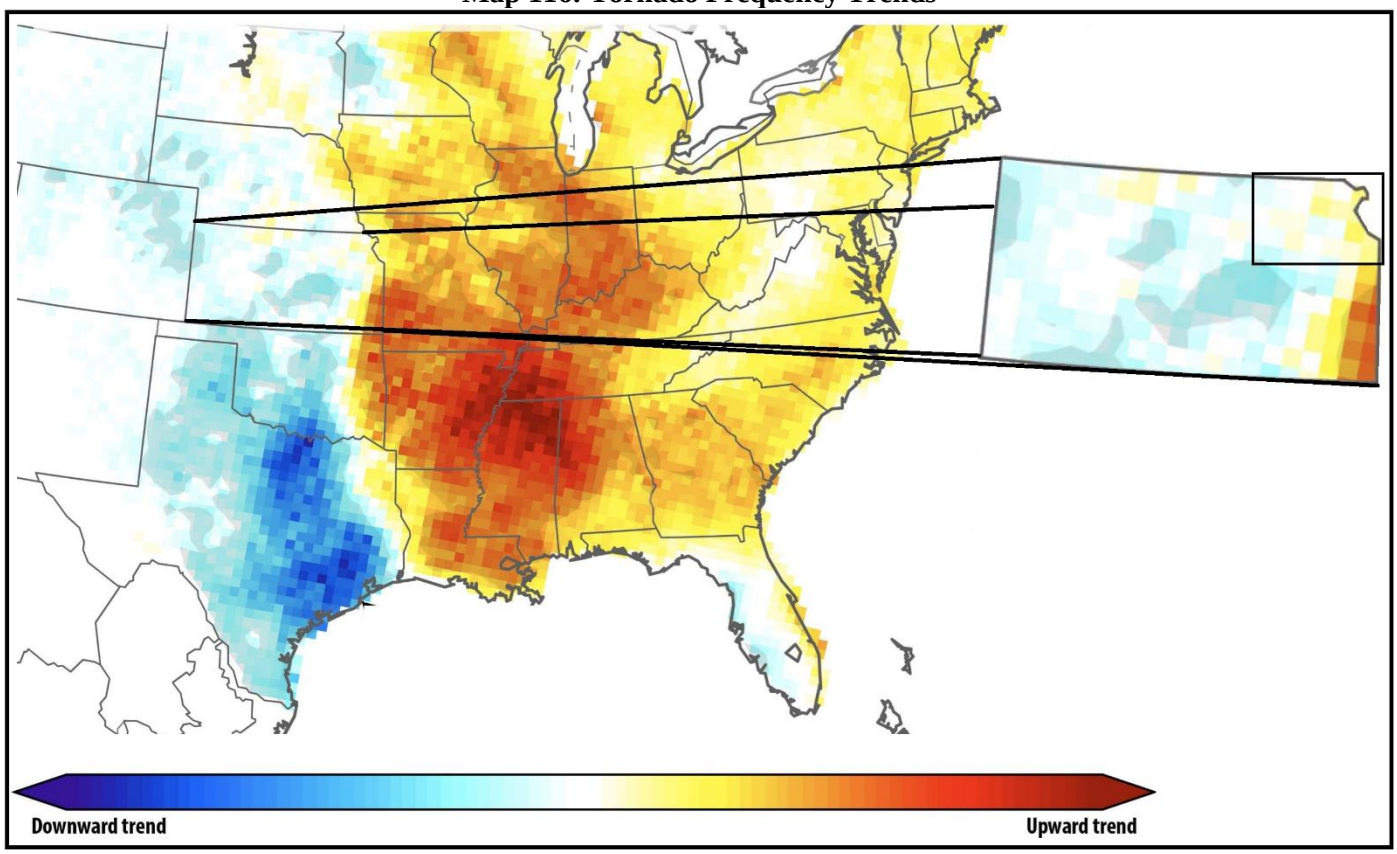
4.15.5 Projected Changes in Location, Intensity, Frequency, and Duration

The relationship between climate change and tornadoes is complex, and while there is ongoing research in this area, it is not fully understood. 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. Climate change can influence some of these factors, which may, in turn, affect tornado activity. Tornadoes typically form when warm, moist air near the surface clashes with cooler, drier air aloft, creating atmospheric instability. Climate change can alter temperature and humidity patterns, potentially affecting the conditions necessary for tornado formation. Additionally, climate change can lead to more extreme and variable weather patterns. While this may not necessarily increase the overall number of tornadoes, it could lead to more unpredictable and severe tornado events when they do occur. Some research suggests that climate change could lead to longer tornado seasons, with tornadoes occurring outside of their typical timeframes.

It's important to emphasize that while there may be some links between climate change and tornado activity, these links are not fully understood, and it is difficult to attribute specific tornado events to climate change. Tornadoes are influenced by a complex interplay of factors, and any changes in tornado patterns may vary by region.

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 K may see a decreasing number of tornados.

Map 116: Tornado Frequency Trends



Source: Northern Illinois University

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 K may see a decreasing number of tornados.

4.15.6 Vulnerability and Impact

While difficult to quantify, as the impacts of future tornadoes will be determined by many factors, the impacts of a tornado may be widespread. An EF4 or EF5 tornado has the potential to level facilities. A lesser magnitude tornado can rip off roofs and walls while launching airborne missiles born from debris. In the absence of proper shelter tornadoes can cause serious injury. In general, if potentially exposed persons take shelter in a solid, well-constructed shelter protection from tornadoes would be provided. However, old or poorly constructed facilities may be more prone to damage, potentially increasing the impact on economically disadvantaged populations.

Tornadoes can have significant and often devastating impacts on people and communities. These impacts can vary depending on the tornado's intensity, size, path, and may include:

- Injuries and Fatalities: Tornadoes can cause a wide range of injuries, from minor cuts and bruises to severe trauma. Flying debris, structural damage, and the force of the wind can lead to injuries or fatalities among those directly affected by the tornado. Prompt medical care is essential to treat injuries effectively and save lives.
- Mental Health Effects: Tornadoes can be extremely traumatic events, causing psychological distress and emotional trauma for survivors. Individuals may experience post-traumatic stress disorder, anxiety, depression, and grief. Mental health support and counseling services are often needed to help survivors cope with these emotional challenges.
- Displacement: People may need to evacuate their homes or be temporarily displaced due to tornado damage, requiring emergency shelter and support.

After a tornado, health risks may arise due to contaminated water, debris, and unsafe conditions. Inadequate sanitation and exposure to harsh weather can exacerbate health issues. Children, the elderly, and individuals with disabilities or limited mobility may face additional challenges in evacuating to safety and accessing needed resources.

Tornadoes can have significant and wide-ranging impacts on facilities. These risks can have significant economic consequences, and can include:

- Power Outages: Tornadoes can cause power outages by bringing down power lines and damaging electrical infrastructure. Critical facilities such as hospitals, emergency response centers, and data centers may rely on backup generators to maintain essential operations during outages.
- Communication Disruptions: Tornadoes can damage communication infrastructure, including cell towers, telephone lines, and data centers, leading to disruptions in phone and internet services. This can hinder emergency communication and coordination, affecting critical response efforts.
- Transportation Disruptions: Debris and fAtchison trees on roads, runways, and railways can disrupt transportation networks, leading to travel delays, accidents, and closures. Critical facilities may face challenges in receiving essential supplies and personnel during and after the storm.
- Water and Wastewater System Interruptions: Tornadoes can damage water treatment plants, pumping stations, and water distribution systems. This can lead to a loss of clean drinking water and sanitation services, posing health risks to affected communities. Damage to wastewater treatment facilities and sewer systems can result in the release of untreated sewage, creating environmental hazards and public health concerns.
- Fuel Supply Disruptions: Tornadoes disrupt fuel supply chains, leading to shortages of gasoline, diesel, and heating oil. Critical facilities may rely on fuel for backup power generators and heating systems.
- Property Damage: Tornadoes can result in property damage, up to and including complete structural collapse.

Tornadoes can have significant impacts on the environment. These impacts are often destructive and can affect ecosystems, wildlife, natural resources, and even the local climate. Tornadoes can disrupt natural habitats by uprooting or damaging trees, destroying vegetation, and altering landscapes. This can affect the habitat suitability for wildlife and plant species. Tornadoes can harm or displace wildlife, resulting in injury or death. Nesting birds, burrowing mammals, and other species can be particularly vulnerable. As tornadoes can transport plant seeds, insects, and other organisms over long distances, in the aftermath it is possible for invasive species to take root in new areas, especially those impacted by wildfires caused by downed utility lines.

Tornadoes can have significant and wide-ranging impacts on local operations. When tornadoes strike, they can disrupt government functions and strain resources. Some of the key impacts of tornadoes on operations may include:

- Emergency Response and Public Safety: Tornadoes can lead to a surge in emergency calls for services related to accidents, injuries, and damaged structures. State agencies involved in emergency response must mobilize additional resources to handle these demands.
- Emergency Operations Centers: Tornadoes often require the activation of state Emergency Operations Centers to coordinate emergency response efforts. These centers serve as hubs for communication, resource allocation, and decision-making during disasters.
- Emergency Shelters and Services: Tornadoes may require the establishment of emergency shelters and services for displaced residents. State agencies must coordinate the setup and operation of these facilities.
- Education Disruption: Tornadoes can lead to school closures, affecting state-run education programs and services. State agencies may need to coordinate with school districts to ensure the safety of students.
- Budgetary Impact: The costs associated with emergency response efforts, disaster recovery, and infrastructure repair can strain state budgets.
- Resource Allocation: State governments must allocate resources, including personnel, equipment, and stockpiled supplies, to support emergency response and recovery efforts.
- Communication Challenges: Tornadoes can disrupt communication networks, hindering the ability of government agencies to communicate internally and with the public. This can impact emergency notifications and coordination efforts.
- Administrative and Governance Challenges: State government offices and facilities may experience closures or reduced staffing during tornadoes, affecting administrative functions, regulatory processes, and public services.
- Economic Impact: The destruction of infrastructure and businesses can have significant economic consequences for the state and local communities, including job losses and reduced economic activity.
- Public Services: Tornadoes can disrupt the delivery of public services, including transportation, utilities, and social services, affecting the well-being of residents.

Potentially Vulnerable Community Lifelines

Tornadoes can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that tornadic conditions place on infrastructure, resources, and operational processes. 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 110: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)

Category	Loss
Loss of Electrical Service	$199
Loss of Communications/Information Technology Services	$141

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

The high winds associated with smaller tornadoes can cause trees, branches, and other debris to fall onto power lines. Higher intensity tornadoes can destroy transmission infrastructure. This can result in downed power lines, structural damage to utility poles, and disruptions in electrical service.

In order to reduce plan duplication, mapping concerning electrical generation plants, high-capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Maps 49 and 50, page 94, and Chart 15, page 95.

Communications systems within Kansas Region K may have an increased vulnerability to tornado events. Of particular concern are 911 and dispatch systems. All jurisdictions are served by a 911 and dispatch system, providing direct dispatching for:

- Law Enforcement

- Emergency Medical Services
- Fire

Tornadoes can disrupt this vital communications system, affecting reliability and functionality. Some of the key vulnerabilities include:

- Structural Damage to Communication Towers: Tornadoes can cause direct structural damage to communication towers, including cellular, television, radio, and microwave towers. Toppled or damaged towers can disrupt signal transmission and reception.
- Power Outages: Tornadoes often cause power outages by damaging electrical infrastructure. Communication facilities, including cell towers and data centers, rely on a stable power supply. Power failures can lead to service interruptions.
- Fiber Optic Cable Damage: Flying debris and tornado-related destruction can damage underground and aerial fiber optic cables. Severed cables can disrupt data transmission and internet connectivity.
- Microwave Link Disruptions: Tornadoes can interfere with microwave communication links, which are used for long-distance communication. High winds and debris can disrupt the line of sight needed for these links.
- Equipment Damage: Communication equipment located outdoors, such as antennas, dishes, and amplifiers, can be damaged by tornadoes, affecting the performance of communication systems.
- Loss of Communication Nodes: Tornadoes can damage communication nodes, exchanges, and network switching centers. Loss of these critical components can lead to widespread service disruptions.
- Cellular Network Congestion: In the aftermath of a tornado, there is often an increased demand for cellular communication as individuals seek information and contact loved ones. This surge in demand can lead to network congestion and reduced service quality.

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 111: 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, aircards, 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

Tornadoes can significantly impact emergency response infrastructure, creating challenges for first responders and organizations involved in managing and mitigating the effects of severe weather events. Tornadoes can impact emergency response through:

- Transportation Disruptions: Debris 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.
- Road Closures: Tornadoes can lead to the closure of roads due to debris accumulation and hazardous conditions. This can limit access for emergency vehicles and impede the evacuation of residents.
- 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 downing power lines can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.
- 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.
- Logistical Challenges: Tornadoes may create logistical challenges for the transportation of supplies, equipment, and personnel to affected areas, hindering the overall effectiveness of emergency response efforts.
- 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.

In order to reduce plan duplication, mapping concerning fire and police locations may be found in MAP #.

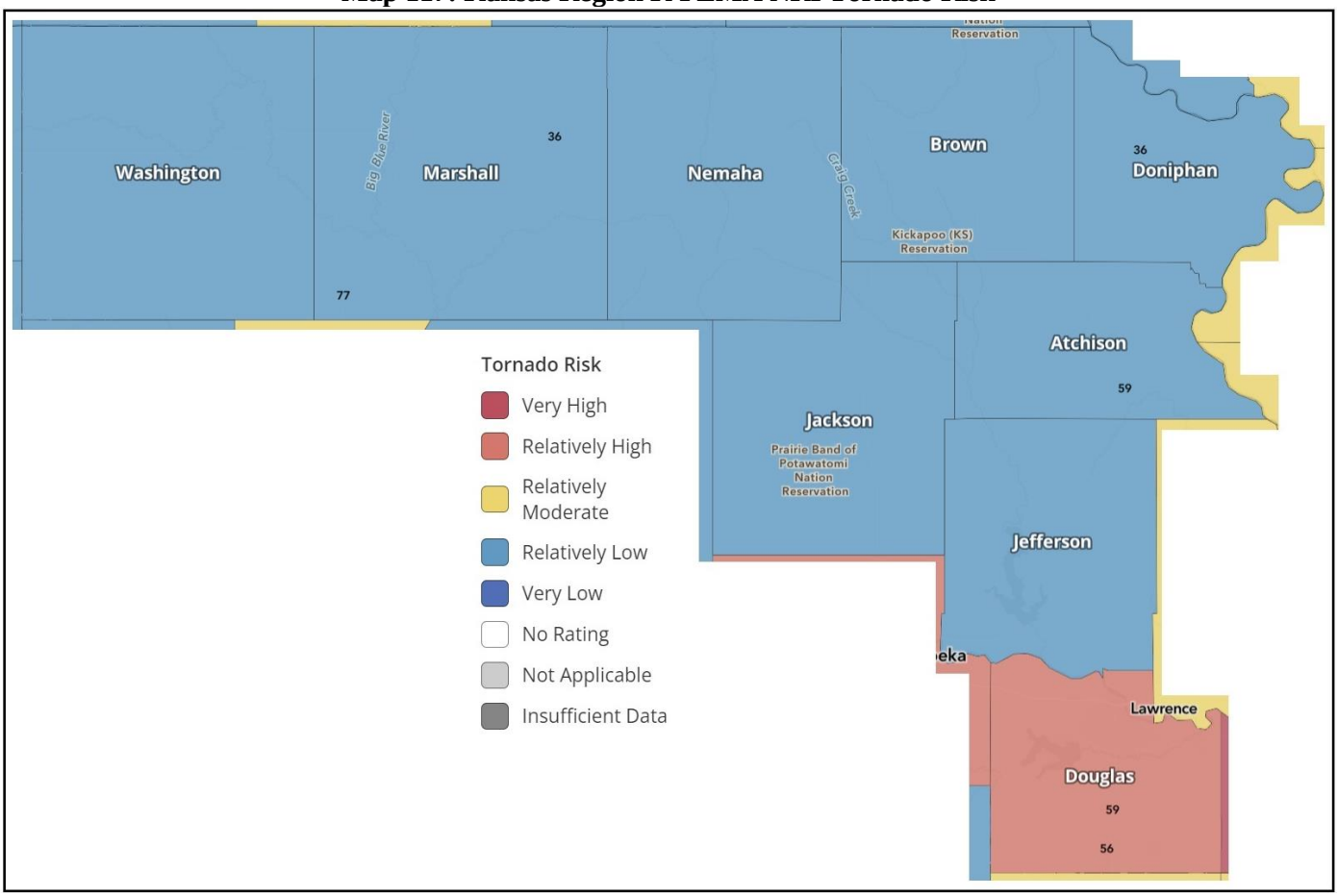
Hospitals and other smaller medical facilities may see an increase in tornado related injuries during an event, but it is considered unlikely that this increase will impact or overload capacity. Hospital capacity mapping may be found in Map 51, page 95.

Tornadoes can increase the demand for emergency shelters, particularly in cases of widespread power outages. Setting up and managing these shelters can strain resources.

FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from tornadoes:

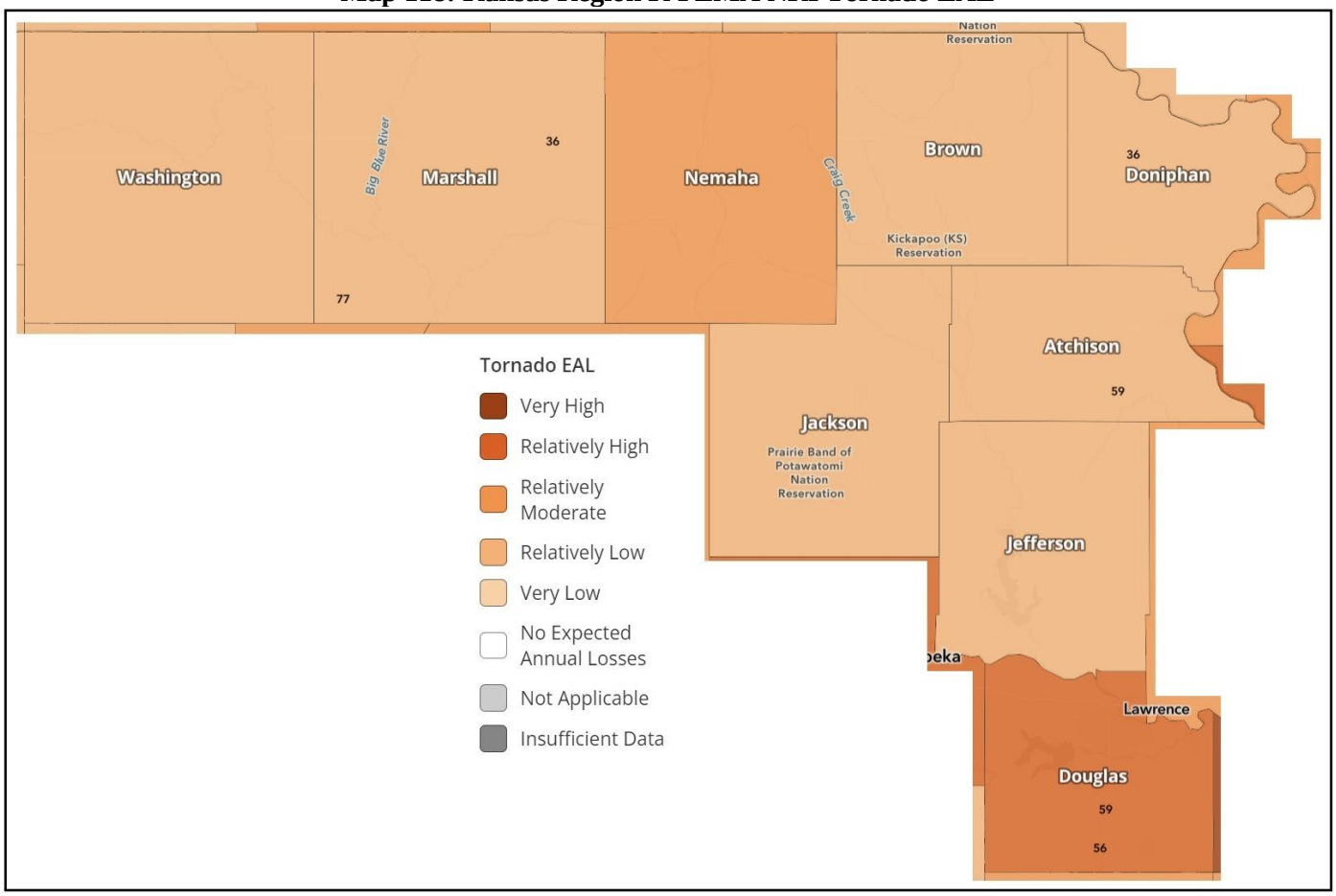
Map 117: Kansas Region K FEMA NRI Tornado Risk



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for tornadoes for participating counties within Kansas Region K:

Map 118: Kansas Region K FEMA NRI Tornado EAL



Source: FEMA NRI

The following table indicates the FEMA NRI and EAL analysis for each participating Kansas Region K county for tornado:

Table 112: Kansas Region K FEMA NRI and EAL for Tornadoes by County

County	Risk Index	EAL
Atchison	Relatively Low	Relatively Low
Brown	Relatively Low	Relatively Low
Doniphan	Relatively Low	Relatively Low
Douglas	Relatively High	Relatively High
Jackson	Relatively Low	Relatively Low
Jefferson	Relatively Low	Relatively Low
Marshall	Relatively Low	Relatively Low
Nemaha	Relatively Low	Relatively Moderate
Washington	Relatively Low	Relatively Low

Source: FEMA NRI

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 K residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 113: Tornado Consequence Analysis

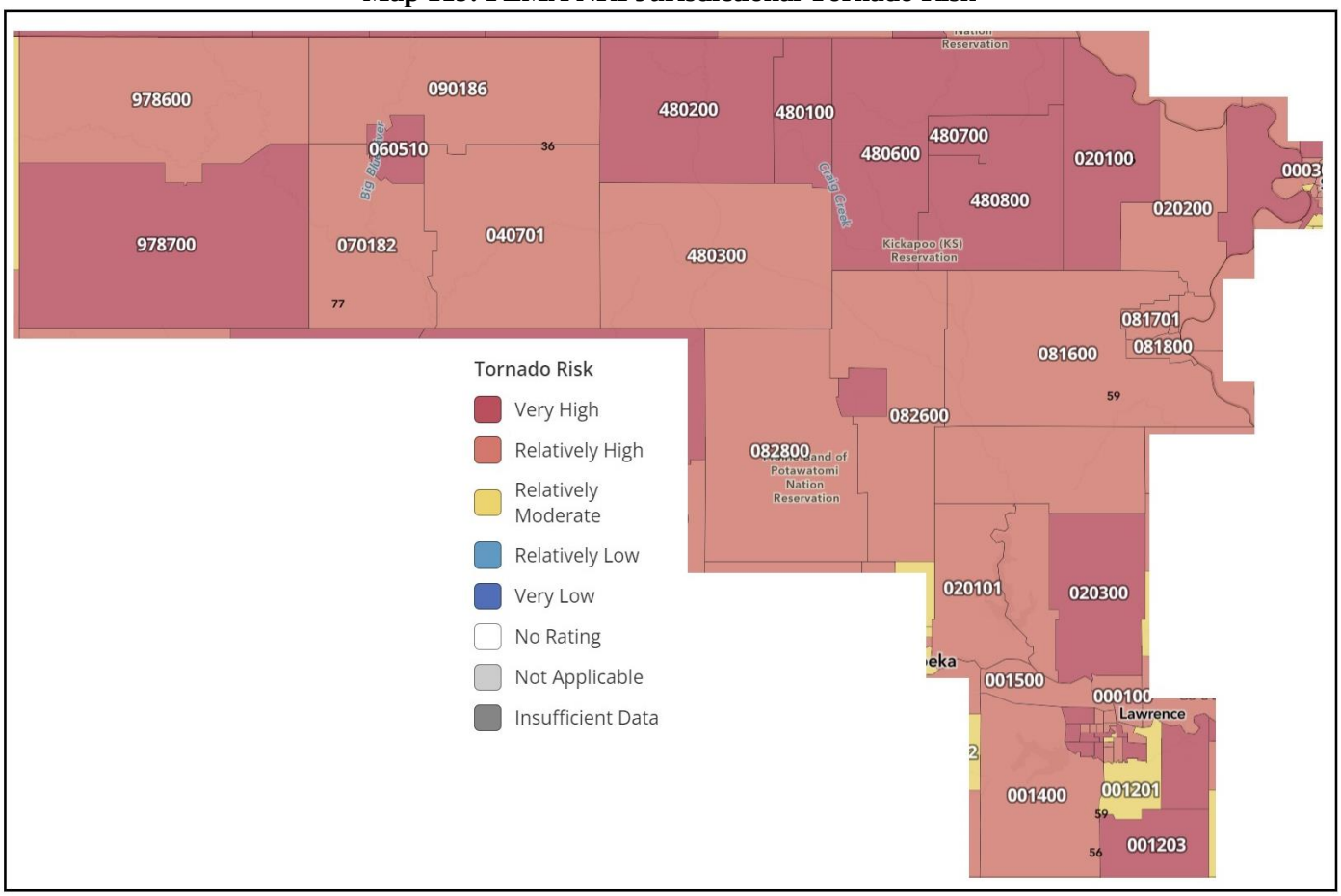
Subject	Potential Impacts
Impact on the Public	High wind speeds can cause automobiles to become airborne, destroy homes, and turn debris into projectiles, which may cause injury or death. An increased demand for medical treatment for traumatic injuries caused by the tornado would be anticipated. Significant 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 continuity of operations due to power or communications infrastructure impacts. If the activation of alternate facilities was required, travel may be difficult due to reduced transportation options, power outages, or damage to facilities.
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.
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.

4.15.7 Jurisdictional Risk and Vulnerability

To help understand the risk and vulnerability to tornadoes of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from tornadoes:

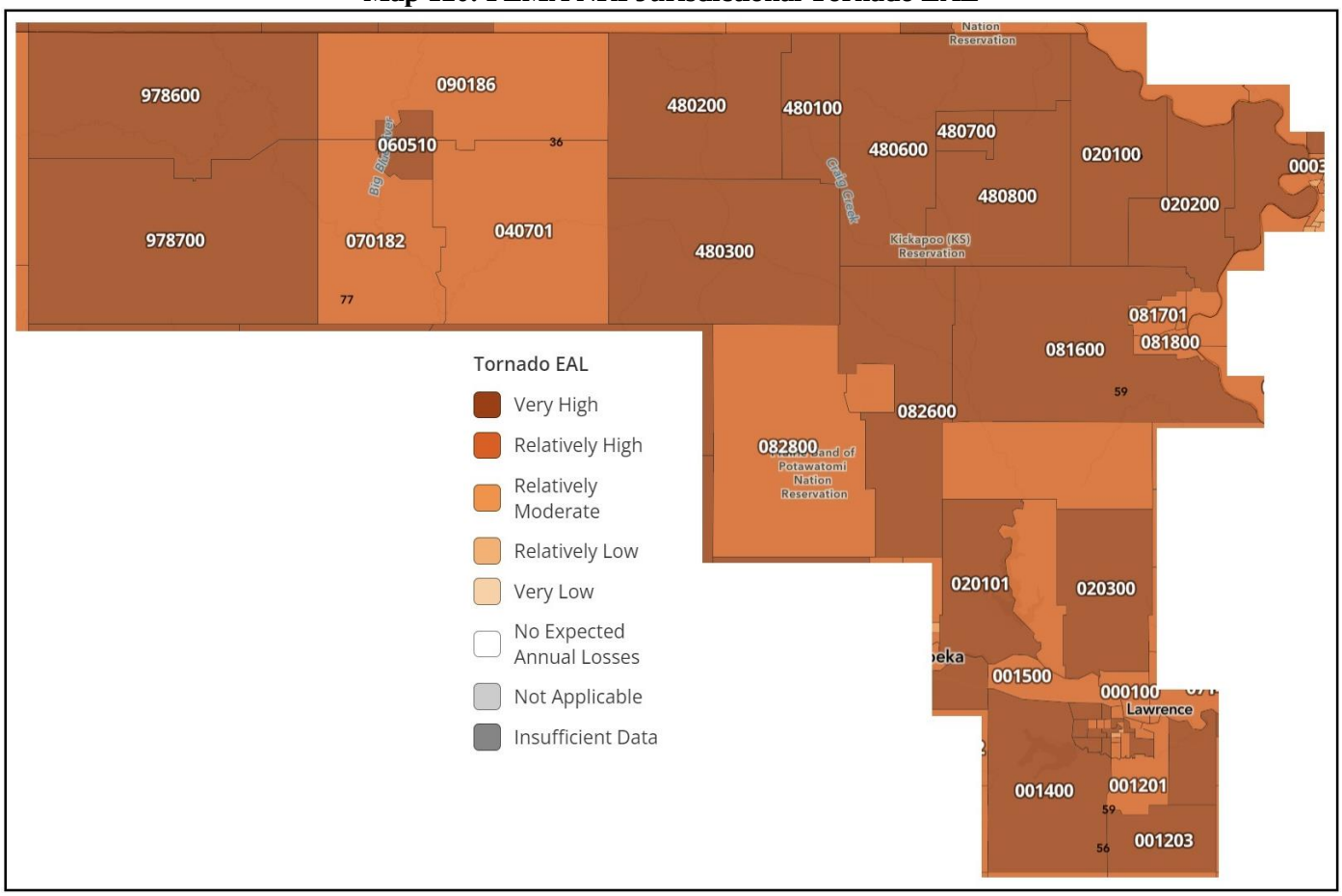
Map 119: FEMA NRI Jurisdictional Tornado Risk



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for tornadoes for participating jurisdictions (as indicated by census tract) within Kansas Region K:

Map 120: FEMA NRI Jurisdictional Tornado EAL



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential vulnerability on a jurisdictional basis.

Kansas Region K citizens living in mobile homes may have an increased vulnerability to tornadoes. Please see MAP # for more details on the percentage of mobile homes for each participating county.

4.16 Wildfires

4.16.1 Hazard Description

The NWS 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, by human accident, and on rare occasions by human action. Population de-concentration in the U.S. has resulted in rapid development in the outlying fringe of metropolitan 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 three classifications of wildfires:

- **Surface Fire:** Burning which may spread rapidly and ignite leaf litter, 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. 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.

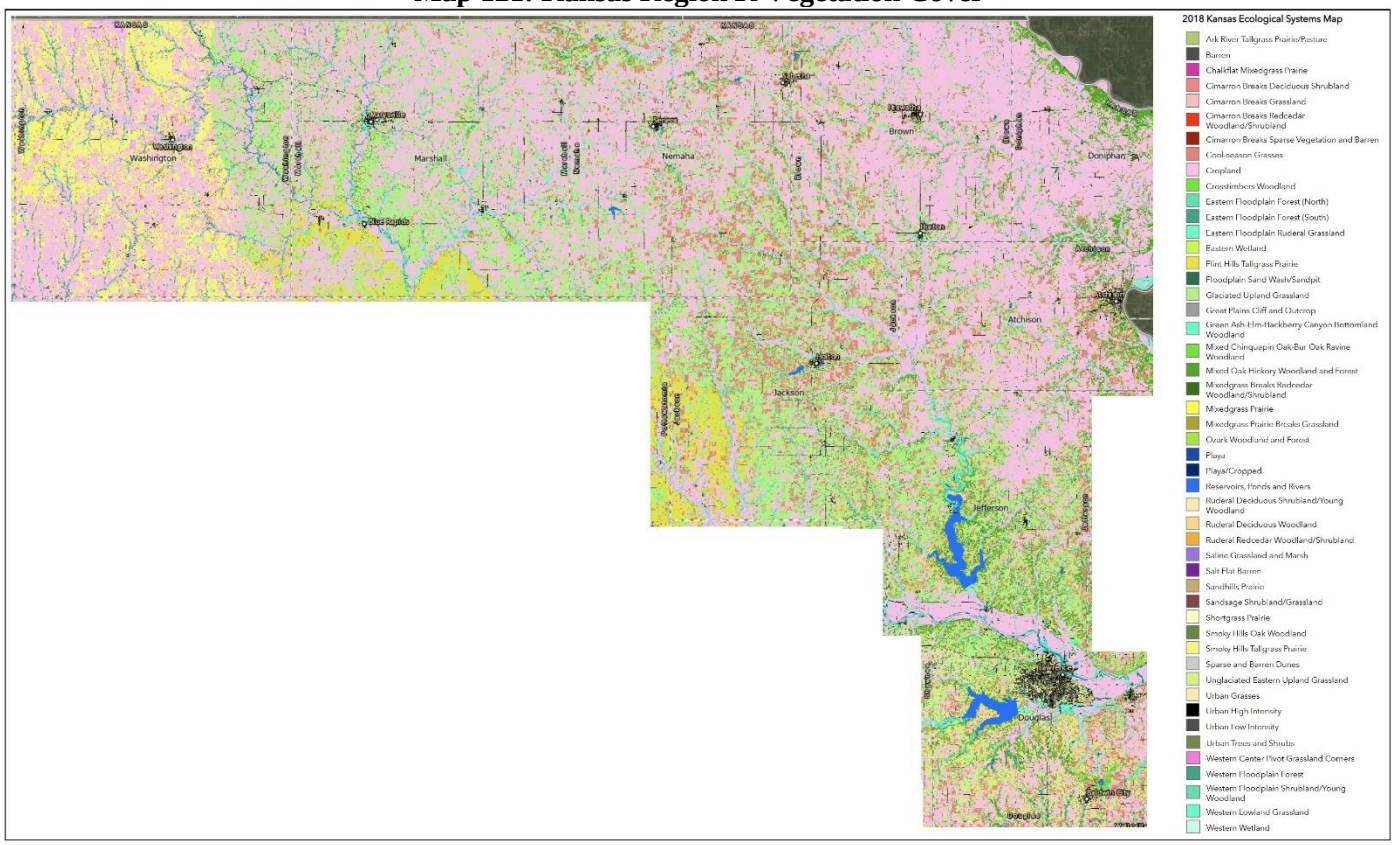
4.16.2 – Location and Extent

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 K, with areas of grasses, forest, and crops more likely to experience a wild or brush fire:

Map 121: Kansas Region K Vegetation Cover

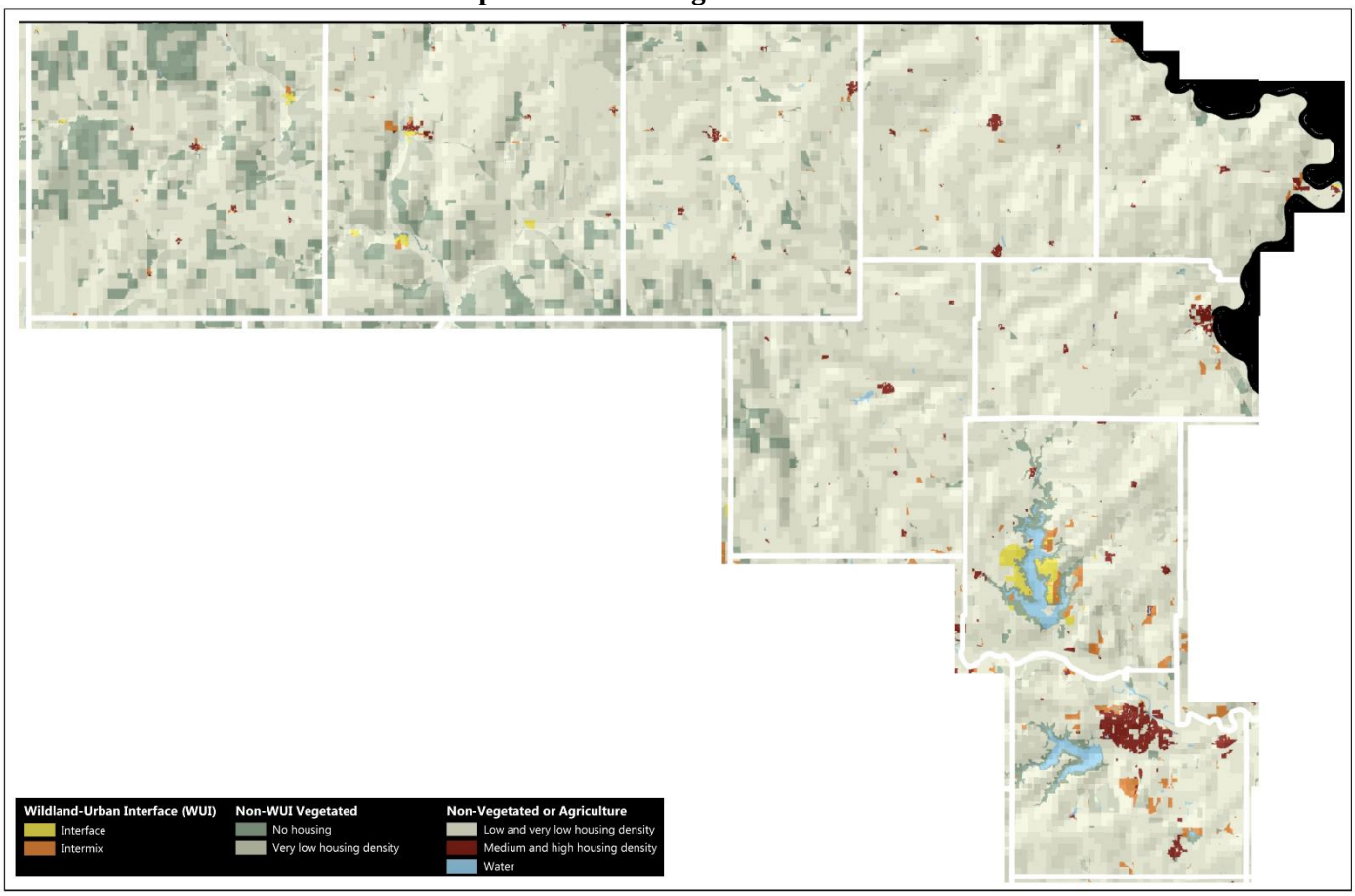


Source: University of Kansas

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 K:

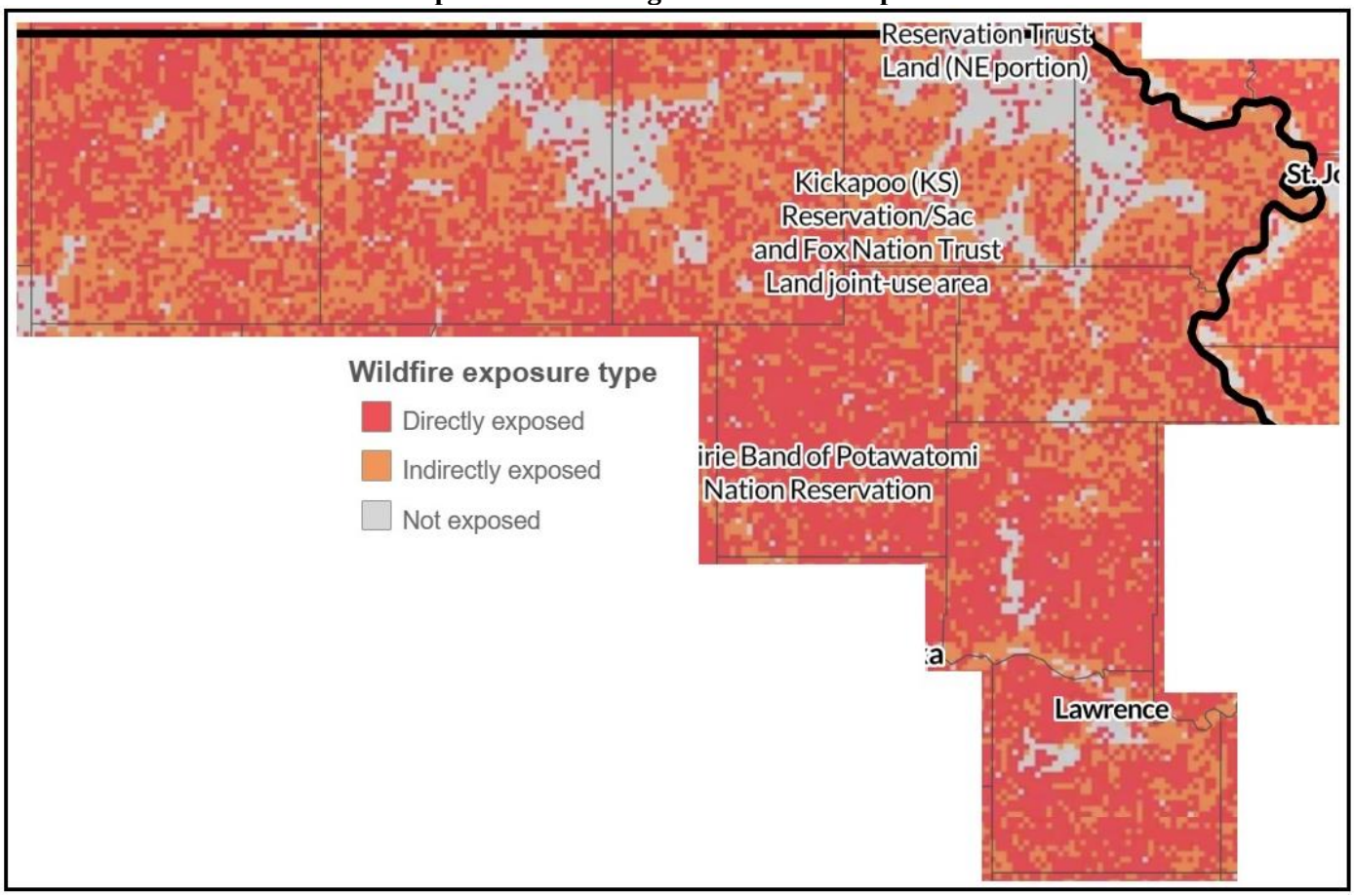
Map 122: Kansas Region K WUI Areas



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 K:

Map 123: Kansas Region K 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 114: 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.

Table 114: National Fire Danger Rating System

Rating	Description
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 the Southern Wildfire Risk Assessment Summary Report specially 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 115: 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.
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 is 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

4.16.3 Previous Occurrences

FEMA can approve declarations for fire management assistance when the Administrator determines that a fire or fire complex on public or private forest land or grassland threatens such destruction as would constitute a major disaster. There have been no fire management declarations for Kansas Region K.

Table 116: Kansas Region K FMAG Declarations

Declaration Date	Designation	Incident Name	Counties	Public Assistance	Emergency Work
4/12/2023	FM-5463-KS	Kansas Haddam Fire	Washington	0	0

Source: FEMA

Wildfires are a frequent occurrence in both Kansas and Kansas Region K 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 K wildfires that burned over 500 acres, caused damages greater than $100,000, and/or caused injuries or fatalities:

Table 117: Kansas Region K Wildfires 2018- 2023

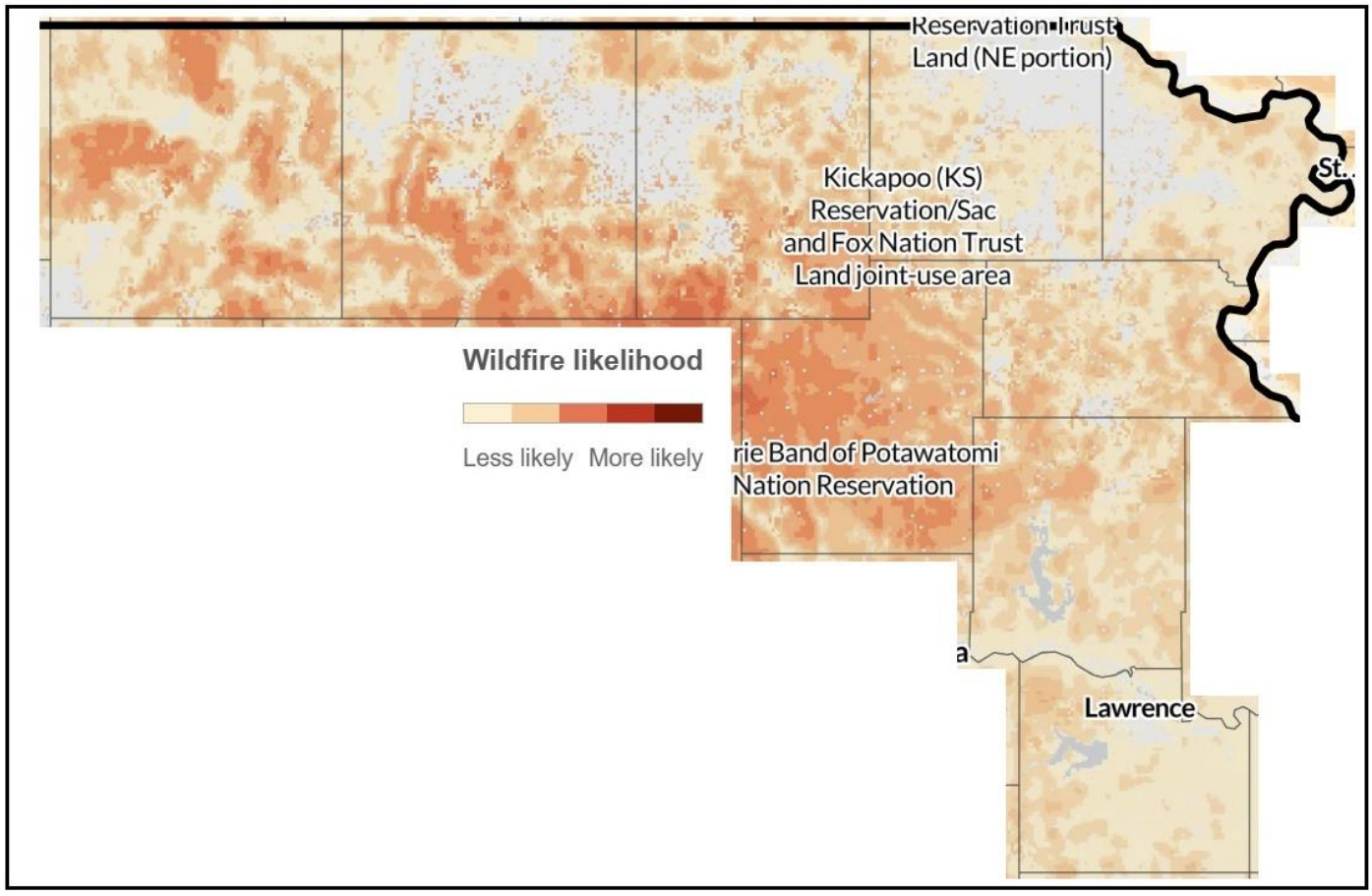
Date	Jurisdiction	County	Buildings Burned	Total Dollar Loss	Injuries and Fatalities	Acres Burned
03/21/2021	Atchison	Atchison	0	$160,000	0	60
11/27/2021	Blue Rapids	Marshall	0	$300,000	0	Not reported
04/06/2022	Blue Rapids	Marshall	0	$0	0	2,000
03/10/2021	Marysville	Marshall	0	$0	0	947
03/10/2021	Marysville	Marshall	0	$0	0	947
03/12/2021	Marysville	Marshall	0	$0	0	947

Source: KDEM

4.16.4 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. 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 K. The following map indicates the likelihood of a wildfire within the Kanas Region K:

Map 124: Kansas Region K Wildfire Likelihood



Source: NOAA's Wildfire Risk to Communities

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

Climate change can result in a significant increase in the likelihood and severity of wildfires. The occurrence of more frequent and longer lasting droughts due to climate change 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.

Climate change may impact the frequency and magnitude of wildfires 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 changing to control and extinguish.
- Longer Fire Seasons: Climate change is 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 associated with climate change reduce soil moisture levels and the availability of water sources. Dry conditions increase the susceptibility of vegetation to ignition.
- Vegetation Changes: Climate change 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: Climate change 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).

Compounding the potential future impact of this hazard, local discussions indicate that a continued staffing shortage and aging equipment in the majority of regional fire departments may hamper future response activities.

4.16.5 Vulnerability and Impact

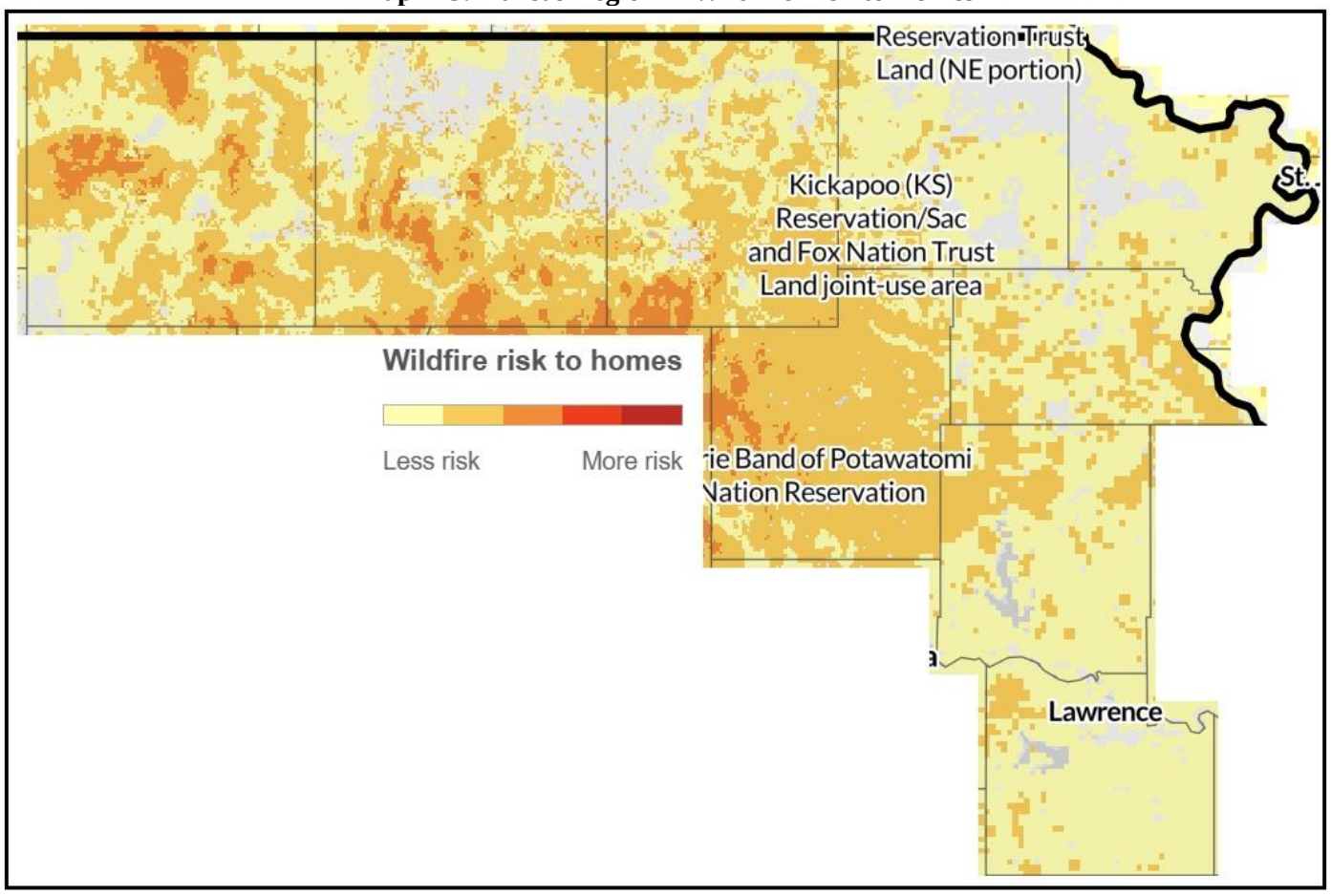
Wildfires can have significant and often devastating impacts on people and communities. These impacts can vary depending on the wildfire's intensity, size, path, and the preparedness of the affected area, and may include.

- Injuries and Fatalities: Wildfires can lead to injuries and fatalities among residents, firefighters, and emergency responders due to burns, smoke inhalation, and accidents during firefighting efforts.
- Evacuations and Displacement: Wildfire damage can force people to leave their homes, leading to temporary or even long-term displacement. Some may require emergency shelter and assistance from relief organizations.
- Property Loss: Wildfires can cause extensive property damage to homes, businesses, and vehicles.
- Health Risks: Smoke from wildfires can contain harmful pollutants, including fine particulate matter and toxic gases, which can lead to respiratory problems and exacerbate pre-existing health conditions. Vulnerable populations, such as children and the elderly, are at higher risk.
- Mental Health Impact: The trauma and stress associated with experiencing a wildfire, evacuations, property loss, and the challenges of recovery can have a significant impact on mental health, including anxiety, depression, and post-traumatic stress disorder.
- Emergency Response Challenges: Wildfires can strain emergency response resources, including firefighting personnel, equipment, and medical facilities. First responders may be faced with a large number of emergency calls.
- Economic Costs: Wildfires result in economic costs, including property damage and insurance claims.

Additionally, wildfires can devastate communities and homes. They can cause various types of property damage, including burning structures, charring of exterior surfaces, and damage to roofs, walls, and windows. The heat generated by wildfires can weaken or melt building materials. In extreme cases, wildfires can completely destroy homes, reducing them to ashes and rubble. Homes that may not have been directly impacted by the fire may also be affected. Wildfires can damage utility infrastructure, including power lines and gas pipelines, leading to utility interruptions that affect homes and residents. They can damage or contaminate water supply infrastructure, affecting access to clean water for drinking, firefighting, and sanitation.

The following map, from NOAA's Wildfire Risk to Communities, indicates the wildfire risk to homes in Kansas Region K:

Map 125: Kansas Region K Wildfire Risk to Homes



Source: NOAA's Wildfire Risk to Communities

Wildfires can have wide-ranging impacts on critical infrastructure. They can damage electrical transmission and distribution lines, transformers, and power substations. This can lead to widespread power outages, affecting homes, businesses, hospitals, and emergency response capabilities. Damage cell towers, telephone lines, and other communication infrastructure can hinder emergency response efforts, as well as the ability of individuals to call for help or communicate with loved ones. Wildfires can block roads with debris, making them impassable and hindering emergency response and evacuation efforts.

Hospitals and healthcare facilities may be damaged or rendered inoperable during wildfires, affecting the ability to provide medical care during a disaster. Fire stations, police stations, and emergency operation centers may be damaged or destroyed, impacting the ability of first responders to coordinate disaster response efforts. Damage to emergency shelters and housing facilities can disrupt services which are critical for providing temporary shelter to displaced individuals and families.

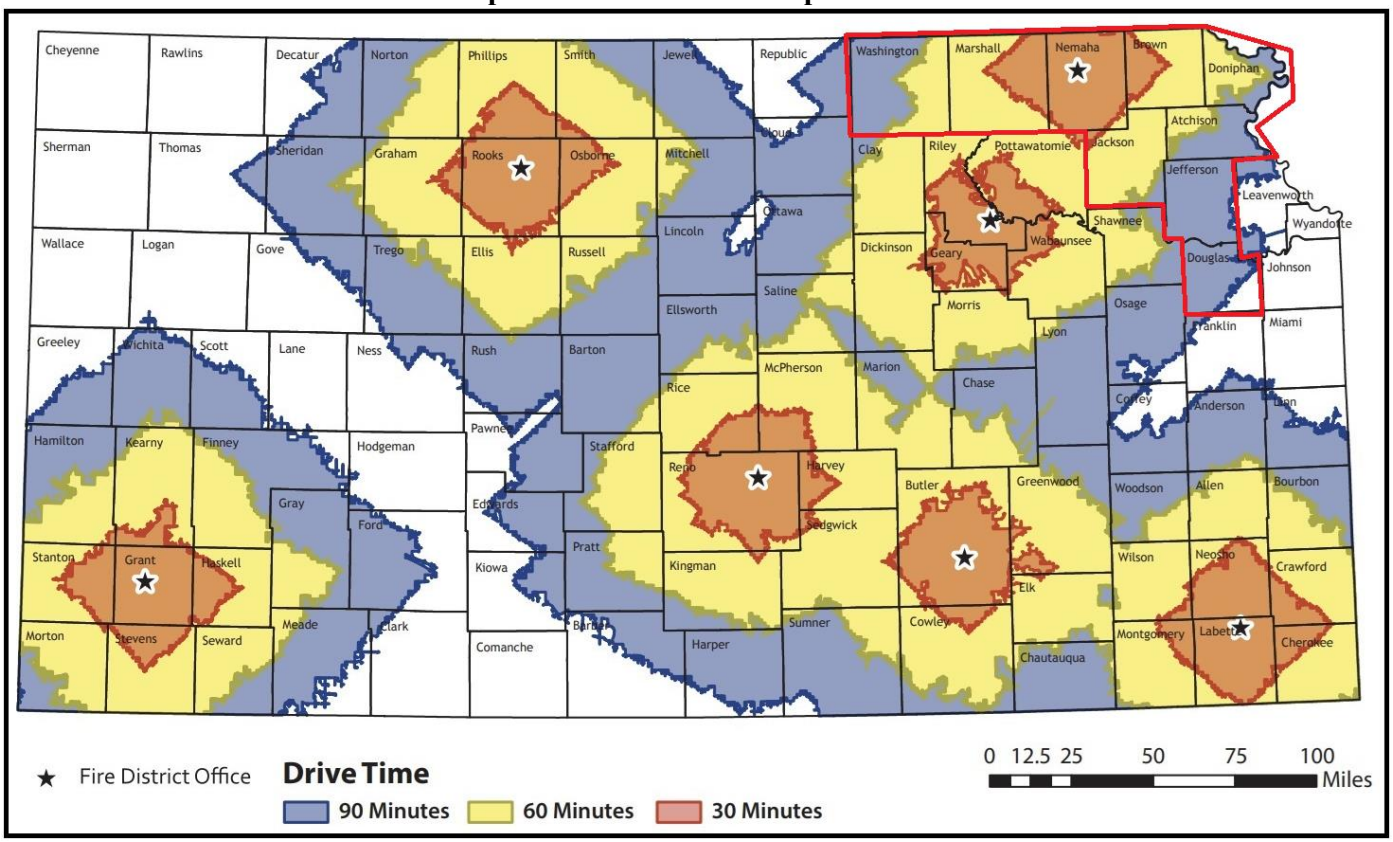
Wildfires can have varied impacts on the environment. These impacts are often destructive and can affect ecosystems, wildlife, natural resources, and even the local climate. They can destroy natural habitats, including forests, grasslands, wetlands, and shrublands. This can have devastating effects on wildlife species that depend on these ecosystems for shelter, food, and breeding. Wildfires can harm or displace wildlife, resulting in injury or death. They can force wildlife to flee their habitats, leading to displacement and potential conflicts with human populations. Animals may struggle to find suitable new habitats. Post-fire landscapes are often vulnerable to colonization by invasive plant species, which can outcompete native vegetation and disrupt ecosystem functions.

Wildfires can have significant impacts on government operations, which may include:

- Emergency Response and Public Safety: Wildfires can lead to a surge in emergency calls for services related to accidents, injuries, and damaged structures. Agencies involved in emergency response must mobilize additional resources to handle these demands.
- Emergency Operations Centers: Wildfire often require the activation of Emergency Operations Centers to coordinate emergency response efforts. These centers serve as hubs for communication, resource allocation, and decision-making during disasters.
- Infrastructure Damage: Wildfires can cause extensive damage to critical infrastructure, including roads, bridges, schools, government buildings, and utility facilities. This damage can disrupt government operations and hinder transportation and communication.
- Budgetary Impact: The costs associated with emergency response efforts, disaster recovery, and infrastructure repair can strain budgets.
- Resource Allocation: Local governments must allocate resources, including personnel, equipment, and stockpiled supplies, to support emergency response and recovery efforts.
- Communication Challenges: Wildfires can disrupt communication networks, hindering the ability of government agencies to communicate internally and with the public. This can impact emergency notifications and coordination efforts.
- Economic Impact: The destruction of infrastructure and businesses can have significant economic consequences for local communities, including job losses and reduced economic activity.
- Public Services: Wildfires can disrupt the delivery of public services, including transportation, utilities, and social services, affecting the well-being of residents.

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 K communities when requested by local resources:

Map 126: Kansas Forest Response Time



Source: Kansas Forest Service

Potentially Vulnerable Community Lifelines

Wildfires can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that wildfires conditions place on infrastructure, resources, and operational processes. 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 118: 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

Wildfires can have significant impacts on electrical utilities, affecting both the infrastructure and the services they provide. Some of the key impacts include:

- Damage to Power Lines and Equipment: Wildfires can cause direct damage to electrical infrastructure such as power lines, transformers, substations, and other equipment. The intense heat from the fire can melt wires, damage insulators, and compromise the structural integrity of utility poles and towers.
- Power Outages: The destruction of power lines and equipment can lead to widespread power outages in affected areas. This not only disrupts daily life for residents but can also impact critical services such as hospitals, emergency response systems, and water treatment facilities.
- Infrastructure Accessibility: Wildfires can make it difficult for utility crews to access affected areas due to road closures, damaged infrastructure, and hazardous conditions. This can delay repair and restoration efforts, prolonging the duration of power outages.

- Grid Instability: The loss of transmission lines and substations can destabilize the electrical grid, leading to voltage fluctuations, frequency variations, and potential cascading outages. Restoring grid stability after a wildfire requires careful coordination and management by utility operators.
- Safety Concerns: Wildfires pose safety risks to utility workers involved in repair and restoration efforts. In addition to the immediate dangers of fire and smoke, there may be hazards such as downed power lines, weakened structures, and unstable terrain.

In order to reduce plan duplication, mapping concerning electrical generation plants, high-capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Maps 49 and 50, page 94, and Chart 15, page 95.

Communications systems within Kansas Region K may have an increased vulnerability to wildfire events. Of particular concern are 911 and dispatch systems. All jurisdictions are served by a 911 and dispatch system, providing direct dispatching for:

- Law Enforcement
- Emergency Medical Services
- Fire

Wildfires can disrupt this vital communications system, affecting reliability and functionality. Some of the key vulnerabilities include:

- Structural Damage to Communication Towers: Wildfires can cause direct structural damage to communication towers, including cellular, television, radio, and microwave towers. Toppled or damaged towers can disrupt signal transmission and reception.
- Power Outages: Wildfires often cause power outages by damaging electrical infrastructure. Communication facilities, including cell towers and data centers, rely on a stable power supply. Power failures can lead to service interruptions.
- Fiber Optic Cable Damage: Wildfires can damage underground and aerial fiber optic cables. Severed cables can disrupt data transmission and internet connectivity.
- Equipment Damage: Communication equipment located outdoors, such as antennas, dishes, and amplifiers, can be damaged by wildfires, affecting the performance of communication systems.
- Loss of Communication Nodes: Wildfires can damage communication nodes, exchanges, and network switching centers. Loss of these critical components can lead to widespread service disruptions.
- Cellular Network Congestion: During and after a wildfire there is often an increased demand for cellular communication as individuals seek information and contact loved ones. This surge in demand can lead to network congestion and reduced service quality.

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 119: 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

Table 119: Summary of Communication System Component Costs

Components	Examples	Cost	Expected Lifespan
Devices	Handheld portable radios, cellular phones, satellite phones, mobile data devices	$-$$	2-10 years
Accessories	Holsters, chargers, speakers, lapel microphone extensions, Bluetooth, vehicle kits, aircards, intercoms	$	2-10 years
Features	Encryption to protect against security risks, ruggedization to ensure reliant services, Over-the-Air-Programming, automatic roaming	$-$$$	-
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

Wildfires can significantly impact emergency response infrastructure, creating challenges for first responders and organizations involved in managing and mitigating the effects. Wildfires can impact emergency response through:

- Transportation Disruptions: Debris 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.
- Road Closures: Wildfires can lead to the closure of roads due to debris accumulation and hazardous conditions. This can limit access for emergency vehicles and impede the evacuation of residents.
- 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 downing power lines can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.
- Resource Allocation Challenges: Wildfires 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.
- Logistical Challenges: Wildfires may create logistical challenges for the transportation of supplies, equipment, and personnel to affected areas, hindering the overall effectiveness of emergency response efforts.
- Increased Demand for Services: Wildfires 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.

In order to reduce plan duplication, mapping concerning fire and police locations may be found in MAP #.

Wildfires can have various impacts on water utilities and infrastructure, affecting both the supply and quality of water as well as the infrastructure used to treat and distribute it. Here are some ways wildfires can impact water utilities and infrastructure:

- Water Source Contamination: Wildfires can contaminate surface water and groundwater sources with ash, debris, sediment, and pollutants. When rain falls on burned areas, it can wash ash and other contaminants into rivers, lakes, and reservoirs, compromising water quality. This can pose challenges for water treatment plants in removing contaminants and ensuring the safety of drinking water supplies.
- Reduced Water Availability: Wildfires can decrease water availability in affected watersheds by altering hydrological processes such as infiltration, runoff, and groundwater recharge. The loss of vegetation and soil cover increases the risk of erosion and reduces water retention capacity, leading to decreased streamflow and lower reservoir levels. Water utilities may need to implement conservation measures and adjust water allocation plans to manage shortages during and after wildfires.
- Infrastructure Damage: Wildfires can damage water infrastructure such as pipelines, pump stations, treatment plants, and storage facilities. Direct exposure to flames, intense heat, and falling debris can cause structural

damage, melting of pipes, and electrical equipment failure. In addition, the loss of vegetation and soil stability can increase the risk of landslides and mudflows, which can damage or block water conveyance systems.

- Power Outages: As mentioned earlier, wildfires can disrupt electrical utilities, leading to power outages that affect water treatment and distribution operations. Many water treatment plants rely on electricity to power pumps, motors, and treatment processes. Without power, water utilities may be unable to maintain adequate water pressure, treat water to regulatory standards, or supply water to customers.

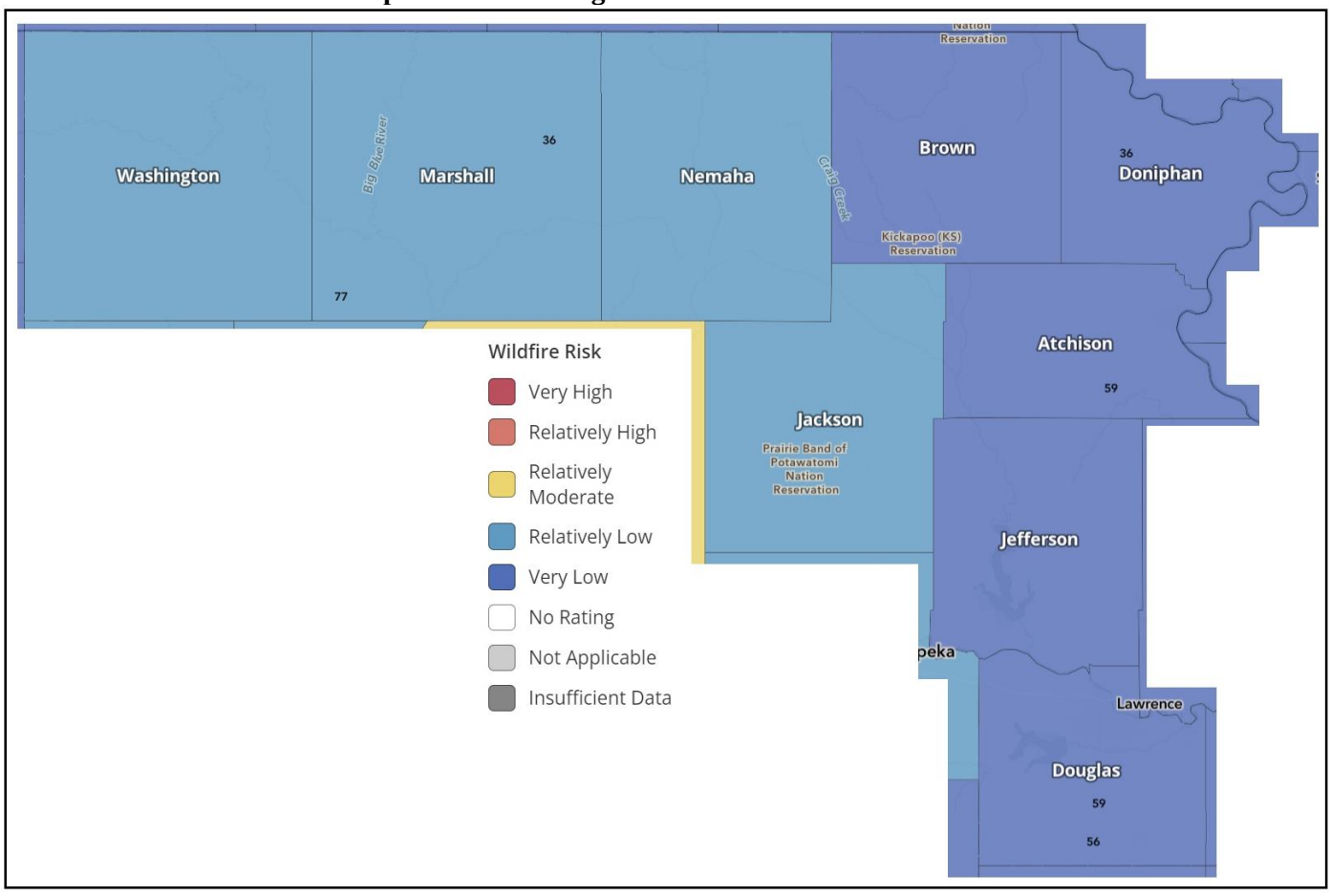
In order to reduce plan duplication, mapping concerning water infrastructure may be found in Map 55, page 107.

Hospitals and other smaller medical facilities may see an increase in wildfire related injuries during an event, but it is considered unlikely that this increase will impact or overload capacity. However, tornadoes can increase the demand for emergency shelters, particularly in cases of widespread power outages. Setting up and managing these shelters can strain resources. Hospital capacity mapping may be found in Map 51, page 95.

FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from wildfires:

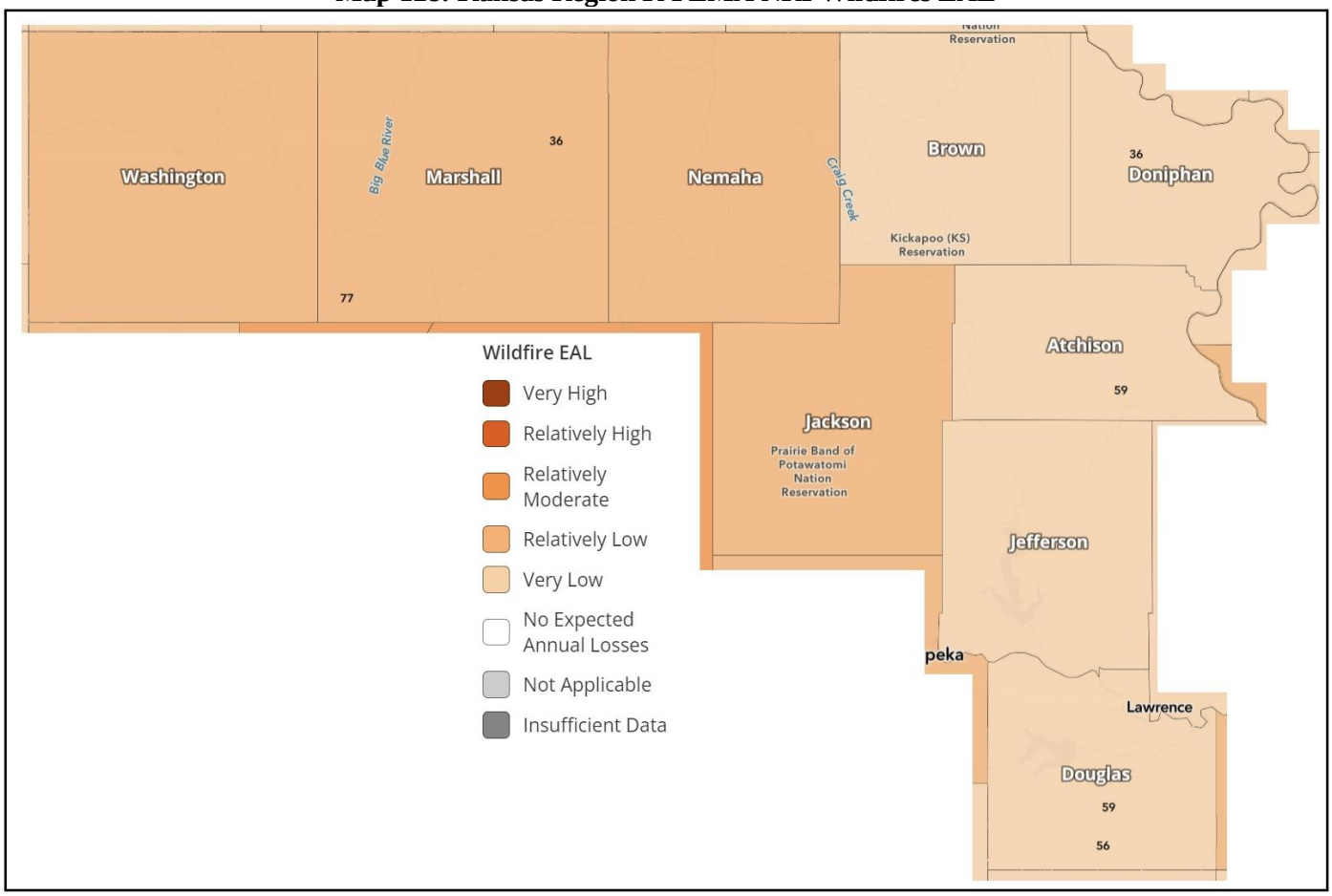
Map 127: Kansas Region K FEMA NRI Wildfire Risk



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for wildfires for participating counties within Kansas Region K:

Map 128: Kansas Region K FEMA NRI Wildfires EAL



Source: FEMA NRI

The following table indicates the FEMA NRI and EAL analysis for each participating Kansas Region K county for wildfire:

Table 120: Kansas Region K FEMA NRI and EAL for Wildfire by County

County	Risk Index	EAL
Atchison	Very Low	Very Low
Brown	Very Low	Very Low
Doniphan	Very Low	Very Low
Douglas	Very Low	Very Low
Jackson	Relatively Low	Relatively Low
Jefferson	Very Low	Very Low
Marshall	Relatively Low	Relatively Low
Nemaha	Relatively Low	Relatively Low
Washington	Relatively Low	Relatively Low

Source: FEMA NRI

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 K residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 121: Wildfire Consequence Analysis

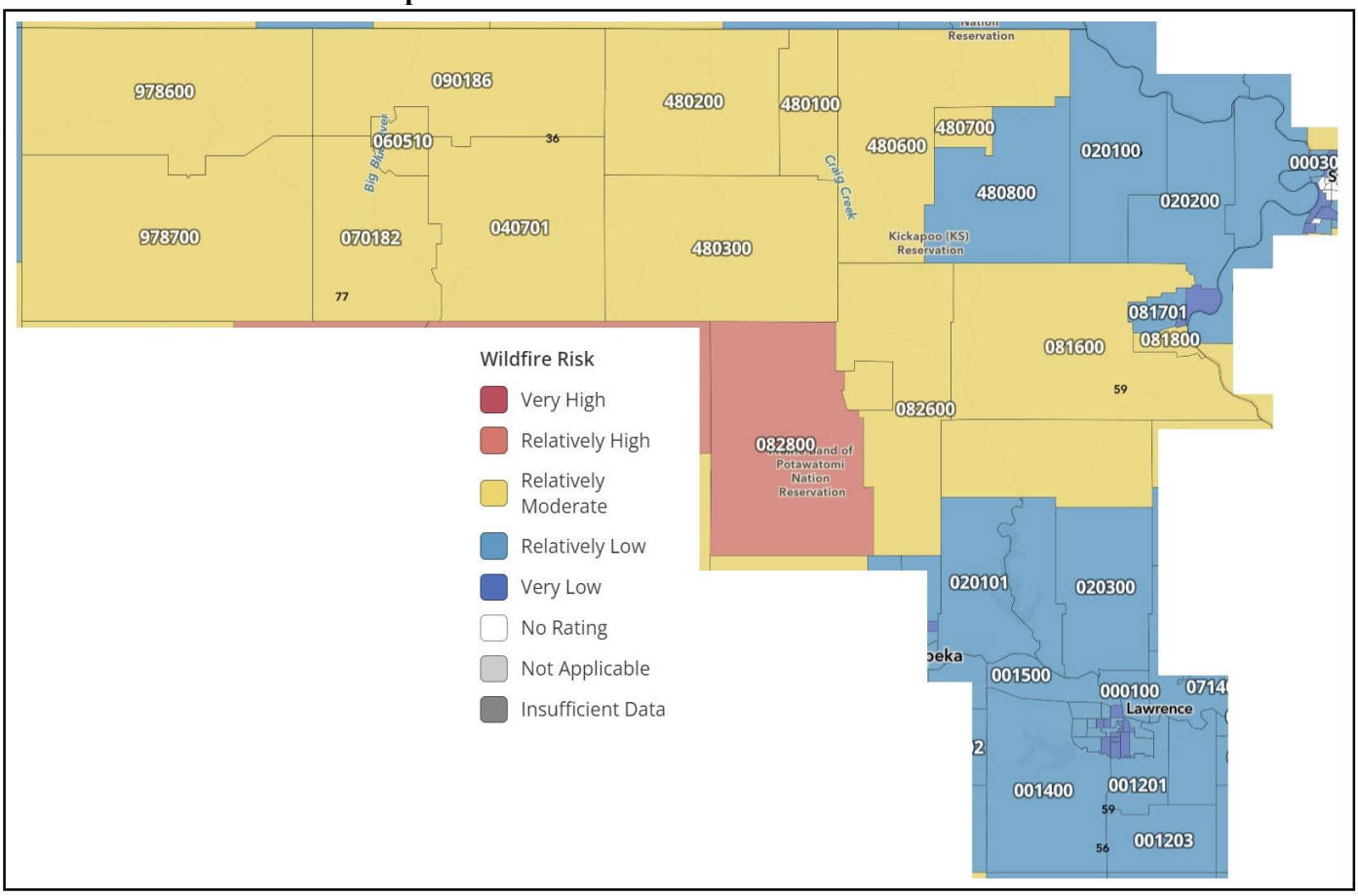
Subject	Potential Impacts
Impact on the Public	People located in the immediate area of the fire face the risk injury or death if not evacuated in time. Once evacuated, they may face lengthy period of relocation. Fires can release toxic components which can cause adverse health effects including respiratory 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 challenges for public transit and evacuation.
Impact on Environment	Fires can cause 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 state economy, and major fires could cause significant impact. Costs may be associated with loss of income, damage to property, 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.

4.16.7 Jurisdictional Risk and Vulnerability

To help understand the risk and vulnerability to wildfires of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from wildfires:

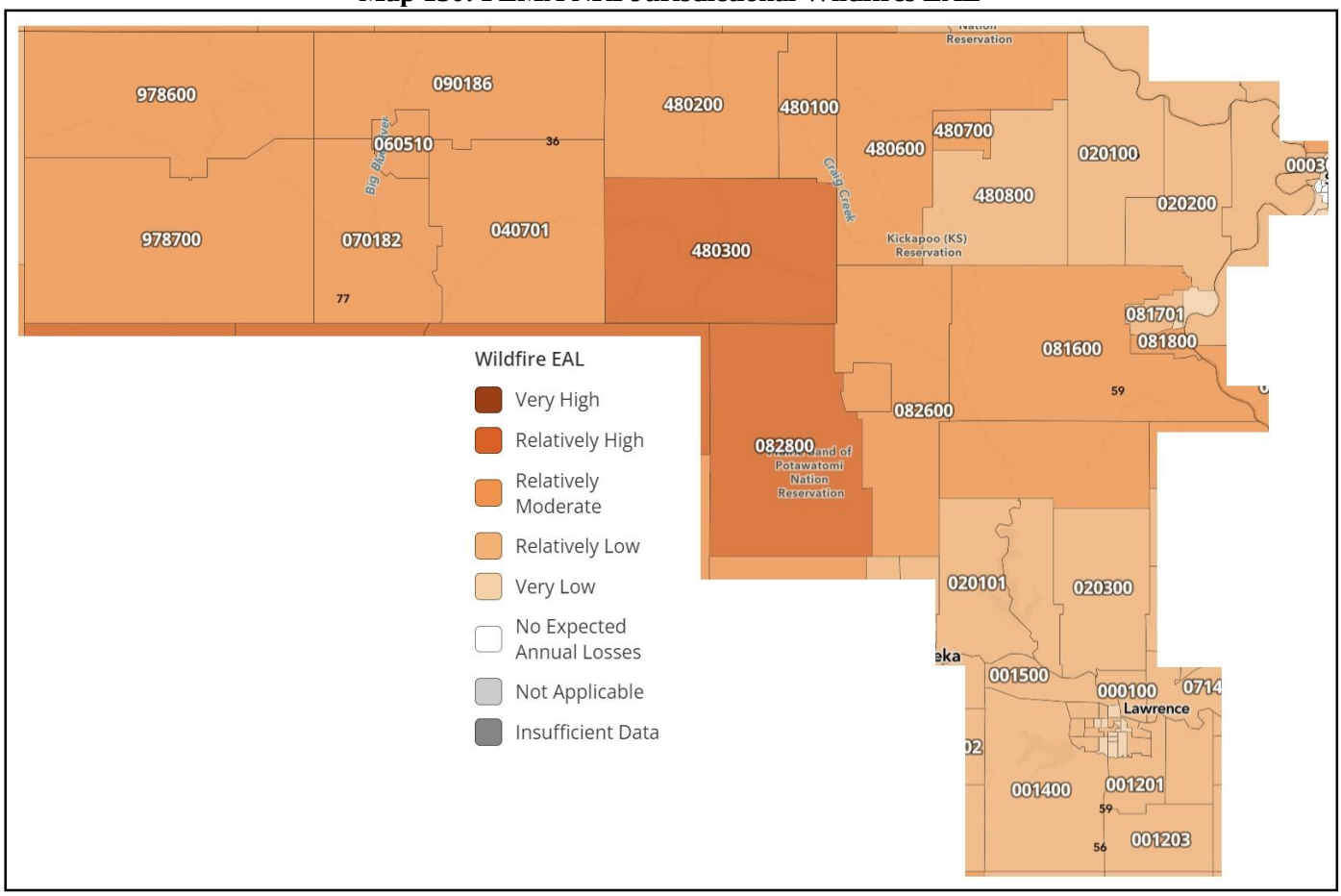
Map 129: FEMA NRI Jurisdictional Wildfires Risk



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for wildfires for participating jurisdictions (as indicated by census tract) within Kansas Region K:

Map 130: FEMA NRI Jurisdictional Wildfires EAL



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential vulnerability on a jurisdictional basis.

4.17 Cybersecurity Event

4.17.1 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.

4.17.2 – Location and Extent

The entire state is 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 involve 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.

4.17.3 Previous Occurrences

Kansas Region K 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.

4.17.4 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 K 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.

4.17.5 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.

4.17.6 Vulnerability and Impact

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.

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.

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: States 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.

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 K residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 122: Cybersecurity Incident Consequence Analysis

Subject	Potential Impacts
Impact on the Public	The public is heavily reliant on technology for daily life. 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 and personal 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 if their infrastructure if 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 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 state 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.

4.17.7 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 123: Cyber Security Incident Planning Significance

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Atchison	4	3	3	3	3.5	High
Brown	4	3	3	3	3.5	High
Doniphan	4	3	3	3	3.5	High
Douglas	4	3	3	3	3.5	High
Jackson	4	3	3	3	3.5	High
Jefferson	4	3	3	3	3.5	High
Marshall	4	3	3	3	3.5	High
Nemaha	4	3	3	3	3.5	High
Washington	4	3	3	3	3.5	High

4.18 Hazardous Material Incident

4.18.1 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.

4.18.2 – Location and Extent

All of Kansas Region K 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.
- Marine Spills: Incidents involving the transport of hazardous materials by sea can lead to marine spills. These spills may involve oil, chemicals, or other substances, and can have significant environmental and economic consequences.
- 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 K has at least one fixed facility that stores, produces, or utilizes hazardous material. Hazardous materials shipments move through Kansas Region K 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.

4.18.3 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, none in Kansas Region K resulted in a serious evacuation, a major artery closure, fatalities, or injuries.

4.18.4 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 incident will be small in scale and cause no evacuation, injuries, or deaths,

4.18.5 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 K 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.

4.18.6 Vulnerability and Impact

Kansas Region K'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:

- Brownville
- 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.
  Injuries and Trauma:
- 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.

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.

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.

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 state 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.

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 K residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 124: Hazardous Materials Incident Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Cities within Kansas Region K with dense populations, particularly 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 those of the most 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 continuity of operations based on the incidents potential to cause workforce absenteeism, contamination, or destruction of public facilities.
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

Table 124: Hazardous Materials Incident Consequence Analysis

Subject	Potential Impacts
	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 and state 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.
Public Confidence in Governance	The public's confidence in the state's 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.

4.18.7 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 125: Hazardous Materials Incident Planning Significance

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Atchison	4	1	3	1	2.7	Moderate
Brown	4	1	3	1	2.7	Moderate
Doniphan	4	1	3	1	2.7	Moderate
Douglas	4	1	3	1	2.7	Moderate
Jackson	4	1	3	1	2.7	Moderate
Jefferson	4	1	3	1	2.7	Moderate
Marshall	4	1	3	1	2.7	Moderate
Nemaha	4	1	3	1	2.7	Moderate
Washington	4	1	3	1	2.7	Moderate

4.19 Infrastructure Failure

4.19.1 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 State. 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 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.
- Environmental Changes: Long-term environmental changes due to climate change can threaten infrastructure.

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.

4.19.2 – Location and Extent

Details concerning Kansas Region K'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 126: 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.
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

Table 126: ASCE Infrastructure Grade System

Grade	Description
	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 127: 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 K 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 at www.kec.org/servicearea_map.html. Additionally, locations of electric certified areas and transmission lines may be found at www.kcc.state.ks.us/maps/ks_electric_certified_areas.pdf.

4.19.3 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 K 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.

4.19.4 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 utility failure may also vary seasonally or during extreme weather events.

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

Climate change can influence the frequency, intensity, and patterns of extreme weather events. An increase in these events can cause a commensurate increase in infrastructure failures. It is expected that climate change will impact infrastructure in the following ways:

- Increased Frequency of Extreme Weather Events: Climate change is associated with an increased frequency and intensity of extreme weather events, such as hurricanes, heatwaves, heavy rainfall, and wildfires. These events can damage utility infrastructure, leading to outages.
- 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: Hurricanes and tropical storms may become more intense due to warming oceans. Stronger storms can damage power lines, transformers, and other electrical infrastructure, resulting in widespread electricity outages.
- Sea-Level Rise and Coastal Infrastructure: Sea-level rise, a consequence of climate change, can threaten coastal infrastructure, including power plants, wastewater treatment facilities, and transportation systems. It can lead to saltwater intrusion, erosion, and damage to critical infrastructure.
- 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: Climate change can contribute to more extensive and intense wildfires. 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.
- Changing Precipitation Patterns: Altered precipitation patterns, such as more intense rainfall or prolonged droughts, can affect the availability and quality of water resources, impacting water utilities and hydropower generation.

As previously noted, Kansas Region K 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 state facilities has remained static since the completion of the 2019 HMP.

4.19.6 Vulnerability and Impact

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.

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.

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.

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 state response and recovery efforts. Coordination among agencies becomes crucial.

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 K residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 128: 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. 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.

Table 128: Infrastructure Failure Consequence Analysis

Subject	Potential Impacts
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 state's 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.

4.19.7 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 129: Infrastructure Failure Planning Significance

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Atchison	3	3	3	2	2.9	Moderate
Brown	3	3	3	2	2.9	Moderate
Doniphan	3	3	3	2	2.9	Moderate
Douglas	3	3	3	2	2.9	Moderate
Jackson	3	3	3	2	2.9	Moderate
Jefferson	3	3	3	2	2.9	Moderate
Marshall	3	3	3	2	2.9	Moderate
Nemaha	3	3	3	2	2.9	Moderate
Washington	3	3	3	2	2.9	Moderate

4.20 Terrorism

4.20.1 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.
- Examples include the 1993 World Trade Center bombing and the 2009 Fort Hood shooting.
- 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.
- Examples include arson attacks on logging facilities or animal testing labs.
- 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.

4.20.2 – Location and Extent

All of Kansas Region K 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.

4.20.3 Previous Occurrences

Although there has not been a terrorist attack in Kansas Region K, 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.

4.20.4 Probability of Future Events

Assessing the probability of a terrorist attack in Kansas Region K 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.

4.20.5 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.

Climate change can indirectly influence terrorism by exacerbating certain conditions that may contribute to the emergence and persistence of terrorist threats. While climate change itself does not directly cause terrorism, it can interact with other factors to create a more conducive environment for terrorist activities. Climate change can lead to resource scarcity, such as water and arable land shortages, which may intensify poverty. This scarcity can create conditions that extremist groups exploit. Additionally, climate-induced displacement and migration can result from events like sea-level rise, extreme weather events, and droughts. Displaced populations can become vulnerable to recruitment by extremist groups, as they may lack basic necessities and economic opportunities.

As previously noted, Kansas Region K 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 state facilities has remained static since the completion of the 2019 SHMP.

4.20.6 Vulnerability and Impact

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.

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.

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.

For this assessment, 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.

In general, 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 130: 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

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 K residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 131: 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.
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.

Table 131: Terrorism Consequence Analysis

Subject	Potential Impacts
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 the state's governance is affected by immediate response through direct and effective actions. Efficiency in response and recovery operations is critical in keeping public confidence.

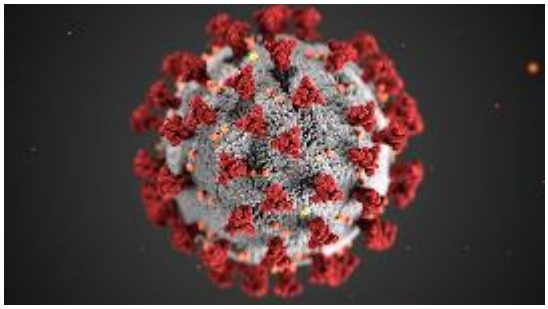
4.20.7 Hazard Planning Significance

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 132: Terrorism Planning Significance

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Atchison	1	3	1	4	1.9	Low
Brown	1	3	1	4	1.9	Low
Doniphan	1	3	1	4	1.9	Low
Douglas	1	3	1	4	1.9	Low
Jackson	1	3	1	4	1.9	Low
Jefferson	1	3	1	4	1.9	Low
Marshall	1	3	1	4	1.9	Low
Nemaha	1	3	1	4	1.9	Low
Washington	1	3	1	4	1.9	Low

4.21 Transmissible Disease



4.21.1 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 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, climate change, 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.

4.21.2 – Location and Extent

Kansas Region K'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:

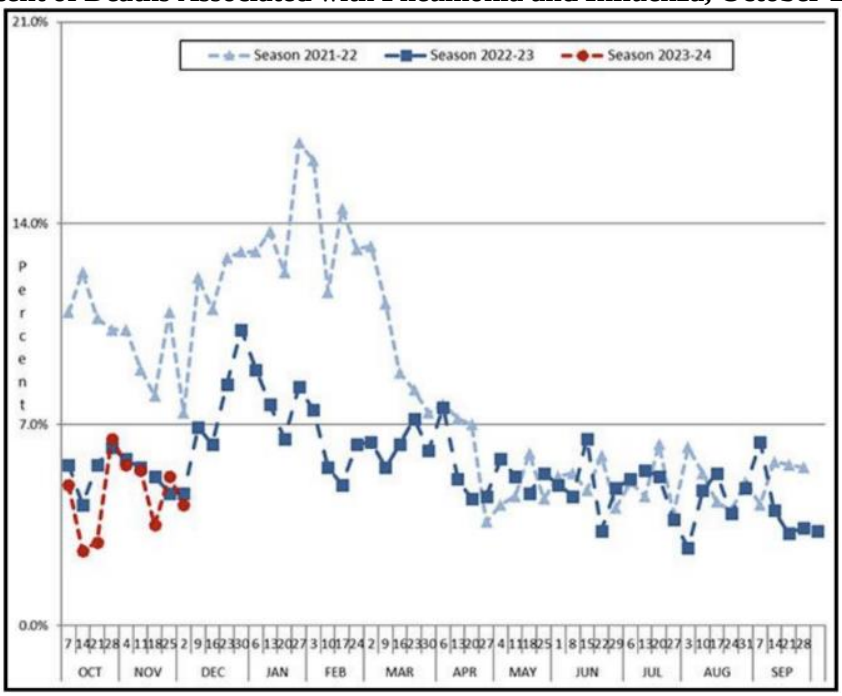
- Pathogen Characteristics: The biological properties of the infectious agent, such as its mode of transmission, incubation period, and virulence, play a significant role. Pathogens that are highly contagious and have a short incubation period are more likely to spread rapidly.
- Human Behavior: Human 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.

4.21.3 Previous Occurrences

One of the most common transmissible diseases within the Kanas Region K 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 chart details deaths for the state from 2021 through 2023:

Chart 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 Kanas Region K 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 K. Some of the key measures taken in Kansas Region K 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 K 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 K, including:

- Economic Repercussion: Job losses, business closures, and economic strain on individuals and families were common within the Kansas Region K. Kansas, like other states, implemented economic relief measures.
- Healthcare System Overload: Hospitals and healthcare facilities in Kansas Region K 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 K 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.

4.21.4 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.
- Climate Change: Environmental changes driven by climate change can alter the geographic distribution of diseases and the behavior of vectors (like mosquitoes). This can affect disease transmission patterns and increase the risk of outbreaks.
- 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) □ □

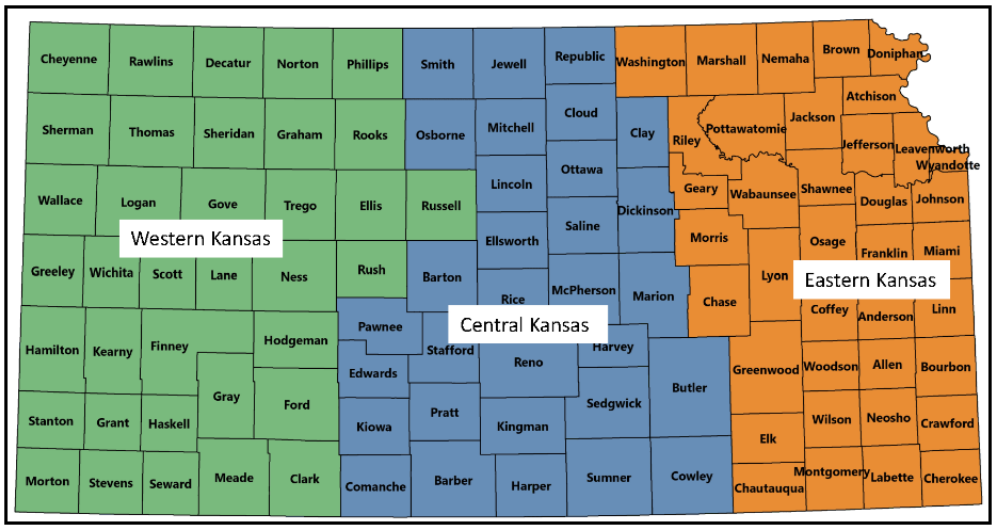
- Shiga toxin-producing Escherichia coli
- Shigellosis
- Smallpox
- Spotted fever rickettsiosis
- Streptococcus pneumoniae, invasive disease
- Syphilis, all stages, including congenital syphilis
- Tetanus
- Toxic shock syndrome, streptococcal and other
- Transmissible spongioform encephalopathy or prion 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 K 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 131: Kansas Department of Health and Environment Field Epidemiology Services Program Regions



Source: Kansas Department of Health and Environment

4.21.5 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.

Climate change can have several impacts on the emergence and spread of transmissible diseases. While the relationship between climate change and transmissible diseases is complex, there are several ways in which climate change can influence disease dynamics including:

- Altered Disease Transmission Patterns in Vector-Borne Diseases: Climate change can affect the distribution and behavior of disease vectors (mosquitoes and ticks) by influencing temperature and precipitation patterns. 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: Climate change 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 the impacts of climate change, 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.
- Supporting research on the links between climate change and infectious diseases.
- Raising awareness and educating communities about the risks and preventive measures.

4.21.6 Vulnerability and Impact

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 K 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 economic 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.

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 K residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 133: 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 continuity of operations based on the potential to create high levels employee absenteeism. Employee absenteeism could also hinder the ability to fulfill critical operations as well as implementation and maintenance of the plan itself.
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 spread 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.

Table 133: Transmissible Disease Consequence Analysis

Subject	Potential Impacts
	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 K significantly. In the event residents and workers 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. Maintenance of these operations will be critical to response and recovery operations.

4.222.7 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 134: Transmissible Disease Planning Significance

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Atchison	3	3	1	4	2.8	Moderate
Brown	3	3	1	4	2.8	Moderate
Doniphan	3	3	1	4	2.8	Moderate
Douglas	4	3	1	4	3.3	High
Jackson	4	3	1	4	3.4	Moderate
Jefferson	3	3	1	4	2.8	Moderate
Marshall	3	3	1	4	2.8	Moderate
Nemaha	3	3	1	4	2.8	Moderate
Washington	3	3	1	4	2.8	Moderate

Section 5 –Capability Assessment

5.1 Introduction

This capability overview for Kansas Region K documents programs, policies, and funding mechanisms for participating jurisdictions. All listed capabilities documented in the previous HMP 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.

Currently, all Kansas Region K counties have an emergency management program that has the primary responsibility for directing the hazard mitigation planning process. However, the capability of each emergency management program varies based largely on the size and financial capabilities of the jurisdiction. While all counties, and some participating jurisdictions, have the capability needed to conduct mitigation planning, many rely on the technical expertise of KDEM to apply for mitigation grant funding and oversee mitigation projects. Additionally, further augmenting local emergency management capabilities, KDEM aids with state and federal mitigation and emergency management initiatives and available funding opportunities.

Technical capabilities for each county and participating jurisdiction vary widely and are generally based on financial capabilities. In general, more urban, or larger jurisdictions have a greater range of technical capabilities and staffing related to planning, engineering, and mapping, while smaller counties and jurisdictions lack these capabilities. It should be noted that KDEM offers a variety of programs to provide local jurisdictions with technical expertise, including mapping and planning.

The following table details local departments and positions and their roles in supporting hazard mitigation planning:

Table 135: Local Jurisdiction Department and Positions Supporting Mitigation Planning

Department or Position	Description	Role in Mitigation
Building Officials	Implements and enforces building codes and zoning ordinances.	Ensures construction standards are consistently applied.
Emergency Management Director	Directs local response, recovery, and mitigation programs.	Develops Local Emergency Operations Plan, Continuity Plans, and Hazard Mitigation Plans, helping to minimize loss of life and property damage.
NFIP/CRS Coordinators	Oversees compliance with the NFIP and CRS and addresses flood determinations, mapping issues, and construction standards within Special Flood Hazard Areas.	Reviews floodplain/building permits for structures within floodplains and inspects developments to determine compliance with the community development standards and NFIP requirements. Explains floodplain

Table 135: Local Jurisdiction Department and Positions Supporting Mitigation Planning

Department or Position	Description	Role in Mitigation
		development requirements to community leaders, citizens, and the general public.
Planning Boards	Recommends land use regulations	Coordinates with the NFIP Coordinator and the Hazard Mitigation Committee through the mitigation planning process and the implementation of the plans.
Public Works Departments	Responsible for municipal drainage and storm water management systems.	Provides for the ongoing maintenance and upgrading of local storm water systems to help reduce flood risks.
Town/Township/City Council	Approves subdivision, zoning and land ordinances and bylaws and facilitates capital improvements budget and plan.	Provide leadership and approval for local hazard mitigation plans, projects, grants, and programs.

5.2 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.

5.3 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.

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:

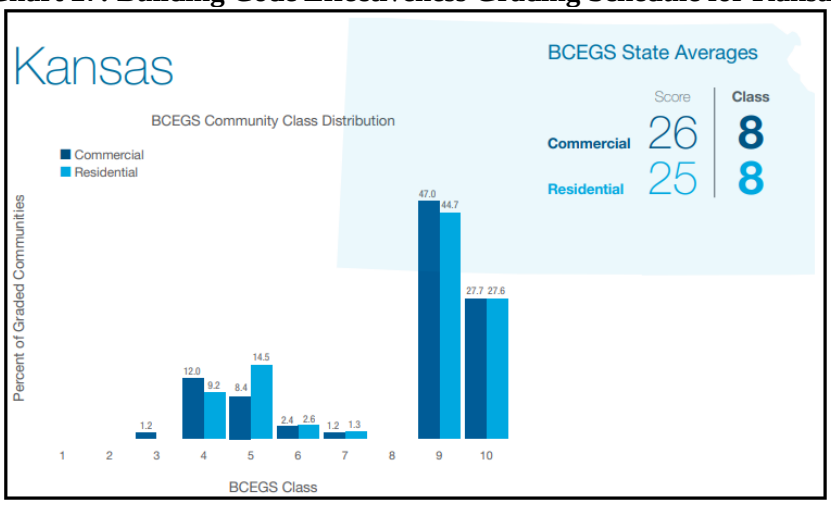
- Structural Design Requirements: Provides requirements for the structural design of buildings to ensure their resistance to various hazards, including earthquakes, high winds, and snow loads. These requirements are aimed at enhancing the overall structural integrity and safety of buildings.

- 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.

As building codes vary by jurisdiction, it is essential to contact the local building department for the most accurate information concerning application and enforcement.

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.

Chart 27: 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.

As part of this planning effort, county 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 have building or zoning departments. The following personnel involved in regulating development were identified:

Table 136: Kansas Region K County Building or Development Stakeholders

Jurisdiction	Name	Title
Atchison County	Holley Hackathorn	County Appraiser
Brown County	Steve Markham	Appraiser

Table 136: Kansas Region K County Building or Development Stakeholders

Jurisdiction	Name	Title
Doniphan County	Julie Meng	Emergency Management Coordinator and Zoning Director
Douglas County	Tonya Voigt	Zoning and Codes Director
Jackson County	Kate Immenschuh	Appraiser
Jefferson County	Erin George	Planner II
Marhsall County	Francine Crome	Appraiser
Nemaha County	Betty Roeder	County Appraiser
Washinton County	Lance Leis	County Appraiser

Zoning Ordinances

Zoning ordinances in Kansas Region K govern land use, development, and building requirements. These 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 K 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 K, 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 K. 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.

Floodplain Management Standards

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 public health, safety, and the welfare for 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 (SFHA), the structure must be elevated to or above the Base Flood Elevation (BFE), which is a requirement imposed by the NFIP's regulations.

The following table details the status of these codes and ordinances for participating jurisdictions:

Table 137: Kansas Region K Jurisdictional Codes and Ordinances

Jurisdiction	Building Code	Floodplain Ordinance	Zoning Ordinance
Atchison County		x	
Atchison	x	x	x
Effingham	x	x	
Huron		x	
Lancaster		x	
Musotah		x	
Brown County		x	
Everest			
Fairview			
Hamlin			
Hiawatha	x	x	x
Horton	x	x	x
Morrill	x	x	
Reserve			
Robinson		x	
Willis			
Doniphan County		x	x
Elwood		x	x
Troy		x	x
Wathena		x	x
Douglas County		x	
Baldwin City	x	x	x
Eudora	x	x	x

Table 137: Kansas Region K Jurisdictional Codes and Ordinances

Jurisdiction	Building Code	Floodplain Ordinance	Zoning Ordinance
Lawrence	x	x	x
Lecompton	x	x	x
Kanawaka Township			
Lecompton Township			
Palmyra Township			
Willow Springs Township			
Jackson County		x	x
Circleville	x	x	x
Delia		x	
Denison	x	x	x
Holton	x	x	x
Hoyt	x	x	x
Mayetta	x	x	x
Netawaka	x		
Soldier		x	
Whiting	x	x	
Jefferson County	x	x	x
McLouth	x	x	x
Oskaloosa	x	x	x
Ozawkie			
Perry	x	x	x
Valley Falls	x	x	x
Winchester	x	x	x
Marshall County		x	
Axtell	x	x	
Beattie		x	
Blue Rapids	x	x	x
Frankfort	x	x	
Marysville	x	x	x
Oketo			
Summerfield			
Vermillion			
Waterville	x	x	x
Nemaha County		x	
Bern			
Centralia		x	
Corning		x	
Goff		x	
Oneida			
Sabetha	x	x	
Seneca	x	x	x
Wetmore			
Washington County		x	
Barnes			
Clinton			
Greenleaf	x		
Haddam		x	
Hanover		x	
Hollenberg			

Table 137: Kansas Region K Jurisdictional Codes and Ordinances

Jurisdiction	Building Code	Floodplain Ordinance	Zoning Ordinance
Linn			
Mahaska			
Morrowville		x	x
Palmer		x	
Vining			
Washington		x	

5.4 Jurisdictional Compliance with NFIP

All NFIP participating jurisdictions are required to meet the minimum standards set forth in the program. The jurisdictions' NFIP Coordinator ensures all new construction projects are properly surveyed and receive an elevation certificate.

NFIP participants are committed to continued involvement and compliance. To help facilitate compliance, NFIP participating jurisdictions:

- Adopted floodplain regulations through local ordinance
- Enforces floodplain ordinances through building restrictions
- Regulates new construction in SFHAs as outlined in their floodplain ordinance
- Utilizes FEMA DFIRMs, where available
- Monitors floodplain activities

Please see Table 94, page 79 for current effective map dates for each participating community.

As part of this planning effort, jurisdictional NFIP Coordinators were given the opportunity to review and comment of the elements of this plan. The following individuals designated as NFIP Coordinators were identified:

Table 138: Kansas Region K Jurisdictional NFIP Coordinators

Jurisdiction	Title	Name
Atchison County	Roger Denton	GIS/Floodplain Administrator
Atchison	Phil Burke	Community Development Officer
Effingham	Janet Eckart	City Clerk
Lancaster	Tim Callahan	Mayor
Musotah	Brian Higley	Mayor
Brown County	Don Pounds	**Emergency Manager**
Everest	Alfred Kimmi	Mayor
Fairview	Bill Sandy	FPA
Hiawatha	Mike Nichols	City Administrator
Horton	John Calhoon	City Administrator
Robinson	Position Vacant	Position Vacant
Willis	Position Vacant	Position Vacant
Doniphan County	Don Pounds	NFIP Coordinator
Elwood	Alfred Kimmi	Mayor
Troy	Bill Sandy	NFIP Coordinator
Wathena	Position Vacant	Position Vacant
Douglas County	Tonya Voigt	Floodplain Manager
Baldwin City	Russ Harding	Floodplain Administrator
Eudora	Curtis Baumann	Building Inspector
Lawrence	Amy Miller	NFIP Coordinator
Lecompton	Rance Roberts	City Superintendent
Jackson County	Kate Immenschuh	County Appraiser

Table 138: Kansas Region K Jurisdictional NFIP Coordinators

Jurisdiction	Title	Name
Circleville	Heather Denault	FPM
Delia	Isabel Bogowith	FPM
Denison	Yvonne Hamer	City Clerk
Holton	Kerwin McKee	FPM
Hoyt	Shawna Blackwood	City Clerk
Mayetta	Grace Bowser	City Clerk
Netawaka	Jon Banaka	Mayor
Whiting	Julie Strathman	FPM
Jefferson County	Stephan Metzger	Community Development Director
McLouth	Kimberly Everly	City Clerk
Ozawkie	Mazi Barnes	City Clerk
Perry	Gene Dick	FPMA
Valley Falls	Destiny Schrick	City Clerk
Winchester	John Magas	City Superintendent
Marshall County	Michael Craig	Public Works Director
Axtell	Roger Koch	FPA
Beattie	Rob Olmstead	Mayor
Blue Rapids	Jerry Zayas	Mayor
Frankfort	Melody Tommer	City Clerk
Marysville	Cindy Holle	City Clerk
Summerfield	Position Vacant	Position Vacant
Vermillion	Shane Woodside	City Clerk
Waterville	Keli Yungeberg	FPMA
Nemaha County	Eddie Aldrine	Emergency Manager
Centralia	Janel Huninghake	City Clerk
Corning	Diane Haverkamp	City Clerk
Goff	Position Vacant	Position Vacant
Sabetha	Steve Compo	City Clerk
Seneca	Tami Haverkamp	Development Administrator
Wetmore	Position Vacant	Position Vacant
Washington County	Randy Hubbard	Emergency Management Director.
Barnes	Laura Oentrich	City Clerk
Clifton	Connie Brunell	City Clerk
Hanover	Dora Ann Sand	City Clerk
Morrowville	Position Vacant	Position Vacant
Washington	Denise Powell	City Clerk

Source: State of Kansas

Participation in the NFIP is based on an agreement between the municipality and the federal government. If a municipality agrees to adopt and enforce a floodplain ordinance designed to reduce future flood risks, all citizens in the participating municipality can purchase flood insurance.

In Kansas Region K, as part of NFIP participation communities must:

- Use current NFIP flood maps in adopting floodplain management regulations.
- Require permits for all development in Special Flood Hazard Area (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.

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 persons and property from flooding, protect watercourses from encroachment, and maintain the capability of floodplains to retain and carry off floodwaters. The local floodplain administrator is typically the municipal official responsible for overseeing the enforcement and update of the document.

Floodplain ordinances are typically enforced by law enforcement departments or code enforcement offices. In general, the enforcement process generally 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.

The following figure represents both pre- and post-disaster community NFIP requirements:

Figure 4: Pre- and Post-Disaster Community NFIP requirements

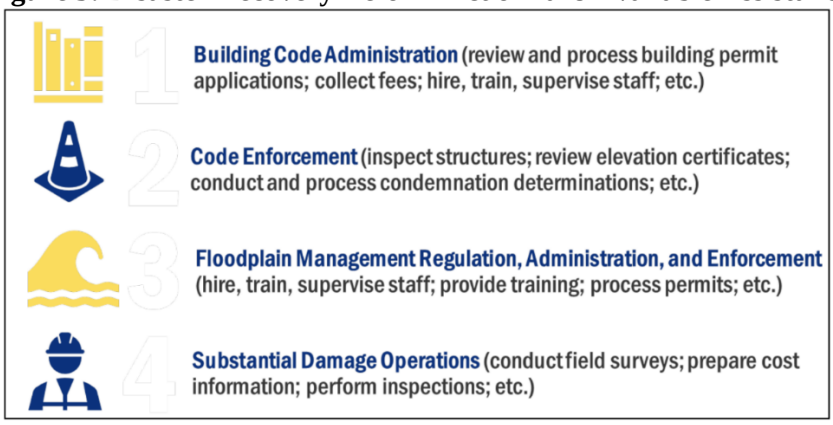
Source: FEMA

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 the Kansas Region K, 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 5: 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, NFIP participating jurisdictions will continue to develop both electronic (including social media) and in person outreach activities.

5.5 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:

- 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 K, the overarching county provides emergency operation planning for jurisdictions within its borders.
- Fire Mitigation Plan: A fire mitigation plan is used to mitigate a jurisdiction's wildfire risk and vulnerability. The plan documents areas with an elevated risk of wildfires, and identifies the actions taken to decrease the risk. A fire mitigaion plan can influence and prioritize future funding for hazardous fuel reduction projects, including where and how federal agencies implement fuel reduction projects on federal lands.
- Flood Mitigation Assistance Plan: The purpose of the flood mitigation assistance plan is to reduce or eliminate the long-term risk of flood damage to buildings and other structures insured under the NFIP.

The following table details the status of these plan types for each participating jurisdiction:

Table 139: Kansas Region K Jurisdictional Plans

Jurisdiction	Comprehensive Plan	Emergency Operations Plan	Fire Mitigation Plan	Flood Mitigation Assistance Plan
Atchison County	**x**	**x**		**x**

Table 139: Kansas Region K Jurisdictional Plans

Jurisdiction	Comprehensive Plan	Emergency Operations Plan	Fire Mitigation Plan	Flood Mitigation Assistance Plan
Atchison	x	x		x
Effingham	x	x		x
Huron	x	x		x
Lancaster	x	x		x
Musotah	x	x		x
Brown County		**x**		**x**
Everest		x		
Fairview	x	x		
Hamlin				
Hiawatha	x	x		x
Horton		x		
Morrill		x		
Reserve		x		
Robinson	x	x		
Willis		x		
Doniphan County	**x**	**x**		
Elwood	x	x		
Troy	x	x		
Wathena		x		
Douglas County	**x**	**x**	**x**	
Baldwin City	x	x		
Eudora	x	x		
Lawrence	x	x		
Lecompton	x	x		x
Kanawaka Township				
Lecompton Township				
Palmyra Township				
Willow Springs Township				
Jackson County	**x**	**x**		
Circleville		x		
Delia		x		
Denison		x		
Holton	x	x		x
Hoyt		x		
Mayetta	x	x		
Netawaka		x		
Soldier		x		
Whiting		x		
Jefferson County	**x**	**x**		**x**
McLouth	x	x	x	
Oskaloosa	x	x	x	
Perry		x		
Ozawkie				
Valley Falls	x	x	x	
Winchester	x	x	x	
Marshall County	**x**	**x**	**x**	**x**
Axtell	x	x		
Beattie		x	x	x

Table 139: Kansas Region K Jurisdictional Plans

Jurisdiction	Comprehensive Plan	Emergency Operations Plan	Fire Mitigation Plan	Flood Mitigation Assistance Plan
Blue Rapids	x	x		x
Frankfort	x	x		x
Marysville	x	x		x
Oketo		x		
Summerfield	x	x		
Vermillion		x		
Waterville	x	x	x	x
Nemaha County	**x**	**x**		
Bern		x		
Centralia		x	x	x
Corning		x		
Goff		x	x	
Oneida		x		
Sabetha		x		
Seneca	x	x	x	
Wetmore		x		x
Washington County		**x**		**x**
Barnes		x		
Clinton		x		
Greenleaf		x		
Haddam		x		
Hanover		x		
Hollenberg		x		
Linn		x		
Mahaska		x		
Morrowville		x		
Palmer		x		

5.6 Challenges and Opportunities for Capability Improvement

As always, challenges exist for all participating jurisdictions 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 HMP and the completion of identified hazard mitigation projects.

Improving capabilities can lead to enhanced performance, increased efficiency, and better outcomes in hazard mitigation planning and implementation. The following identify recommended improvements for all jurisdictions, with some recommendations being applicable to all jurisdictions, and others being applicable to specific jurisdictions:

- On a yearly basis, many counties and jurisdictions throughout Kansas Region K 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 K are not completed due to lack of funding. All Kansas Region K jurisdictions should, as possible, prioritize budgeting for mitigation projects.
- All participating jurisdictions should build a relationship with local meteorologists and the NWS to give priority access to rapidly developing weather conditions.
- All participating jurisdictions could receive instruction from the State of Kansas Division of Emergency Management /Homeland Security and FEMA Region VII on grant application processes and grant management strategies. These classes could help all participating jurisdictions receive available grant funding.

- All participating jurisdictions should consider adoption of the 2018 (or newer) International Building Codes to ensure current constructions standards, including climate resiliency standards.
- Participating jurisdictions without a long-term community plan would benefit from the creation of a comprehensive plan to help plan and budget for hazard mitigation measures, policies, and procedures. Legal authority for Kansas local governments to develop comprehensive plans, both individually and with other jurisdictions, is found at K.S.A 12-747 and K.S.A. 19-2958. The statute also authorizes county planning commissions to develop comprehensive plans for unincorporated areas, and for cities, where appropriate.
- Jurisdictions that do not currently participate in the NFIP should enroll in the program to allow citizens to purchase federally backed flood insurance.
- Current NFIP participants should apply for membership in the CRS to allow citizens to receive discounts off their federally backed flood insurance policies.
- All participating jurisdictions should explore engaging in public-private emergency planning partnerships to further increase hazard resiliency through the infusion of additional funding and expertise to help complete mitigation projects.

Additionally, 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 6 – Mitigation Strategy

6.1 Introduction

As part of this planning effort, Kansas Region K participating jurisdictions 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 K'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.

6.2 Goals and Objectives

Kansas Region K's overall mitigation goal is to minimize the protect lives and properties within the region from the impacts of hazards identified in this plan. Based on discussion with the discussions by the MPC, it was determined that the goals (desired outcomes) identified in the 2019 HMP remained viable and valid. The following represent the identified goals for the 2024 HMP:

- **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 K MPC will continuously evaluate these identified goals against current capabilities and conditions. As part of this process, the Kansas Region K 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.

In addition, the Kansas Region K MPC will work with all local, county, regional, and state agencies and policy makers to help integrate the goals delineated in the HMP and goals and plans for combating climate change.

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.
- **Not Completed:** The action was not started or has been started and is not completed.
- **Revised:** Action has been revised to reflect current planning environment or identified changes.
- **Cancelled:** 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.

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 damages, 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 or physical risks.
- Establishment of hazard warning and communication procedures.
- Redundancy or duplication of essential personnel, critical systems, equipment, and information materials.

In general, all mitigation actions can be 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.
- **Natural resource protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems.
- **Preparedness and response:** Emergency response or operational preparedness actions.
- **Public education and awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them.
- **Structural:** Actions that the modification of existing buildings or structures or involve the construction of structures to reduce the impact of hazard.

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 140: 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 considerations, such as the National Environmental Policy Act need to considered for federal funds.	How will the action affect the environment? Will the action need environmental regulatory approvals? 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.

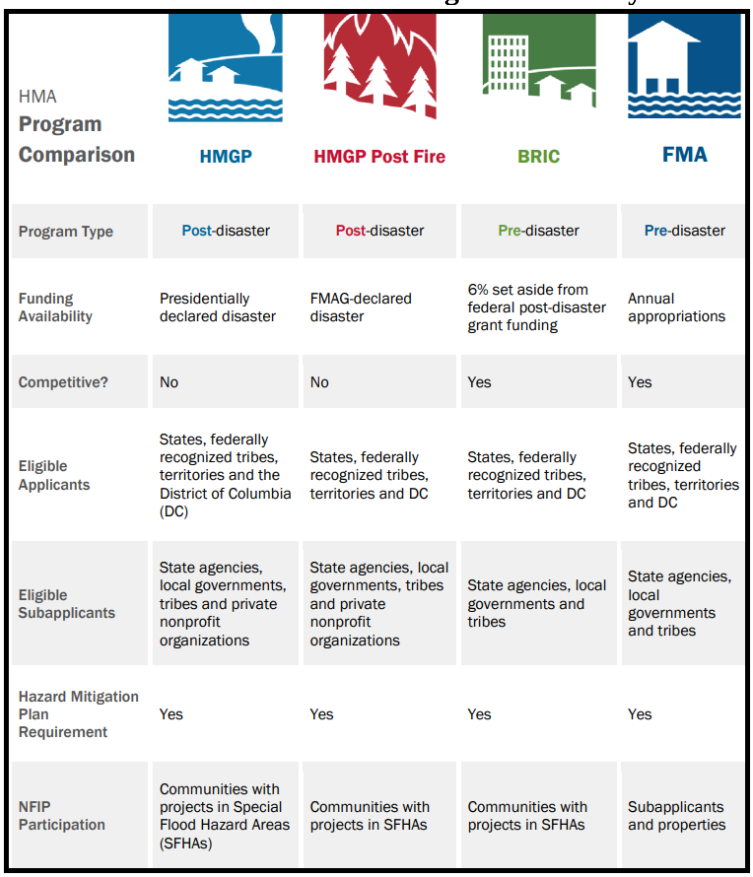
FEMA provides financial assistance to state, local, tribal, and territorial governments, as well as certain private non-profit organizations, to implement projects that help reduce the risk and impact of future disasters. These grant programs are designed to support initiatives aimed at mitigating hazards 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, Building Resilient Infrastructure and Communities (BRIC), 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.
- **BRIC:** BRIC supports states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. Working in coordination with BRIC, the National Mitigation Investment Strategy is intended to provide a national, whole-community approach to investments in mitigation activities and risk management.
- **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 chart summarizes HMA grants programs:

Chart 28: HMA Grant Program Summary



HMA Program Comparison	HMGP	HMGP Post Fire	BRIC	FMA
Program Type	Post-disaster	Post-disaster	Pre-disaster	Pre-disaster
Funding Availability	Presidentially declared disaster	FMAG-declared disaster	6% set aside from federal post-disaster grant funding	Annual appropriations
Competitive?	No	No	Yes	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	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	State agencies, local governments and tribes
Hazard Mitigation Plan Requirement	Yes	Yes	Yes	Yes
NFIP Participation	Communities with projects in Special Flood Hazard Areas (SFHAs)	Communities with projects in SFHAs	Communities with projects in SFHAs	Subapplicants and properties

Source: FEMA

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.
- **Nonprofit Security Grant Program:** Program is one of three grant programs that support DHS/FEMA's focus on enhancing the ability of state, local, tribal, and territorial governments, as well as nonprofits, to prevent, protect against, prepare for, and respond to terrorist or other extremist attacks. These grant programs are part of a comprehensive set of measures authorized by Congress and implemented by DHS to help strengthen the nation's communities against potential terrorist or other extremist attacks. Among the five basic homeland security missions noted in the DHS Strategic Plan for Fiscal Years 2020-2024
- **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, re duction of hazardous fuels, restoration of fire-adapted ecosystems and promotion of community assistance.
- **Bureau of Indian Affairs Aid to Tribal Governments:** This program provides funds to Indian Tribal governments to support general Tribal government operations, to maintain up-to-date Tribal enrollment, to conduct Tribal elections, and to develop appropriate Tribal policies, legislation, and regulations. Funds may be used in a variety of ways to strengthen the capabilities of Indian tribes in self-government, community planning, and maintenance of membership records.
- **Bureau of Indian Affairs Replacement and Repair of Indian Schools:** Providing safe, functional, code-compliant, economical, and energy efficient education facilities for American Indian students attending Bureau of Indian Affairs owned or funded primary and secondary schools or residing in Bureau owned or funded dormitories.
- **Bureau of Indian Affairs Wildland Fire Management:** Cooperative agreements for grants and reimbursable costs related to wildland fire management directly associated with programs contracted by tribes under the authority of the National Indian Forest Resources Management Act.

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 Completed Mitigation Actions

Kansas Region K and its participating jurisdictions remain committed to investigating and obtaining all available grant funding for the completion of hazard mitigation projects. Since the completion of the previous HMP, the MPC has been tracking the completion status of all identified hazard mitigation actions. The onset of COVID-19 early in the life of the 2019 HMP necessitated all available resources, funding, and capabilities to be reassigned to help manage the pandemic. Additionally, staff shortages and non-standard working arrangements were instituted for all agencies. As such, the Kansas Region K and its participating jurisdictions only managed to complete a sub-set of previously identified mitigation action items since the completion of the last HMP. Completed actions are marked as such in the detailed list jurisdictional mitigation actions found in Appendix D.

6.7 Jurisdictional Mitigation Actions

To support the mitigation goals identified in this HMP, all participating Kansas Region K jurisdictions identified a comprehensive range mitigation projects and activities. The selected set carefully takes an all-hazards 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. This plan update includes carryover mitigation actions from the 2019 HMP as they are still relevant and/or in progress or ongoing. It also includes projects that have been carried over due to a lack of funding and/or resources required for project completion during the last five-year cycle.

It is important to note that since the previous HMP, requirements for plan approval have changed. In the previous plan, all jurisdictions identified only a few actions, with many of the actions identified at the county level to cover local participants. As such, the actions in this plan have been re-written and reclassified on a wholesale basis to ensure each participating jurisdiction has identified at least one action per identified hazard. In doing so, presenting a comparison to previously identified actions in impractical. However, any actions previously identified that have been completed are noted to illustrate successes.

The Kansas Region K MPC acknowledges that the adoption and approval of this plan does not obligate any participating jurisdictions to complete 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 HMP.

A detailed list of each participating jurisdiction's hazard mitigation actions may be found in Appendix D. A revised version of the requirement allows for a more tailored approach to mitigation planning, ensuring that communities address the hazards most relevant to their circumstances while also acknowledging that not all hazards may be equally significant across different areas. It promotes a more efficient use of resources by focusing efforts on mitigating the most pressing risks faced by each community.

The following table details each participating jurisdiction's mitigation action items against identified hazards:

Table 141: Jurisdictional Mitigation Action Cross Check

Jurisdiction	All Hazards	Agricultural Infestation	Dam or Levee Failure	Drought	Extreme Temperatures	Flood	Severe Weather	Severe Winter Weather	TorXdo	Wildfire
Atchison County	1, 2, 3, 4	5, 6	7, 8	5, 9, 10,	11	12, 13, 14, 15, 16, 17	18, 19, 20	21, 22	20	23, 24
City of Atchison	1, 2, 3	X		4	5	6, 7	8	5, 9	8	10
City of Effingham	1, 2, 3	X	X	4	5	6, 7	8	5, 9	8	10
City of Huron	1, 2, 3	X	X	4	5	6, 7	8	5, 9	8	10
City of Lancaster	1, 2, 3	X	X	4	5	6, 7	8	5, 9	8	10
City of Muscotah	1, 2, 3	X	X	4	5	6, 7	8	5, 9	8	10
USD #377 - Atchison County	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #409 - Atchison	1, 2, 3	X	X	4	5	6	7	5	2	7
Evergy	1	X	1	1	1	1	1	1	1	1
Brown County	1, 2, 3, 4, 5, 6	7	8	7	9	10, 11, 12, 13, 14, 15, 16, 17, 18, 19	20, 21, 22	23	21, 22	24, 25, 26, 27, 28
City of Everest	1, 4	X	X	X	X	2, 3	5	6	5	7
City of Fairview	1, 2	X	X	X	X	3, 4	5	6	5, 7	8
City of Hamlin	1, 2, 3,4	X	5	X	X	6, 7, 8	9	10	9	11
City of Hiawatha	1, 2, 3	X	4	X	X	5, 6, 7, 8, 9, 10	11	12, 13	11	14
City of Horton	1, 2, 3, 4	X	5, 6, 7	X	X	8, 9, 10, 11, 12	13, 14	15	13, 14	16
City of Morrill	1	X	X	X	X	2, 3, 4, 5	6	7, 8	6	6
City of Powhattan	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Reserve	1, 2, 3	X	X	X	X	X	4	5	4	6
City of Robinson	1, 2, 3	X	X	X	X	4, 5, 6, 7, 8	9	10	9	11
City of Willis	1, 2	X	X	X	X	3, 4, 5, 6	7	8	7	9
USD #415 - Hiawatha	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #430 - Horton	1, 2, 3	X	X	4	5	6	7	5	2	7
Evergy	1	X	1	1	1	1	1	1	1	1
Doniphan County	1, 2, 3, 4, 5, 6	7, 8	9, 10	7	11	13, 14, 15, 16, 17, 18, 19, 20	21, 22, 23	24	21, 22, 23	25
City of Elwood	1, 2	X	3	4	5	6, 7, 8, 9, 10	11	12	11	13
City of Troy	1, 2, 3, 4	X	5	6	7	8, 9, 10, 11, 12, 13	14	15	14	16
City of WatheX	1, 2, 3, 4	X	5	6	7	8, 9, 10, 11	12, 13	14	12, 13	X
USD #111 – Doniphan West	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #429 - Troy	1, 2, 3	X	X	4	5	6	7	5	2	7
Evergy	1	X	1	1	1	1	1	1	1	1
Douglas County	1, 2, 3, 4, 5	6, 7	8., 9	10, 11	12	13, 14, 15, 16, 17, 18, 19	20, 21, 22, 23	22, 23	24	25, 26
City of Baldwin	1	X	X	X	X	1, 2, 3, 8, 9	4, 5, 6	4, 5	4, 5, 6	X
City of Eudora	1, 2, 3, 4,5	X	X	X	X	6, 7, 8, 9, 10	11, 12, 13	11, 12, 13	11, 12, 13	15
City of Lawrence	1	X	X	X	X	2, 3, 4, 5, 6, 7	8. 9. 10	9, 10	8, 9, 10	X
City of Lecompton	1	X	X	X	X	2, 3, 4	5, 6, 7	6, 7	5, 6, 7	X
Eudora Township	1	X	X	X	X	X	2	2	2	3

Table 141: Jurisdictional Mitigation Action Cross Check

Jurisdiction	All Hazards	Agricultural Infestation	Dam or Levee Failure	Drought	Extreme Temperatures	Flood	Severe Weather	Severe Winter Weather	TorXdo	Wildfire
Clinton Township	1	X	X	X	X	X	2, 3	2, 3	2, 3	4
KaXwaka Township	1	X	X	X	X	X	2	2	2	3
Lecompton Township	3	X	X	X	X	X	1	1	1	2
Palmyra Township	X	X	X	X	X	X	1	1	1	2
Wakarusa Township	X	X	X	X	X	X	1, 2	1, 2	1, 2	3
Willow Springs Township	X	X	X	X	X	X	1	1	1	2
Baker University	1	X	1	1	1	1	1, 2	1, 2	1, 2	1
University of Kansas	1, 2, 3	X	X	X	X	X	4	4	4	4
USD #343 - Perry / Lecompton	X	X	X	X	X	1	1, 2	1, 2	1, 2	1, 2
USD #348 - Baldwin City	X	X	X	X	X	1	1, 2	1, 2	1, 2	1, 2
USD #491 - Eudora	X	X	X	X	X	1	1, 2, 3	1, 2, 3	1, 2, 3	1, 2
USD #497 - Lawrence	2, 4, 5	X	X	X	X	X	1, 3	1, 3	1, 3	3
Palmyra Fire District #2	X	X	X	X	X	X	X	X	X	1, 2
Willow Springs Fire District #3	X	X	X	X	X	X	X	X	X	1, 2
Rural Water District #2	X	X	X	1, 2	X	X	3	X	X	1, 2
Rural Water District #5	1	X	X	2	X	X	3	X	X	2
Rural Water District #6	1	X	X	2	X	X	3	X	X	2
Lawrence Memorial Hospital	X	X	X	X	X	X	1	1	1	1
Evergy	1	X	1	1	1	1	1	1	1	1
Jackson County	1, 2, 3, 4, 5	6	7	8	9, 10	11, 12, 13, 14, 15, 16, 17	18, 19	20	18, 19	21, 22, 23
City of Circleville	1, 2, 3, 4	X	5	6, 7	8	9, 10	11	12	13	11, 14
City of Delia	1, 2, 3, 4	X	5	6, 7	8	9, 10	11	12	13	11, 14
City of Denison	1, 2, 3, 4, 5	X	6	7, 8	9	10, 11	12	13	14	12, 15
City of Holton	1, 2, 3, 4, 5	X	6	7, 8	9	10, 11, 12	13	14	15	13, 16
City of Hoyt	1, 2, 3, 4	X	5	6, 7	8	9, 10	11	12	13	11, 14
City of Mayetta	1, 2, 3, 4, 5	X	6	7, 8	9	10, 11	12	13	14	12, 15
City of Netawaka	1, 2, 3, 4	X	5	6, 7	8	9, 10	11	12	13	11, 14
City of Soldier	1, 2, 3, 4	X	5	6, 7	8	9, 10	11	12	13	11, 14
City of Whiting	1, 2, 3, 4	X	5	6, 7	8	9, 10	11	12	13	11, 14
USD #335 - North Jackson	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #336 - Holton	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #337 - Royal Valley	1, 2, 3	X	X	4	5	6	7	5	2	7
RWD #3		X		3, 4, 5						
PWWSD #18	1	X	X	2	X	X	X	X	X	2
Blue Stem Electric Coop	1	X	1	1	1	1	1	1	1	1
Evergy		X								
Nemaha Marshall Electric Coop	1	X	2	2	2	2	2	2	2	2
Jefferson County	1, 2, 3, 4	5, 6	7, 8	5, 9, 10,	11	12, 13, 14, 15, 16, 17	18, 19, 20	21, 22	20	23, 24
City of McLouth	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Meriden	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Nortonville	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Oskaloosa	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Ozawkie	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Perry	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Valley Falls	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Winchester	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14

Table 141: Jurisdictional Mitigation Action Cross Check

Jurisdiction	All Hazards	Agricultural Infestation	Dam or Levee Failure	Drought	Extreme Temperatures	Flood	Severe Weather	Severe Winter Weather	TorXdo	Wildfire
Lakeside Village Improvement District	X	X	X	1, 2	X	X	X	X	X	3
Lake Shore Estates Improvement District	X	X	X	1, 2	X	X	X	X	X	3
Lakewood Hills Improvement District	X	X	X	1, 2	X	X	X	X	X	3
USD #338 – Valley Falls	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #339 - Jefferson County North	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #340 - Jefferson West	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #341 – Oskaloosa	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #342 – McLouth	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #343 - Perry / Lecompton	1, 2, 3	X	X	4	5	6	7	5	2	7
Jefferson RWD 1	1	X	X	2	X	X	X	X	X	2
Jefferson RWD 2	1	X	X	2	X	X	X	X	X	2
Jefferson RWD 3	1	X	X	2	X	X	X	X	X	2
Jefferson RWD 7	1	X	X	2	X	X	X	X	X	2
Jefferson RWD 9	1	X	X	2	X	X	X	X	X	2
Jefferson RWD 10	1	X	X	2	X	X	X	X	X	2
Jefferson RWD 11	1	X	X	2	X	X	X	X	X	2
Jefferson RWD 12	1	X	X	2	X	X	X	X	X	2
Jefferson RWD 13	1	X	X	2	X	X	X	X	X	2
Jefferson RWD 15	1	X	X	2	X	X	X	X	X	2
Evergy	1	X	1	1	1	1	1	1	1	1
FreeState Electric Co-op	1	X	1	1	1	1	1	1	1	1
Marshall County	1 -13	14, 15	16 - 24	X	25, 26, 27	28-38	39 - 45	27, 45, 46	42 - 46	47 - 52
City of Axtell	1, 2, 3, 4	X	X	X	X	5	9	10	9	11, 12
City of Beattie	1, 2, 3, 4	X	X	X	X	6	10	11	10	13, 14
City of Blue Rapids	1, 2, 3, 4	X	X	X	X	7	10	11	10	13, 14
City of Frankfort	1, 2, 3, 4	X	7, 8	X	X	9, 10	13	14	13	16, 17
City of Marysville	1, 2, 3, 4	X	5, 6	X	X	7, 8, 9	15	16	15	X
City of Oketo	1, 2, 3, 4	X	X	X	X	6	9	10	9	12
City of Summerfield	1, 2, 3, 4	X	X	X	X	6	9	12	9	11
City of Vermillion	1, 2, 3, 4	X	X	X	X	6, 7, 8	10	12	10	X
City of Waterville	1, 2, 3, 4	X	X	X	X	7	10	11	10	13, 14
Good Shepherd School	X	X	X	X	X	X	1	1	1	1
St. Gregory School	X	X	X	X	X	X	1	1	1	1
USD #113 - Prairie Hills	X	X	X	X	X	X	1	1	1	1
USD #364 - Marysville	X	X	X	X	X	X	1	1	1	1
USD #380 - Vermillion	X	X	X	X	X	X	1	1	1	1
USD #498 - Valley Heights	X	X	X	X	X	X	1	1	1	1
Blue Stem Electric Coop	X	X	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2
Evergy	1	X	1	1	1	1	1	1	1	1
Nemaha Marshall Electric Coop	X	X	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2
Prairie Land Electric Coop	X	X	1, 2, 4	1, 2, 4	1, 2, 4	1, 2, 4	1, 2, 4	1, 2, 4	1, 2, 4	1, 2, 4
Nemaha County	1, 2, 3, 4, 5	6, 7	8	9	10	11, 1,2 13	14, 15, 16	17, 18	16	19, 20
City of Bern	1, 2, 3, 4, 5	X	X	X	X	6, 7	8	9	10	8, 11
City of Centralia	1, 2, 3, 4, 5	X	X	X	X	6, 7	8	9	10	8, 11
City of Corning	1, 2, 3, 4, 5	X	X	X	X	6, 7	8	9	10	8, 11
City of Goff	1, 2, 3, 4, 5	X	X	X	X	6, 7	8	9	10	8, 11

Table 141: Jurisdictional Mitigation Action Cross Check

Jurisdiction	All Hazards	Agricultural Infestation	Dam or Levee Failure	Drought	Extreme Temperatures	Flood	Severe Weather	Severe Winter Weather	TorXdo	Wildfire
City of Oneida	1, 2, 3, 4, 5	X	X	X	X	6, 7	8	9	10	8, 11
City of Sabetha	1, 2, 3, 4, 5	X	X	X	X	6, 7	8	9	10	8, 11
City of Seneca	1, 2, 3, 4, 5	X	X	X	X	6, 7	8	9	10	8, 11
City of Wetmore	1, 2, 3, 4, 5	X	X	X	X	6, 7	8	9	10	8, 11
Saints Peter and Paul School	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #113 - Prairie Hills	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #115 - Nemaha Central	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #380 - Vermillion	1, 2, 3	X	X	4	5	6	7	5	2	7
RWD #1	3	X	X	2	X	X	X	X	X	X
RWD #3	3	X	X	1, 2	X	X	X	X	X	X
RWD #4	1	X	X	2	X	X	X	X	X	X
Evergy	1	X	1	1	1	1	1	1	1	1
Nemaha Marshall Electric Coop	X	X	2	2	2	2	2	2	2	2
Washington County	1, 2, 3, 4	5, 6	7, 8	5, 9, 10,	11	12, 13, 14, 15, 16, 17	18, 19, 20	21, 22	20	23, 24
City of Barnes	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Clifton	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Greenleaf	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Haddam	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Hanover	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Hollenberg	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Linn	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Mahaska	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Morrowville	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Palmer	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Vining	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
City of Washington	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
USD #108 - Washington County	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #223 - Barnes / Hanover / Douglas	1, 2, 3	X	X	4	5	6	7	5	2	7
USD #224 – Clifton/Clyde	1, 2, 3	X	X	4	5	6	7	5	2	7
Blue Stem Electric Coop	1	X	1	1	1	1	1	1	1	1
Nemaha Marshall Electric Coop	1	X	2	2	2	2	2	2	2	2
Rolling Hills Electric	1	X	1	1	1	1	1	1	1	1

Note: X: 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 maXged 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).

6.8 Mitigation Action Implementation and Monitoring

Kansas Region K participating jurisdictions are responsible for implementing their 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 K HMP 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 K 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 K 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 K 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

6.9 Hazard Mitigation Plan Incorporation and Integration

The hazard mitigation plan is an overarching document that is both comprised of, and contributes to, various county, tribal, and local plans. Unfortunately, previous versions of the Kansas Region K HMP have not been incorporated into

jurisdictional planning efforts. Under the leadership of the MPC, it is hoped that when future revisions occur to these other plans, they will be measured against the contents of this HMP. Plan integration will help:

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

In cooperation with the MPC, each participating jurisdiction will be actively courted on incorporating elements of this hazard mitigation plan for any relevant plan, code or ordinance revision or creation. Each participating jurisdiction has committed to actively encourage all departments to implement actions that minimize loss of life and property damage from hazards. Whenever possible, each 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 can be integrated include:

- Comprehensive 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 HMP 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.
- Climate Action Plans: Can help address both short-term hazards and long-term climate-related risks. This includes considerations for extreme temperatures and changes in precipitation patterns.
- Transportation Plans: Helps ensure the resilience of transportation infrastructure to hazards. 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.

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 stakeholders and participating jurisdictions utilize similar internal procedures for plan incorporation and integration. The following represent commonly utilized methods by all participating jurisdictions:

- 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 HMP). 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.

All participating jurisdictions within Kansas Region K have good internal working relationships, and strong relationships with the State of Kansas and FEMA, indicating great potential for plan incorporation and integration across the planning area. Where appropriate, The Kansas Region K MPC will take the lead in integrating this HMP into overarching plans, codes, ordinances and any other relevant documents, policies, or procedures.

Federal Program Integration
KDEM and Kansas Region K work closely with FEMA Region VII in all aspects of planning, response, and mitigation. To ensure understanding and cooperation, the KDEM SHMO and Kansas Region K Emergency Managers regularly interface with FEMA mitigation staff on the status of local plans, changing FEMA guidelines, and opportunities for closer working relationships.

FEMA Grant Outcomes (FEMA GO)
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.

Risk Mapping, Assessment, and Planning Program
Kansas Region K and KDEM work closely with FEMA, tribal, and local partners to identify flood risk and promote informed planning and development practices through the Risk MAP program. Risk MAP is the process used to make FIRMs which both map flood risk and provide informational datasets. Mapping occurs in four phases:

- Discovery: An initial investigation into a community's flood risk, challenges, and goals.
- Analysis and Mapping: A complete engineering analysis is performed that leads to the initial updates to the flood maps. Work is completed with technical experts in each community to make sure the drafts line up with community knowledge.
- Preliminary Flood Map Release: A preliminary flood map and supporting preliminary flood hazard data is generated for review and comment.
- Map Adoption: Community takes full ownership of the updated flood maps and data.

Kansas Region K and KDEM work with FEMA during the map update process from discovery to map adoption. In addition, Kansas Region K and KDEM provide any available data to FEMA as requested.

Kansas Silver Jackets
The Kansas Silver Jackets is comprised of representatives from Federal and State agencies which support comprehensive and sustainable actions that reduce flood risk. In general, the Silver Jackets:

- Promote capacity to implement projects, programs, plans, policies, and legislative actions to reduce vulnerability to flooding.
- Foster and facilitate statewide coordination with organizations, agencies, and stakeholders to achieve flood risk reduction.
- Establish or supplement mechanisms to collaboratively identify issues and implement or recommend solutions.
- Increase and improve flood risk communication and outreach.
- Advise and assist communities in their efforts to become more resilient and less vulnerable to flood hazards.

FEMA National Safety of Dams Program

The State of Kansas is responsible for regulating the safety of dams and supports the National Safety of Dams Program.

Section 7 – Plan Maintenance

7.1 Introduction

The HMP 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. Kansas Region K will utilize the MPC to provide plan updates, revisions, and data collection for future HMP 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 K L EPC 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 HMP. 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 HMP 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 local jurisdictions are receiving technical assistance

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, KDEM and the full MPC will convene to document impacts on Kansas Region K 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 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 by either the full MPC or the LEPC Mitigation Sub-Committee 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 HMP 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, Kansas Region K 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:

- **2027 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.
- **2027 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.
- **2028 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.
- **2028 Fall Meeting:** As appropriate, a new MPC for Kansas Region K 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.
- **2029 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 HMP revision:

Table 142: Kansas Region K 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.
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.

Table 142: Kansas Region K HMP Update Task List

Task	Action
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 K 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 K 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 K HMP 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.

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Appendix A – Kansas Region K Adoption Documentation and FEMA Region VII Approval Documentation

Appendix B – Community Feedback

Appendix C – FEMA National Risk Index Census Tract Data

Table C1: FEMA NRI Census Tract General Data

County	Census Tract	Population	Building Value	Agricultural Value	Area	All Hazard Risk Rating	All Hazard EAL	Social Vulnerability Rating	Community Resilience Rating
Atchison	81600	4,210	$1,658,972,904	$90,591,339	392.9	Relatively Moderate	Relatively Moderate	Very Low	Relatively High
Atchison	81701	3,786	$732,475,316	$3,427,482	19.7	Relatively Low	Relatively Low	Relatively Low	Relatively High
Atchison	81702	2,602	$406,365,360	$1,779,588	10.2	Relatively Low	Relatively Low	Relatively Moderate	Relatively High
Atchison	81800	2,705	$862,810,916	$1,954,031	14.4	Relatively Low	Relatively Low	Relatively Moderate	Relatively High
Atchison	81900	3,038	$782,260,846	$0	0.9	Relatively Low	Relatively Low	Relatively High	Relatively High
Brown	480600	2,786	$1,177,962,981	$90,444,373	344.6	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High
Brown	480700	3,585	$1,000,156,452	$6,234,689	25.6	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High
Brown	480800	3,132	$1,132,138,395	$54,518,834	207.7	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High
Doniphan	20100	2,059	$1,046,623,470	$46,139,100	178.3	Relatively Moderate	Relatively High	Relatively Moderate	Relatively Moderate
Doniphan	20200	2,121	$723,573,265	$29,601,186	138.7	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Moderate
Doniphan	20300	3,330	$1,079,622,941	$17,451,655	85.3	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate
Douglas	100	2,775	$692,303,051	$5,610,408	20.5	Relatively Low	Relatively Low	Relatively Moderate	Relatively High
Douglas	201	2,118	$641,414,884	$254,781	2.9	Relatively Low	Relatively Low	Relatively Moderate	Relatively High
Douglas	202	4,971	$1,146,086,416	$336	1.2	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High
Douglas	301	4,470	$561,608,876	$34	0.3	Relatively Low	Relatively Low	Relatively Moderate	Relatively High
Douglas	302	1,881	$245,325,675	$0	0.3	Very Low	Very Low	Relatively Low	Relatively High
Douglas	400	4,844	$2,444,395,709	$14,239	1.4	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High
Douglas	501	3,130	$846,682,390	$66,995	1.5	Relatively Low	Relatively Low	Relatively Low	Relatively High
Douglas	502	5,014	$828,956,337	$0	0.9	Relatively Low	Relatively Moderate	Relatively Low	Relatively High
Douglas	602	6,515	$1,457,602,464	$38,896	3.0	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High
Douglas	603	10,155	$1,664,278,033	$230,526	5.8	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High
Douglas	604	5,331	$876,411,528	$68	1.4	Relatively Low	Relatively Moderate	Very Low	Relatively High
Douglas	701	4,061	$897,390,555	$536	1.0	Relatively Low	Relatively Low	Relatively Low	Relatively High
Douglas	703	2,973	$389,972,530	$302	0.7	Relatively Low	Relatively Low	Relatively Moderate	Relatively High
Douglas	704	3,435	$499,851,178	$67	0.8	Relatively Low	Relatively Low	Relatively Moderate	Relatively High
Douglas	797	4,944	$960,310,586	$158	1.8	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Douglas	801	5,900	$688,692,132	$451,670	3.8	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High
Douglas	802	5,859	$1,016,830,881	$126,345	1.9	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Douglas	902	2,368	$480,709,964	$362,792	1.7	Relatively Low	Relatively Low	Relatively Moderate	Relatively High
Douglas	903	1,775	$396,550,125	$0	0.5	Very Low	Relatively Low	Very Low	Relatively High
Douglas	904	3,921	$514,716,868	$201	0.6	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	1001	2,654	$699,936,883	$51,362	2.5	Relatively Low	Relatively Low	Relatively Moderate	Relatively High
Douglas	1002	5,885	$830,343,638	$815,697	5.1	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High
Douglas	1201	1,782	$459,807,008	$8,164,830	42.6	Very Low	Relatively Low	Very Low	Relatively High
Douglas	1202	7,613	$1,238,255,798	$11,610,332	45.2	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High
Douglas	1203	7,159	$1,641,243,123	$12,190,379	78.0	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High
Douglas	1400	4,759	$1,370,151,440	$30,954,946	212.2	Relatively Moderate	Relatively Moderate	Very Low	Relatively High
Douglas	1500	2,374	$1,015,057,807	$4,580,977	41.9	Relatively Low	Relatively Low	Relatively Low	Relatively High
Jackson	82600	5,148	$1,108,066,945	$37,307,267	269.9	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High
Jackson	82700	4,052	$925,535,314	$2,846,407	24.2	Relatively Moderate	Relatively Moderate	Very High	Relatively High
Jackson	82800	4,028	$913,437,902	$41,351,582	370.6	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High
Jefferson	20101	6,009	$1,317,225,354	$19,385,573	131.4	Relatively Moderate	Relatively Moderate	Relatively Low	Very High
Jefferson	20102	2,974	$614,366,131	$6,296,569	78.1	Relatively Low	Relatively Moderate	Very Low	Very High
Jefferson	20200	3,744	$1,076,321,407	$38,466,293	187.7	Relatively Moderate	Relatively Moderate	Relatively Low	Very High
Jefferson	20300	5,617	$1,343,983,170	$22,695,293	165.1	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High

Table C1: FEMA NRI Census Tract General Data

County	Census Tract	Population	Building Value	Agricultural Value	Area	All Hazard Risk Rating	All Hazard EAL	Social Vulnerability Rating	Community Resilience Rating
Marshall	40701	1,839	$862,188,041	$46,110,087	337.7	Relatively Low	Relatively Low	Relatively Low	Very High
Marshall	60510	3,755	$1,183,051,083	$4,193,429	36.6	Relatively Moderate	Relatively Moderate	Relatively Low	Very High
Marshall	70182	2,218	$711,253,716	$24,289,427	219.1	Relatively Low	Relatively Low	Relatively Moderate	Very High
Marshall	90186	2,226	$1,074,723,119	$69,254,980	320.8	Relatively Low	Relatively Moderate	Relatively Low	Very High
Nemaha	480100	3,474	$1,095,986,494	$22,349,384	90.1	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High
Nemaha	480200	4,250	$2,060,275,341	$69,131,751	273.6	Relatively Moderate	Relatively High	Relatively Low	Very High
Nemaha	480300	2,549	$1,342,755,858	$134,962,559	363.1	Relatively Moderate	Relatively Moderate	Very Low	Very High
Washington	978600	3,017	$1,354,767,058	$79,266,438	389.4	Relatively Moderate	Relatively High	Relatively Low	Relatively Moderate
Washington	978700	2,496	$1,503,404,912	$129,472,518	518.3	Relatively High	Relatively High	Relatively Low	Relatively Moderate

Source: FEMA NRI

Table C2: FEMA NRI Identified Hazard Ratings

County	Census Tract	Drought EAL	Drought Risk Rating	Cold Wave EAL	Cold Wave Risk Rating	Heatwave EAL	Heatwave Risk Rating
Atchison	81600	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively High	Relatively High
Atchison	81701	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Atchison	81702	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Atchison	81800	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Atchison	81900	No Expected Annual Losses	No Rating	Relatively Low	Relatively Moderate	Relatively High	Relatively High
Brown	480600	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High
Brown	480700	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Relatively High
Brown	480800	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High
Doniphan	20100	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High
Doniphan	20200	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High
Doniphan	20300	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very High
Douglas	100	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	201	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	202	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	301	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	302	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Low
Douglas	400	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	501	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	502	No Expected Annual Losses	No Rating	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	602	Very Low	Very Low	Relatively High	Relatively High	Relatively High	Relatively Moderate
Douglas	603	Very Low	Very Low	Relatively High	Relatively High	Relatively High	Relatively High
Douglas	604	No Expected Annual Losses	No Rating	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	701	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	703	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	704	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	797	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively High	Relatively Moderate	Relatively Moderate
Douglas	801	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate
Douglas	802	Very Low	Very Low	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate
Douglas	902	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	903	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Low
Douglas	904	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	1001	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Douglas	1002	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate
Douglas	1201	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Low
Douglas	1202	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively High	Relatively Moderate
Douglas	1203	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively High	Relatively High
Douglas	1400	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate
Douglas	1500	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Jackson	82600	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively High	Relatively High
Jackson	82700	Relatively Low	Relatively Low	Relatively Moderate	Relatively High	Relatively High	Relatively High
Jackson	82800	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively High	Relatively High
Jefferson	20101	Relatively Moderate	Relatively Low	Relatively High	Relatively High	Relatively High	Relatively High
Jefferson	20102	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Jefferson	20200	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively High	Relatively High
Jefferson	20300	Relatively Moderate	Relatively Low	Relatively High	Relatively High	Relatively High	Relatively High
Marshall	40701	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Relatively Moderate	Relatively Low
Marshall	60510	Relatively Low	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate

Table C2: FEMA NRI Identified Hazard Ratings

County	Census Tract	Drought EAL	Drought Risk Rating	Cold Wave EAL	Cold Wave Risk Rating	Heatwave EAL	Heatwave Risk Rating
Marshall	70182	Relatively Low	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate
Marshall	90186	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate
Nemaha	480100	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very High	Relatively High
Nemaha	480200	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very High	Relatively High
Nemaha	480300	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively High	Relatively High
Washington	978600	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate
Washington	978700	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate

Source: FEMA NRI

Table C3: FEMA NRI Identified Hazard Ratings

County	Census Tract	Riverine Flood EAL	Riverine Flood Risk Rating	Hail EAL	Hail Risk Rating	Lightning EAL	Lightning Risk Rating	Strong Wind EAL	Strong Wind Risk Rating
Atchison	81600	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Atchison	81701	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Atchison	81702	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate
Atchison	81800	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High
Atchison	81900	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Brown	480600	Very Low	Very Low	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High
Brown	480700	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High
Brown	480800	Very Low	Very Low	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High
Doniphan	20100	Relatively Low	Relatively Low	Very High	Very High	Relatively Moderate	Relatively Moderate	Very High	Very High
Doniphan	20200	Relatively Low	Relatively Low	Very High	Very High	Relatively Moderate	Relatively Moderate	Very High	Relatively High
Doniphan	20300	Relatively Low	Relatively Low	Very High	Very High	Relatively Moderate	Relatively Moderate	Very High	Very High
Douglas	100	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	201	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	202	Relatively Moderate	Relatively Low	Relatively High	Relatively High	Relatively Low	Relatively Low	Very High	Very High
Douglas	301	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	302	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Very Low	Very Low	Relatively Moderate	Relatively Moderate
Douglas	400	Very Low	Very Low	Relatively High	Relatively High	Relatively Moderate	Relatively Low	Very High	Very High
Douglas	501	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	502	No Expected Annual Losses	No Rating	Relatively High	Relatively High	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	602	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively Moderate	Relatively Low	Very High	Very High
Douglas	603	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High
Douglas	604	Relatively Low	Relatively Low	Relatively High	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	701	No Expected Annual Losses	No Rating	Relatively High	Relatively High	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	703	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	704	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	797	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Relatively Low	Relatively High	Very High
Douglas	801	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	802	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Relatively Low	Very High	Very High
Douglas	902	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	903	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Low	Very Low	Relatively High	Relatively Moderate
Douglas	904	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	1001	Relatively Low	Relatively Low	Relatively High	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	1002	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively Low	Relatively Low	Relatively High	Relatively High
Douglas	1201	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Low	Very Low	Relatively High	Relatively Moderate
Douglas	1202	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Low	Very High	Very High
Douglas	1203	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High
Douglas	1400	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Relatively Low	Very High	Relatively High
Douglas	1500	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Relatively Low	Relatively High	Relatively High
Jackson	82600	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Relatively High
Jackson	82700	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Very High
Jackson	82800	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Jefferson	20101	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very High	Very High	Very High	Very High
Jefferson	20102	Relatively High	Relatively Moderate	Relatively High	Relatively High	Very High	Relatively High	Relatively High	Relatively High
Jefferson	20200	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very High	Very High	Very High	Very High
Jefferson	20300	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very High	Very High	Very High	Very High
Marshall	40701	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Very High	Very High
Marshall	60510	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Low	Very High	Very High

Table C3: FEMA NRI Identified Hazard Ratings

County	Census Tract	Riverine Flood EAL	Riverine Flood Risk Rating	Hail EAL	Hail Risk Rating	Lightning EAL	Lightning Risk Rating	Strong Wind EAL	Strong Wind Risk Rating
Marshall	70182	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Very High	Very High
Marshall	90186	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low	Very High	Very High
Nemaha	480100	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High
Nemaha	480200	Very Low	Very Low	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High
Nemaha	480300	Very Low	Very Low	Relatively High	Relatively High	Relatively Low	Relatively Low	Very High	Relatively High
Washington	978600	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively High	Relatively High	Very High	Very High
Washington	978700	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively High	Relatively High	Very High	Very High

Source: FEMA NRI

Table C4: FEMA NRI Identified Hazard Ratings

County	Census Tract	Ice Storm EAL	Ice Storm Risk Rating	Winter Weather EAL	Winter Weather Rating	Tornado EAL	Tornado Risk Rating	Wildfire EAL	Wildfire Risk Rating
Atchison	81600	Relatively Moderate	Relatively Moderate	Very High	Relatively High	Very Low	Very High	Relatively Moderate	Relatively Moderate
Atchison	81701	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Relatively High	Relatively Low	Relatively Low
Atchison	81702	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Relatively High	Relatively Moderate	Very Low
Atchison	81800	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Relatively High	Relatively Moderate	Relatively Moderate
Atchison	81900	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very Low
Brown	480600	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very Low	Very High	Relatively Moderate	Relatively Moderate
Brown	480700	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Very High	Relatively Moderate	Relatively Moderate
Brown	480800	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very Low	Very High	Relatively Moderate	Relatively Low
Doniphan	20100	Relatively High	Relatively Moderate	Relatively High	Relatively High	Very Low	Very High	Relatively Moderate	Relatively Low
Doniphan	20200	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very Low	Very High	Relatively Moderate	Relatively Low
Doniphan	20300	Relatively High	Relatively High	Relatively High	Relatively High	Very Low	Very High	Relatively Low	Relatively Low
Douglas	100	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High	Relatively Low	Relatively Low
Douglas	201	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Low	Relatively Low
Douglas	202	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Relatively Low	Very Low
Douglas	301	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very Low
Douglas	302	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate	Very Low	Very Low
Douglas	400	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Relatively High	Relatively Low
Douglas	501	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Very Low
Douglas	502	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very Low	Relatively Low
Douglas	602	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Moderate	Very High	Relatively Low	Relatively Low
Douglas	603	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Moderate	Very High	Relatively Low	Relatively Low
Douglas	604	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively High	Very High	Relatively Low	Relatively Low
Douglas	701	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Relatively Low
Douglas	703	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very Low	Very Low
Douglas	704	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very Low	Very Low
Douglas	797	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Relatively Low	Relatively Low
Douglas	801	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Moderate	Very High	Very Low	Relatively Low
Douglas	802	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Moderate	Very High	Very Low	Very Low
Douglas	902	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Low	Very Low
Douglas	903	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate	Relatively Low	Very Low
Douglas	904	Relatively High	Relatively High	Relatively Moderate	Relatively High	Relatively High	Relatively High	Very Low	Very Low
Douglas	1001	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Low	Very Low
Douglas	1002	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Moderate	Very High	Relatively Low	Relatively Low
Douglas	1201	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very Low	Relatively High	Relatively Low	Relatively Low
Douglas	1202	Relatively High	Relatively High	Relatively High	Relatively High	Very Low	Very High	Very Low	Relatively Low
Douglas	1203	Relatively High	Relatively High	Relatively High	Relatively High	Very Low	Very High	Relatively Low	Relatively Low
Douglas	1400	Relatively High	Relatively High	Relatively High	Relatively High	Very Low	Very High	Relatively Low	Relatively Low
Douglas	1500	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High	Very Low	Relatively Low
Jackson	82600	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very Low	Very High	Relatively Low	Relatively Moderate
Jackson	82700	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High	Relatively Moderate	Relatively Moderate
Jackson	82800	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very Low	Relatively High	Relatively Low	Relatively High
Jefferson	20101	Relatively Moderate	Relatively Moderate	Very High	Relatively High	Very Low	Very High	Very Low	Relatively Low
Jefferson	20102	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very Low	Relatively High	Very Low	Relatively Low
Jefferson	20200	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very Low	Relatively High	Relatively Low	Relatively Moderate
Jefferson	20300	Relatively Moderate	Relatively Moderate	Very High	Relatively High	Very Low	Very High	Relatively Low	Relatively Low
Marshall	40701	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very Low	Relatively High	Relatively Moderate	Relatively Moderate
Marshall	60510	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very Low	Very High	Relatively Low	Relatively Moderate

Table C4: FEMA NRI Identified Hazard Ratings

County	Census Tract	Ice Storm EAL	Ice Storm Risk Rating	Winter Weather EAL	Winter Weather Rating	Tornado EAL	Tornado Risk Rating	Wildfire EAL	Wildfire Risk Rating
Marshall	70182	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very Low	Relatively High	Relatively Moderate	Relatively Moderate
Marshall	90186	Relatively Moderate	Relatively Low	Relatively Moderate	Relatively Moderate	Very Low	Relatively High	Relatively Moderate	Relatively Moderate
Nemaha	480100	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very Low	Very High	Relatively Low	Relatively Moderate
Nemaha	480200	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate	Very Low	Very High	Relatively Moderate	Relatively Moderate
Nemaha	480300	Relatively Moderate	Relatively Low	Relatively Moderate	Relatively Moderate	Very Low	Very High	Relatively Moderate	Relatively High
Washington	978600	Very High	Very High	Relatively High	Relatively High	Very Low	Very High	Relatively Moderate	Relatively Moderate
Washington	978700	Very High	Very High	Relatively High	Relatively High	Very Low	Very High	Relatively Moderate	Relatively Moderate

Source: FEMA NRI

Appendix D – Jurisdictional Hazard Mitigation Actions

Atchison 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
Atchison County-1	Install generators in all county facilities.	All hazards	Emergency Manager, Facilities Director	High	1, 3	$10,000 to $50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Atchison County-2	Upgrade and enhance sirens throughout county	All hazards	Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Atchison County-3	Purchase electronic mobile traffic notification signs.	All hazards	Emergency Manager, Public Works Director	Medium	1, 2	$35,000	HMGP, Jurisdiction budget	Five years	New
Atchison County-4	Conduct a regular tree trimming and tree wire installation program.	All hazards	Emergency Manager	High	1, 2	$25,000 per occurrence	HMGP, BRIC, Jurisdiction budget	On-going	On-going
Atchison County-5	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Atchison County-6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Emergency Manager	High	1, 2	Staff Time and $500	Jurisdiction budget	Five years	Carried over due to lack of staff
Atchison County-7	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Emergency Manager	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Atchison County-8	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Emergency Manager	Medium	1, 2, 4	$10,000 per location	HMGP, Jurisdiction budget	Five years	New
Atchison County-9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Low	1, 2	$5,000 - $50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Atchison County-10	Revise building codes to require low water flow toilets and faucets.	Drought	Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff

Atchison 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
Atchison County-11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Facilities Director	Low	1, 2	$25,000 per facility	HMGP, BRIC, Jurisdiction budget	-	Completed
Atchison County-12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Facilities Director	Low	1, 2	$2,000 per facility	Local budget	-	Completed
Atchison County-13	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Atchison County-14	Purchase and demolish flood prone properties	Flood	Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Atchison County-15	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Atchison County-16	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Atchison County-17	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, County Emergency Manager	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Atchison County-18	Install surge protectors in all jurisdictional facilities.	Severe Weather	Facilities Director	Medium	1, 2	$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Atchison County-19	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Facilities Director	Medium	1, 2	$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New

Atchison 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
Atchison County-20	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Emergency Manager	Medium	1, 2	$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Atchison County-21	Construct snow fences along major transportation routes.	Severe Winter Storm	Public Works Director	Low	1, 2	$25,000 - $100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Atchison County-22	Insulate water lines in all jurisdictional facilities.	Severe Winter Storm	Building Department	Low	1, 2	$10,000 - $50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Atchison County-23	Create defensible space buffers at all critical facilities	Wildfire	Public Works Director	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Atchison County-24	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Management Coordinator	Low	3	$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding
Atchison County-25	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	High	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Atchison County-26	Provide hazardous materials response training to first responders and EM staff.	Hazardous Materials Event	Emergency Manager	High	1, 2	$500 per trainee	HMGP, Jurisdiction budget	As required	New
Atchison County-27	Identify and map all structurally deficient bridges.	Infrastructure Failure	Public Works Director	Medium	1, 2	$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Atchison County-28	Conduct active shooter drills and exercises for all county personnel.	Terrorism	County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New

Atchison 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
Atchison-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	4	Unknown	Staff time	Continuous	Carried over, staff restrictions
Atchison-2	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	Medium	4	Unknown	Staff time	Continuous	Carried over, staff restrictions
Atchison-3	Promote the use of NOAA All Hazards Weather Radios for the entire community of Effingham. Seek funding to subsidize purchase and distribution of weather radios.	All Hazards	Mayor	Medium	3,4	$3,000	Jurisdiction budget, State grant, Federal grant	Three Years	Carried over, funding restrictions
Atchison-4	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Mayor	Low	1, 2	$5,000 - $50,000 per location	HMGP, Jurisdiction budget	Five years	New
Atchison-5	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Mayor	Low	1, 2	$2,000 per facility	Local budget	Three years	New
Atchison-6	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	Local	Continuous	
Atchison-7	Educate and promote local jurisdictional participation in the NFIP.	Flood	Mayor	High	2,4	Staff Time	Jurisdiction budget, State grant	Three Years	Carried over, funding restrictions
Atchison-8	Seek funding for the design and construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities	Severe Weather, Tornado	Mayor	High	2,3	$750,000	Jurisdiction budget, State grant, Federal grant	Three Years	Carried over, funding restrictions

Atchison 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
Atchison-9	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	$1,000	Jurisdiction budget	Continuous	Carried over, staff restrictions
Atchison-10	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, Jurisdiction budget	As required	New
Effingham-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	4	Unknown	Staff time	Continuous	Carried over, staff restrictions
Effingham-2	Annually host a public “hazards workshop” in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	Medium	4	Unknown	Staff time	Continuous	Carried over, staff restrictions
Effingham-3	Promote the use of NOAA All Hazards Weather Radios for the entire community of Effingham. Seek funding to subsidize purchase and distribution of weather radios.	All Hazards	Mayor	Medium	3,4	$3,000	Jurisdiction budget, State grant, Federal grant	Three Years	Carried over, funding restrictions
Effingham-4	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Mayor	Low	1, 2	$5,000 - $50,000 per location	HMGP, Jurisdiction budget	Five years	New
Effingham-5	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Mayor	Low	1, 2	$2,000 per facility	Local budget	Three years	New
Effingham-6	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	Local	Continuous	
Effingham-7	Educate and promote local jurisdictional participation in the NFIP.	Flood	Mayor	High	2,4	Staff Time	Jurisdiction budget, State grant	Three Years	Carried over, funding restrictions

Atchison 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
Effingham-8	Seek funding for the design and construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities	Severe Weather, Tornado	Mayor	High	2,3	$750,000	Jurisdiction budget, State grant, Federal grant	Three Years	Carried over, funding restrictions
Effingham-9	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	$1,000	Jurisdiction budget	Continuous	Carried over, staff restrictions
Effingham-10	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, Jurisdiction budget	As required	New
Huron-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	4	Unknown	Staff time	Continuous	Carried over, staff restrictions
Huron-2	Annually host a public “hazards workshop” in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	Medium	4	Unknown	Staff time	Continuous	Carried over, staff restrictions
Huron-3	Promote the use of NOAA All Hazards Weather Radios for the entire community of Effingham. Seek funding to subsidize purchase and distribution of weather radios.	All Hazards	Mayor	Medium	3,4	$3,000	Jurisdiction budget, State grant, Federal grant	Three Years	Carried over, funding restrictions
Huron-4	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Mayor	Low	1, 2	$5,000 - $50,000 per location	HMGP, Jurisdiction budget	Five years	New
Huron-5	Identify and prepare jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe Winter Weather	Mayor	Low	1, 2	$2,000 per facility	Local budget	Three years	New
Huron-6	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	Local	Continuous	

Atchison 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
Huron-7	Educate and promote local jurisdictional participation in the NFIP.	Flood	Mayor	High	2,4	Staff Time	Jurisdiction budget, State grant	Three Years	Carried over, funding restrictions
Huron-8	Seek funding for the design and construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities	Severe Weather, Tornado	Mayor	High	2,3	$750,000	Jurisdiction budget, State grant, Federal grant	Three Years	Carried over, funding restrictions
Huron-9	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	$1,000	Jurisdiction budget	Continuous	Carried over, staff restrictions
Huron-10	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, Jurisdiction budget	As required	New
Lancaster-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	4	Unknown	Staff time	Continuous	Carried over, staff restrictions
Lancaster-2	Annually host a public “hazards workshop” in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	Medium	4	Unknown	Staff time	Continuous	Carried over, staff restrictions
Lancaster-3	Promote the use of NOAA All Hazards Weather Radios for the entire community of Effingham. Seek funding to subsidize purchase and distribution of weather radios.	All Hazards	Mayor	Medium	3,4	$3,000	Jurisdiction budget, State grant, Federal grant	Three Years	Carried over, funding restrictions
Lancaster-4	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Mayor	Low	1, 2	$5,000 - $50,000 per location	HMGP, Jurisdiction budget	Five years	New
Lancaster-5	Identify and prepare jurisdictional building for usage as heat/cold shelter.	Extreme Temperature, Severe	Mayor	Low	1, 2	$2,000 per facility	Local budget	Three years	New

Atchison 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							
Lancaster-6	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	Local	Continuous	
Lancaster-7	Educate and promote local jurisdictional participation in the NFIP.	Flood	Mayor	High	2,4	Staff Time	Jurisdiction budget, State grant	Three Years	Carried over, funding restrictions
Lancaster-8	Seek funding for the design and construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities	Severe Weather, Tornado	Mayor	High	2,3	$750,000	Jurisdiction budget, State grant, Federal grant	Three Years	Carried over, funding restrictions
Lancaster-9	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	$1,000	Jurisdiction budget	Continuous	Carried over, staff restrictions
Lancaster-10	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, Jurisdiction budget	As required	New
Muscotah-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	4	Unknown	Staff time	Continuous	Carried over, staff restrictions
Muscotah-2	Annually host a public “hazards workshop” in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	Medium	4	Unknown	Staff time	Continuous	Carried over, staff restrictions
Muscotah-3	Promote the use of NOAA All Hazards Weather Radios for the entire community of Effingham. Seek funding to subsidize purchase and distribution of weather radios.	All Hazards	Mayor	Medium	3,4	$3,000	Jurisdiction budget, State grant, Federal grant	Three Years	Carried over, funding restrictions

Atchison 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
Muscotah-4	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Mayor	Low	1, 2	$5,000 - $50,000 per location	HMGP, Jurisdiction budget	Five years	New
Muscotah-5	Identify and prepare a jurisdictional building for usage as heat/cold shelter.	Extreme Temperatures, Severe Winter Weather	Mayor	Low	1, 2	$2,000 per facility	Local budget	Three years	New
Muscotah-6	Continued participation and compliance with the NFIP.	Flood	NFIP Coordinator	Medium	1,2	Staff Time	Local	Continuous	
Muscotah-7	Educate and promote local jurisdictional participation in the NFIP.	Flood	Mayor	High	2,4	Staff Time	Jurisdiction budget, State grant	Three Years	Carried over, funding restrictions
Muscotah-8	Seek funding for the design and construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities	Severe Weather, Tornado	Mayor	High	2,3	$750,000	Jurisdiction budget, State grant, Federal grant	Three Years	Carried over, funding restrictions
Muscotah-9	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	$1,000	Jurisdiction budget	Continuous	Carried over, staff restrictions
Muscotah-10	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, Jurisdiction budget	As required	New
USD 377 1	Purchase and install facility backup generators.	All hazards	USD 377 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 377 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 377 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, BRIC, School budget	Ten years	New
USD 377 3	Conduct hazard mitigation education programs for students.	All hazards	USD 377 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New

Atchison 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 377 4	Conduct a xeriscaping program for all school facilities	Drought	USD 377 Superintendent	Low	1, 2	$10,000 - per location	HMGP, BRIC, School Budget	Ten years	New
USD 377 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 377 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 377 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 377 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 377 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 377 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 377 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 377 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 409 1	Purchase and install facility backup generators.	All hazards	USD 409 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 409 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 409 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, BRIC, School budget	Ten years	New
USD 409 3	Conduct hazard mitigation education programs for students.	All hazards	USD 409 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 409 4	Conduct a xeriscaping program for all school facilities	Drought	USD 409 Superintendent	Low	1, 2	$10,000 - per location	HMGP, BRIC, School Budget	Ten years	New

Atchison 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 409 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperature, Severe Winter Weather	USD 409 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 409 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 409 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 409 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 409 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 409 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 409 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Evergy-1	Encourage long-term decrease in consumer energy use.	All Hazards	Director	High	1, 2, 3, 4	Staff Time	Evergy budget	As required	New

Brown 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
Brown County-1	Collect and distribute educational materials on individual and family preparedness and/or mitigation measures for property owners using both electronic and printed information	All Hazards	Emergency Manager	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity, lack of capacity
Brown County-2	Annually host a public “hazards workshop” for the residents in combination with Jurisdiction Budget festivals, fairs, or other appropriate events	All Hazards	Emergency Manager	Medium	4	$1,00o per workshop	Jurisdiction Budget/State Grant Funding	Continuous	Carried over: lack of staff, continuously available on web page
Brown County-3	Seek funding to purchase and install new warning sirens and explore new technology that issues warning messages to electronic devices	All Hazards	Emergency Manager	Medium	1,3	$60,000	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Carried over, lack of capacity, lack of capacity, progress made
Brown County-4	Develop cross-departmental information collection capabilities, and incorporate (building/parcel) data utilizing GIS	All Hazards	County Planner, county Appraiser	High	1,3	$10,000	Jurisdiction Budget, State Grant Funding, Grants	Continuous	Carried over, lack of capacity, lack of capacity, progess continually made
Brown County-5	Conduct inventory/survey for the county’s emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Manager	Medium	1	Staff Time	Jurisdiction Budget, State Grant Funding	Three years	Carried over, lack of capacity, lack of capacity, much progress made

Brown 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
Brown County-6	Identify the county's most at-risk critical facilities and evaluate potential mitigation techniques for protecting each to the maximum extent possible.	All Hazards	Emergency Manager	Medium	1,3	Staff Time	Jurisdiction Budget	Three years	Carried over, lack of capacity, constantly updated in LEOP
Brown County-7	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Brown County-8	Appoint a planning committee to develop and adopt an annex to the LEOP for dam/levee failure response and evacuation for high hazard dams/levees in the jurisdiction.	Dam and Levee Failure	Emergency Manager	High	1,3	Staff Time	Jurisdiction Budget	Three years	Carried over, lack of capacity, lack of capacity
Brown County-9	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Facilities Director	Low	1, 2	$25,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	New
Brown County 10	Brown County is committed to Carried over, lack of capacity participation and compliance with the NFIP.	Flood	Emergency Manager	High	1,2,3	Staff Time	State Grant Funding, FEMA Grants	Continuous	Carried over, lack of capacity, lack of capacity commitmen t
Brown County-11	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Grant Funding Flood Mitigation Assistance (FEMA) program	Flood	Emergency Manager	High	3,4	Staff Time	Jurisdiction Budget	Continuous	Carried over: lack of staff, continuousl y available on web page
Brown County-12	Advertise and promote the availability of flood insurance to county property owners using social media and/or direct mail.	Flood	Emergency Manager	High	4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity, lack of

Brown 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
									capacity, available on County web page
Brown County-13	Educate and promote Jurisdiction Budget jurisdictional participation in the NFIP.	Flood	Emergency Manager	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity, lack of capacity
Brown County-14	Appoint a planning committee to research and develop a Comprehensive Land Use Plan for Brown County.	Flood	County Planner	Medium	1,2	Staff Time	Jurisdiction Budget	Three years	Carried over, lack of capacity, lack of capacity, lack of political support
Brown County-15	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to county planners.	Flood	Floodplain Manager	Medium	1,2,3	Staff Time	Jurisdiction Budget	Three years	Carried over, lack of capacity, lack of capacity
Brown County-16	Develop and recommend an amendment to the County Flood Damage Prevention Ordinance to include a “no-rise (in base flood elevation)” clause for the county.	Flood	Floodplain Manager	Medium	1,2	Staff Time	Jurisdiction Budget	Three years	Carried over, lack of capacity, lack of capacity
Brown County-17	Research, design, implement, and recommend an appropriate stream buffer ordinance to protect water resources and to limit future flood damages.	Flood	County Planner, Floodplain Manager	Medium	1,2	$40,000	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Carried over, lack of capacity, lack of capacity
Brown County-18	Pony Creek Joint Watershed District No. 78 will Carried over, lack of capacity to	Flood	Emergency Manager	Medium	1,2,3	Unknown	Jurisdiction Budget,	Continuous	Carried over, lack

Brown 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
	protect the water and land resources within its jurisdiction. It will evaluate the need for further floodwater control and erosion control actions or projects. Additional effort will be made to seek alternative funding resources as they become available.						State Grant Funding, Federal Grant Funding		of capacity, lack of capacity
Brown County-19	Walnut Creek Watershed will Carried over, lack of capacity to protect the water and land resources within its jurisdiction. It will evaluate the need for further floodwater control and erosion control actions or projects. Additional effort will be made to seek alternative funding resources as they become available.	Flood	Emergency Manager	Medium	1,2,3	Unknown	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Continuous	Carried over, lack of capacity, lack of capacity
Brown County-20	Encourage and seek funding for the construction of safe rooms in public and private schools, day care centers and senior care facilities and early alert systems.	Severe Weather, Tornado	Emergency Manager	High	3	Staff Time	Jurisdiction Budget, School Districts, State Grant Funding, Federal Grant Funding	Continuous	Carried over: lack of staff
Brown County-21	Research and recommend appropriate building codes that includes wind-resistant design techniques for new construction.	Severe Weather, Tornado	County Planner, County Appraiser	High	2	Staff Time	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Carried over, lack of capacity, lack of capacity; no County building codes, no political support

Brown 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
Brown County-22	Incorporate the inspection and management of trees that may pose a threat to the county's routine maintenance process.	Severe Weather, Tornado, Infrastructure Failure	Emergency Manager	Medium	1,3	$10,000	Jurisdiction Budget	Continuous	Carried over, lack of capacity, will address with BOCC for interest
Brown County-23	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Emergency Manager	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over: seasonally available on web page
Brown County-24	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources.	Wildfire	Emergency Manager	Medium	1,3	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity, lack of capacity; quarterly meetings
Brown County-25	Create a working group to evaluate the firefighting water supply resources within the County, including both fixed and mobile supply issues.	Wildfire	Emergency Manager	Medium	1,3	Staff Time	Jurisdiction Budget	Three years	Carried over, lack of capacity, lack of capacity; quarterly meetings
Brown County-26	Distribute assessment report examples provided by the Kansas Forest Service to applicable parties to develop an understanding of the Community Wildfire Protection Plan (CWPP). Recommend joining the program and completing an assessment report for approval.	Wildfire	Emergency Manager	High	1,3,4	Staff Time	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Carried over, lack of capacity, lack of capacity, will address in Fire Chief meetings

Brown 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
Brown County-27	Appoint a rural fire committee to schedule meetings with the Kansas Forest Service to map suspected hazardous wildfire areas in the county for potential participation in the CWPP.	Wildfire	Emergency Manager	High	1,3,4	Staff Time	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Carried over, lack of capacity, lack of capacity, will address in Fire Chief meetings
Brown County-28	Incorporate wildfire maps, develop actions and projects for wildfire prevention, and complete an assessment report to meet CWPP requirements for submittal to the Kansas Forest Service.	Wildfire	Emergency Manager	High	1,3,4	$5,000	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Carried over, lack of capacity, lack of capacity, will address in Fire Chief meetings
Brown County-29	Coordinate county and Jurisdiction Budget government mitigation efforts with RECs	Infrastructure Failure	Emergency Manager	High	3	Staff Time	Jurisdiction Budget/State Grant Funding/Federal Grant Funding	Continuous	Carried over, lack of capacity, lack of capacity
Brown County-30	Encourage the repositioning of as many utility lines as possible underground. Consider Jurisdiction Budget regulations to require the placement of all new utility lines underground	Infrastructure Failure	Emergency Manager	High	2,3	Unknown	Jurisdiction Budget	Three years	Carried over, lack of capacity, will address with BOCC for interest
Brown County-31	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism	Emergency Manager	Medium	4	Staff Time n	Jurisdiction Budget, State Grant Funding, KS Animal	Continuous	Carried over, lack of capacity, lack of capacity

Brown 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
							Health, Federal Grant Funding		
Brown County-32	Appoint a committee to develop and submit an Emergency Action Plan (EAP) for each of the three High Hazard Dams owned and maintained by the Walnut Creek Watershed.	Dam and Levee Failure	Emergency Manager	High	1,2,3	Staff Time	Jurisdiction Budget	Three years	Complete
Everest-1	Collect and distribute educational materials on individual and family preparedness and/or mitigation measures for property owners each season in City newsletter.	All Hazards	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Will include seasonally in City newsletter
Everest-2	Advertise and promote the availability of flood insurance to Everest property owners by direct mail once a year in City newsletter.	Flood	Mayor	High	4	Staff Time	Jurisdiction Budget	Continuous	Will advertise in City newsletter
Everest-3	Educate and promote Jurisdiction Budget jurisdictional participation in the NFIP by direct mail once a year in City newsletter.	Flood	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding	Three years	Will advertise in City newsletter
Everest-4	Provide written material on “all hazards” for the residents available at the City Office and Library.	All Hazards	Mayor	Medium	4	Free handouts	Jurisdiction Budget, State Grant Funding	Continuous	Will start this program in 2024
Everest-5	Encourage and seek funding for the construction of safe rooms in public and private schools, day care centers and senior care facilities and encourage sign up to Brown County Textcaster warning service.	Severe Storm, Tornado	Mayor	High	3	Staff Time	Jurisdiction Budget, School Districts, State Grant Funding, Federal Grant Funding	Continuous	Carried over, lack of capacity

Brown 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
Everest-6	Educate residents about driving in winter storms and handling winter-related health effects. Encourage use of Textcaster for severe weather alerts.	Winter Storm	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Everest-7	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Everest-8	Coordinate county and Jurisdiction Budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	3	Staff Time	Jurisdiction Budget, State Grant Funding, FEMA	Continuous	Carried over, lack of capacity
Everest-9	Seek funding to purchase and install a backup power generator for the outdoor warning siren.	Infrastructure Failure	Mayor	Medium	1,3	$5,000	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Will start this action in 2024
Everest-10	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues using the City's newsletter.	Terrorism	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding, KS Animal Health, Federal Grant Funding	Continuous	On-going
~~Everest~~	~~Seek grant funding to purchase and install the new warning sirens.~~	~~All Hazards~~	~~Mayor~~	~~Medium~~	~~1,3~~	~~$30,000~~	~~Jurisdiction Budget, State Grant Funding, Federal Grant Funding~~	~~NA~~	Delete. Current siren is adequate. Will encourage use of

Brown 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
									electronic device warning use in addition to siren.
~~Everest~~	~~Appoint a planning committee to develop and adopt an annex to the LEOP for dam/levee failure response and evacuation for high hazard dams/levees in the jurisdiction.~~	~~Dam and Levee Failure~~	~~Mayor~~	~~High~~	~~1,3~~	~~Staff Time~~	~~Jurisdiction Budget~~	~~NA~~	Delete. Everest is not in the flood plain
~~Everest~~	~~On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Grant Funding Flood Mitigation Assistance (FEMA) program.~~	~~Flood~~	~~Floodplain Manager~~	~~High~~	~~3,4~~	~~Staff Time~~	~~Jurisdiction Budget~~	~~NA~~	Delete. Everest is not in the flood plain
~~Everest~~	~~Appoint a planning committee to research and develop a Comprehensive Land Use Plan.~~	~~All Hazards~~	~~Mayor~~	~~High~~	~~1,3~~	~~Staff Time~~	~~Jurisdiction Budget, State Grant Funding, Federal Grant Funding~~	~~NA~~	DELETE
Fairview-1	Will promote the use of Brown County Textcaster for emergency warning on personal electronic devices.	All Hazards	Mayor	Medium	1,3	Staff time	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Continuous	Continuous
Fairview-2	Distribute educational materials at City Office promoting individual and family preparedness and/or mitigation measures for property owners on a seasonal basis.	All Hazards	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Continuous

Brown 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
Fairview-3	Advertise and promote the availability of flood insurance to county property owners by notice on City web page.	Flood	Floodplain Manager	High	4	Staff Time	Jurisdiction Budget	Continuous	Continuous
Fairview-4	Educate and promote Jurisdiction Budget jurisdictional participation in the NFIP using City web page.	Flood	Floodplain Manager	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Continuous
Fairview-5	Encourage and seek funding for the construction of safe rooms in public and private schools, day care centers and senior care facilities and improve advanced warning systems.	Severe Storm, Tornado	Mayor	High	3	Staff Time and $500,000 per project	Jurisdiction Budget, School Districts, State Grant Funding, Federal Grant Funding	Completed	New outdoor warning siren installed
Fairview-6	Educate residents about driving in winter storms and handling winter-related health effects using NWS handouts and web page posts.	Severe Winter Weather	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Continuous
Fairview-7	Will consider design and building safe rooms for the town of Fairview if funds are made available.	Tornado	Mayor	High	2,3	Staff time	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Continuous	Continuous
Fairview-8	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Fairview-9	Coordinate county and Jurisdiction Budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	3	Staff Time	Jurisdiction Budget, State Grant Funding, FEMA	Continuous	Continuous

Brown 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
Fairview-10	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues by directing them to Extension Agent.	Terrorism	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding, KS Animal Health, Federal Grant Funding	Continuous	Continuous
~~Fairview~~	~~Incorporate the inspection and management of trees into the city maintenance program that may pose a threat to the electrical lines that could result in power outages.~~	~~Winter Storm, Utility/ Infrastructure Failure~~	~~Mayor~~	~~Medium~~	~~1,3~~	~~$5,000~~	~~Jurisdiction Budget, State Grant Funding, Federal Grant Funding~~	~~NA~~	Delete. the power company is responsible for tree trimming.
~~Fairview~~	~~On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Grant Funding Flood Mitigation Assistance (FEMA) program.~~	~~Flood~~	~~Floodplain Manager~~	~~High~~	~~3,4~~	~~Staff Time~~	~~Jurisdiction Budget~~	~~NA~~	Delete. No high risk flood areas in Fairview
~~Fairview~~	~~Appoint a planning committee to develop and adopt an annex to the LEOP for dam/levee failure response and evacuation for high hazard dams/levees in the jurisdiction.~~	~~Dam and Levee Failure~~	~~Mayor~~	~~High~~	~~1,3~~	~~Staff Time~~	~~Jurisdiction Budget~~	~~NA~~	Delete. No dam threat in the area
Hamlin-1	Distribute educational materials on individual and family preparedness and/or mitigation measures for property owners using web page links in the City newsletter.	All Hazards	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Hamlin-2	Annually host a public "hazards workshop" for the residents in combination with Jurisdiction Budget	All Hazards	Mayor	Medium	4	$300 per workshop	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity

Brown 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
	festivals, fairs, or other appropriate events drawing large crowds.								
Hamlin-3	Seek grant funding to purchase and install the new warning sirens.	All Hazards	Mayor	Medium	1,3	$30,000	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Carried over, lack of capacity
Hamlin -4	Appoint a planning committee to research and develop a Comprehensive Land Use Plan.	All Hazards	Mayor	High	1,3	Staff Time	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Carried over, lack of capacity
Hamlin -5	Appoint a planning committee to develop and adopt an annex to the LEOP for dam/levee failure response and evacuation for high hazard dams/levees in the jurisdiction.	Dam and Levee Failure	Mayor	High	1,3	Staff Time	Jurisdiction Budget	Three years	Carried over, lack of capacity
Hamlin -6	Using the Hamlin news letter, contact all property owners in Hamlin and inform them of potential availability of assistance through the Federal Grant Funding Flood Mitigation Assistance (FEMA) program.	Flood	Mayor	High	3,4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Hamlin -7	Advertise and promote the availability of flood insurance to county property owners by news letter once a year.	Flood	Mayor	High	4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Hamlin -8	Educate and promote Jurisdiction Budget jurisdictional participation in the NFIP using Hamlin newsletter.	Flood	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity

Brown 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
Hamlin -9	Encourage and seek funding for the construction of safe rooms in public and private schools, day care centers and senior care facilities and improve advanced warning systems.	Severe Storm, Tornado	Mayor	High	3	Staff Time and $500,000 per project	Jurisdiction Budget, School Districts, State Grant Funding, Federal Grant Funding	Continuous	Carried over, lack of capacity
Hamlin -10	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Hamlin -11	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Hamlin -12	Coordinate county and Jurisdiction Budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	3	Staff Time	Jurisdiction Budget, State Grant Funding, FEMA		Carried over, lack of capacity
Hamlin -13	Seek funding to purchase and install a backup power generator for the second outdoor warning siren.	Infrastructure Failure	Mayor	Medium	1,3	$30,000	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Carried over, lack of capacity
Hamlin -14	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding, KS Animal Health, Federal	Continuous	Carried over, lack of capacity

Brown 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
							Grant Funding		
Hiawatha-1	Distribute seasonable appropriate educational materials on individual and family preparedness and/or mitigation measures for property owners using City Hall and the Fischer Center.	All Hazards	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Hiawatha-2	Annually host a public “hazards workshop” for the residents in combination with Jurisdiction Budget festivals.	All Hazards	Mayor	Medium	4	$300 per workshop	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Hiawatha-3	Use Facebook and City web page to promote the use of Textcaster for electronic delivery of warnings to area residents.	All Hazards	Mayor	Medium	1,3	No cost	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Continuous	Carried over, lack of capacity
Hiawatha-4	Appoint a planning committee to develop and adopt an annex to the LEOP for dam/levee failure response and evacuation for high hazard dams/levees in the jurisdiction.	Dam and Levee Failure	Mayor	High	1,3	Staff Time	Jurisdiction Budget	One year	Carried over, lack of capacity
Hiawatha-5	Hiawatha is committed to Carried over, lack of capacity participation and compliance with the NFIP.	Flood	Mayor	High	1,2,3	Staff Time	State Grant Funding, FEMA Grants	Continuous	Carried over, lack of capacity
Hiawatha-6	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to city planners.	Flood	Mayor	Medium	1,2,3	Staff Time	Jurisdiction Budget	One year	Carried over, lack of capacity
Hiawatha-7	Use Facebook and City webpage to notify all residents of potential availability of assistance through the Federal Grant Funding Flood Mitigation	Flood	Mayor	High	3,4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity

Brown 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
	Assistance (FEMA) program, in addition to other flood protection measures.								
Hiawatha-8	Advertise and promote the availability of flood insurance to Hiawatha property owners using Facebook and the City webpage.	Flood	Mayor	High	4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Hiawatha-9	Educate and promote Jurisdiction Budget jurisdictional participation in the NFIP.	Flood	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Hiawatha-10	Seek funding to complete a stormwater drainage study for the jurisdiction that will lead to better stormwater management.	Flood	Mayor	Medium	1	Unknown	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Carried over, lack of capacity
Hiawatha-11	Encourage and seek funding for the construction of public safe rooms in Hiawatha	Severe Storm, Tornado	Mayor	High	3	Staff Time and $500,000 per project	Jurisdiction Budget, School Districts, State Grant Funding, Federal Grant Funding	Continuous	Carried over, lack of capacity
Hiawatha-12	Using Facebook, educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Weather	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Hiawatha-13	Incorporate the inspection and management of trees into the city maintenance program that may pose a threat to the electrical lines and road crossings that could result in power	Severe Winter Weather, Infrastructure Failure	Mayor	Medium	1,3	$10,000	Jurisdiction Budget, State Grant Funding, Federal	Continuous	Carried over, lack of capacity

Brown 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
	outages. The City tree board will take the lead.						Grant Funding		
Hiawatha-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Hiawatha-15	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues. The public will be encouraged to contact the County Extension Agent for information.	Terrorism	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding, KS Animal Health, Federal Grant Funding	Continuous	Carried over, lack of capacity
~~Hiawatha~~	~~Encourage the repositioning of as many utility lines as possible underground. Consider Jurisdiction Budget regulations to require the placement of all new utility lines underground. Encourage utility providers and municipalities within the county to require that utility lines and mains be installed underground.~~	~~Utility/ Infrastructure Failure~~	~~Mayor~~	~~High~~	~~1,3~~	~~Staff Time~~	~~Jurisdiction Budget~~	~~Delete~~	Delete- Every is contracted for this service – no interest in moving to undergroun d wires
~~Hiawatha~~	~~Coordinate county and Jurisdiction Budget government mitigation efforts with RECs.~~	~~Utility/ Infrastructure Failure~~	~~Mayor~~	~~High~~	~~3~~	~~Staff Time~~	~~Jurisdiction Budget, State Grant Funding, FEMA~~	~~DELETE~~	Delete- contract with Evergy for this service
Horton-1	Collect and distribute educational materials on individual and family preparedness and/or mitigation measures for property owners.	All Hazards	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity

Brown 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
Horton-2	Seek grant funding to purchase and install the new warning sirens.	All Hazards	Mayor	Medium	1,3	$30,000	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Three years	Carried over, lack of capacity
Horton-3	**Promote citizens to signup for the Brown County free textcaster service to receive immediate alerts on all hazards on electronic devices.**	All Hazards	Mayor	High	1,3	$8,000	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Continuous	New
Horton-4	Annually host a public "hazards workshop" for the residents in combination with Jurisdiction Budget festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	Medium	4	$300 per workshop	Jurisdiction Budget, State Grant Funding	Continuous	Will start in 2024
Horton-5	Appoint a planning committee to develop an Evacuation Plan for Horton in the event of dam failure. Coordinate efforts with County Emergency Management to include the evacuation plan in the LEOP.	Dam and Levee Failure	Mayor	High	1,3	Staff Time	NA	One year	Carried over, lack of capacity
Horton-6	Appoint a planning committee to develop and adopt an annex to the LEOP for dam/levee failure response and evacuation for high hazard dams/levees in the jurisdiction.	Dam and Levee Failure	Mayor	High	1,3	Staff Time	Jurisdiction Budget	Committee in place	Carried over, lack of capacity
Horton-7	Appoint a team to evaluate and assess potential downstream damage in the event of dam failure from the Mission Lake Dam and update the current Emergency Action Plan. The City should also contact the Kansas	Dam and Levee Failure	Mayor	High	1,3	Staff Time	Jurisdiction Budget	One year	Carried over, lack of capacity

Brown 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
	Department of Agriculture, Structures Division, to apply for inundation mapping and evaluation assistance for their high hazard dam.								
Horton-8	Horton is committed to Carried over, lack of capacity participation and compliance with the NFIP.	Flood	Floodplain Manager	High	1,2,3	Staff Time	State Grant Funding, FEMA Grants	Continuous	Carried over, lack of capacity
Horton-9	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to city planners.	Flood	Mayor	Medium	1,2,3	Staff Time	Jurisdiction Budget	Three years	Carried over, lack of capacity
Horton-10	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Grant Funding Flood Mitigation Assistance (FEMA) program, in addition to other flood protection measures.	Flood	Floodplain Manager	High	3,4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Horton-11	Advertise and promote the availability of flood insurance to county property owners by direct mail once a year.	Flood	Floodplain Manager	High	4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Horton-12	Educate and promote Jurisdiction Budget jurisdictional participation in the NFIP.	Flood	Floodplain Manager	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Horton-13	Encourage and seek funding for the construction of safe rooms in public and private schools, day care centers and senior care facilities and improve advanced warning systems.	Severe Storm, Tornado	Mayor	High	3	Staff Time and $500,000 per project	Jurisdiction Budget, School Districts, State Grant Funding, Federal Grant Funding	Continuous	Carried over, lack of capacity

Brown 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
Horton-14	Incorporate the inspection and management of trees into the city's routine maintenance process to remove trees that may pose a threat to people and the infrastructure.	Severe Storm, Tornado, Infrastructure Failure	Mayor	High	1,3	$10,000	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Horton-15	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Horton-16	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Horton-17	Coordinate county and Jurisdiction Budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	3	Staff Time	Jurisdiction Budget, State Grant Funding, FEMA	Continuous	Carried over, lack of capacity
Horton-18	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding, KS Animal Health, Federal Grant Funding	Continuous	Carried over, lack of capacity
~~Horton~~	~~Encourage the repositioning of as many utility lines as possible underground. Consider Jurisdiction Budget regulations to require the placement of all new utility lines underground. Encourage utility providers and municipalities within the county to require that utility lines and mains be installed underground.~~	~~Winter Storm~~	~~Mayor~~	~~High~~	~~1,3~~	~~Staff Time~~	~~Jurisdiction Budget~~	~~NA~~	Delete, no political support to bury power lines

Brown 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
Morrill-1	Distribute educational materials on individual and family preparedness and/or mitigation measures for property owners using Facebook and City newsletter.	All Hazards	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Morrill-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Grant Funding Flood Mitigation Assistance (FEMA) program using Facebook and Ci ty newsletter.	Flood	City Clerk	High	3,4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Morrill-3	Advertise and promote the availability of flood insurance to county property owners by Facebook and newsletter.	Flood	City Clerk	High	4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Morrill-4	Educate and promote Jurisdiction Budget jurisdictional participation in the NFIP using Facebook and City newsletter.	Flood	City Clerk	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Morrill-5	Carried over, lack of capacity participation and compliance with the NFIP.	Flood	City Clerk	High	3,4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Morrill-6	Install wind, hail, and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Tornado, Wildfires	Facilities Director	Low	1, 2	Facility size dependent	Jurisdiction Budget, Federal Grant Funding	Five years	New
Morrill-7	Educate residents about driving in winter storms and handling winter-related health effects using Facebook and City newsletter.	Winter Storm	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Morrill-8	Incorporate the inspection and management of trees that may pose a threat to the electrical lines that could result in power outages during severe	Winter Storm	Mayor	Medium	1,3	$5,000	Jurisdiction Budget, State Grant Funding, Federal	Continuous	Carried over, lack of capacity

Brown 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/ice storms into the city maintenance program.						Grant Funding		
Morrill-9	Coordinate county and Jurisdiction Budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	3	Staff Time	Jurisdiction Budget, State Grant Funding, FEMA	Continuous	Carried over, lack of capacity
Morrill-10	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues using County Extension Office.	Terrorism	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding, KS Animal Health, Federal Grant Funding	Continuous	Carried over, lack of capacity
Morrill	Seek grant funding to purchase and install the new warning sirens.	All Hazards	Mayor	Medium	1,3	$30,000	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Completed, backup generator in place	Completed
~~Morrill~~	~~Appoint a planning committee to develop and adopt an annex to the LEOP for dam/levee failure response and evacuation for high hazard dams/levees in the jurisdiction.~~	~~Dam and Levee Failure~~	~~Mayor~~	~~High~~	~~1,3~~	~~Staff Time~~	~~Jurisdiction Budget~~	~~Delete~~	Delete, no political support
~~Morrill~~	~~Appoint a committee to research and develop a FEMA application package for participation in the NFIP.~~	~~Flood~~	~~Mayor~~	~~High~~	~~1,2~~	~~Staff Time~~	~~Jurisdiction Budget~~	~~Delete~~	Delete, no political support
~~Morrill~~	~~Annually host a public "hazards workshop" for the residents in combination with Jurisdiction Budget festivals, fairs, or other appropriate events drawing large crowds.~~	~~All Hazards~~	~~Mayor~~	~~Medium~~	~~4~~	~~$300 per workshop~~	~~Jurisdiction Budget, State Grant Funding~~	~~Delete~~	Delete, no annual event, no political support

Brown 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
~~Morrill~~	~~Encourage and seek funding for the construction of safe rooms in public and private schools, day care centers and senior care facilities and improve advanced warning systems.~~	~~Tornado, Windstorm~~	~~Mayor~~	~~High~~	~~3~~	~~Staff Time and $500,000 per project~~	~~Jurisdiction Budget, School Districts, State Grant Funding, Federal Grant Funding~~	~~Delete~~	Delete, no political support
Powhattan-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Powhattan-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Powhattan-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Powhattan-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Powhattan-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Powhattan-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Powhattan-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New

Brown 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
Powhattan-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Powhattan-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Powhattan-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Powhattan-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Powhattan-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Powhattan-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Powhattan-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Powhattan-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Reserve-1	Using City newsletter, distribute educational materials on individual and family preparedness and/or mitigation measures for property owners.	All Hazards	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Reserve-2	During City Picnic host a public “hazards workshop” for the residents.	All Hazards	Mayor	Medium	4	$300 per workshop	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity

Brown 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
Reserve-3	Encourage residents to signup for Brown County Textcaster to receive immediate notification of severe threats on electronic devices.	All Hazards	Mayor	Medium	1,3	$20,000	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Immediate	Carried over, lack of capacity
Reserve-4	Encourage residents to become aware of safe room locations and to make plans of what to do incase of tornado damage. Use City Newsletter for education.	Severe Storm, Tornado	Mayor	High	3	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Reserve-5	Provide information in City newsletter educating residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Reserve-6	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Reserve-7	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues by forwarding requests to the County Extension Agent.	Terrorism	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding, KS Animal Health, Federal Grant Funding	Continuous	Carried over, lack of capacity
~~Reserve~~	~~Seek funding to design and build safe rooms for the town of Reserve.~~	~~Tornado~~	~~Mayor~~	~~High~~	~~1,2,3~~	~~$250,000~~	~~Jurisdiction Budget, State Grant Funding, Federal Grant Funding~~	~~Delete duplicate~~	Delete duplicate

Brown 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
~~Reserve~~	~~Seek funding to subsidize, purchase and distribution of NOAA weather radios.~~	~~All Hazards~~	~~Mayor~~	~~High~~	~~1,3,4~~	~~$8,000~~	~~Jurisdiction Budget~~	~~Delete will promote use of Textcaster in #7 above~~	Delete will promote use of Textcaster in #7 above
~~Reserve~~	~~Advertise and promote the availability of flood insurance to county property owners.~~	~~Flood~~	~~Floodplain Manager~~	~~High~~	~~4~~	~~Staff Time~~	~~Jurisdiction Budget~~	~~DELETE duplicate~~	DELETE duplicate
~~Reserve~~	~~Educate and promote Jurisdiction Budget jurisdictional participation in the NFIP.~~	~~Flood~~	~~Floodplain Manager~~	~~Medium~~	~~4~~	~~Staff Time~~	~~Jurisdiction Budget, State Grant Funding~~	~~DELETE duplicate~~	DELETE duplicate
~~Reserve~~	~~Coordinate county and Jurisdiction Budget government mitigation efforts with RECs.~~	~~Utility/ Infrastructure Failure~~	~~Mayor~~	~~High~~	~~3~~	~~Staff Time~~	~~Jurisdiction Budget, State Grant Funding, FEMA~~	~~Delete contract with Evergy for this service~~	Delete contract with Evergy for this service
~~Reserve~~	~~Appoint a planning committee to develop and adopt an annex to the LEOP for dam/levee failure response and evacuation for high hazard dams/levees in the jurisdiction.~~	~~Dam and Levee Failure~~	~~Mayor~~	~~High~~	~~1,3~~	~~Staff Time~~	~~Jurisdiction Budget~~	~~Delete- Reserve is not in flood plain~~	Delete- Reserve is not in flood plain
Robinson-1	Distribute educational materials on individual and family preparedness and/or mitigation measures for property owners using handouts at the City office and PSA on the web page and in City newsletter.	All Hazards	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Robinson-2	Have material continually available for “all hazards” in the City office , online on the web page and published in the newsletter.	All Hazards	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Robinson-3	Encourage residents to signup for Brown County Textcaster to receive immediate notification of severe threats on electronic devices.	All Hazards	Mayor	Medium	1,3	$20,000	Jurisdiction Budget	Immediate	Carried over, lack of capacity

Brown 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
Robinson-4	Robinson is committed to Carried over, lack of capacity participation and compliance with the NFIP.	Flood	Mayor	High	1,2,3	Staff Time	State Grant Funding, FEMA Grants	Continuous	Carried over, lack of capacity
Robinson-5	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to city planners.	Flood	Mayor	Medium	1,2,3	Staff Time	Jurisdiction Budget	Two years	Will plan to appoint a committee
Robinson-6	Using the City web page and newsletter, contact all property owners in Robinson and inform them of potential availability of assistance through the Federal Grant Funding Flood Mitigation Assistance (FEMA) program, in addition to other flood protection measures.	Flood	Mayor	High	3,4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Robinson-7	Advertise and promote the availability of flood insurance to county property owners by web page and newsletter.	Flood	Mayor	High	4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Robinson-8	Educate and promote Jurisdiction Budget jurisdictional participation in the NFIP using web page and newsletter.	Flood	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Robinson-9	Seek funding for the construction of public safe room.	Severe Storm, Tornado	Mayor	High	3	Staff Time and $500,000 per project	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Continuous	Carried over, lack of capacity
Robinson-10	Educate residents about driving in winter storms and handling winter-related health effects using handouts at City Office, web page postings, newsletter articles.	Severe Winter Storm	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Robinson-11	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC,	As required	New

Brown 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
							Jurisdiction budget		
Robinson-12	Coordinate county and Jurisdiction Budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	3	Staff Time	Jurisdiction Budget, State Grant Funding, FEMA	Continuous	Carried over, lack of capacity
Robinson-12	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues and instruct them to contact the County Extension Agent..	Terrorism	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding, KS Animal Health, Federal Grant Funding	Continuous	Carried over, lack of capacity
~~Robinson~~	~~Appoint a planning committee to develop and adopt an annex to the LEOP for dam/levee failure response and evacuation for high hazard dams/levees in the jurisdiction.~~	~~Dam and Levee Failure~~	~~Mayor~~	~~High~~	~~1,3~~	~~Staff Time~~	~~Jurisdiction Budget~~	~~DELETE~~	DELETE- no upstream dams/ levees that threaten Robinson
~~Robinson~~	~~Seek grant funding to purchase and install the new warning sirens.~~	~~All Hazards~~	~~Mayor~~	~~Medium~~	~~1,3~~	~~——~~	~~Jurisdiction Budget, State Grant Funding, Federal Grant Funding~~	~~DELETE~~	Delete – existing sirens are adequate
Willis-1	Encourage residents to signup for Brown County Textcaster to receive immediate notification of severe threats on electronic devices.	All Hazards	Mayor	Medium	1,3	$20,000	Jurisdiction Budget	Immediate	Carried over, lack of capacity

Brown 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
Willis-2	Annually host a public "hazards workshop" for the residents in combination with Jurisdiction Budget festivals in September.	All Hazards	Mayor	Medium	4	$300 per workshop	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Willis-3	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Grant Funding Flood Mitigation Assistance (FEMA) program.	Flood	Floodplain Manager	High	3,4	Staff Time	Jurisdiction Budget	Continuous	
Willis -4	Advertise and promote the availability of flood insurance to county property owners by direct mail once a year.	Flood	Floodplain Manager	High	4	Staff Time	Jurisdiction Budget	Continuous	
Willis -5	Include with annual water quality report, and inclusion in welcome packet, the availability of flood insurance to Willis property owners.	Flood	Mayor	High	4	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of capacity
Willis -6	Educate and promote Jurisdiction Budget jurisdictional participation in the NFIP.	Flood	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Willis -7	Carried over, lack of capacity working on grant seeking funding for the construction of safe rooms in proposed new fire station.	Severe Weather, Tornado	Mayor	High	3	Staff Time and $500,000 per project	Jurisdiction Budget, School Districts, State Grant Funding, Federal Grant Funding	Continuous	Carried over, lack of capacity
Willis -8	Use Facebook page to educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	Staff Time	Jurisdiction Budget, State Grant Funding	Continuous	Carried over, lack of capacity
Willis -9	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC,	As required	New

Brown 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
							Jurisdiction budget		
Willis -10	Promote and educate the public and private sectors on potential agricultural terrorism and bio-terrorism issues by contacting the County Extension agent..	Terrorism	Mayor	Medium	4	Staff Time	Jurisdiction Budget, State Grant Funding, KS Animal Health, Federal Grant Funding	Continuous	Continuous
Willis	Seek grant funding to purchase and install the new warning sirens.	All Hazards	Mayor	Medium	1,3	$30,000	Jurisdiction Budget, State Grant Funding, Federal Grant Funding	Completed siren installed in 2023	Completed
~~Willis~~	~~Appoint a planning committee to research and develop a Comprehensive Land Use Plan.~~	~~All Hazards~~	~~Mayor~~	~~High~~	~~1,3~~	~~Staff Time~~	~~Jurisdiction Budget, State Grant Funding, Federal Grant Funding~~	~~Delete~~	Delete – no political support
~~Willis~~	~~Seek funding to purchase and install a backup power generator for the second outdoor warning siren.~~	~~Utility/ Infrastructure Failure~~	~~Mayor~~	~~Medium~~	~~1,3~~	~~$30,000~~	~~Jurisdiction Budget, State Grant Funding, Federal Grant Funding~~	~~Delete~~	Delete – pursuing new community safe building
USD 415 1	Purchase and install facility backup generators.	All hazards	USD 415 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding

Brown 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 415 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 415 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 415 3	Conduct hazard mitigation education programs for students.	All hazards	USD 415 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 415 4	Conduct a xeriscaping program for all school facilities	Drought	USD 415 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 415 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 415 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 415 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 415 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 415 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 415 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 415 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 415 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 430 1	Purchase and install facility backup generators.	All hazards	USD 430 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 430 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 430 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 430 3	Conduct hazard mitigation education programs for students.	All hazards	USD 430 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New

Brown 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 430 4	Conduct a xeriscaping program for all school facilities	Drought	USD 430 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 430 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 430 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 430 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 430 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 430 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 430 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 430 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 430 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Evergy-1	Encourage long-term decrease in consumer energy use.	All Hazards	Director	High	1, 2, 3, 4	Staff Time	Evergy budget	As required	new

Doniphan 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
Doniphan County-1	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	Emergency Manager	High	4	Staff Time	Local	Continuous	Carried over due to lack of staff
Doniphan County-2	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other community events drawing large crowds.	All Hazards	Emergency Manager	High	3,4	$1,000 per workshop	Local, State, Federal	Continuous	Carried over due to lack of staff
Doniphan County-3	Develop cross-departmental information collection capabilities, and incorporate cadastral (building/parcel) data utilizing GIS	All Hazards	Emergency Manager	Medium	4	Staff Time	Local, State	Three years	Carried over due to lack of staff
Doniphan County-4	Update the Comprehensive Land Use Plan for the County.	All Hazards	Emergency Manager	Medium	1,2	Staff Time	Local	Three years	Carried over due to lack of staff
Doniphan County-5	Conduct inventory/survey for the county emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Manager	Medium	1,3	Staff Time	Local, State	Three years	Carried over due to lack of staff
Doniphan County-6	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner.	All Hazards	Emergency Manager	Medium	1,3,4	Staff Time	Local, State	Three years	Carried over due to lack of staff
Doniphan County-7	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Doniphan County-8	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Emergency Manager	High	1, 2	Staff Time and $500	Jurisdiction budget	Five years	Carried over due to lack of staff
Doniphan County-9	The Elwood-Gladden Drainage District will continue to operate and maintain their levee in accordance with appropriate regulatory requirements.	Dam and Levee Failure	Emergency Manager	High	1	Staff Time	Local, State, Federal	Continuous	Carried over due to lack of staff

Doniphan 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
Doniphan County-10	The Burr Oak Drainage District will continue to maintain and operate flood control structures and channels, allowing storm water runoff to pass through the district without causing flooding of property.	Dam and Levee Failure	Emergency Manager	Medium	1	Staff Time	Local, State, Federal	Continuous	Carried over due to lack of staff
Doniphan County-11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Emergency Manager	Low	1, 2	$25,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Doniphan County-12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Emergency Manager	Low	1, 2	$2,000 per facility	BRIC, Jurisdiction budget	Five years	New
Doniphan County-13	Doniphan County and the incorporated cities will work in coordination with the KDA-DWR and FEMA to develop D-FIRMs for the county and incorporated cities.	Flood	Emergency Manager	High	2	Staff Time	Local, State, Federal	Three years	Carried over due to lack of staff
Doniphan County-14	Continued participation in the NFIP. Adopt and enforce floodplain management regulations that meet or exceed the minimum requirements of the NFIP.	Flood	Zoning Administrator	High	2	Staff Time	None	Continuous	Carried over due to lack of staff
Doniphan County-15	The County and local governments will work with the KDA-DWR to educate and promote local jurisdictional participation in the NFIP.	Flood	Emergency Manager	High	1,2	Staff Time	Local, State	Continuous	Carried over due to lack of staff
Doniphan County-16	Doniphan County is committed to continued participation and compliance with the NFIP.	Flood	Emergency Manager	High	1,2	Staff Time	Local	Continuous	Carried over due to lack of staff
Doniphan County-17	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners.	Flood	Emergency Manager	High	1,2	Fair market value	Local, State, Federal	Continuous	Carried over due to lack of funding

Doniphan 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
Doniphan County-18	Contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program	Flood	Emergency Manager	High	1,4	Staff Time	Local, State, Federal	Continuous	Carried over due to lack of staff
Doniphan County-19	Identify flash-flood prone areas to consider flood reduction measures to county planners.	Flood	Emergency Manager	High	1,2,4	Staff Time	Local	Three years	Carried over due to lack of staff
Doniphan County-20	Research and design an appropriate stream buffer ordinance to further protect the jurisdiction's water resources and to limit future flood damages adjacent to major waterways.	Flood	Emergency Manager	High	1,2	$40,000	Local, State, Federal	Three years	Carried over due to lack of funding
Doniphan County-21	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Emergency Manager	High	2,3,4	Staff Time, $500,000	Local, State, Federal	Continuous	Carried over due to lack of funding
Doniphan County-22	Consider researching and recommending appropriate building codes for the County that include wind-resistant design techniques for new construction.	Severe Weather, Tornado	Emergency Manager	High	2	Staff Time	Local	Three years	Carried over due to lack of staff
Doniphan County-23	Research, develop and recommend an ordinance /resolution to require installation of tornado shelters for any new major manufactured and/or mobile home parks with more than 10 mobile home spaces.	Severe Weather, Tornado	Emergency Manager	High	2,3	Staff Time	Local	Three years	Carried over due to lack of staff
Doniphan County-24	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	Emergency Manager	High	4	Staff Time	Local	Continuous	Carried over due to lack of staff
Doniphan County-25	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources.	Wildfire	Emergency Manager	High	1,3	Staff Time	Local	Three years	Carried over due to lack of staff

Doniphan 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
Doniphan County-26	Evaluate the firefighting water supply resources within the County., including both fixed and mobile supply issues.	Wildfire	Emergency Manager	Medium	1,3	Staff Time	Local	Three years	Carried over due to lack of staff
Doniphan County-27	Develop and implement a wildfire prevention/education program.	Wildfire	Emergency Manager	Medium	4	$300 per workshop	Local		Carried over due to lack of funding
Doniphan County-28	Coordinate county and local government mitigation efforts with RECs	Infrastructure Failure	Emergency Manager	High	3,4	Staff Time	Local	Continuous	Carried over due to lack of staff
Doniphan County-29	Incorporate the inspection and management of trees that may pose a threat to the county's routine maintenance system process.	Infrastructure Failure	Emergency Manager	Medium	3	$8,000	Local	Continuous	Carried over due to lack of funding
Doniphan County-30	The Doniphan Electric Cooperative Association, Inc. will continue to coordinate mitigation efforts with county and local governments	Infrastructure Failure	Emergency Manager	Medium	3,4	Staff Time	Local, State, Federal	Three years	Carried over due to lack of staff
Doniphan County-31	Emergency Generators. Acquire and install a permanently mounted generator capable of handling all emergency operations at the Doniphan County Courthouse	Infrastructure Failure	Emergency Management Coordinator	High	1,2	$30,000	Local, Grant	Five years	Carried over due to lack of funding
Doniphan County-32	The Elwood Gladden Drainage District will work in coordination with Doniphan County and the cities of Elwood and Wathena to research and pursue funding options for the purchase and installation of discharge pumps and outlet drainages for both city's sewage lagoons, allowing effluent discharge to flow beyond the levee systems to the Missouri River.	Infrastructure Failure	Emergency Manager	Medium	3	Staff Time	Local, State, Federal	Three years	Carried over due to lack of funding

Doniphan 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
Elwood-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	4	Staff Time	Local	Continuous	Carried over due to lack of staff
Elwood-2	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other community events drawing large crowds.	All Hazards	Mayor	High	3,4	Staff Time	Local, State, Federal	Continuous	Carried over due to lack of staff
Elwood-3	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Elwood-4	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Mayor	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Elwood-5	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Mayor	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Elwood-6	Doniphan County and the incorporated cities will work in coordination with the KDA-DWR and FEMA to develop D-FIRMs for the county and incorporated cities.	Flood	Mayor	Medium	2	Staff Time	Local, State, Federal	Three years	Carried over due to lack of staff
Elwood-7	NFIP. Participation in the NFIP ensures that citizens are provided the opportunity to purchase flood insurance to protect themselves against flood losses. Adopt and enforce floodplain management regulations that meet or exceed the minimum requirements of the NFIP.	Flood	City Clerk	High	2	None-	None	Continuous	On-going
Elwood-8	Educate and promote local jurisdictional participation in the NFIP.	Flood	Mayor	High	1,2	Staff Time	Local, State	Three years	Carried over due to lack of staff
Elwood-9	Research and pursue funding options to map and upgrade the city of Elwood storm drain system to minimize	Flood	Mayor	High	1,2	$300,000	Local, State, Federal	Five years	Carried over due to

Doniphan 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
	overflow and subsequent damage to property.								lack of funding
Elwood-10	The city of Elwood will work in coordination with Doniphan County and the Elwood Gladden Drainage District to research and pursue funding options for the purchase and installation of discharge pumps and outlet drainages for the city of Elwood's sewage lagoon, allowing effluent discharge to flow beyond the levee system to the Missouri River.	Flood	Mayor	Medium	1,3,4	Unknown	Local, State, Federal	########	Carried over due to lack of funding
Elwood-11	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Mayor	High	2,3,4	Staff Time, $500,000	Local, State, Federal	Continuous	Carried over due to lack of funding
Elwood-12	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	Staff Time	Local	Continuous	Carried over due to lack of staff
Elwood-13	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Elwood-14	Coordinate county and local government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	3,4	Staff Time	Local	Continuous	Carried over due to lack of staff
Elwood-15	Acquire and Install emergency generators for the City of Elwood's water tower, Community Buildings and City Hall.	Infrastructure Failure	Council Member/	High	1,2	$30,000	Local, Grant	Five years	Carried over due to lack of funding
Elwood-16	Research and pursue funding options for the mapping of utility services provided in the city of Elwood, including water, sewer, and electrical utilities	Infrastructure Failure	Mayor	Medium	1,3	$15,000	Local, State, Federal	########	Carried over due to lack of funding

Doniphan 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
Elwood-17	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	High	3,4	Staff Time	Local, State, Federal	Three years	Carried over due to lack of staff
Troy-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	4	Staff Time	Local	Continuous	Carried over due to lack of staff
Troy-2	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other community events drawing large crowds.	All Hazards	Mayor	High	3,4	Staff Time	Local, State, Federal	Continuous	Carried over due to lack of staff
Troy-3	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	Unknown	Local, State	Three years	Carried over due to lack of staff
Troy-4	Seek funding for the purchase and installation of an additional outdoor warning siren in the city.	All Hazards	Mayor	Medium	1,3	$30,000	Local, State, Federal	Three years	Carried over due to lack of funding
Troy-5	Install evacuation route and high ground signage in any high hazard dam or levee failure potential inundation areas.	Dam or Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Troy-6	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Mayor	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Troy-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Mayor	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Troy-8	Doniphan County and the incorporated cities will work in coordination with the KDA-DWR and FEMA to develop D-FIRMs for the county and incorporated cities.	Flood	Mayor	Medium	2	Staff Time	Local, State, Federal	Three years	Carried over due to lack of staff

Doniphan 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
Troy-9	NFIP. Participation in the NFIP ensures that citizens are provided the opportunity to purchase flood insurance to protect themselves against flood losses. Adopt and enforce floodplain management regulations that meet or exceed the minimum requirements of the NFIP.	Flood	City Clerk	High	2	None-	None	Continuous	On-going
Troy-10	Educate and promote local jurisdictional participation in the NFIP.	Flood	Mayor	High	1,2	Staff Time	Local, State	Three years	Carried over due to lack of staff
Troy-11	The City of Troy is committed to continued participation and compliance with the NFIP.	Flood	City Clerk, City Attorney	High	1,2	Staff Time	Local	Continuous	Carried over due to lack of staff
Troy-12	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	Mayor	Medium	1,3	Staff Time and mailing costs	Local, State, Federal	Two years	Carried over due to lack of staff
Troy-13	Research and pursue funding options to map and upgrade the city storm drain system to minimize overflow and subsequent damage to property.	Flood	Mayor	Medium	1,3,4	$300,000	Local, State, Federal	Three years	Carried over due to lack of funding
Troy-14	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Mayor	High	2,3,4	Staff Time, $500,000	Local, State, Federal	Continuous	On-going
Troy-15	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	Staff Time	Local	Continuous	Carried over due to lack of staff
Troy-16	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

Doniphan 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
Troy-17	Coordinate county and local government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	3,4	Staff Time	Local	Continuous	Carried over due to lack of staff
Troy-18	Research funding options and purchase emergency generators and/or transfer switches to provide backup power for Critical Facilities.	Infrastructure Failure	Mayor	Medium	1,3	$50,000	Local, State, Federal	Three years	Carried over due to lack of funding
Wathena-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	4	Staff Time	Local	Continuous	Carried over due to lack of staff
Wathena-2	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other community events drawing large crowds.	All Hazards	Mayor	High	3,4	Staff Time	Local, State, Federal	Continuous	Carried over due to lack of staff
Wathena-3	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	Unknown	Local, State	Three years	Carried over due to lack of staff
Wathena-4	Research and developing a Comprehensive Land Use Plan for the city of Wathena, as well as the creation and adoption of Zoning Ordinances for the city.	All Hazards	Mayor	Medium	1,3,4	Staff Time	Local, State, Federal	Three years	Carried over due to lack of staff
Wathena-5	Install evacuation route and high ground signage in any high hazard dam or levee failure potential inundation areas.	Dam or Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Wathena-6	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Mayor	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Wathena-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Mayor	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New

Doniphan 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
Wathena-8	NFIP. Participation in the NFIP ensures that citizens are provided the opportunity to purchase flood insurance to protect themselves against flood losses. Adopt and enforce floodplain management regulations that meet or exceed the minimum requirements of the NFIP.	Flood	City Clerk	High	2	None-	None	Continuous	On-going
Wathena-9	Educate and promote local jurisdictional participation in the NFIP.	Flood	Mayor	High	1,2	Staff Time	Local, State	Three years	Carried over due to lack of staff
Wathena-10	The City is committed to continued participation and compliance with the NFIP.	Flood	City Clerk	High	1,2	Staff Time	Local	Continuous	Carried over due to lack of staff
Wathena-11	The city of Wathena will work in coordination with Doniphan County and the Elwood Gladden Drainage District to research and pursue funding options for the purchase and installation of discharge pumps and outlet drainages for the city of Wathena's sewage lagoon, allowing effluent discharge to flow beyond the levee system to the Missouri River.	Flood	Mayor	Medium	3	Unknown	Local, State, Federal	Three years	Carried over due to lack of funding
Wathena-12	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Mayor	High	2,3,4	Staff Time, $500,000	Local, State, Federal	Continuous	Carried over due to lack of funding
Wathena-13	Seek funding to design community tornado shelters and apply for grant funding for construction.	Severe Weather, Tornado	Mayor	Medium	2,3	$500,000	Local, State, Federal	Three years	Carried over due to lack of funding
Wathena-14	Educate residents about driving in winter storms and handling winter-related health effects.	Severe Winter Storm	Mayor	High	4	Staff Time	Local	Continuous	Carried over due to lack of staff

Doniphan 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
Wathena-15	Coordinate county and local government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	3,4	Staff Time	Local	Continuous	Carried over due to lack of staff
Wathena-16	Research and pursue funding options for the mapping of utility services provided in the city of Wathena, including water, sewer, and electrical utilities.	Infrastructure Failure	Mayor	Medium	1,3	$10,000	Local, State, Federal	Three years	Carried over due to lack of funding
Wathena-17	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	High	3,4	Staff Time	Local, State, Federal	Three years	Carried over due to lack of staff
USD 411 1	Purchase and install facility backup generators.	All hazards	USD 411 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 411 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 411 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 411 3	Conduct hazard mitigation education programs for students.	All hazards	USD 411 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 411 4	Conduct a xeriscaping program for all school facilities	Drought	USD 411 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 411 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 411 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 411 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 411 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New

Doniphan 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 411 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 411 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 411 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 411 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 429 1	Purchase and install facility backup generators.	All hazards	USD 429 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 429 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 429 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 429 3	Conduct hazard mitigation education programs for students.	All hazards	USD 429 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 429 4	Conduct a xeriscaping program for all school facilities	Drought	USD 429 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 429 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 429 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 429 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 429 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 429 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 429 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 429 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 429 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC,	As required	New

Doniphan 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
							School Budget		
Evergy-1	Encourage long-term decrease in consumer energy use.	All Hazards	Director	High	1, 2, 3, 4	Staff Time	Evergy budget	As required	New

Douglas 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
Douglas County-01	Install generators in all county facilities.	All hazards	Administration/Sustainability	Medium	1, 3	$10,000 to $50,000 per location	HMGP, BRIC, Local budgets	3-5 years	Carried over, lack of funding
Douglas County-02	Continue to evaluate, upgrade, and maintain communitywide outdoor omnidirectional voice/siren warning systems.	All hazards	Emergency Management	High	1, 2	Staff Time	Local budgets	Ongoing	On-going
Douglas County-03	Continue to acquire and distribute NOAA Weather Radios to all Critical Facilities and the public.	All Hazards	Emergency Management	High	2, 3	$15,000	HMGP, Local budgets	Ongoing	On-going
Douglas County-04	Purchase electronic mobile traffic notification signs.	All Hazards	Emergency Management/Public Works	High	1, 2	$35,000	HMGP, Local budgets	3-5 years	Carried over, lack of funding
Douglas County-05	Public Info/Education on Natural Hazards	All Hazards	Emergency Management	High	1,2,3	Staff Time	HMGP, BRIC, Local budgets	Ongoing	On-going
Douglas County-06	Conduct agricultural education programs on the identification of invasive species and pathogens.	Agricultural Infestation	Extension Office	Medium	1, 3	Staff Time	Grants, Local budgets	3-5 years	Carried over, lack of funding
Douglas County-07	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Extension Office	High	1, 2	Staff Time and $500	Grants, Local budgets	Ongoing	Carried over, lack of funding
Douglas County-08	Conduct routine inspections and maintenance of dams and levees to identify and address vulnerabilities.	Dam or Levee Failure	Public Works/MSO	High	1, 2	$100,000 - $500,000 per year	Local budgets, BRIC	Ongoing	On-going
Douglas County-09	Develop exercises for emergency response plans and evacuation procedures for communities downstream.	Dam or Levee Failure	Emergency Management	High	1, 4	Staff Time	Local budgets, BRIC	Ongoing	Carried over, lack of staff
Douglas County-10	Conduct a native drought-resistant plant and vegetation program for all jurisdictional-owned facilities.	Drought	Sustainability	High	1, 2	$5,000 - $50,000 per location	HMGP, BRIC, Local budgets	3-5 years	Carried over, lack of funding
Douglas County-11	Create and distribute materials to builders and homeowners to encourage water-saving equipment, technology,	Drought	Administration/Sustainability	Medium	1, 2	Staff Time	Grants, Local budgets	3-5 years	Carried over, lack of funding

Douglas 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
	and materials in new homes/renovations.								
Douglas County-12	Modernization of HVAC systems in jurisdictional facilities.	Extreme Temperatures	Administration/Sustainability	High	1, 2	$25,000 per facility	BRIC, Local budgets	3-5 years	Carried over, lack of funding
Douglas County-13	Develop early warning systems and evacuation plans for flood events.	Flood	Emergency Management	High	1,2	Staff Time	HMGP, BRIC, Local Budgets	Ongoing	Carried over, lack of funding
Douglas County-14	Procure permanent signage to warn of flood hazard areas.	Flood	Emergency Management/Public Works	High	1, 2	Location dependent	HMGP, BRIC, Local budgets	3-5 years	Carried over, lack of funding
Douglas County-15	Partner with the Division of Water Resources to update out-of-date FEMA floodplain maps.	Flood	Zoning and Codes	High	1, 2, 3, 4	Staff Time	DWR, FEMA	In Progress	Carried over, lack of funding
Douglas County-16	Partnering with private landowners and local agencies. Examples include stream setbacks, open space zoning, conservation easements, etc.	Flood	Zoning and Codes	High	1, 2, 3, 4	Staff Time	County led	In progress	Carried over, lack of staff
Douglas County-17	Reduce or buy out repetitive loss properties.	Flood	Zoning and Codes	High	1, 2, 3, 4	The seller has historically covered Staff Time with a 25% match.	KDEM, BRIC	In progress and as needed.	Carried over, lack of funding
Douglas County-18	Working with partners such as NRCS to apply for funding available after a disaster to assist with bank restoration.	Flood	Zoning and Codes	Medium	1, 2, 3, 4	Staff Time County could assist with grant funding application	NRCS-Dept. of Ag. Potential partner with Ks Forest Service.	As needed	Carried over, lack of funding

Douglas 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
Douglas County-19	KDA grants to partner with USACE to assist with a focused study of a highly impacted area to better direct and complement future grant and aid applications.	Flood	Zoning and Codes	Medium	1, 2, 3, 4	Staff Time	USACE/KDA	As needed	Carried over, lack of funding
Douglas County-20	Construct lightning rods or air terminals (strike termination devices) for the protection of Critical Facilities	Severe Weather	Emergency Management/Administration/Public Works	Medium	1,2	Cost of Device/Installation	HMGP, BRIC, Local Budgets	3-5 years	Carried over, lack of funding
Douglas County-21	Convert one or more shipping containers into semi-permanent storm shelters for individuals residing in Lawrence's Pallet Shelter Village.	Severe Weather	Lawrence Homeless Solutions Division		2	$50,000	Grants, Local budgets	1 year	Carried over, lack of funding
Douglas County-22	Purchase new tires and new blades for the Township work truck to allow more efficient snow/debris removal in localized situations after storms.	Severe Winter Weather, Severe Weather	Grant Twp	High	1, 2	$3,500	Grants, Local budgets	1 year	Carried over, lack of funding
Douglas County-23	Purchase a newer used road grader/plow to clear snow and debris.	Severe Winter Weather, Severe Weather	Grant Twp	High	1, 2	$150,000	Grants, Local budgets	1 year	Carried over, lack of funding
Douglas County-24	Promote the installation of tornado-safe rooms or shelters in homes and public buildings.	Tornado	Emergency Management/Sustainability	High	2,3	Staff Time	HMGP, BRIC, Local Budgets	Ongoing	On-going
Douglas County-25	Creating a Community Wildfire Protection Plan (CWPP) that considers key stakeholders, identified risks, assets at risk, fire fuels class, and an action plan.	Wildfire	Lawrence-Douglas County Fire Medical	Medium	2,3,4	$145,000	Community Wildfire Defense Grant Program	5 years	Carried over, lack of funding

Douglas 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
Douglas County-26	Public Burn Ban Warning Signage and education/outreach.	Wildfire	Emergency Management/Consolidated Fire #1	High	1,2,3	Staff Time	HMGP, BRIC, Local budgets	Ongoing	On-going
Douglas County-27	Civil Unrest personal protective equipment (Riot Gear/Gas Masks)	Civil Unrest	Sheriff Office	High	2, 4	$50,000-$60,000	Grants, Donations, Local budgets	2 years	Carried over, lack of funding
Douglas County-28	Establish a community-based conflict resolution program to address underlying tensions and grievances.	Civil Unrest	Sheriff Office	Medium	2, 4	$5,000 - $20,000 per program	Grants, Donations, Local budgets	2 years	Carried over, lack of funding
Douglas County-29	Purchase/sustain data backups of county infrastructure as appropriate.	Cybersecurity Incident	IT	High	1, 2	Data size dependent	Local budgets	3-5 years	Carried over, lack of funding
Douglas County-30	Provide hazardous materials response training to first responders and emergency management staff.	Hazardous Materials Event	LDCFM/Emergency Management	High	1, 2	$500 per trainee	HMGP, Local budgets	In progress	Carried over, lack of funding
Douglas County-31	Identify and map all roads and bridges with structural concerns.	Infrastructure Failure	Public Works		1, 2	$1,000,000 per facility	HMGP, BRIC, Local budgets	2 years	Carried over, lack of funding
Douglas County-32	Excavate road ditches on 20 of 29 miles of road.	Infrastructure failure, Flood	Grant Twp	High	1,2	rent excavator 18 weeks @ $1200/wee	Grants, Local budgets	3 years	Carried over, lack of funding

Douglas 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
						k, purchase gravel blade ($12K) to pull road material back to road beds - total = $33,600			
Douglas County-33	Conduct regular training exercises for emergency responders on radiological incident response protocols.	Radiological Incidents	Emergency Management/LDCFM	High	1, 3	Staff Time	HMGP, Local budgets	Ongoing	Carried over, lack of staff
Douglas County-34	Provide specialized training for medical personnel on handling radiological exposure cases.	Radiological Incidents	Public Health/LMH/LDCFM	Medium	1, 3	$10,000 - $30,000	HMGP, Local budgets	2 years	Carried over, lack of funding
Douglas County-35	Installation of retractable bollards (or other equivalent technology) to protect the Massachusetts Street corridor during community events (parades, festivals, etc.)	Terrorism	Lawrence Parks and Recreation, Lawrence Police Department, Lawrence MSO	High	1	$200,000	Grants, Local budgets	3 years	Carried over, lack of funding
Douglas County-36	Purchase and install new epidemiological tracking software.	Transmissible Disease	Public Health		1, 2	$3,500 per user	HMGP, Local budgets	3 years	Carried over, lack of funding
Douglas County-37	Implement public health campaigns to promote vaccination and disease prevention measures.	Transmissible Diseases	Public Health	High	1, 3	$50,000 - $100,000 per campaign	CDC grants, Local budgets	Ongoing	Carried over, lack of funding

Douglas 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
Douglas County-38	Establish early warning systems and surveillance networks for detecting outbreaks and epidemics.	Transmissible Diseases	Public Health	High	1, 3	$100,000 - $500,000 per system	CDC grants, Federal funds	3-5 years	Carried over, lack of funding
Baldwin-1	Promote and continue to participate in the National Flood Insurance Program.	Flood	Mayor	High	1,2	Staff Time	Jurisdiction budget	Continuous	On-going
Baldwin-2	Provide additional support to the Community Rating System to raise the rating to the next level.	Flood	Mayor	High	3,4	Staff Time	Jurisdiction budget	Two years	Not started, lack of staff
Baldwin-3	Upgrade / repair / upsize 8 culverts within Baldwin City to prevent continued flooding issues.	Flood	Mayor	High	1,2	$565,000	Jurisdiction budget	Two years	Not started, lack of funding
Baldwin-4	Proactive management of tree and debris removal from roadways and elevation of roadways.	Tornado, Winter Storm, Windstorm	Mayor	High	1,2	$60,000	Jurisdiction budget	Continuous	Not started, lack of funding
Baldwin-5	Obtain funding for safe room retrofits / new construction.	Tornado, Winter Storm, Windstorm	Mayor	High	1,2	Staff Time and $500,000	Jurisdiction budget	Three years	Not started, lack of funding
Baldwin-6	Develop and conduct a seminar for builders, developers, and home buyers on wind resistant and safe room construction.	Tornado, Windstorm	Mayor	High	3	$1,000 per seminar	Jurisdiction budget	Continuous	Not started, lack of staff
Baldwin-7	Promote the use of all hazard radios and seek funding to supplement the purchase of NOAA weather radios	All Hazards	Mayor	High	1,2,3,4	Staff Time	Jurisdiction budget	Continuous	Not started, lack of funding
Baldwin-8	Study drainage issues throughout the county in flood prone areas, and make recommendations for flood control measures, flood management procedures, and low-water crossing improvements.	Flood	Mayor	High	1,2	Staff Time	Jurisdiction budget	Two years	Not started, lack of staff

Douglas 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
Baldwin-9	Enhance existing GIS systems.	Flood	Mayor	High	1,2	$5,000	Jurisdiction budget	Three years	Not started, lack of funding
Eudora-1	Develop procedures to activate EAS and NWS all-hazard radios for emergency situations affecting a large portion of the population and provide education on shelter-in-place versus evacuation.	All Hazards	Fire Chief, Emergency Manager	High	4	Staff Time	Jurisdiction budget	One year	Not started, lack of staff
Eudora-2	Seek funding to purchase and install available systems that can be utilized to warn citizens of an emergency.	All Hazards	Fire Chief, Emergency Manager	High	3,4	Staff Time	Unknown	Two years	Not started, lack of funding
Eudora-3	Provide educational materials for COOP Planning for small business and government.	All Hazards	Mayor	High	3	$60,000	Jurisdiction budget	Three years	Not started, lack of funding
Eudora-4	Promote the early warning notification with the use of all hazard radios.	All Hazards	Mayor	High	1,2,4	$2,000	Jurisdiction budget	Continuous	Not started, lack of staff
Eudora-5	Enhance existing GIS systems	All Hazards	Mayor	High	1,2,4	$3,000	Jurisdiction budget	Two years	Not started, lack of funding
Eudora-6	Continue to participate in the NFIP	Flood	Mayor	High	1,3	Fair market value	Jurisdiction budget	Continuous	On-going
Eudora-7	Provide additional support to the Community Rating System to raise the rating to the next level.	Flood	Mayor	High	1	Staff Time	Jurisdiction budget	Three years	Not started, lack of staff
Eudora-8	Purchase structures in the 100-year flood plain	Flood	Mayor	High	1	Fair market value	Jurisdiction budget, State grant, Federal grant	Three years	Not started, lack of funding
Eudora-9	Research stream bank set back ordinances.	Flood	Mayor	High	1	Staff Time	Jurisdiction budget	Three years	Not started, lack of staff
Eudora-10	Provide hydrologic and hydraulic analysis and storm damage improvement designs for the City of Eudora.	Flood	Mayor	High	1,2	$20,000	Jurisdiction budget	Two years	Not started, lack of funding

Douglas 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
Eudora-11	Proactive management of tree and debris removal from roadways	Tornado, Windstorm, Winter Storm	Mayor	High	1,2	$60,000	Jurisdiction budget	Three years	Not started, lack of funding
Eudora-12	Seek funding for safe rooms and prioritize replacements and upgrades to existing facilities.	Tornado, Windstorm, Winter Storm	Mayor	High	1,2	$350,000	Jurisdiction budget, State grant, Federal grant	Three years	Not started, lack of funding
Eudora-13	Develop and conduct a seminar for builders, developers, and home buyers on wind resistant and safe room construction.	Tornado, Windstorm, Winter Storm	Mayor	High	1,2	$300 per seminar	Jurisdiction budget	Two years	Not started, lack of staff
Eudora-14	Provide backup power generators for critical facilities in Eudora.	Utility/ Infrastructure Failure	Fire Chief, Emergency Manager	High	2	$60,000	Jurisdiction budget, Grants	Three years	Not started, lack of funding
Eudora-15	Provide homeowner education on wildfire mitigation in wildland-urban interface.	Wildfire	Mayor	High	3	$500 per workshop	Jurisdiction budget	Two years	Not started, lack of funding
Eudora-16	Develop procedures to activate EAS and NWS all-hazard radios for chemical events and provide education on shelter in-place related to a chemical release event.	Hazardous Material	Mayor	High	1,2,4	Staff Time	Jurisdiction budget	Four years	Not started, lack of staff
Lawrence-1	Seek funding to promote and purchase NOAA weather radios	All Hazards	Emergency Manager	High	3,4	$8,000	Jurisdiction budget	Continuous	Not started, lack of funding
Lawrence-2	Promote and continue to participate in the NFIP.	Flood	Planning & Development Services Department; Asst Director, Planning	High	1,2	Staff Time	Jurisdiction budget	Continuous	On-going
Lawrence-3	Provide additional support to the Community Rating System to raise the rating to the next level.	Flood	Planning & Development Services Department; Asst Director, Planning	High	3	Staff Time	Jurisdiction budget, State grant, Federal grant	########	Not started, lack of staff

Douglas 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
Lawrence-4	Enhance and maintain existing GIS systems.	Flood	Dept of Information Technology; GIS Coordinator	High	1,2	$10,000	Jurisdiction budget	On-going	Not started, lack of funding
Lawrence-5	Create a stream buffer ordinance.	Flood	Dept of Public Works; Stormwater Engineer	High	1,2	Staff Time	Jurisdiction budget	On-going	Not started, lack of staff
Lawrence-6	Relocate the Public Works Facility and Fuel Station outside of flood zone.	Flood	Public Works Director	High	1,2	########	Jurisdiction budget, State grant and Federal grant	On-going	Not started, lack of funding
Lawrence-7	Develop a map layer of lower water crossing bridges.	Flood	Dept of Public Works; Stormwater Engineer	High	1,2	Staff Time	Jurisdiction budget	On-going	Not started, lack of staff
Lawrence-8	Develop and conduct a seminar for builders, developers, and home buyers on wind resistant and safe room construction.	Tornado, Windstorm	Planning & Development Services Department; Asst Director Development Svcs	High	3	$2,000 per seminar	Jurisdiction budget	Continuous	Not started, lack of funding
Lawrence-9	Seek funding to evaluate and construct existing buildings for safe rooms, and construct replacements and upgrades to existing facilities.	Tornado, Windstorm, Winter Storm	Planning & Development Services Department; Asst Director Development Svcs	High	2	$500,000	Jurisdiction budget	Continuous	Not started, lack of funding
Lawrence-10	Proactive management of tree and debris removal from roadways and elevated areas next to the roadway, such as Right of way or other easements	Tornado, Winter Storm, Windstorm	Parks & Rec Department; Horticulture Manager	High	1,2	$60,000	Jurisdiction budget	Continuous	Not started, lack of funding

Douglas 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
Lawrence-11	Upgrade storm water pumps for Maple Grove drainage and additional pumping capacity to the existing pump station. An infrastructure tax to support this project is on the November 2009 ballot.	Utility/ Infrastructure Failure	Public Works Department; Stormwater Engineer	High	1,2	########	Jurisdiction budget	Unknown	Not started, lack of funding
Lecompton-1	Seek funding to promote and purchase NOAA weather radios	All Hazards	Emergency Manager	High	3,4	$8,000	Jurisdiction budget	Continuous	Not started, lack of funding
Lecompton-2	Promote and continue to participate in the NFIP.	Flood	Planning & Development Services Department; Asst Director, Planning	High	1,2	Staff Time	Jurisdiction budget	Continuous	On-going
Lecompton-3	Provide additional support to the Community Rating System to raise the rating to the next level.	Flood	Planning & Development Services Department; Asst Director, Planning	High	3	Staff Time	Jurisdiction budget, State grant, Federal grant	########	Not started, lack of staff
Lecompton-4	Enhance and maintain existing GIS systems.	Flood	Dept of Information Technology; GIS Coordinator	High	1,2	$10,000	Jurisdiction budget	On-going	Not started, lack of funding
Lecompton-5	Develop and conduct a seminar for builders, developers, and home buyers on wind resistant and safe room construction.	Tornado, Windstorm	Planning & Development Services Department; Asst Director Development Svcs	High	3	$2,000 per seminar	Jurisdiction budget	Continuous	Not started, lack of funding
Lecompton-6	Seek funding to evaluate and construct existing buildings for safe rooms, and construct replacements and upgrades to existing facilities.	Tornado, Windstorm, Winter Storm		High	2	$500,000	Jurisdiction budget	Continuous	Not started, lack of funding
Lecompton-7	Proactive management of tree and debris removal from roadways and elevated	Tornado, Winter Storm, Windstorm	Parks & Rec Department;	High	1,2	$60,000	Jurisdiction budget	Continuous	Not started, lack of funding

Douglas 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
	areas next to the roadway, such as Right of way or other easements		Horticulture Manager						
Lecompton-8	Upgrade storm water pumps for Maple Grove drainage and additional pumping capacity to the existing pump station. An infrastructure tax to support this project is on the November 2009 ballot.	Infrastructure Failure	Public Works Department; Stormwater Engineer	High	1,2	########	Jurisdiction budget	Unknown	Not started, lack of funding
Eudora Township - 1	Purchase emergency generators for facilities to ensure continued operations	All Hazards	Trustee	High	2	$300,000	Jurisdiction budget	Three years	New
Eudora Township - 2	Seek funding to evaluate and construct existing buildings for safe rooms and construct replacements and upgrades to existing facilities.	Severe Weather, Tornado, Severe Winter Storm	Trustee	High	2	$500,000	Jurisdiction budget	Three years	New
Eudora Township - 3	Provide education on wildfire mitigation in the wildland-urban interface area.	Wildfire	Trustee	High	3	$500 per workshop	Jurisdiction budget	Three years	New
Clinton Township - 1	Identify critical facilities that are vulnerable to natural and man-made hazards. Bring fire stations up to code and have backup heat, electricity, and water to use for emergency shelters. Also, improvements should be made to Station #2 to improve facilities for use if needed for emergency shelters.	All hazards	Trustee	High	3	$500 per workshop	Clinton Township Tax Base	Three years	New
Clinton Township - 2	Proactive management of tree and debris removal from roadways and elevated areas next to the roadway, such as Right of way or other easements	Severe Weather, Tornado, Severe Winter Storm	Trustee	High	2	$60,000	Jurisdiction budget	Three years	New
Clinton Township - 3	Seek funding to evaluate and construct existing buildings for safe rooms, and construct replacements and upgrades to existing facilities.	Tornado, Windstorm, Winter Storm	Trustee	High	2	$500,000	Jurisdiction budget	Three years	New

Douglas 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
Clinton Township - 4	Provide education on wildfire mitigation in the wildland-urban interface area.	Wildfire	Trustee	High	3	$500 per workshop	Jurisdiction budget	Three years	New
Kanawaka Township - 1	We would like to procure and provide warning sirens and weather radios for the safety of our citizens.	All Hazards	Trustee	M	1,2	Unknown	Jurisdiction budget, State grant, Federal grant	Three years	Not started, lack of funding
Kanawaka Township-2	Seek funding to evaluate and construct existing buildings for safe rooms, and construct replacements and upgrades to existing facilities.	Severe Weather, Tornado, Severe Winter Storm	Trustee	High	2	$500,000	Jurisdiction budget	Three years	Not started, lack of funding
Kanawaka Township-3	Provide education on wildfire mitigation in wildland-urban interface through educational workshops for homeowners with property in wildland-urban interface areas, including steps they can take to defend their property from wildfire.	Wildfire	Trustee	High	3	$500 per workshop	Jurisdiction budget	Three years	Not started, lack of funding
Lecompton Township - 1	Seek funding to evaluate and construct existing buildings for safe rooms, and construct replacements and upgrades to existing facilities.	Severe Weather, Tornado, Severe Winter Storm	Trustee	High	2	$500,000	Jurisdiction budget	Three years	Not started, lack of funding
Lecompton Township - 2	Provide education on wildfire mitigation in wildland-urban interface through educational workshops for homeowners with property in wildland-urban interface areas, including steps they can take to defend their property from wildfire.	Wildfire	Trustee	High	3	$500 per workshop	Jurisdiction budget	Three years	Not started, lack of funding
Lecompton Township - 3	Seek funding to promote and purchase NOAA weather radios	All Hazards	Trustee	High	3,4	$8,000	Jurisdiction budget	Continuous	Not started, lack of funding
Marion Township-1	Seek funding to evaluate and construct existing buildings for safe rooms, and	Severe Weather, Tornado,	Trustee	High	2	$500,000	Jurisdiction budget	Three years	Not started, lack of funding

Douglas 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
	construct replacements and upgrades to existing facilities.	Severe Winter Storm							
Marion Township-2	Provide education on wildfire mitigation in wildland-urban interface through educational workshops for homeowners with property in wildland-urban interface areas, including steps they can take to defend their property from wildfire.	Wildfire	Trustee	High	3	$500 per workshop	Jurisdiction budget	Three years	New
Palmyra Township-1	Seek funding to evaluate and construct existing buildings for safe rooms, and construct replacements and upgrades to existing facilities.	Severe Weather, Tornado, Severe Winter Storm	Trustee	High	2	$500,000	Jurisdiction budget	Three years	Not started, lack of funding
Palmyra Township-2	Provide education on wildfire mitigation in wildland-urban interface through educational workshops for homeowners with property in wildland-urban interface areas, including steps they can take to defend their property from wildfire.	Wildfire	Trustee	High	3	$500 per workshop	Jurisdiction budget	Three years	Not started, lack of funding
Wakarusa Township - 1	Seek funding to evaluate and construct existing buildings for safe rooms, and construct replacements and upgrades to existing facilities.	Severe Weather, Tornado, Severe Winter Storm	Trustee	High	2	$500,000	Jurisdiction budget	Three years	Not started, lack of funding
Wakarusa Township - 2	Proactive management of tree and debris removal from roadways and elevated areas next to the roadway, such as Right of way or other easements	Severe Weather, Tornado, Severe Winter Storm	Trustee	High	2	$60,000	Jurisdiction budget	Three years	New
Wakarusa Township - 3	Provide education on wildfire mitigation in wildland-urban interface through educational workshops for homeowners with property in wildland-urban interface areas, including steps they can	Wildfire	Trustee	High	3	$500 per workshop	Jurisdiction budget	Three years	New

Douglas 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
	take to defend their property from wildfire.								
Willow Springs Township - 1	Seek funding to evaluate and construct existing buildings for safe rooms, and construct replacements and upgrades to existing facilities.	Severe Weather, Tornado, Severe Winter Storm	Trustee	High	2	$500,000	Jurisdiction budget	Three years	Not started, lack of funding
Willow Springs Township - 2	Provide education on wildfire mitigation in wildland-urban interface through educational workshops for homeowners with property in wildland-urban interface areas, including steps they can take to defend their property from wildfire.	Wildfire	Trustee	High	3	$500 per workshop	Jurisdiction budget	Three years	Not started, lack of funding
Baker University-1	Conduct hazard mitigation classes for student on how to mitigate against hazard impact.	All hazards	President	High	2	$500,000	University budget	Three years	Not started, lack of funding
Baker University-2	Seek funding to design and construct safe rooms for Baker University facilities	Severe Weather, Tornado, Severe Winter Storm	President	High	2	$500,000	University budget	Three years	Not started, lack of funding
KU-1	Develop a campus wide alert website to include emergency numbers and instructions for emergency preparedness.	All Hazards	President	High	1,2,4	$8,000	Jurisdiction budget	Three years	Not started, lack of funding
KU-2	Install Electronic building access controls on KU campus.	All hazards	Deputy Director of Design & Construction Management	High	1,2	$03,000	State grant, private, Grant	Three years	Not started, lack of funding
KU-3	Enhance Emergency public address system on KU Campus. To improve public safety with situation-specific voice and text messages in response to natural and man-made threats.	All Hazards	City Administrator	M	1,2,4	$1,000,000	State grant, private, Grant	Two years	Not started, lack of funding

Douglas 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
KU-4	Seek funding to design and construct safe rooms for KU facilities	Severe Weather, Tornado, Severe Winter Storm, Wildfire	Superintendent	High	1,2	$1,000,000	Jurisdiction budget	Two years	Not started, lack of funding
USD343-1	Conduct regular emergency preparedness drills for school children at all levels, including tornado drills and fire evacuation drills. The drills include tornado, fire, and general evacuation drills and are conducted at routine intervals. Corrective action is taken for each drill where problems are determined to exist.	Flood, Severe Storms, Severe Winter Weather, Tornado, Wildfire	Superintendent	High	3	Staff Time	Jurisdiction budget	Continuous	On-going
USD343-2	Seek funding to design and construct safe rooms for USD 343 facilities	Severe Weather, Tornado, Severe Winter Storm, Wildfire	Superintendent	High	1,2	$1,000,000	Jurisdiction budget	Unknown	Not started, lack of funding
USD348-1	Conduct regular emergency preparedness drills for school children at all levels, including tornado drills and fire evacuation drills. The drills include tornado, fire, and general evacuation drills and are conducted at routine intervals. Corrective action is taken for each drill where problems are determined to exist.	Severe Storms, Severe Winter Weather, Tornado, Wildfire	Superintendent	High	3	Staff Time	Jurisdiction budget	Continuous	On-going
USD348-2	Seek funding to design and construct safe rooms for USD 348 facilities	Severe Weather, Tornado, Severe Winter Storm	Superintendent	High	1,2	$1,000,000	Jurisdiction budget	Unknown	Not started, lack of funding

Douglas 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
USD491-1	Conduct regular emergency preparedness drills for school children at all levels, including tornado drills and fire evacuation drills. The drills include tornado, fire, and general evacuation drills and are conducted at routine intervals. Corrective action is taken for each drill where problems are determined to exist.	Flood, Severe Storms, Severe Winter Weather, Tornado, Wildfire	Superintendent	High	3	Staff Time	Jurisdiction budget	Continuous	On-going
USD491-2	Seek funding to design and construct safe rooms for USD 491 facilities	Severe Weather, Tornado, Severe Winter Storm	Superintendent	High	1,2	$1,000,000	Jurisdiction budget	Two years	Not started, lack of funding
USD491-3	Implement a program promoting the purchase and use of NOAA weather radios in school district classrooms.	Severe Weather, Tornado, Severe Winter Storm	Superintendent	Medium	1, 2, 3	$10,000	Jurisdiction budget, State grant, Federal grant	Two years	Not started, lack of funding
USD497-1	Implement a program promoting the purchase and use of NOAA weather radios in school district classrooms.	Severe Weather, Tornado, Severe Winter Storm	Superintendent	High	3	$10,000	Jurisdiction budget	Two years	Not started, lack of funding
USD497-2	Develop a plan for supporting medically fragile and special needs students at each school site during emergency events.	All Hazards	Superintendent	High	2	Staff Time	Jurisdiction budget	2017	Not started, lack of funding
USD497-3	Seek funding to design and construct safe rooms for USD 497 facilities	Severe Weather, Tornado, Severe Winter Storm, Wildfire	Superintendent	High	1,2	$1,000,000	Jurisdiction budget	Two years	Not started, lack of funding
USD497-4	Implement an emergency communication system that will allow for communication in district and with	All Hazards	Director of Administrative Services	High	4	$10,000 - $100,000	Jurisdiction budget, Grants	Four years	Not started, lack of funding

Douglas 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
	county emergency personnel in the event of power loss								
USD497-5	Conduct regular emergency preparedness drills for school children at all levels, including tornado drills and fire evacuation drills.	All hazards	Director of Administrative Services	High	3	Staff Time	None	Continuous	On-going
USD497-6	Acquire and install emergency generators for buildings prioritized on building usage for USD 497.	Infrastructure Failure	Director of Administrative Services	High	1,2	$500,000	Jurisdiction budget, Grants	Four years	Not started, lack of funding
USD497-7	Construct secure entrances for each building in USD 497.	Terrorism	Director of Administrative Services	High	1,2	$1,300,000	Jurisdiction budget, Grants	Four years	Not started, lack of funding
Palmyra Fire District #2 - 1	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	Fire Chief	Medium	1,2	$105.00 an acre	Federal WUI grant dollars, Fire budget	On going	Carried over due to lack of funding
Palmyra Fire District #2 - 2	Conduct Wildland Urban Interface response training for firefighters.	Wildfire	Fire Chief	Medium	1,2,3	$30 per student per training	Federal WUI grant dollars, Fire budget	On going	New
Willow Springs District #3 - 1	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	Fire Chief	Medium	1,2	$105.00 an acre	Federal WUI grant dollars, Fire budget	On going	Carried over due to lack of funding
Willow Springs Fire District #3 - 2	Conduct Wildland Urban Interface response training for firefighters.	Wildfire	Fire Chief	Medium	1,2,3	$30 per student per training	Federal WUI grant dollars, Fire budget	On going	New
RWD#2-1	Purchase and install remote telemetry for rural water systems including controls for water tanks and pump stations.	Drought, Wildfire	Director	High	1,2	$58,000	Jurisdiction budget	Three years	New
RWD#2-2	Review and update emergency water supply plan.	Drought, Wildfire	Director	High	1,2	Staff Time	Jurisdiction budget	Three years	New
RWD#2-3	Communication Link Protection. Lightning strikes cause loss of communication between the water tower	Severe Weather	Director	High	1,2,4	$200	General Funds	Four years	New

Douglas 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
	and remote telemetry equipment located in the District office building.								
RWD#5-1	Purchase emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Director	High	1,2	$100,000	Jurisdiction budget, State grant, Federal grant	Two years	New
RWD#5-2	Replace and upgrade pump stations and water towers.	Drought, Wildfire	Director	High	1,2	$1,000,000	Jurisdiction budget, State grant, Federal grant	Three years	New
RWD#6-1	Purchase emergency generators for facilities to ensure continued operations. Loss of power could potentially curtail services to the community.	All Hazards	Director	High	1,2	$100,000	Jurisdiction budget, State grant, Federal grant	Two years	New
RWD#6-2	Replace and upgrade pump stations and water towers.	Drought, Wildfire	Director	High	1,2	$1,000,000	Jurisdiction budget, State grant, Federal grant	Three years	New
Lawrence Memorial Hospital-1	Install shatter proof hardened windows throughout hospital.	Sever Weather, Severe Winter Storms, Tornado, Wildfire	CEO	High	1,2	$100,000	State grant and Federal grant Funding	Four years	New
Evergy-1	Encourage long-term decrease in consumer energy use.	All Hazards	Director	High	1, 2, 3, 4	Staff Time	Evergy budget	As required	new

Jackson 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
Jackson County-1	Collect and distribute educational materials on individual and family preparedness \ mitigation measures for property owners	All Hazards	Emergency Manager	High	3	Staff time	Jurisdiction budget	Continuous	On-going
Jackson County-2	Annually host a public "hazards workshop" for the residents of the county in combination with Jurisdiction budget festivals, fairs, or other events drawing large crowds.	All Hazards	Emergency Manager	High	3	$1,000 per workshop	Jurisdiction budget	Continuous	On-going
Jackson County-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Emergency Manager	High	3	Staff time	Jurisdiction budget	Continuous	On-going
Jackson County-4	Conduct inventory/survey for the county and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Manager	Medium	1,2	Staff time	Jurisdiction budget, State Grant	Three years	On-going
Jackson County-5	Develop cross-departmental information collection capabilities, and incorporate cadastral (building/parcel) data utilizing GIS	All Hazards	County Planner	Medium	4	$3,000	Jurisdiction budget	Three years	On-going
Jackson County-6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Emergency Manager	High	1, 2	Staff Time and $500	Jurisdiction budget	Five years	Carried over due to lack of staff
Jackson County-7	Develop an annex to the LEOP for dam failure response and evacuation plans for high hazard dams in Jackson County	Dam and Levee Failure	Emergency Manager	High	1,2	Staff time	Jurisdiction budget	One Year	2024
Jackson County-8	Revise codes to limit lawn watering.	Drought	Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	New
Jackson County-9	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Emergency Manager	Low	1, 2	$25,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding

Jackson 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
Jackson County-10	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Emergency Manager	Low	1, 2	$2,000 per facility	BRIC, Jurisdiction budget	Five years	New
Jackson County-11	Educate and promote Jurisdiction budget jurisdictional participation in the NFIP.	Flood	County Planner	High	1,2,3	Staff time	Jurisdiction budget, State Grant	Continuous	On-going
Jackson County-12	Jackson County is committed to continued participation and compliance with the NFIP.	Flood	County Planner	High	1,2,3	Staff time	State Grant, FEMA	Continuous	Continuous
Jackson County-13	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	County Planner	High	3	Staff time	Jurisdiction budget	Continuous	Lack of Staff/
Jackson County-14	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners	Flood	County Planner	High	1,2	Subject to fair market value	Jurisdiction budget, KDEM, FEMA	Three years	Lack of Funding and Staff
Jackson County-15	Contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Mitigation Grant Flood Mitigation Assistance (FEMA) program	Flood	County Planner, Emergency Manager	High	1,2,4	Staff Time	Jurisdiction budget	Continuous	On-going
Jackson County-16	Identify flash-flood prone areas to consider flood reduction measures to county planners	Flood	County Planner, Emergency Manager	High	1,2,4	Staff Time	Jurisdiction budget	Three years	Lack of Staff
Jackson County-17	Research and design an appropriate stream buffer ordinance to further protect the jurisdiction’s water resources and to limit future flood damages adjacent to major waterways.	Flood	County Planner, Floodplain Manager	High	1,2	Staff Time	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Lack of Staff

Jackson 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
Jackson County-18	Research and recommend appropriate building codes for the County that include Wind -resistant design techniques for new construction.	Severe Storms, Tornado	County Planner	High	1,2	Staff time	Jurisdiction budget	Three years	Lack of Funding and Staff
Jackson County-19	The Delaware Watershed District No. 10 will continue to construct, operate, and maintain water detention dams for flood reduction in the watershed district. The organization will evaluate the need for further construction, operation, and maintenance projects, and additional effort will be made to seek alternative funding as they become available.	Severe Storms, Tornado	County Planner	High	1,2	Staff Time	Jurisdiction budget	Three years	Lack of Funding and Staff
Jackson County-20	Insulate water lines in all jurisdictional facilities.	Winter Storm	Building Department Director	Low	1, 2	$10,000 - $50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Jackson County-21	Develop and implement a wildfire prevention/education program/workshop.	Wildfire	Emergency Manager	Medium	3	$500 per workshop	Jurisdiction budget	Continuous	On-going
Jackson County-22	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources.	Wildfire	Emergency Manager	High	3,4	Staff Time	Jurisdiction budget	Continuous	On-going
Jackson County-23	Evaluate the firefighting water supply resources within the County, including both fixed and mobile supply issues.	Wildfire	Emergency Manager	Medium	1,2	Staff Time	Jurisdiction budget	Continuous	On-going

Jackson 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
Jackson County-24	-Purchase cloud storage backup for all jurisdictional electronic records. (County Attorney Server and Data Storage Standardized on the main County Enterprise Server). -Email Enhanced Security with all employees implementing Multi Factor Authentication for Microsoft365 and email.	Cybersecurity Incident	County IT	High	1,2	$5,000	Jurisdiction budget	1 year	New
Jackson County-25	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events	Infrastructure Failure	Emergency Manager	Medium	1,2	Staff time	Jurisdiction budget,	Continuous	Lack of Funding
Jackson County-26	The Jackson County RWDs will seek funding sources to mitigate damage to critical infrastructure, including water line enhancements and the replacement of equipment including water pumps, meters, and valves. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Emergency Manager	Low	1,2	########	Jurisdiction budget, State Grant, Federal Mitigation Grant	Continuous	DELETE
Jackson County-27	Coordinate county and Jurisdiction budget government mitigation efforts with RECs	Infrastructure Failure	Emergency Manager	High	4	Staff Time	Jurisdiction budget	Three years	On-going

Jackson 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
Jackson County-28	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism,	Emergency Manager	Medium	3	Staff time	Jurisdiction budget, State Grant, Federal Mitigation Grant	Continuous	Lack of Staff
~~Jackson County~~	~~Develop an ordinance/resolution to require the jurisdiction's Manufactured Housing and Travel Trailer Park Ordinance to install tornado shelters for major manufactured and/or mobile home parks with more than 10 spaces.~~	~~Severe Storms, Tornado~~	~~County Planner~~	~~High~~	~~1,2~~	~~Staff Time~~	~~Jurisdiction budget~~	~~NA~~	No Resolution DELETE
Circleville-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Circleville-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with Jurisdiction budget festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Jurisdiction budget	Continuous	Carried over, lack of capacity
Circleville-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Circleville-4	Conduct inventory/survey for the city and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Mayor	Medium	1,2,4	Staff Time	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity

Jackson 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
Circleville-5	Install evacuation route and high ground signage in any high hazard dam or levee potential inundation areas.	Dam or Levee Failure	NFIP Coordinator	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Circleville-6	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Circleville-7	seek funding sources to upgrade existing water lines	Drought	Facilities Director	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Circleville-8	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Circleville-9	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	NFIP Coordinator	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Circleville-10	Educate and promote jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Jurisdiction budget, State Grant	Continuous	Carried over, lack of capacity
Circleville-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Circleville-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New

Jackson 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
Circleville-13	Seek funding for the purchase and installation of warning sirens, to include updating and retrofitting	Tornado	Mayor	Medium	1,2,3	$20,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Circleville-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Circleville-15	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Mayor	Medium	1,2,4	$20,000	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Circleville-16	Coordinate county and Jurisdiction budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Jurisdiction budget	########	Carried over, lack of capacity
Circleville-17	Seek funding for the purchase of generators for all Critical Facilities	Infrastructure Failure	Mayor	Medium	1,2	$30,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Circleville-18	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Jurisdiction budget, State Grant, Federal Mitigation Grant	Continuous	Carried over, lack of capacity
Delia-1	Collect educational materials on individual and family preparedness /	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity

Jackson 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
	mitigation measures for property owners.								
Delia-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with Jurisdiction budget festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Jurisdiction budget	Continuous	Carried over, lack of capacity
Delia-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Delia-4	Conduct inventory/survey for the city and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Mayor	Medium	1,2,4	Staff Time	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Delia-5	Install evacuation route and high ground signage in any high hazard dam or levee potential inundation areas.	Dam or Levee Failure	NFIP Coordinator	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Delia-6	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Delia-7	Upgrade existing water lines to minimize leakage and breaks.	Drought	Facilities Director	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Delia-8	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Delia-9	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	NFIP Coordinator	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity

Jackson 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
Delia-10	Educate and promote jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Jurisdiction budget, State Grant	Continuous	Carried over, lack of capacity
Delia-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Delia-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Delia-13	Seek funding for the purchase and installation of warning sirens, to include updating and retrofitting	Tornado	Mayor	Medium	1,2,3	$20,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Delia-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Delia-15	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Mayor	Medium	1,2,4	$20,000	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Delia-16	Coordinate county and Jurisdiction budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Jurisdiction budget	########	Carried over, lack of capacity
Delia-17	Seek funding for the purchase of generators for all Critical Facilities	Infrastructure Failure	Mayor	Medium	1,2	$30,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity

Jackson 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
Delia-18	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Jurisdiction budget, State Grant, Federal Mitigation Grant	Continuous	Carried over, lack of capacity
Denison-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Denison-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with Jurisdiction budget festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Jurisdiction budget	Continuous	Carried over, lack of capacity
Denison-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Denison-4	Conduct inventory/survey for the city and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Mayor	Medium	1,2,4	Staff Time	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Denison-5	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	$2,000	State Grant	Three years	Lack of Funding and Staff
Denison-6	Install evacuation route and high ground signage in any high hazard dam or levee potential inundation areas.	Dam or Levee Failure	NFIP Coordinator	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Denison-7	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New

Jackson 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
Denison-8	Upgrade existing water lines to minimize leakage and breaks.	Drought	Facilities Director	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Denison-9	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Denison-10	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	NFIP Coordinator	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Denison-11	Educate and promote jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Jurisdiction budget, State Grant	Continuous	Carried over, lack of capacity
Denison-12	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Denison-13	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Denison-14	Seek funding for the purchase and installation of warning sirens, to include updating and retrofitting	Tornado	Mayor	Medium	1,2,3	$20,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Denison-15	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Denison-16	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to	Infrastructure Failure	Mayor	Medium	1,2,4	$20,000	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity

Jackson 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
	maintain power in the event of severe weather events.								
Denison-17	Coordinate county and Jurisdiction budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Jurisdiction budget	########	Carried over, lack of capacity
Denison-18	Seek funding for the purchase of generators for all Critical Facilities	Infrastructure Failure	Mayor	Medium	1,2	$30,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Holton-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Holton-2	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with Jurisdiction budget festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Jurisdiction budget	Continuous	Carried over, lack of capacity
Holton-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Holton-4	Conduct inventory/survey for the city and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Mayor	Medium	1,2,4	Staff Time	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Holton-5	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	$2,000	State Grant	Three years	Lack of Funding and Staff

Jackson 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
Holton-6	Install evacuation route and high ground signage in any high hazard dam or levee potential inundation areas.	Dam or Levee Failure	NFIP Coordinator	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Holton-7	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Holton-8	Upgrade existing water lines to minimize leakage and breaks.	Drought	Facilities Director	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Holton-9	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Holton-10	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	NFIP Coordinator	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Holton-11	Repair the Prairie Lake Spillway (NFIP)	Flood	Mayor	Medium	1,2	$100,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried Over
Holton-12	Educate and promote jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Jurisdiction budget, State Grant	Continuous	Carried over, lack of capacity
Holton-13	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Holton-14	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Holton-15	Seek funding for the purchase and installation of warning sirens, to include updating and retrofitting	Tornado	Mayor	Medium	1,2,3	$20,000	Jurisdiction budget, State Grant, Federal	Three years	Carried over, lack of capacity

Jackson 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
							Mitigation Grant		
Holton-16	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Holton-17	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Mayor	Medium	1,2,4	$20,000	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Holton-18	Coordinate county and Jurisdiction budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Jurisdiction budget	########	Carried over, lack of capacity
Holton-19	Seek funding for the purchase of generators for all Critical Facilities	Infrastructure Failure	Mayor	Medium	1,2	$30,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Holton-20	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Jurisdiction budget, State Grant, Federal Mitigation Grant	Continuous	Carried over, lack of capacity
Holton-21	Seek funding options to purchase and install security fencing at the city-owned power plant, water plant, and wastewater plant to improve site security.	Terrorism	Mayor	Medium	1,2	$30,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried Over

Jackson 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
Holton-	We would like to rebuild and update the water treatment plant to ensure high quality drinking and potable water for residents.	Infrastructure Failure	City Manager	High	1,2	$10,000,000	Unknown	Three years	Completed
Hoyt-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Hoyt-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with Jurisdiction budget festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Jurisdiction budget	Continuous	Carried over, lack of capacity
Hoyt-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Hoyt-4	Conduct inventory/survey for the city and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Mayor	Medium	1,2,4	Staff Time	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Hoyt-5	Install evacuation route and high ground signage in any high hazard dam or levee potential inundation areas.	Dam or Levee Failure	NFIP Coordinator	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Hoyt-6	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Hoyt-7	Upgrade existing water lines to minimize leakage and breaks.	Drought	Facilities Director	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New

Jackson 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
Hoyt-8	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Hoyt-9	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	NFIP Coordinator	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Hoyt-10	Educate and promote jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Jurisdiction budget, State Grant	Continuous	Carried over, lack of capacity
Hoyt-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Hoyt-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Hoyt-13	Seek funding for the purchase and installation of warning sirens, to include updating and retrofitting	Tornado	Mayor	Medium	1,2,3	$20,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Hoyt-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Hoyt-15	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Mayor	Medium	1,2,4	$20,000	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Hoyt-16	Coordinate county and Jurisdiction budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Jurisdiction budget	########	Carried over, lack of capacity

Jackson 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
Hoyt-17	Seek funding for the purchase of generators for all Critical Facilities	Infrastructure Failure	Mayor	Medium	1,2	$30,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Hoyt-18	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Jurisdiction budget, State Grant, Federal Mitigation Grant	Continuous	Carried over, lack of capacity
Mayetta-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Mayetta-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with Jurisdiction budget festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Jurisdiction budget	Continuous	Carried over, lack of capacity
Mayetta-4	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Mayetta-5	Conduct inventory/survey for the city and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Mayor	Medium	1,2,4	Staff Time	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Mayetta-6	Install evacuation route and high ground signage in any high hazard dam or levee potential inundation areas.	Dam or Levee Failure	NFIP Coordinator	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New

Jackson 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
Mayetta-7	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Mayetta-8	Upgrade existing water lines to minimize leakage and breaks.	Drought	Facilities Director	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Mayetta-9	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Mayetta-10	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	NFIP Coordinator	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Mayetta-11	Educate and promote jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Jurisdiction budget, State Grant	Continuous	Carried over, lack of capacity
Mayetta-12	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Mayetta-13	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Mayetta-14	Seek funding for the purchase and installation of warning sirens, to include updating and retrofitting	Tornado	Mayor	Medium	1,2,3	$20,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Mayetta-15	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Mayetta-16	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each	Infrastructure Failure	Mayor	Medium	1,2,4	$20,000	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity

Jackson 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
	facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.								
Mayetta-17	Coordinate county and Jurisdiction budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Jurisdiction budget	########	Carried over, lack of capacity
Mayetta-18	Seek funding for the purchase of generators for all Critical Facilities	Infrastructure Failure	Mayor	Medium	1,2	$30,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Netawaka-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Netawaka-2	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with Jurisdiction budget festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Jurisdiction budget	Continuous	Carried over, lack of capacity
Netawaka-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Netawaka-4	Conduct inventory/survey for the city and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Mayor	Medium	1,2,4	Staff Time	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Netawaka-5	Install evacuation route and high ground signage in any high hazard dam or levee potential inundation areas.	Dam or Levee Failure	NFIP Coordinator	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New

Jackson 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
Netawaka-6	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Netawaka-7	Upgrade existing water lines to minimize leakage and breaks.	Drought	Facilities Director	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Netawaka-8	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Netawaka-9	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	NFIP Coordinator	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Netawaka-10	Educate and promote jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Jurisdiction budget, State Grant	Continuous	Carried over, lack of capacity
Netawaka-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Netawaka-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Netawaka-13	Seek funding for the purchase and installation of warning sirens, to include updating and retrofitting	Tornado	Mayor	Medium	1,2,3	$20,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Netawaka-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Netawaka-15	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each	Infrastructure Failure	Mayor	Medium	1,2,4	$20,000	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity

Jackson 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
	facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.								
Netawaka-16	Coordinate county and Jurisdiction budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Jurisdiction budget	########	Carried over, lack of capacity
Netawaka-17	Seek funding for the purchase of generators for all Critical Facilities	Infrastructure Failure	Mayor	Medium	1,2	$30,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Netawaka-18	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Jurisdiction budget, State Grant, Federal Mitigation Grant	Continuous	Carried over, lack of capacity
Soldier-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Soldier-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with Jurisdiction budget festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Jurisdiction budget	Continuous	Carried over, lack of capacity
Soldier-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Soldier-4	Conduct inventory/survey for the city and incorporated cities emergency response services to identify any	All Hazards	Mayor	Medium	1,2,4	Staff Time	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity

Jackson 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
	existing needs or shortfalls in terms of personnel, equipment or required resources.								
Soldier-5	Install evacuation route and high ground signage in any high hazard dam or levee potential inundation areas.	Dam or Levee Failure	NFIP Coordinator	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Soldier-6	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Soldier-7	Upgrade existing water lines to minimize leakage and breaks.	Drought	Facilities Director	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Soldier-8	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Soldier-9	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	NFIP Coordinator	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Soldier-10	Educate and promote jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Jurisdiction budget, State Grant	Continuous	Carried over, lack of capacity
Soldier-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Soldier-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Soldier-13	Seek funding for the purchase and installation of warning sirens, to include updating and retrofitting	Tornado	Mayor	Medium	1,2,3	$20,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity

Jackson 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
Soldier-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Soldier-15	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Mayor	Medium	1,2,4	$20,000	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Soldier-16	Coordinate county and Jurisdiction budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Jurisdiction budget	########	Carried over, lack of capacity
Soldier-17	Seek funding for the purchase of generators for all Critical Facilities	Infrastructure Failure	Mayor	Medium	1,2	$30,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Soldier-18	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Jurisdiction budget, State Grant, Federal Mitigation Grant	Continuous	Carried over, lack of capacity
Whiting-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Whiting-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with Jurisdiction budget festivals, fairs, or	All Hazards	Mayor	High	4	$300 per workshop	Jurisdiction budget	Continuous	Carried over, lack of capacity

Jackson 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
	other appropriate events drawing large crowds.								
Whiting-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Whiting-4	Conduct inventory/survey for the city and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Mayor	Medium	1,2,4	Staff Time	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Whiting-5	Install evacuation route and high ground signage in any high hazard dam or levee potential inundation areas.	Dam or Levee Failure	NFIP Coordinator	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Whiting-6	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Whiting-7	Upgrade existing water lines to minimize leakage and breaks.	Drought	Facilities Director	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Whiting-8	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Whiting-9	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	NFIP Coordinator	High	3	Staff Time	Jurisdiction budget	Continuous	Carried over, lack of capacity
Whiting-10	Educate and promote jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Jurisdiction budget, State Grant	Continuous	Carried over, lack of capacity
Whiting-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New

Jackson 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
Whiting-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Whiting-13	Seek funding for the purchase and installation of warning sirens, to include updating and retrofitting	Tornado	Mayor	Medium	1,2,3	$20,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Whiting-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Whiting-15	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Mayor	Medium	1,2,4	$20,000	Jurisdiction budget, State Grant	Three years	Carried over, lack of capacity
Whiting-16	Coordinate county and Jurisdiction budget government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Jurisdiction budget	########	Carried over, lack of capacity
Whiting-17	Seek funding for the purchase of generators for all Critical Facilities	Infrastructure Failure	Mayor	Medium	1,2	$30,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over, lack of capacity
Whiting-18	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Jurisdiction budget, State Grant, Federal Mitigation Grant	Continuous	Carried over, lack of capacity

Jackson 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 335 1	Purchase and install facility backup generators.	All hazards	USD 335 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 335 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 335 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, BRIC, School budget	Ten years	New
USD 335 3	Conduct hazard mitigation education programs for students.	All hazards	USD 335 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 335 4	Conduct a xeriscaping program for all school facilities	Drought	USD 335 Superintendent	Low	1, 2	$10,000 - per location	HMGP, BRIC, School Budget	Ten years	New
USD 335 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 335 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 335 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 335 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 335 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 335 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 335 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 335 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 335 9	Seek funding to retain a professional school safety and security firm to review and update the school's Security Plan for domestic acts of terrorism, building security, and contagious disease response.	Terrorism	Superintendent	Low	1,3	$50,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over due to lack of funding
USD 336 1	Purchase and install facility backup generators.	All hazards	USD 336 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding

Jackson 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 336 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 336 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, BRIC, School budget	Ten years	New
USD 336 3	Conduct hazard mitigation education programs for students.	All hazards	USD 336 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 336 4	Conduct a xeriscaping program for all school facilities	Drought	USD 336 Superintendent	Low	1, 2	$10,000 - per location	HMGP, BRIC, School Budget	Ten years	New
USD 336 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 336 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 336 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 336 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 336 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 336 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 336 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 336 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 336 9	Seek funding to retain a professional school safety and security firm to review and update the school's Security Plan for domestic acts of terrorism, building security, and contagious disease response.	Terrorism	Superintendent	Low	1,3	$50,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over due to lack of funding
USD 337 1	Purchase and install facility backup generators.	All hazards	USD 337 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 337 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 337 Superintendent	High	1, 2	$1,000,000 -per location	HMGP, BRIC, School budget	Ten years	Complete

Jackson 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 337 3	Conduct hazard mitigation education programs for students.	All hazards	USD 337 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 337 4	Conduct a xeriscaping program for all school facilities	Drought	USD 337 Superintendent	Low	1, 2	$10,000 - per location	HMGP, BRIC, School Budget	Ten years	New
USD 337 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 337 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 337 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 337 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 337 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 337 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 337 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 337 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 337 9	Seek funding to retain a professional school safety and security firm to review and update the school's Security Plan for domestic acts of terrorism, building security, and contagious disease response.	Terrorism	Superintendent	Low	1,3	$50,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Three years	Carried over due to lack of funding
RWD #3 – 1	Updated Engineering Strategic Plan	Infrastructure Failure	General Manager	Medium	1,2,3,4	$27,000.00	Jurisdiction budget	1 Year	Modified
RWD #3 - 2	Paint Soldier Water Tower	Infrastructure Failure	General Manager, Water Operator Vendor	High	1,2,3,4	$116,690.00	Jurisdiction budget	6 Months	Modified
RWD #3 - 3	Upgrade Pipe along T Road from Highway K-116 going South down to 214th Road 2 miles from 6" old pipe to 8" new stronger pipe.	Drought	General Manager Water Operators Contractor	High	1,2,3,4	$528,225.00	Jurisdiction budget	1 Year	Modified

Jackson 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
RWD #3 – 4	Upgrade Pipe from T to P road and then South to 246th Road. Upgrade from 6" old brittle pipe to 8" new stronger pipe approximately 27,000 feet or pipe or 5.25 miles.	Drought	General Manager, Water Operators Contractor	High	1,2,3,4	$997,700.00	Jurisdiction budget	2 Years	Modified
RWD #3 - 5	Radio Remote Read Drive by Meter System	Drought	General Manager, Water Operators	Medium	1,2,3,4	$760,000.00	Jurisdiction budget	3 Years	Modified
PWWSD #18 1	Purchase and install facility backup generators.	All hazards	Manager	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, System budgets	Five years	New
PWWSD #18 2	Replace water lines at critical locations throughout service area.	Drought, Wildfire	Manager	Medium	1,2	Distance and specification dependent	BRIC, HMGP, System budget	On going	New
Blue Stem Electric Coop-1	Refit poles and electrical wire throughout the county.	All sazards, Infrastructure Failure	President	Medium	1,2	$5,000,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Ten years	Carried over, lack of capacity
Evergy-1	Encourage long-term decrease in consumer energy use.	All Hazards	Director	High	1, 2, 3, 4	Staff Time	Evergy budget	As required	new
Nemaha-Marshall Electric Coop-1	The Nemaha Marshall Electric Cooperative will continue to coordinate mitigation efforts with county and Jurisdiction budget governments, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	All hazards	President	Medium	4	Staff Time	Jurisdiction budget, State Grant, Federal Mitigation Grant	Continuous	Carried over, lack of capacity
Nemaha-Marshall	Refit poles and electrical wire throughout the county.	All hazards	President	Medium	1,2	$5,000,000	Jurisdiction budget, State Grant,	Ten years	Carried over, lack of capacity

Jackson 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
Electric Coop-2							Federal Mitigation Grant		

Jefferson 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
Jefferson County-1	Install generators in all county facilities.	All hazards	Jefferson County Emergency Manager, Jefferson County Facilities Director	High	1, 3	$10,000 to $50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Jefferson County-2	Upgrade and enhance sirens throughout county	All hazards	Jefferson County Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Jefferson County-3	Purchase electronic mobile traffic notification signs.	All hazards	Jefferson County Emergency Manager, Jefferson County Public Works Director	Medium	1, 2	$35,000	HMGP, Jurisdiction budget	Five years	New
Jefferson County-4	Conduct a regular tree trimming and tree wire installation program.	All hazards	Jefferson County Emergency Manager	High	1, 2	$25,000 per occurrence	HMGP, BRIC, Jurisdiction budget	On-going	On-going
Jefferson County-5	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Jefferson County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Jefferson County-6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Jefferson County Emergency Manager	High	1, 2	Staff Time and $500	Jurisdiction budget	Five years	Carried over due to lack of staff
Jefferson County-7	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Jefferson County Emergency Manager	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Jefferson County-8	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Jefferson County Emergency Manager	Medium	1, 2, 4	$10,000 per location	HMGP, Jurisdiction budget	Five years	New
Jefferson County-9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Jefferson County Facilities Director	Low	1, 2	$5,000 - $50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding

Jefferson 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
Jefferson County-10	Revise building codes to require low water flow toilets and faucets.	Drought	Jefferson County Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Jefferson County-11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Jefferson County Facilities Director	Low	1, 2	$25,000 per facility	HMGP, BRIC, Jurisdiction budget	-	Completed
Jefferson County-12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Jefferson County Facilities Director	Low	1, 2	$2,000 per facility	Local budget	-	Completed
Jefferson County-13	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Jefferson County-14	Purchase and demolish flood prone properties	Flood	Jefferson County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Jefferson County-15	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Jefferson County-16	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Jefferson County Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Jefferson County-17	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, County Emergency Manager	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Jefferson County-18	Install surge protectors in all jurisdictional facilities.	Severe Weather	Jefferson County Facilities Director	Medium	1, 2	$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Jefferson County-19	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Jefferson County Facilities Director	Medium	1, 2	$50,000 per location	HMGP, BRIC,	Five years	New

Jefferson 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
							Jurisdiction budget		
Jefferson County-20	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Jefferson County Emergency Manager	Medium	1, 2	$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Jefferson County-21	Construct snow fences along major transportation routes.	Winter Storm	Jefferson County Public Works Director	Low	1, 2	$25,000 - $100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Jefferson County-22	Insulate water lines in all jurisdictional facilities.	Winter Storm	Jefferson County Building Department	Low	1, 2	$10,000 - $50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Jefferson County-23	Create defensible space buffers at all critical facilities	Wildfire	Jefferson County Public Works Director	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Jefferson County-24	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Management Coordinator	Low	3	$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding
Jefferson County-25	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	County IT Director	High	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Jefferson County-26	Provide hazardous materials response training to first responders and EM staff.	Hazardous Materials Event	Jefferson County Emergency Manager	High	1, 2	$500 per trainee	HMGP, Jurisdiction budget	As required	New
Jefferson County-27	Identify and map all structurally deficient bridges.	Infrastructure Failure	Public Works Director	Medium	1, 2	$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Jefferson County-28	Conduct active shooter drills and exercises for all county personnel.	Terrorism	County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New

Jefferson 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
McLouth-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
McLouth-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
McLouth-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
McLouth-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
McLouth-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
McLouth-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
McLouth-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
McLouth-8	Continue to participate in the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
McLouth-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
McLouth-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New

Jefferson 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
McLouth-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
McLouth-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
McLouth-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
McLouth-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
McLouth-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Meriden-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Meriden-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Meriden-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Meriden-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Meriden-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New

Jefferson 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
Meriden-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Meriden-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Meriden-8	Continue to participate in the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Meriden-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Meriden-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Meriden-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Meriden-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Meriden-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Meriden-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Meriden-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Oskaloosa-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC,	Five years	Carried over due to

Jefferson 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
							Jurisdiction budget		lack of funding
Oskaloosa-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Oskaloosa-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Oskaloosa-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Oskaloosa-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Oskaloosa-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Oskaloosa-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Oskaloosa-8	Continue to participate in the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Oskaloosa-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Oskaloosa-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New

Jefferson 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
Oskaloosa-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Oskaloosa-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Oskaloosa-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Oskaloosa-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Oskaloosa-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Ozawakie-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Ozawakie-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Ozawakie-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Ozawakie-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Ozawakie-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New

Jefferson 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
Ozawakie-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Ozawakie-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Ozawakie-8	Continue to participate in the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Ozawakie-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Ozawakie-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Ozawakie-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Ozawakie-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Ozawakie-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Ozawakie-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Ozawakie-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
ValleyFalls-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC,	Five years	Carried over due to

Jefferson 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
							Jurisdiction budget		lack of funding
ValleyFalls-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
ValleyFalls-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
ValleyFalls-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
ValleyFalls-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
ValleyFalls-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
ValleyFalls-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
ValleyFalls-8	Continue to participate in the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
ValleyFalls-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
ValleyFalls-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New

Jefferson 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
ValleyFalls-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
ValleyFalls-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
ValleyFalls-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
ValleyFalls-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
ValleyFalls-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Winchester-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Winchester-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Winchester-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Winchester-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Winchester-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New

Jefferson 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
Winchester-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Winchester-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Winchester-8	Continue to participate in the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Winchester-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Winchester-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Winchester-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Winchester-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Winchester-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Winchester-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Winchester-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Lakeside Village	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	President	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC,	Ten years	New

Jefferson 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
Improvement District - 1							Jurisdiction budget		
Lakeside Village Improvement District - 2	Conduct a personal water use education program.	Drought	President	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	New
Lakeside Village Improvement District - 3	Create defensible space buffers at all critical facilities	Wildfire	President	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Lake Shore Estates Improvement District - 1	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	President	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Lake Shore Estates Improvement District - 2	Conduct a personal water use education program.	Drought	President	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	New
Lake Shore Estates Improvement District - 3	Create defensible space buffers at all critical facilities	Wildfire	President	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Lakewood Hills Improvement District - 1	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	President	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Lakewood Hills Improvement District - 2	Conduct a personal water use education program.	Drought	President	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	New
Lakewood Hills Improvement District - 3	Create defensible space buffers at all critical facilities	Wildfire	President	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

Jefferson 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 338 1	Purchase and install facility backup generators.	All hazards	USD 338 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 338 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 338 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 338 3	Conduct hazard mitigation education programs for students.	All hazards	USD 338 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 338 4	Conduct a xeriscaping program for all school facilities	Drought	USD 338 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 338 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 338 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 338 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 338 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 338 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 338 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 338 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 338 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 339 1	Purchase and install facility backup generators.	All hazards	USD 339 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 339 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 339 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC,	Ten years	New

Jefferson 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
							School budget		
USD 339 3	Conduct hazard mitigation education programs for students.	All hazards	USD 339 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 339 4	Conduct a xeriscaping program for all school facilities	Drought	USD 339 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 339 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 339 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 339 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 339 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 339 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 339 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 339 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 339 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 340 1	Purchase and install facility backup generators.	All hazards	USD 340 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 340 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 340 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 340 3	Conduct hazard mitigation education programs for students.	All hazards	USD 340 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 340 4	Conduct a xeriscaping program for all school facilities	Drought	USD 340 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC,	Ten years	New

Jefferson 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
							School Budget		
USD 340 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 340 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 340 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 340 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 340 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 340 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 340 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 340 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 342 1	Purchase and install facility backup generators.	All hazards	USD 342 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 342 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 342 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 342 3	Conduct hazard mitigation education programs for students.	All hazards	USD 342 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 342 4	Conduct a xeriscaping program for all school facilities	Drought	USD 342 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 342 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 342 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New

Jefferson 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 342 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 342 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 342 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 342 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 342 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 342 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 343 1	Purchase and install facility backup generators.	All hazards	USD 343 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 343 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 343 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 343 3	Conduct hazard mitigation education programs for students.	All hazards	USD 343 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 343 4	Conduct a xeriscaping program for all school facilities	Drought	USD 343 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 343 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 343 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 343 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 343 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New

Jefferson 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 343 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 343 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 343 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 343 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Rural Water Districts (ALL) 1	Purchase and install facility backup generators.	All hazards	District Manager	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, System budgets	Five years	New
Rural Water Districts (ALL) 2	Replace water lines at critical locations throughout service area.	Drought, Wildfire	District Manager	Medium	1,2	Distance and specification dependent	Bric, HMGP, System budget	Ten years	New
Evergy-1	Encourage long-term decrease in consumer energy use.	All Hazards	Director	High	1, 2, 3, 4	Staff Time	Evergy budget	As required	New
Freestate Electric Coop-1	Refit poles and electrical wire throughout the county.	All hazards	President	Medium	1,2	$5,000,000	Jurisdiction budget, State Grant, Federal Mitigation Grant	Ten years	Carried over, lack of capacity

Marshall 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
Marshall County-1	Enhance existing GIS for mitigation, preparedness, and response.	All Hazards	Emergency Management Director	High	1,2	$150,000	Unknown	Five years	Carried over, lack of funding
Marshall County-2	Storm sirens, weather radios, talking outdoor warning devices	All Hazard	Emergency Manager	Medium	1	$600,000	Grants/BRIC/Mitigation/Jurisdiction Budget Funds	Continuous	New
Marshall County-3	Collect and distribute educational materials on individual and family preparedness \ mitigation measures for property owners	All Hazards	Emergency Manager	High	3	Staff time		Continuous	Carried over, lack of funding
Marshall County-4	Annually host a public “hazards workshop” for the residents of the county in combination with local festivals, fairs, or other events drawing large crowds.	All Hazards	Emergency Manager	High	3	$1,000 per workshop	Jurisdiction Budget	Continuous	Done/Hosted Pipeline Meetings/ Weather Education Seminars ,Renew
Marshall County-5	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Emergency Manager	High	3	Staff time	Jurisdiction Budget	Continuous	Facebook Campaign Beginning And During Winter Months, Renew
Marshall County-6	Consider development of a Comprehensive Land Use Plan for Marshall County.	All Hazards	Mitigation Officer	medium	4	Staff Time	Jurisdiction Budget	continuous	Carried over, lack of funding
Marshall County-7	Develop cross-departmental information collection capabilities, and incorporate cadastral (building/parcel) data utilizing GIS	All Hazards	Emergency Management Director/Appraiser office	Medium	4	Staff Time	Jurisdiction Budget, State Grant	Continuous	Working With Different Apps To See Which

Marshall 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
									Is The Best/ Orion Renew
Marshall County-8	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner.	All Hazards	Emergency Management Director	Medium	1,2,4	Staff Time	Jurisdiction Budget, State Grant	Three years	Carried over, lack of funding
Marshall County-9	Conduct inventory/survey for the county emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources	All Hazards	Emergency Management Director	Medium	4	Staff Time	Jurisdiction Budget, State Grant	Three years	Yearly Inventory, Renew
Marshall County-10	Replace water lines at critical locations throughout service area	All Hazards	Rural Water Districts	Medium/High	1, 2	Distance and specification dependent	BRIC, HMGP, Jurisdiction Budgets	5 years	New
Marshall County-11	Identify and clearly mark evacuation routes. Allow for quick and safe evacuation if needed.	All Hazards	Emergency Manager	High	1	$15,000	Jurisdiction Budget/BRIC/Mitigation	Continuous	New
Marshall County-12	Purchase electronic mobile traffic notification signs.	All Hazards	Emergency Manager	High	1,2	$35,000	HMGP/Jurisdiction Budgets	5yrs	New
Marshall County-13	Interoperable communications, such as radios, laptops, virtual EOC and weather radios. Training for apps, equipment as it becomes available, hotspots and back-up satellite systems.	All hazards	Emergency Manager	High	4	25 million	Grants/Mitigation Money	Continuous	New
Marshall County-14	Conduct agricultural education program on the identification of invasive species and pathogens.	Agricultural Infestation	Extension	Medium/High	1,3	Staff Time	Jurisdiction Budgets	Continuous	New
Marshall County-15	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Extension	High	1,2	Staff Time and $500	Jurisdiction Budgets	Continuous	New

Marshall 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
Marshall County-16	Develop an annex to the LEOP for dam failure response and evacuation for high hazard dams in Marshall County.	Dam / Levee Failure	Emergency Management Director/flood plain manager	High	4	Staff Time	Jurisdiction Budget	Three years	Working On New Leop
Marshall County-17	The Marshall County Rural Water District No. 2 will seek funding sources to mitigate damage to critical infrastructure, including water line enhancements and the replacement of equipment including water pumps, meters, and valves. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Dam and Levee Failure	Emergency Management Director/Marshall County Rural Water District	Medium	1,2	$1,000,000	Jurisdiction Budget, State Grant, Federal Grant	Three years	Carried over, lack of funding
Marshall County-18	The Mission Creek Watershed District No. 51 will continue to maintain watershed-related structures within their district, including the maintenance and repair of structure-related fences	Dam and Levee Failure	Emergency Management Director/Mission Creek Watershed District No. 51	Medium	1,2	$1,000,000	Jurisdiction Budget, State Grant, Federal Grant	Three years	Carried over, lack of funding
Marshall County-19	The Watershed District No. 69 will continue to construct, operate, and maintain water detention dams and related structures for flood reduction in their watershed district	Dam and Levee Failure	Emergency Management Director/ Watershed District No. 69	Medium	1,2	Staff Time	Jurisdiction Budget, State Grant, Federal Grant	Three years	Carried over, lack of funding
Marshall County-20	The Horseshoe Creek Watershed District No. 10 will continue to construct, operate, and maintain water detention dams and related structures for flood reduction in their watershed district.	Dam and Levee Failure	Emergency Management Director/horseshoe Creek Watershed District	Medium	1,2	Staff Time	Jurisdiction Budget, State Grant, Federal Grant	Three years	Ongoing
Marshall County-21	The Rubidoux Watershed No. 70 will continue to construct, operate, and maintain water detention dams and	Dam and Levee Failure	Emergency Management Director/Rubidou	Medium	1,2	Staff Time	Jurisdiction Budget, State Grant,	Three years	Carried over, lack of funding

Marshall 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
	related structures for flood reduction in their watershed district.		x watershed No. 70				Federal Grant		
Marshall County-22	The Upper Black Vermillion Watershed will continue to construct, operate, and maintain water detention dams and related structures for flood reduction in their watershed district.	Dam and Levee Failure	Emergency Management Director/Upper Black Vermillion Watershed	Medium	1,2	Staff Time	Jurisdiction Budget, State Grant, Federal Grant	Three years	Carried over, lack of funding
Marshall County-23	The Spring Creek Watershed No. 80 will continue to construct, operate, and maintain water detention dams and related structures for flood reduction in their watershed district.	Dam and Levee Failure	Emergency Management Director	Medium	1,2	Staff Time	Jurisdiction Budget, State Grant, Federal Grant	Three years	Carried over, lack of funding
Marshall County-24	Contact owners of high hazard dams in the county and inform them of their responsibility to provide and/or update EAPs to Marshall County Emergency Management as prescribed by the KDA-DWR, Chief Engineer.	Dam and Levee Failure	Emergency Management Director/flood plain manager	High	`1,2,3,4	Staff Time	Jurisdiction Budget	Three years	Working With State Grant, Nfip,
Marshall County-25	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Building Supervisor	High	1,2	$25,000 per facility	HMGP, BRIC, Jurisdiction Budget	Continuous	New
Marshall County-26	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Emergency Manager/County Commissioners	High	1,2	$2000 per facility	BRIC, Jurisdiction Budgets	4-5 years	New
Marshall County-27	Purchase of mobile heated/ airconditioned tent.	Extreme Temperatures, Severe Winter Weather	Emergency Manager	Medium	1, 2	$30,000	BRIC, HMGP, State Grant, Federal Grant, Jurisdiction Budgets	5 years	New

Marshall 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
Marshall County-28	Marshall County is committed to continued voluntary participation and compliance with the NFIP	Flood	Msco, Public Works/Flood Plan Manager	High	1,2,3,4	Staff Time	State Grant, Federal Grant	Continuous	Carried over, lack of funding
Marshall County-29	Educate and promote local jurisdictional participation in the NFIP.	Flood	Msco, Public Works/Flood Plan Manager	High	1,2,3	Staff time	Jurisdiction Budget, State Grant	Continuous	Held Meeting On New Flood Plan Mapping Renew
Marshall County-30	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners.	Flood	Mitigation Officer/Public Works /flood plan manager	High	1,2	Staff Time and fair market value	Jurisdiction Budget, State Grant, Federal Grant	Continuous	Still In Progress/When Funding Is Available Renew
Marshall County-31	Contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Grant Flood Mitigation Assistance (FEMA)	Flood	Mitigation Officer//Public Works /flood plan manager	High	1,2,3	Staff Time	Jurisdiction Budget	Continuous	Carried over, lack of funding
Marshall County-32	Identify flash-flood prone areas to consider flood reduction measures to county planners	Flood	Emergency Management Director/ flood plain manager	High	1,2,4	Staff Time	Jurisdiction Budget	continuous	Carried over, lack of funding
Marshall County-33	Research and design an appropriate stream buffer ordinance to further protect the jurisdiction’s water resources and to limit future flood damages adjacent to major waterways	Flood	Emergency Management Director/flood plain manager	High	1,2,4	Staff Time	Jurisdiction Budget, State Grant, Federal Grant	Three years	Worked With State Grant Partners On Stream Buffers And Tier Placement , Renew

Marshall 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
Marshall County-34	Regularly calculate and document the amount of flood prone property that is preserved as open space to reduce flood insurance burden to the county.	Flood	Emergency Management Director/flood plain manager	High	1,2,3,4	Staff Time	Jurisdiction Budget	Continuous	Working With State Grant Nfip On This Renew
Marshall County-35	Purchase and demolish flood prone properties	Flood	Flood Plain Manager	Medium	1,2	Per property cost	Jurisdiction Budget	4-5 years	New
Marshall County-36	Construct rainwater retention/detention ponds at strategic locations.	Flood	Flood Plain Manager and Watershed District	Medium/High	1,2	Facility size dependent	HMGP, BRIC, Jurisdiction Budgets	4-5 years	New
Marshall County-37	Procure permanent signage to warn of flood hazard areas.	Flood	Road and Bridge	Medium/High	1,2	Location Dependent	HMGP, BRIC, Jurisdiction Budgets	4 years	New
Marshall County-38	Clean and repair drainage ditches to maintain capacity	Flood	Public Works	Medium	1, 2	Location length and size dependent	HMGP, BRIC, Jurisdiction Budgets	5 years	New
Marshall County-39	Install surge protectors in all jurisdictional facilities.	Severe Weather	Building Maintenance	High	1,2	$10,000 per location	HMGP, BRIC, Jurisdiction Budgets	3 years	New
Marshall County-40	Install hail resistant roofing on all jurisdictional facilities	Severe Weather	Building Maintenance and County Commissioners	Medium/High	1,2	$50,000 per location	HMGP, BRIC, Jurisdiction Budgets	5 years	New
Marshall County-41	Insulate water lines in all jurisdictional facilities	Severe Weather	Building Maintenance	High	1,2	$10,000-$50,000 per facility	HMGP, BRIC, Jurisdiction Budgets	5 years	New
Marshall County-42	Construct community safe rooms throughout the county to required building standards	Severe Weather, Tornado	Emergency Manager	High	1,2	$1,000,000 per facility	HMGP, BRIC, Jurisdiction Budgets	5 years	New

Marshall 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
Marshall County-43	Research, develop and recommend an ordinance /resolution to require installation of tornado saferooms for any new major manufactured and/or mobile home parks with more than 10 mobile home spaces	Severe Weather, Tornado	Emergency Management Director/ County commissioners	High	1,2,4	Staff Time	Jurisdiction Budget	Three years	Carried over, lack of staff
Marshall County-44	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Emergency Management Director	High	1,2	Staff Time	Jurisdiction Budget, State Grant, Federal Grant	Continuous	Have Published Funding Sources On Public Sites, Carried over, lack of funding
Marshall County-45	Incorporate the inspection and management of trees that may pose a threat to the county and incorporated cities routine maintenance system process.	Severe Weather, Tornado, Winter Storm	Emergency Management Director/Public Works Director	Medium	1,2	$10,000	Jurisdiction Budget	Continuous	Addressing As Needed/Some Cities Have Ordinance With Minimum Of 12 Feet Clearance Renew
Marshall County-46	Evaluate existing buildings for safe areas and prioritize replacements and upgrades to existing facilities. Obtain funding for those retrofits / new construction.	Severe Weather, Tornado, Winter Storm	Emergency Manager	High	2	Staff Time	Jurisdiction Budget/BRIC/Mitigation	Continuous	New
Marshall County-47	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources.	Wildfire	Emergency Management Director	High	4	Staff Time	Jurisdiction Budget	Three years	Carried over, lack of staff

Marshall 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
Marshall County-48	Evaluate the firefighting water supply resources within the County, including both fixed and mobile supply issues.	Wildfire	Emergency Management Director	Medium	4	Staff Time	Jurisdiction Budget	Three years	Carried over, lack of funding
Marshall County-49	Develop and implement a wildfire prevention/education program.	Wildfire	Emergency Management Director	Medium	3	$500	Jurisdiction Budget	Continuous	Handouts At Fairs/ Facebook, Renew
Marshall County-50	Distribute assessment report examples provided by the Kansas Forest Service to applicable parties to develop an understanding of the Community Wildfire Protection Plan (CWPP). Recommend joining the program and completing an assessment report for approval.	Wildfire	Emergency Manager	High	1,3,4	Staff Time	Jurisdiction Budget, State Grant, Federal Grant	Three years	New
Marshall County -51	Create defensible space buffers at all critical facilities	Wildfire	Emergency Manager	High	1,2	Facility size dependent	HMGP, BRIC, Jurisdiction Budgets	5 years	New
Marshall County-52	Conduct education campaign for all community and volunteer firefighters on wildfire response protocols and tactics	Wildfire	Emergency Manager	High	1,2,4	$1,000 per class	HMGP, Jurisdiction Budgets	2-3 years	New
Marshall County-53	Purchase of gas masks, bulletproof vests and riot gear	Civil Unrest	Sheriff	Medium	1, 2	$40,000	BRIC, Jurisdiction Budget, State Grant, Federal Grant, Mitigation	5 years	New
Marshall County-54	To improve the security of our internet in the county, with equipment and technology.	Cyber Security	IT Department Director	High	2	$150,000	Homeland Security/Mitigation Money/ BRIC	Continuous	New

Marshall 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
Marshall County-55	Purchase cloud storage backup for all jurisdictional electronic records	Cybersecurity Incident	IT Department Director	High	1,2	Data size dependent	Jurisdiction Budgets	3 years	New
Marshall County-56	Provide hazardous materials response training to first responders and emergency management staff	Hazardous Materials Event	Emergency Manager and Department Leads	High	1,2	$500 per trainee	HMGP, Jurisdiction Budgets	2 years	New
Marshall County-57	Identify and map all structurally deficient bridges	Infrastructure Failure	Road and Bridge Department	High	1, 2	$1,000,000 per facility	HMGP, BRIC, Jurisdiction Budgets	3 years	New
Marshall County-58	The Washington County Rural Water District No. 1 will seek funding sources to mitigate damage to critical infrastructure, including extending and replacing water lines, water line enhancements, installing new wells and water towers, and the replacement/purchase of equipment including water pumps, meters, and valves. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Emergency Management Director/Washington County	Medium	1,2	$1,000,000	Jurisdiction Budget, State Grant, Federal Grant	Three years	Ongoing
Marshall County-59	The Nemaha Marshall Electric Cooperative will continue to coordinate mitigation efforts with county and local governments, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies	Infrastructure Failure	Emergency Management Director/Nemaha Marshall Electric Coop	Medium	4	Staff Time	Jurisdiction Budget, State Grant, Federal Grant	Three years	Seeking Funding From Bric And Mitigation For Upgrades At This Time. Ongoing
Marshall County-60	The Prairie Land Electric Cooperative will continue to coordinate mitigation efforts with county and local governments, encourage identification of	Infrastructure Failure	Emergency Manager/Prairie Land Electric Coop	High	1,2,4	Unknown	Jurisdiction Budget, State Grant,	Continuous	New

Marshall 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
	hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies. .						Federal Grant		
Marshall County-61	The Home Rural Water District will seek funding sources to mitigate damage to critical infrastructure, including water line enhancements and the replacement of equipment including water pumps, meters, and valves. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Emergency Management Director/Home Rural Water District	Medium	1,2	$1,000,000	Jurisdiction Budget, State Grant, Federal Grant	Three years	Ongoing
Marshall County-62	The Pottawatomie County Rural Water District No. 3 will seek funding sources to mitigate damage to critical infrastructure, including water line enhancements and the replacement of equipment including water pumps, meters, and valves. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Emergency Management Director/Pottawatomie County Rural Water District No. 3	Medium	1,2	$1,000,000	Jurisdiction Budget, State Grant, Federal Grant	Three years	Carried over, lack of funding
Marshall County-63	The Nemaha County Rural Water District No. 3 will seek funding sources to mitigate damage to critical infrastructure, including water line enhancements and the replacement of equipment including water pumps, meters, and valves. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Emergency Management Director/Nemaha County Rural Water District No. 3	Medium	1,2	$1,000,000	Jurisdiction Budget, State Grant, Federal Grant	Three years	Carried over, lack of funding
Marshall County-64	The Bluestem Electric Cooperative, Inc. will continue to coordinate mitigation	Infrastructure Failure	Emergency Management	Medium	4	Staff Time	Jurisdiction Budget,	Three years	Ongoing

Marshall 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
	efforts with county and local governments, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.		Director/Bluestem Electric Coop				State Grant, Federal Grant		
Marshall County-65	The Blue Valley Telephone Cooperative will seek funding sources for possible, but not exclusively, capital improvement projects including updating head ends and wireless equipment, overbuilds of cable plants, dial tones over the cable plants, cellular solutions, and fiber capabilities in Marshall County, among other possible projects.	Infrastructure Failure	Emergency Management Director/Blue Valley Technologies	Medium	1,2	$1,000,000	Jurisdiction Budget, State Grant, Federal Grant	Three years	Ongoing With New Upgrades To Their System Being Installed Now,
Marshall County-66	The Marshall County Rural Water District No. 3 will seek funding sources to mitigate damage to critical infrastructure, including line extensions, updating of radio read software, water line enhancements and the replacement of equipment including water pumps, meters, and valves. Also seek funding for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Emergency Management Director/ Rural Water Districts	Medium	1,2	$1,000,000	Jurisdiction Budget, State Grant, Federal Grant	Three years	Ongoing, Looked Into Bric Money For Generators
Marshall County-67	Coordinate county and local government mitigation efforts with RECs	Infrastructure Failure	Emergency Manager/Local Utilities	High	4	Staff Time	Jurisdiction Budget	continuous	Work With Them On Mitigation Projects Keep Them Informed On Funding As It Becomes

Marshall 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
									Available Renew
Marshall County-68	Purchase and provide backup power generators, solar panels, battery backup as appropriate for critical facilities and utilities.	Infrastructure Failure	Emergency Management Director/Local Jurisdictions	High	2	$150,000	Mitigation Money/Grants	Continuous	New
Marshall County-69	Cameras, Key fob system to enter the building, outdoor and indoor cameras, silent alarm buttons under each desk, and an automatic notification system to silently inform employees of an emergency to help make each building safter.	Terrorism	IT Manager	High/Medium	1,2,4	$1,000,000	Jurisdiction Budget/State Grant/Federal Grant Funding	Continuous	New
Marshall County-70	Conduct active shooter drills and exercises for all county personnel	Terrorism	Emergency Management Director	High	1, 2	Data size dependent	Jurisdiction Budgets	5 years	New
Marshall County-71	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism	Emergency Manager/ Extension Office	Medium	3	Staff time	Jurisdiction Budget, State Grant, Federal Grant	Continuous	Have Handouts Available At Extension Office And Held An Ag Terrorism Workshop With Ttx. Renew
Marshall County-72	Purchase and install new epidemiological tracking software	Transmissible Disease	Health Department Director	Medium	1, 2	$500 per trainee	HMGP, Jurisdiction Budgets	5 years	New
Axtell-1	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	Mayor	Medium	3,4	Staff Time	Local, State, Federal	Continuous	On-going

Marshall 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
Axtell-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Local	Continuous	HOSTED WEATHER SEMINAR
Axtell-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Local	Continuous	Facebook campaign with EM
Axtell-4	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	$2,000	State	Three years	RENEW
Axtell-5	Educate and promote local jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Local, State	Continuous	On-going
Axtell-6	Purchase cloud storage backup for all jurisdictional electronic records	Cybersecurity Incident	IT	High	1,2	Data size dependent	Local budgets	3 years	New Add
Axtell-7	Provide backup power generators for critical facilities.	Infrastructure Failure	Mayor	Medium	2	$60,000	Local, Grants	Three years	Working on funding RENEW
Axtell-8	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Local, State, Federal	Continuous	Working with extension
Axtell-9	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Mayor	High	1,2	Staff Time	Local, State, Federal	Continuous	On going
Axtell-10	Incorporate the inspection and management of trees into the city maintenance program that may pose a threat to the electrical lines that could result in power outages.	Severe Winter Storm, Infrastructure Failure	Mayor	Medium	1,3	$5,000	Local, State, Federal	Three years	Ongoing RENEW

Marshall 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
Axtell-11	Conduct Wildland Urban Interface Response Training for firefighters	Wildfire	Fire Chief	Medium	1, 2, 3	$30 per student training	HMGP, BRIC, Fire Budgets, Federal WUI grant dollars	5 years	New Add
Axtell-12	Reduce hazardous fuels in prioritized wildfire risk areas	Wildfire	Fire Chief	High	1, 2	$25,000-$50,000 per facility	HMGP, BRIC, Fire Budgets, Federal WUI grant dollars	5 years	New Add
Beattie-1	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	Mayor	Medium	3,4	Staff Time	Local, State, Federal	Continuous	Working with EM on campaigns sharing information Renew
Beattie-2	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Local	Continuous	Hosted weather spotter seminar RENEW
Beattie-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Local	Continuous	Worked with EM on Facebook campaign RENEW
Beattie-4	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	$2,000	State	Three years	Ongoing renew
Beattie-5	Purchase cloud storage backup for all jurisdictional electronic records	Cybersecurity Incident	IT	High	1,2	Data size dependent	Local budgets	3 years	New Add

Marshall 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
Beattie-6	Educate and promote local jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Local, State	Continuous	On gong RENEW
Beattie-7	The city of Beattie, on behalf of the Twin Valley Developmental Services, Inc. organization, will research funding options and consider the purchase of emergency generators to provide backup power for Twin Valley's sheltered workshop site in the city.	Infrastructure Failure	Mayor	Medium	1,2	$40,000	Local, State, Federal	Three years	Ongoing, looking into funding sources,
Beattie-8	Purchase and provide backup power generators for critical facilities.	Infrastructure Failure	Mayor	Medium	2	$60,000	Local, Grants	Three years	Ongoing, renew
Beattie-9	Coordinate county and local government mitigation efforts with RECs.	Infrastructure Failure							
Beattie-10	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Mayor	High	1,2	Staff Time	Local, State, Federal	Continuous	Ongoing RENEW
Beattie-11	Incorporate the inspection and management of trees into the city maintenance program that may pose a threat to the electrical lines that could result in power outages.	Severe Winter Storm, Infrastructure Failure	Mayor	Medium	1,3	$5,000	Local, State, Federal	Three years	Ongoing, renew
Beattie-12	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Local, State, Federal	Continuous	Working with extension on hand outs and classes RENEW
Beattie-13	Conduct Wildland Urban Interface Response Training for firefighters	Wildfire	Fire Chief	Medium	1, 2, 3	$30 per student training	HMGP, BRIC, Fire Budgets, Federal	5 years	New Add

Marshall 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
							WUI grant dollars		
Beattie-14	Reduce hazardous fuels in prioritized wildfire risk areas	Wildfire	Fire Chief	High	1, 2	$25,000-$50,000 per facility	HMGP, BRIC, Fire Budgets, Federal WUI grant dollars	5 years	New Add
BlueRapids-1	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	Mayor	Medium	3,4	Staff Time	Local, State, Federal	Continuous	On going
BlueRapids-2	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Local	Continuous	Hand out at county Fair in BR. Working with EM
BlueRapids-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Local	Continuous	Facebook campaign with EM on going
BlueRapids-4	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	$2,000	State	Three years	Working on this on going renew
BlueRapids-5	Purchase of gas masks, bulletproof vests and riot gear	Civil Unrest	Police Chief	Medium	2	$40,000	BRIC, Local, State, Federal, Mitigation	5 years	New Add
BlueRapids-6	Purchase cloud storage backup for all jurisdictional electronic records	Cybersecurity Incident	IT	High	1,2	Data size dependent	Local budgets	3 years	New Add
Blue Rapids -7	Consider developing an application package for participation in the NFIP.	Flood	Mayor	High	1,2,3,4	Staff Time	Local	Two years	Information in city hall renew

Marshall 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
BlueRapids-8	Coordinate county and local government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Local	Three years	On going
BlueRapids-9	Purchase and provide backup power generators for critical facilities.	Infrastructure Failure	Mayor	Medium	2	$60,000	Local, Grants	Three years	Purchased three generators on going
BlueRapids-10	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Mayor	High	1,2	Staff Time	Local, State, Federal	Continuous	On going
BlueRapids-11	Incorporate the inspection and management of trees into the city maintenance program that may pose a threat to the electrical lines that could result in power outages.	Severe Winter Storm, Infrastructure Failure	Mayor	Medium	1,3	$5,000	Local, State, Federal	Three years	On going lots of tree trimming after storms lately on going renew
Blue Rapids-12	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Local, State, Federal	Continuous	Working with Extension
Blue Rapids-13	Conduct Wildland Urban Interface Response Training for firefighters	Wildfire	Fire Chief	Medium	1, 2, 3	$30 per student training	HMGP, BRIC, Fire Budgets, Federal WUI grant dollars	5 years	New Add
Blue Rapids-14	Reduce hazardous fuels in prioritized wildfire risk areas	Wildfire	Fire Chief	High	1, 2	$25,000-$50,000 per facility	HMGP, BRIC, Fire Budgets, Federal WUI grant dollars	5 years	New Add

Marshall 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
Frankfort-1	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	Mayor	Medium	3,4	Staff Time	Local, State, Federal	Continuous	Working with EM and state on updating mitigation plan on going renew
Frankfort-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Local	Continuous	Working with EM on setting up table with handouts at events on going renew
Frankfort-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Local	Continuous	Facebook campaign with EM on going renew
Frankfort-4	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	$2,000	State	Three years	ON GOING RENEW
Frankfort-5	Purchase of gas masks, bulletproof vests and riot gear	Civil Unrest	Police Chief	Medium	2	$40,000	BRIC, Local, State, Federal, Mitigation	5 years	New Add
Frankfort-6	Purchase cloud storage backup for all jurisdictional electronic records	Cybersecurity Incident	IT	High	1,2	Data size dependent	Local budgets	3 years	New Add
Frankfort-7	The City of Frankfort will continue to operate and maintain their levee system	Dam and Levee Failure	Mayor	High	1,2	Staff Time	Local, State, Federal	Continuous	Working with state and Federal

Marshall 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
	in accordance with the appropriate regulatory requirements.								entities on levee maintenanc e ongoing renew
Frankfort-8	Research funding options and consider the purchase of a pumping system to aid in dewatering of the levee system in Frankfort. The city of Frankfort has identified a need to install a pumping system in the areas of the levee located in the city. This pumping system will be utilized to aid in dewatering of the ponding areas adjacent to the levee system.	Dam and Levee Failure	Mayor	Medium	1,2	Unknown	Local, State, Federal	Three years	Research possible funding and proper way to achieve this
Frankfort-9	Frankfort is committed to continued voluntary participation and compliance with the NFIP.	Flood	Mayor	High	1,2,3,4	Staff Time	State, Federal	Continuous	Working with state and local NFIP on going renew
Frankfort-10	Assess flood prone areas and recommend flood reduction measures to city officials.	Flood	Mayor	High	1,2,4	Staff Time	Local	########	Working with State and local NFIP to update flood plan maps on going renew
Frankfort-11	Coordinate county and local government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Local	Three years	On going RENEW
Frankfort-12	Purchase and provide backup power generators for critical facilities.	Infrastructure Failure	Mayor	Medium	2	$60,000	Local, Grants	Three years	On going looking for funding sources on

Marshall 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
									going renew
Frankfort -13	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Storm, Tornado,	Mayor	High	1,2	Staff Time	Local, State, Federal	Continuous	Ongoing
Frankfort-14	Incorporate the inspection and management of trees into the city maintenance program that may pose a threat to the electrical lines that could result in power outages.	Severe Winter Storm, Infrastructure Failure	Mayor	Medium	1,3	$5,000	Local, State, Federal	Three years	WORKIN G ON ORDINAC E RENEW
Frankfort-15	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Local, State, Federal	Continuous	Working with extension on meeting and handouts
Frankfort-16	Conduct Wildland Urban Interface Response Training for firefighters	Wildfire	Fire Chief	Medium	1, 2, 3	$30 per student training	HMGP, BRIC, Fire Budgets, Federal WUI grant dollars	5 years	New Add
Frankfort-17	Reduce hazardous fuels in prioritized wildfire risk areas	Wildfire	Fire Chief	High	1, 2	$25,000-$50,000 per facility	HMGP, BRIC, Fire Budgets, Federal WUI grant dollars	5 years	New Add
Marysville-1	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	Mayor	Medium	3,4	Staff Time	Local, State, Federal	Continuous	Working with EM on new mitigation plan and

Marshall 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
									surveys for the public on going renew
Marysville-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Local	Continuous	Weather spotter class, wild fire work shops, handouts with EM, on going RENEW
Marysville-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Local	Continuous	Campaign with EM on facebook and handouts , on going renew
Marysville-4	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	$2,000	State	Three years	On going renew
Marysville-5	The City of Marysville will continue to operate and maintain their levee system in accordance with the appropriate regulatory requirements.	Dam and Levee Failure	Mayor	High	1,2	Staff Time	Local, State, Federal	Continuous	Working with state and Federal entities on levee maintenance ongoing renew
Marysville-6	Research funding options and consider the purchase of a pumping system to aid in dewatering of the levee system in Marysville. The city of Marysville has	Dam and Levee Failure	Mayor	Medium	1,2	Unknown	Local, State, Federal	Three years	Research possible funding and proper

Marshall 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
	identified a need to install a pumping system in the areas of the levee located in the city. This pumping system will be utilized to aid in dewatering of the ponding areas adjacent to the levee system.								way to achieve this
Marysville-7	Marysville is committed to continued voluntary participation and compliance with the NFIP.	Flood	Mayor	High	1,2,3,4	Staff Time	State, Federal	Continuous	Information sharing in front lobby on going renew
Marysville-8	Educate and promote local jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Local, State	Continuous	Information sharing in front lobby of city hall on going renew
Marysville-9	Assess flood prone areas and recommend flood reduction measures to city officials.	Flood	Mayor	High	1,2,4	Staff Time	Local	########	Working with state and local NFIP on flood plan mapping and updates ongoing renew
Marysville-10	Coordinate county and local government mitigation efforts with RECs.	Infrastructure Failure							
Marysville-11	The City of Marysville will continue to assess the impact of natural hazards on potable water supplies, distribution lines, pumps, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure and replace necessary equipment. Also seek funding sources options for generators and/or	Infrastructure Failure	Mayor	Medium	1,2	Unknown	Local, State, Federal	Three years	Seeking funding options on going renew

Marshall 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
	transfer switches to maintain power in the event of severe weather events.								
Marysville-12	The City of Marysville will continue to assess the impact of natural hazards on its sewage lift station. Seek funding sources to mitigate damage to critical infrastructure and replace necessary equipment.	Infrastructure Failure	Mayor	Medium	1,2	$100,000	Local, State, Federal	Three years	Working on in house plan on how to best handle this and prioritize best use of funds on going renew
Marysville-13	Purchase and provide backup power generators or transfer switches for critical facilities.	Infrastructure Failure	Mayor	Medium	2	$60,000	Local, Grants	Three years	Purchases generators for city hall, pd, fire department on going
Marysville-14	The city of Marysville, on behalf of the Twin Valley Developmental Services, Inc. organization, will research funding options and consider the purchase of emergency generators to provide backup power for Twin Valley's residential homes in the city of Marysville.	Infrastructure Failure	Mayor	Medium	1,2	$40,000	Local, State, Federal	Three years	On going
Marysville-15	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Mayor	High	1,2	Staff Time	Local, State, Federal	Continuous	INFORMATION SHARING on possible funding at city hall on going renew

Marshall 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
Marysville-16	Incorporate the inspection and management of trees into the city maintenance program that may pose a threat to the electrical lines that could result in power outages.	Severe Winter Storm, Infrastructure Failure	Mayor	Medium	1,3	$5,000	Local, State, Federal	Three years	Passed ord. on height restriction on limbs over streets and alley ways, on going renew
Marysville-17	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Local, State, Federal	Continuous	Working with extension and EM information , attending ttx on ag terrorism, on going renew
Oketo-1	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	Mayor	Medium	3,4	Staff Time	Local, State, Federal	Continuous	Working with EM on updating surveys for public on Mitigation plan on going
Oketo-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Local	Continuous	Working with EM on events and handing out information , on going RENEW

Marshall 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
Oketo-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Local	Continuous	Working with EM on Facebook campaign during winter months on going renew
Oketo-4	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	$2,000	State	Three years	On going renew
Oketo-5	Purchase cloud storage backup for all jurisdictional electronic records	Cybersecurity Incident	IT	High	1,2	Data size dependent	Local budgets	3 years	New Add
Oketo-6	Educate and promote local jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Local, State	Continuous	HELD FIRM map updates with public and state NFIP on going renew
Oketo-7	Coordinate county and local government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Local	Three years	On going renew
Oketo-8	Purchase and provide backup power generators or transfer switches for critical facilities.	Infrastructure Failure	Mayor	Medium	2	$60,000	Local, Grants	Three years	Working on grants for backup generators for water system on going renew

Marshall 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
Oketo-9	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Mayor	High	1,2	Staff Time	Local, State, Federal	Continuous	ON GOING RENEW
Oketo-10	Incorporate the inspection and management of trees into the city maintenance program that may pose a threat to the electrical lines that could result in power outages.	Severe Winter Storm, Infrastructure Failure	Mayor	Medium	1,3	$5,000	Local, State, Federal	Three years	On going local help remove low hanging tree limbs as needed on going renew
Oketo-11	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Local, State, Federal	Continuous	Working with extension on hand outs and meetings on going renew
Oketo-12	Conduct Wildland Urban Interface Response Training for firefighters	Wildfire	Fire Chief	Medium	1, 2, 3	$30 per student training	HMGP, BRIC, Fire Budgets, Federal WUI grant dollars	5 years	New Add
Summerfield-1	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	Mayor	Medium	3,4	Staff Time	Local, State, Federal	Continuous	Working with EM on handouts for residents on going renew
Summerfield-2	Annually host a public "hazards workshop" for the residents of the	All Hazards	Mayor	High	4	$300 per workshop	Local	Continuous	Working with EM at

Marshall 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
	jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.								events to set up table for handouts and talk with residents about how to prepare, ongoing renew
Summerfield-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Local	Continuous	Working with EM on local Facebook campaign, ongoing renew
Summerfield-4	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	$2,000	State	Three years	Ongoing renew
Summerfield-5	Purchase cloud storage backup for all jurisdictional electronic records	Cybersecurity Incident	IT	High	1,2	Data size dependent	Local budgets	3 years	New Add
Summerfield-6	Educate and promote local jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Local, State	Continuous	Working with state and local NFIP on updated FIRM MAPS ON GOING RENEW
Summerfield-7	Coordinate county and local government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Local	Three years	Always looking at ways to

Marshall 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
									make our system bomb proof on going renew
Summerfield-8	Purchase and provide backup power generators or transfer switches for critical facilities.	Infrastructure Failure	Mayor	Medium	2	$60,000	Local, Grants	Three years	Looking at funding resources on going renew
Summerfield-9	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Mayor	High	1,2	Staff Time	Local, State, Federal	Continuous	Handouts available on saferooms at city hall and possible funding on going renew
Summerfield-10	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Local, State, Federal	Continuous	Working with extension on handouts and meetings, ongoing renew
Summerfield-11	Conduct Wildland Urban Interface Response Training for firefighters	Wildfire	Fire Chief	Medium	1, 2, 3	$30 per student training	HMGP, BRIC, Fire Budgets, Federal WUI grant dollars	5 years	New Add

Marshall 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
Summerfield-12	Incorporate the inspection and management of trees into the city maintenance program that may pose a threat to the electrical lines that could result in power outages.	Winter Storm, Infrastructure Failure	Mayor	Medium	1,3	$5,000	Local, State, Federal	Three years	On going renew
Vermillion-1	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	Mayor	Medium	3,4	Staff Time	Local, State, Federal	Continuous	Working with EM on updating residents on all hazard mitigation methods on going renew
Vermillion-2	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Local	Continuous	Working with local EM on handouts and information that can be hand out at events in our town on going renew
Vermillion-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Local	Continuous	Worked with EM on Facebook campaign on winter driving and hypertherm ia on going renew

Marshall 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
Vermillion-4	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	$2,000	State	Three years	On going renew
Vermillion-5	Purchase cloud storage backup for all jurisdictional electronic records	Cybersecurity Incident	IT	High	1,2	Data size dependent	Local budgets	3 years	New Add
Vermillion-6	Vermillion is committed to continued voluntary participation and compliance with the NFIP.	Flood	Mayor	High	1,2,3,4	Staff Time	State, Federal	Continuous	Awareness campaigns with EM on going renew
Vermillion-7	Educate and promote local jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Local, State	Continuous	Handouts and meetings with state and local NFIP on updated firm maps on going renew
Vermillion-8	Assess flood prone areas and recommend flood reduction measures to city officials.	Flood	Mayor	High	1,2	Staff Time	State, Federal	Continuous	Working with state and local food plan areas and up grading tubes and drainage in area on going renew
Vermillion-9	Coordinate county and local government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Local	Three years	On going renew

Marshall 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
Vermillion-10	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Mayor	High	1,2	Staff Time	Local, State, Federal	Continuous	Seeking fund ideas on going renew
Vermillion-11	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Local, State, Federal	Continuous	Extension agent is assisting with hand outs and meetings as needed on going renew
Vermillion-12	Incorporate the inspection and management of trees into the city maintenance program that may pose a threat to the electrical lines that could result in power outages.	Winter Storm, Infrastructure Failure	Mayor	Medium	1,3	$5,000	Local, State, Federal	Three years	On going locals help when the need cut on going renew
Waterville-1	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	Mayor	Medium	3,4	Staff Time	Local, State, Federal	Continuous	Working with EM and state on new mitigation planning and surveys for public on going RENEW
Waterville-2	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Mayor	High	4	$300 per workshop	Local	Continuous	Working with EM on coming to events to set up hand outs and

Marshall 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
									talk about different mitigation and hazards we have in our community on going RENEW
Waterville-3	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Mayor	High	3	Staff Time	Local	Continuous	USED EM Facebook campaign for winter driving and winter health effects on going RENEW
Waterville-4	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Mayor	Medium	4	$2,000	State	Three years	Working in house on that project on going RENEW
Waterville-5	Purchase of gas masks, bulletproof vests and riot gear	Civil Unrest	Police Chief	Medium	2	$40,000	BRIC, Local, State, Federal, Mitigation	5 years	New Add
Waterville-6	Purchase cloud storage backup for all jurisdictional electronic records	Cybersecurity Incident	IT	High	1,2	Data size dependent	Local budgets	3 years	New Add
Waterville-7	Educate and promote local jurisdictional participation in the NFIP.	Flood	NFIP Coordinator	High	1,3,4	Staff Time	Local, State	Continuous	Handouts and meetings held to educate on

Marshall 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
									new FIRM maps and why they need to participate in the insurance plan along with local bankers on going renew
Waterville-8	Coordinate county and local government mitigation efforts with RECs.	Infrastructure Failure	Mayor	High	4	Staff Time	Local	Three years	ON GOING RENEW
Waterville-9	Purchase and provide backup power generators or transfer switches for critical facilities.	Infrastructure Failure	Mayor	Medium	2	$60,000	Local, Grants	Three years	Looking for funding ongoing RENEW
Waterville-10	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Severe Weather, Tornado	Mayor	High	1,2	Staff Time	Local, State, Federal	Continuous	Working on funding and needs priority for shelters, on going RENEW
Waterville-11	Incorporate the inspection and management of trees into the city maintenance program that may pose a threat to the electrical lines that could result in power outages.	Severe Winter Storm, Infrastructure Failure	Mayor	Medium	1,3	$5,000	Local, State, Federal	Three years	ON GOING RENEW
Waterville-12	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism	Mayor	Medium	3	Staff Time	Local, State, Federal	Continuous	Working with extension office on hand outs

Marshall 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
									and meetings as needed on going RENEW
Waterville-13	Reduce hazardous fuels in prioritized wildfire risk areas	Wildfire	Fire Chief	High	1, 2	$25,000-$50,000 per facility	HMGP, BRIC, Fire Budgets, Federal WUI grant dollars	5 years	New Add
Waterville-14	Conduct Wildland Urban Interface Response Training for firefighters	Wildfire	Fire Chief	Medium	1, 2, 3	$30 per student training	HMGP, BRIC, Fire Budgets, Federal WUI grant dollars	5 years	New Add
Waterville-15	The City of Waterville will seek funding sources to mitigate damage to critical infrastructure, including extending and replacing water lines, water line enhancements, installing new wells and water towers, and the replacement/purchase of equipment including water pumps, meters, and valves. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Infrastructure Failure	Mayor	Medium	1,2	$1,000,000	Local, State, Federal	Three years	New
Good Shepherd School-1	Develop and fund mitigation projects for the construction of tornado safe rooms for Good Shepherd School.	Severe Weather, Severe Winter Storm, Tornado, Wildfire	Superintendent	Low	1,2	$500,000	Local, State, Federal	Dependent upon funding.	SEEKING FUNDING OPTIONS ONGOING RENEW

Marshall 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
Good Shepherd School -2	Seek funding to retain a professional school safety and security firm to review and update the school's Security Plan for domestic acts of terrorism, building security, and contagious disease response.	Terrorism	Superintendent	Medium	1,2,3,4	$50,000	Local, State, Federal	Three years	ONGOING
Good Shepherd School -3	Seek funding options for the purchase and installation of backup power generators for the schools of Good Shepherd School.	Infrastructure Failure	Superintendent	Medium	1,2	$30,000	Local, State, Federal	Three years	Seeking funding RENEW
Good Shepherd School -4	Seek funding to evaluate and update the existing School Emergency Plans / Evacuation Plans for technological hazards caused by severe weather events.	All Hazards	Superintendent	Medium	1,2,3,4	$30,000	Local, State, Federal	Four years	Looking for funding ongoing, RENEW
Good Shepherd School-5	Conduct regular staff and student active shooter trainings	Terrorism	Principal	Medium/High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	Continuous	New Add
St. Gregory School-1	Develop and fund mitigation projects for the construction of tornado safe rooms for St. Gregory School.	Severe Weather, Severe Winter Storm, Tornado, Wildfire	Superintendent	Low	1,2	$500,000	Local, State, Federal	Dependent upon funding.	Seeking funding ongoing RENEW
St. Gregory School-2	Seek funding to retain a professional school safety and security firm to review and update the school's Security Plan for domestic acts of terrorism, building security, and contagious disease response.	Terrorism/	Superintendent	Medium	1,2,3,4	$50,000	Local, State, Federal	Three years	Looking for funding on this project ongoing RENEW
St. Gregory School-3	Seek funding options for the purchase and installation of backup power generators for the schools of St. Gregory School.	Infrastructure Failure	Superintendent	Medium	1,2	$30,000	Local, State, Federal	Three years	SEEKING FUNDING OPTIONS

Marshall 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
									ONGOING RENEW
St. Gregory School-4	Seek funding to evaluate and update the existing School Emergency Plans / Evacuation Plans for technological hazards caused by severe weather events.	All Hazards	Superintendent	Medium	1,2,3,4	$30,000	Local, State, Federal	Four years	Always looking for funding on going RENEW
St. Gregory School-5	Conduct regular staff and student active shooter trainings	Terrorism	Principal	Medium/High	1, 2, 3	Location and size dependent	HMGP BRIC, School Budget,	Continuous	New Add
USD113-1	Develop and fund mitigation projects for the construction of tornado safe rooms for all Unified School District 113 schools.	Severe Weather, Severe Winter Storm, Tornado, Wildfire	Superintendent	Low	1,2	$1,000,000	Local, State, Federal	Dependent upon funding.	Funding and location plans hold up ongoing, RENEW
USD 113-2	Conduct regular staff and student active shooter trainings	Terrorism	Superintendent	Medium/High	1, 2, 3	Location and size dependent	HMGP BRIC, School Budget,	Continuous	New Add
USD364-1	Develop and fund mitigation projects for the construction of tornado safe rooms for all Unified School District 364 schools.	Severe Weather, Severe Winter Storm, Tornado, Wildfire	Superintendent	Low	1,2	$1,000,000	Local, State, Federal	Dependent upon funding.	Looking into funding options and budgeting ongoing RENEW
USD364-2	Seek funding to retain a professional school safety and security firm to review and update the school's Security Plan for domestic acts of terrorism, building security, and contagious disease response.	Terrorism	Superintendent	Medium	1,2,3,4	$50,000	Local, State, Federal	Three years	FUNDING HOLD UP

Marshall 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
USD364-3	Seek funding options for the purchase and installation of backup power generators for the schools of USD 364.	Infrastructure Failure	Superintendent	Medium	1,2	$150,000	Local, State, Federal	Three years	Funding and prioritize buildings ongoing RENEW
USD364-4	Seek funding to evaluate and update the existing School Emergency Plans / Evacuation Plans for technological hazards caused by severe weather events.	All Hazards	Superintendent	Medium	1,2,3,4	$40,000	Local, State, Federal	Four years	Working on funding, ongoing, RENEW
USD 364-5	Conduct regular staff and student active shooter trainings	Terrorism	Superintendent	Medium/High	1, 2, 3	Location and size dependent	HMGP BRIC, School Budget,	Continuous	New Add
USD380-1	Develop and fund mitigation projects for the construction of tornado safe rooms for all Unified School District 380 schools.	Severe Weather, Severe Winter Storm, Tornado, Wildfire	Superintendent	Low	1,2	$1,000,000	Local, State, Federal	Dependent upon funding.	Funding holdup, Ongoing, RENEW
USD 380-2	Conduct regular staff and student active shooter trainings	Terrorism	Superintendent	Medium/High	1, 2, 3	Location and size dependent	HMGP BRIC, School Budget,	Continuous	New Add
USD498-1	Develop and fund mitigation projects for the construction of tornado safe rooms for all Unified School District 498 schools.	Severe Weather, Severe Winter Storm, Tornado, Wildfire	Superintendent	Low	1,2	$1,000,000	Local, State, Federal	Dependent upon funding.	Funding ongoing, RENEW
USD498-2	Seek funding to retain a professional school safety and security firm to review and update the school's Security Plan for domestic acts of terrorism, building	Terrorism/	Superintendent	Medium	1,2,3,4	$50,000	Local, State, Federal	Three years	ONGOING RENEW

Marshall 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
	security, and contagious disease response.								
USD498-3	Seek funding options for the purchase and installation of backup power generators for the schools of USD 498.	Infrastructure Failure	Superintendent	Medium	1,2	$150,000	Local, State, Federal	Three years	ONGOING RENEW
USD498-4	Seek funding to evaluate and update the existing School Emergency Plans / Evacuation Plans for technological hazards caused by severe weather events.	All Hazards	Superintendent	Medium	1,2,3,4	$40,000	Local, State, Federal	Four years	Looking into options for funding ongoing RENEW
USD 498-5	Conduct regular staff and student active shooter trainings	Terrorism	Superintendent	Medium/High	1, 2, 3	Location and size dependent	HMGP BRIC, School Budget,	Continuous	New Add
Blue Stem Electric Coop-1	Refit poles and electrical wire throughout the county.	Infrastructure Failure	President	Medium	1,2	$5,000,000	Local, State, Federal	Ten years	Ongoing RENEW
Blue Stem Electric Coop-2	Shorten distance between utility poles	All Hazards	Blue Stem Electric Coop Administration	Medium	1, 2	Distance and specification dependent	HMGP, System Budget	Ten years	New Add
Evergy-1	Encourage long-term decrease in consumer energy use.	All Hazards	Director	High	1, 2, 3, 4	Staff Time	Evergy budget	As required	New
Nemaha-Marshall Electric Coop-1	The Nemaha Marshall Electric Cooperative will continue to coordinate mitigation efforts with county and local governments, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Infrastructure Failure	President	Medium	4	Staff Time	Local, State, Federal	Three years	On going RENEW
Nemaha-Marshall Electric Coop-2	Refit poles and electrical wire throughout the county.	Infrastructure Failure	President	Medium	1,2	$5,000,000	Local, State, Federal	Three years	Seeking funds on going RENEW

Marshall 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
Nemaha-Marshall Electric Coop-3	Shorten distance between utility poles	All Hazards	Nemaha-Marshall Electric Coop Administration	Medium	1, 2	Distance and specification dependent	HMGP, System Budget	Ten years	New Add
Prairie Land Electric -1	Refit poles and electrical wire throughout the county.	Infrastructure Failure	President	Medium	1,2	$5,000,000	Local, State, Federal	Three years	New
Prairie Land Electric-2	Enhance and upgrade all power lines and equipment as needed to better withstand all hazard events	Infrastructure Failure	Prairie Land Operations Managers	Medium	1.2	Approximate cost $1,500.00 per distribution pole and $4,500 per transmission pole. Approximate cost per mile $46,000 per single phase, $81,000 per three phases, $140,000 per 34.5 kV transmission.	Local, state federal	Determined in annual work plan	New
Prairie Land Electric -3	The Prairie Land Electric Cooperative will continue to coordinate mitigation efforts with county and local governments, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Infrastructure Failure	President	Medium	4	Staff Time	Local, State, Federal	Three years	New

Marshall 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
Prairie Land Electric-4	Shorten distance between utility poles	All Hazards	Prairie Land Electric Administration	Medium	1, 2	Distance and specification dependent	HMGP, System Budget	Ten years	New Add

Nemaha 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
Nemaha County-1	Awareness. Provide information regarding hazard mitigation via the county website or the public library	All Hazards	Emergency Manager	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Nemaha County-2	Conduct training and public outreach to Nemaha county citizens, businesses and local government regarding ways to protect against and mitigate natural hazards.	All Hazards	Emergency Manager	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Nemaha County-3	Seek funding to assure that all citizens are equipped with NOAA Weather Radios.	All Hazards	Emergency Manager	High	1,2	$130,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Nemaha County-4	Seek funding for an outdoor emergency warning system that allow for voice communications.	All Hazards	Emergency Manager	High	1,2	$700,000	Local, State, Federal	Contingent upon funding	Delete
Nemaha County-5	A study will be conducted to ascertain the vulnerability to hazards affecting government and emergency services structures and facilities, and how these can be mitigated.	All Hazards	Emergency Manager	Medium	1,2,3,4	$36,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Nemaha County-6	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Nemaha County-7	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Emergency Manager	High	1, 2	Staff Time and $500	Jurisdiction budget	Five years	New
Nemaha County-8	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Emergency Manager	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Nemaha County-9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	County Facilities Director	Low	1, 2	$5,000 - $50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Nemaha County-10	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	County Facilities Director	Low	1, 2	$2,000 per facility	Local budget	Three years	New

Nemaha 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
Nemaha County-11	Utilize the Hazard Mitigation Grant Program and other funding means to identify structures and facilities located within the 100-year floodplain and implement a buy-out program to demolish or remove structures from hazardous areas.	Flood	Emergency Manager	Medium	1,2,3,4	$291,000	Local, State, Federal	Five years	Carried Over, Funding
Nemaha County-12	Review or develop and promote plans and ordinances for restrictions to construction in flood hazard areas.	Flood	Emergency Manager	Medium	3,4	$12,000	Local, State, Federal	Contingent upon funding	Carried Over
Nemaha County13	Continue participation for communities already in NFIP.	Flood	Emergency Manager	High	1,2,3,4	$12,000	Local, State, Federal	Continuous	Carried Over
Nemaha County-14	Install surge protectors in all jurisdictional facilities.	Severe Weather	County Facilities Director	Medium	1, 2	$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Nemaha County-15	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	County Facilities Director	Medium	1, 2	$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Nemaha County-16	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Emergency Manager	Medium	1, 2	$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Nemaha County-17	Construct snow fences along major transportation routes.	Winter Storm	County Public Works Director	Low	1, 2	$25,000 - $100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Nemaha County-18	Insulate water lines in all jurisdictional facilities.	Winter Storm	County Building Department Director	Low	1, 2	$10,000 - $50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Nemaha County19	Create defensible space buffers at all critical facilities	Wildfire	County Public Works Director	High	1, 2	Facility size dependent	HMGP, BRIC,	As required	New

Nemaha 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
							Jurisdiction budget		
Nemaha County-20	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Management Coordinator	Low	3	$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding
Nemaha County-21	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	County IT Director	High	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Nemaha County-22	Provide hazardous materials response training to first responders and EM staff.	Hazardous Materials Event	Emergency Manager	High	1, 2	$500 per trainee	HMGP, Jurisdiction budget	As required	New
Nemaha County-23	Identify and map all structurally deficient bridges.	Infrastructure Failure	Public Works Director	Medium	1, 2	$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Nemaha County-24	Conduct active shooter drills and exercises for all county personnel.	Terrorism	County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Bern-1	Awareness. Provide information regarding hazard mitigation via the county website or the public library.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Bern-2	Conduct training and public outreach to Bern citizens, businesses and local government regarding ways to protect against and mitigate natural hazards.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Bern-3	Seek funding to assure that all citizens are equipped with NOAA Weather Radios.	All Hazards	Mayor	High	1,2	$5,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Bern-4	Seek funding for an outdoor emergency warning system that allow for voice communications.	All Hazards	Mayor	High	1,2	$700,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Bern-5	A study will be conducted to ascertain the vulnerability to hazards affecting government and emergency services	All Hazards	Mayor	Medium	1,2,3,4	$36,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding

Nemaha 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
	structures and facilities, and how these can be mitigated.								
Bern-6	Review or develop and promote plans and ordinances for restrictions to construction in flood hazard areas.	Flood	NFIP Administrator	Medium	1,2	$12,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Bern-7	Continue participation in NFIP.	Flood	NFIP Administrator	High	1,2,3,4	$12,000	Local, State, Federal	Continuous	Carried Over
Bern-8	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Mayor	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Bern-9	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Bern-10	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Bern-11	Create defensible space buffers at all critical facilities	Wildfire	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Centralia-1	Awareness. Provide information regarding hazard mitigation via the county website or the public library.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Centralia-2	Conduct training and public outreach to Bern citizens, businesses and local government regarding ways to protect against and mitigate natural hazards.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Centralia-3	Seek funding to assure that all citizens are equipped with NOAA Weather Radios.	All Hazards	Mayor	High	1,2	$5,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Centralia-4	Seek funding for an outdoor emergency warning system that allow for voice communications.	All Hazards	Mayor	High	1,2	$700,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding

Nemaha 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
Centralia-5	A study will be conducted to ascertain the vulnerability to hazards affecting government and emergency services structures and facilities, and how these can be mitigated.	All Hazards	Mayor	Medium	1,2,3,4	$36,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Centralia-6	Review or develop and promote plans and ordinances for restrictions to construction in flood hazard areas.	Flood	NFIP Administrator	Medium	1,2	$12,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Centralia-7	Continue participation in NFIP.	Flood	NFIP Administrator	High	1,2,3,4	$12,000	Local, State, Federal	Continuous	Carried Over
Centralia-8	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Mayor	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Centralia-9	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Centralia-10	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Centralia-11	Create defensible space buffers at all critical facilities	Wildfire	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Corning-1	Awareness. Provide information regarding hazard mitigation via the county website or the public library.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Corning-2	Conduct training and public outreach to Bern citizens, businesses and local government regarding ways to protect against and mitigate natural hazards.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Corning-3	Seek funding to assure that all citizens are equipped with NOAA Weather Radios.	All Hazards	Mayor	High	1,2	$5,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding

Nemaha 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
Corning-4	Seek funding for an outdoor emergency warning system that allow for voice communications.	All Hazards	Mayor	High	1,2	$700,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Corning-5	A study will be conducted to ascertain the vulnerability to hazards affecting government and emergency services structures and facilities, and how these can be mitigated.	All Hazards	Mayor	Medium	1,2,3,4	$36,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Corning-6	Review or develop and promote plans and ordinances for restrictions to construction in flood hazard areas.	Flood	NFIP Administrator	Medium	1,2	$12,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Corning-7	Continue participation in NFIP.	Flood	NFIP Administrator	High	1,2,3,4	$12,000	Local, State, Federal	Continuous	Carried Over
Corning-8	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Mayor	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Corning-9	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Corning-10	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Corning-11	Create defensible space buffers at all critical facilities	Wildfire	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Goff-1	Awareness. Provide information regarding hazard mitigation via the county website or the public library.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Goff-2	Conduct training and public outreach to Bern citizens, businesses and local government regarding ways to protect against and mitigate natural hazards.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over

Nemaha 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
Goff-3	Seek funding to assure that all citizens are equipped with NOAA Weather Radios.	All Hazards	Mayor	High	1,2	$5,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Goff-4	Seek funding for an outdoor emergency warning system that allow for voice communications.	All Hazards	Mayor	High	1,2	$700,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Goff-5	A study will be conducted to ascertain the vulnerability to hazards affecting government and emergency services structures and facilities, and how these can be mitigated.	All Hazards	Mayor	Medium	1,2,3,4	$36,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Goff-6	Review or develop and promote plans and ordinances for restrictions to construction in flood hazard areas.	Flood	NFIP Administrator	Medium	1,2	$12,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Goff-7	Continue participation in NFIP.	Flood	NFIP Administrator	High	1,2,3,4	$12,000	Local, State, Federal	Continuous	Carried Over
Goff-8	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Mayor	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Goff-9	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Goff-10	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Goff-11	Create defensible space buffers at all critical facilities	Wildfire	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Oneida-1	Awareness. Provide information regarding hazard mitigation via the county website or the public library.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over

Nemaha 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
Oneida-2	Conduct training and public outreach to Bern citizens, businesses and local government regarding ways to protect against and mitigate natural hazards.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Oneida-3	Seek funding to assure that all citizens are equipped with NOAA Weather Radios.	All Hazards	Mayor	High	1,2	$5,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Oneida-4	Seek funding for an outdoor emergency warning system that allow for voice communications.	All Hazards	Mayor	High	1,2	$700,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Oneida-5	A study will be conducted to ascertain the vulnerability to hazards affecting government and emergency services structures and facilities, and how these can be mitigated.	All Hazards	Mayor	Medium	1,2,3,4	$36,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Oneida-6	Review or develop and promote plans and ordinances for restrictions to construction in flood hazard areas.	Flood	NFIP Administrator	Medium	1,2	$12,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Oneida-7	Continue participation in NFIP.	Flood	NFIP Administrator	High	1,2,3,4	$12,000	Local, State, Federal	Continuous	Carried Over
Oneida-8	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Mayor	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Oneida-9	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Oneida-10	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Oneida-11	Create defensible space buffers at all critical facilities	Wildfire	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

Nemaha 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
Sabetha-1	Awareness. Provide information regarding hazard mitigation via the county website or the public library.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Sabetha-2	Conduct training and public outreach to Bern citizens, businesses and local government regarding ways to protect against and mitigate natural hazards.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Sabetha-3	Seek funding to assure that all citizens are equipped with NOAA Weather Radios.	All Hazards	Mayor	High	1,2	$5,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Sabetha-4	Seek funding for an outdoor emergency warning system that allow for voice communications.	All Hazards	Mayor	High	1,2	$700,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Sabetha-5	A study will be conducted to ascertain the vulnerability to hazards affecting government and emergency services structures and facilities, and how these can be mitigated.	All Hazards	Mayor	Medium	1,2,3,4	$36,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Sabetha-6	Review or develop and promote plans and ordinances for restrictions to construction in flood hazard areas.	Flood	NFIP Administrator	Medium	1,2	$12,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Sabetha-7	Continue participation in NFIP.	Flood	NFIP Administrator	High	1,2,3,4	$12,000	Local, State, Federal	Continuous	Carried Over
Sabetha-8	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Mayor	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Sabetha-9	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Sabetha-10	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Sabetha-11	Create defensible space buffers at all critical facilities	Wildfire	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC,	As required	New

Nemaha 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
							Jurisdiction budget		
Seneca-1	Awareness. Provide information regarding hazard mitigation via the county website or the public library.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Seneca-2	Conduct training and public outreach to Bern citizens, businesses and local government regarding ways to protect against and mitigate natural hazards.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Seneca-3	Seek funding to assure that all citizens are equipped with NOAA Weather Radios.	All Hazards	Mayor	High	1,2	$5,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Seneca-4	Seek funding for an outdoor emergency warning system that allow for voice communications.	All Hazards	Mayor	High	1,2	$700,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Seneca-5	A study will be conducted to ascertain the vulnerability to hazards affecting government and emergency services structures and facilities, and how these can be mitigated.	All Hazards	Mayor	Medium	1,2,3,4	$36,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Seneca-6	Review or develop and promote plans and ordinances for restrictions to construction in flood hazard areas.	Flood	NFIP Administrator	Medium	1,2	$12,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Seneca-7	Continue participation in NFIP.	Flood	NFIP Administrator	High	1,2,3,4	$12,000	Local, State, Federal	Continuous	Carried Over
Seneca-8	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Mayor	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Seneca-9	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Seneca-10	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New

Nemaha 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
Seneca-11	Create defensible space buffers at all critical facilities	Wildfire	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Wetmore-1	Awareness. Provide information regarding hazard mitigation via the county website or the public library.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Wetmore-2	Conduct training and public outreach to Bern citizens, businesses and local government regarding ways to protect against and mitigate natural hazards.	All Hazards	Mayor	High	3,4	$6,000	Local, State, Federal	Continuous	Carried Over
Wetmore-3	Seek funding to assure that all citizens are equipped with NOAA Weather Radios.	All Hazards	Mayor	High	1,2	$5,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Wetmore-4	Seek funding for an outdoor emergency warning system that allow for voice communications.	All Hazards	Mayor	High	1,2	$700,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Wetmore-5	A study will be conducted to ascertain the vulnerability to hazards affecting government and emergency services structures and facilities, and how these can be mitigated.	All Hazards	Mayor	Medium	1,2,3,4	$36,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Wetmore-6	Review or develop and promote plans and ordinances for restrictions to construction in flood hazard areas.	Flood	NFIP Administrator	Medium	1,2	$12,000	Local, State, Federal	Contingent upon funding	Carried Over, Funding
Wetmore-7	Continue participation in NFIP.	Flood	NFIP Administrator	High	1,2,3,4	$12,000	Local, State, Federal	Continuous	Carried Over
Wetmore-8	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Mayor	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Wetmore-9	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Wetmore-10	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC,	Ten years	New

Nemaha 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
							Jurisdiction budget		
Wetmore-11	Create defensible space buffers at all critical facilities	Wildfire	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Saints Peter and Paul School 1	Purchase and install facility backup generators.	All hazards	Saints Peter and Paul School Director	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
Saints Peter and Paul School 2	Construct safe rooms in all school buildings to required standards.	All hazards	Saints Peter and Paul School Director	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
Saints Peter and Paul School 3	Conduct hazard mitigation education programs for students.	All hazards	Saints Peter and Paul School Director	Medium	1, 2, 3	$2,000	School Budget	As required	New
Saints Peter and Paul School 4	Conduct a xeriscaping program for all school facilities	Drought	Saints Peter and Paul School Director	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
Saints Peter and Paul School 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	Saints Peter and Paul School Director	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
Saints Peter and Paul School 6	Construct rainwater gardens adjacent to paved areas.	Flood	Saints Peter and Paul School Director	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Saints Peter and Paul School 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Saints Peter and Paul School Director	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
Saints Peter and Paul School 8	Conduct regular staff and student active shooter trainings.	Terrorism	Saints Peter and Paul School Director	High	1, 2, 3	Location and size dependent	HMGP, BRIC,	As required	New

Nemaha 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
							School Budget		
USD 113 1	Purchase and install facility backup generators.	All hazards	USD 113 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 113 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 113 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 113 3	Conduct hazard mitigation education programs for students.	All hazards	USD 113 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 113 4	Conduct a xeriscaping program for all school facilities	Drought	USD 113 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 113 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 113 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 113 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 113 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 113 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 113 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 113 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 113 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 115 1	Purchase and install facility backup generators.	All hazards	USD 115 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding

Nemaha 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 115 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 115 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 115 3	Conduct hazard mitigation education programs for students.	All hazards	USD 115 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 115 4	Conduct a xeriscaping program for all school facilities	Drought	USD 115 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 115 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 115 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 115 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 115 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 115 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 115 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 115 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 115 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 380 1	Purchase and install facility backup generators.	All hazards	USD 380 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 380 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 380 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 380 3	Conduct hazard mitigation education programs for students.	All hazards	USD 380 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New

Nemaha 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 380 4	Conduct a xeriscaping program for all school facilities	Drought	USD 380 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 380 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 380 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 380 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 380 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 380 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 380 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 380 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 380 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
RWD #1-1	Lower exposed waterlines in creeks or streams due to flooding	Drought, Infrastructure Failure	Manager	High	1,2	$500,00	Local, State, Federal	Contingent upon funding	New
RWD #1-2	Replace or upgrade Well and Treatment buildings	Drought, Infrastructure Failure	Manager	Medium	1,2	$1,000,000	Local, State, Federal	Contingent upon funding	New
RWD #1-3	Purchase or and install emergency generators for facilities to ensure continued operations	All Hazards	Manager	High	1,2	$300,000	Local, State, Federal	Contingent upon funding	New
RWD #1-4	Maintenance on Water Towers	Drought, Infrastructure Failure	Manager	Medium	1,2	$30,000 per tower	Local, State, Federal	Continuous	New
RWD #3-1	Lower exposed waterlines in creeks or streams due to flooding.	Drought, Infrastructure Failure	Manager	High	1,2	$500,000	Local, State, Federal	Contingent upon funding	New

Nemaha 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
RWD #3-2	Replace or upgrade Well and Treatment buildings.	Drought, Infrastructure Failure	Manager	Medium	1,2	$1,000,000	Local, State, Federal	Contingent upon funding	New
RWD #3-3	Purchase and install emergency generators for facilities to ensure continued operations.	All Hazards	Manager	High	1,2	$300,000	Local, State, Federal	Contingent upon funding	New
RWD #4-1	Purchase and install facility backup generators.	All Hazards	Manager	High	1,2	$50,000 per facility	Local, State, Federal	Contingent upon funding	New
RWD #4-2	Maintenance on Water Towers.	Drought, Infrastructure Failure	Manager	Medium	1,2	$30,000 per facility	Local, State, Federal	Continuous	New
Evergy-1	Encourage long-term decrease in consumer energy use.	All Hazards	Director	High	1, 2, 3, 4	Staff Time	Evergy budget	As required	New
Nemaha-Marshall Electric Coop-1	The Nemaha Marshall Electric Cooperative will continue to coordinate mitigation efforts with county and local governments, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Infrastructure Failure	President	Medium	4	$1,000,000	Local, State, Federal	Contingent upon funding	Carried over, lack of capacity
Nemaha-Marshall Electric Coop-2	Refit poles and electrical wire throughout the county.	Infrastructure Failure	President	Medium	1,2	$1,000,000	Local, State, Federal	Contingent upon funding	Carried over, lack of capacity

Washington 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
Washington County-1	Install generators in all county facilities.	All hazards	Washington County Emergency Manager, Washington County Facilities Director	High	1, 3	$10,000 to $50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Washington County-2	Upgrade and enhance sirens throughout county	All hazards	Washington County Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Washington County-3	Purchase electronic mobile traffic notification signs.	All hazards	Washington County Emergency Manager, Washington County Public Works Director	Medium	1, 2	$35,000	HMGP, Jurisdiction budget	Five years	New
Washington County-4	Conduct a regular tree trimming and tree wire installation program.	All hazards	Washington County Emergency Manager	High	1, 2	$25,000 per occurrence	HMGP, BRIC, Jurisdiction budget	On-going	On-going
Washington County-5	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Washington County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Washington County-6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Washington County Emergency Manager	High	1, 2	Staff Time and $500	Jurisdiction budget	Five years	Carried over due to lack of staff
Washington County-7	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Washington County Emergency Manager	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New

Washington 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
Washington County-8	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Washington County Emergency Manager	Medium	1, 2, 4	$10,000 per location	HMGP, Jurisdiction budget	Five years	New
Washington County-9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Washington County Facilities Director	Low	1, 2	$5,000 - $50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Washington County-10	Revise building codes to require low water flow toilets and faucets.	Drought	Washington County Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Washington County-11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Washington County Facilities Director	Low	1, 2	$25,000 per facility	HMGP, BRIC, Jurisdiction budget	-	Completed
Washington County-12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Washington County Facilities Director	Low	1, 2	$2,000 per facility	Local budget	-	Completed
Washington County-13	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Washington County-14	Purchase and demolish flood prone properties	Flood	Washington County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Washington County-15	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Washington County-16	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Washington County Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Washington County-17	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, County	Medium	1, 2	Location dependent	HMGP, BRIC,	Five years	Carried over due to

Washington 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
			Emergency Manager				Jurisdiction budget		lack of funding
Washington County-18	Install surge protectors in all jurisdictional facilities.	Severe Weather	Washington County Facilities Director	Medium	1, 2	$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Washington County-19	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Washington County Facilities Director	Medium	1, 2	$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Washington County-20	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Washington County Emergency Manager	Medium	1, 2	$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Washington County-21	Construct snow fences along major transportation routes.	Winter Storm	Washington County Public Works Director	Low	1, 2	$25,000 - $100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Washington County-22	Insulate water lines in all jurisdictional facilities.	Winter Storm	Washington County Building Department	Low	1, 2	$10,000 - $50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Washington County-23	Create defensible space buffers at all critical facilities	Wildfire	Washington County Public Works Director	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Washington County-24	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Management Coordinator	Low	3	$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding
Washington County-25	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Washington County IT Director	High	1, 2	Data size dependent	Jurisdiction budget	Five years	New

Washington 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
Washington County-26	Provide hazardous materials response training to first responders and EM staff.	Hazardous Materials Event	Washington County Emergency Manager	High	1, 2	$500 per trainee	HMGP, Jurisdiction budget	As required	New
Washington County-27	Identify and map all structurally deficient bridges.	Infrastructure Failure	Washington County Public Works Director	Medium	1, 2	$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Washington County-28	Conduct active shooter drills and exercises for all county personnel.	Terrorism	County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Barnes-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Barnes-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Barnes-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Barnes-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Barnes-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Barnes-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Barnes-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New

Washington 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
Barnes-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Barnes-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Barnes-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Barnes-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Barnes-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Barnes-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Barnes-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Barnes-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Clifton-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Clifton-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Clifton-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC,	As required	New

Washington 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
							Jurisdiction budget		
Clifton-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Clifton-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Clifton-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Clifton-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Clifton-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Clifton-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Clifton-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Clifton-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Clifton-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Clifton-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding

Washington 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
Clifton-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Clifton-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Greenleaf-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Greenleaf-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Greenleaf-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Greenleaf-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Greenleaf-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Greenleaf-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Greenleaf-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Greenleaf-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going

Washington 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
Greenleaf-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Greenleaf-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Greenleaf-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Greenleaf-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Greenleaf-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Greenleaf-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Greenleaf-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Haddam-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Haddam-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Haddam-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New

Washington 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
Haddam-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Haddam-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Haddam-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Haddam-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Haddam-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Haddam-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Haddam-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Haddam-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Haddam-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Haddam-1	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Haddam-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC,	As required	New

Washington 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
							Jurisdiction budget		
Haddam-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Hanover-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Hanover-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Hanover-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Hanover-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Hanover-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Hanover-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Hanover-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Hanover-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Hanover-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

Washington 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
Hanover-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Hanover-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Hanover-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Hanover-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Hanover-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Hanover-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Hollenberg-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Hollenberg-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Hollenberg-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Hollenberg-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New

Washington 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
Hollenberg-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Hollenberg-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Hollenberg-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Hollenberg-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Hollenberg-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Hollenberg-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Hollenberg-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Hollenberg-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Hollenberg-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Hollenberg-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

Washington 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
Hollenberg-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Linn-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Linn-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Linn-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Linn-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Linn-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Linn-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Linn-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Linn-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Linn-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Linn-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and	HMGP, BRIC,	Ten years	New

Washington 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
						size dependent	Jurisdiction budget		
Linn-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Linn-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Linn-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Linn-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Linn-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Mahaska-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Mahaska-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Mahaska-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Mahaska-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Mahaska-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New

Washington 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
Mahaska-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Mahaska-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Mahaska-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Mahaska-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Mahaska-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Mahaska-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Mahaska-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Mahaska-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Mahaska-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Mahaska-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Morrowville-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC,	Five years	Carried over due to

Washington 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
							Jurisdiction budget		lack of funding
Morrowville-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Morrowville-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Morrowville-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Morrowville-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Morrowville-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Morrowville-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Morrowville-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Morrowville-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Morrowville-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New

Washington 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
Morrowville-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Morrowville127	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Morrowville-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Morrowville-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Morrowville-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Palmer-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Palmer-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Palmer-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Palmer-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Palmer-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New

Washington 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
Palmer-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Palmer-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Palmer-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Palmer-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Palmer-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Palmer-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Palmer-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Palmer-14	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Palmer-15	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Palmer-16	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Vining-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC,	Five years	Carried over due to

Washington 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
							Jurisdiction budget		lack of funding
Vining-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
Vining-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Vining-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Vining-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Vining-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Vining-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Vining-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Vining-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Vining-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New

Washington 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
Vining-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
Vining-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
Vining-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Vining-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Vining-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
City of Washington-1	Purchase and install critical facility backup generators.	All hazards	Mayor	High	1, 2	$25,000 - $50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
City of Washington-2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mayor	High	1, 2	$50,000 annually	HMGP, Jurisdiction budget	As required	New
City of Washington-3	Institute a tree trimming program near utility lines.	All hazards	Mayor	Medium	1, 2	-$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
City of Washington-4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mayor	Medium	1, 2, 4	$5,000 per location	HMGP, Jurisdiction budget	Five years	New
City of Washington-5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Facilities Director	Medium	1, 2	$5,000 - $20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New

Washington 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
City of Washington-6	Conduct a personal water use education program.	Drought	Mayor	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
City of Washington-7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Facilities Director	Medium	1, 2	$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
City of Washington-8	Continue to participate meet requirements of the NFIP.	Flood	NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
City of Washington-9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
City of Washington-10	Clean and repair drainage ditches to maintain capacity.	Flood	Mayor	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
City of Washington-11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Facilities Director	Low	1, 2	$50,000 per location	Facility size dependent	Five years	New
City of Washington-12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mayor	Low	4	Staff Time	Jurisdiction budget	Five years	New
City of Washington-13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mayor	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
City of Washington-14	Create defensible space buffers at all critical facilities	Wildfire	Fire Chief	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
City of Washington-15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New

Washington 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 108 1	Purchase and install facility backup generators.	All hazards	USD 108 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 108 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 108 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 108 3	Conduct hazard mitigation education programs for students.	All hazards	USD 108 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 108 4	Conduct a xeriscaping program for all school facilities	Drought	USD 108 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 108 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 108 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 108 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 108 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 108 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 108 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 108 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 108 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 223 1	Purchase and install facility backup generators.	All hazards	USD 223 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 223 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 223 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC,	Ten years	New

Washington 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
							School budget		
USD 223 3	Conduct hazard mitigation education programs for students.	All hazards	USD 223 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 223 4	Conduct a xeriscaping program for all school facilities	Drought	USD 223 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 223 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 223 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 223 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 223 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 223 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 223 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 223 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 223 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 224 1	Purchase and install facility backup generators.	All hazards	USD 224 Superintendent	High	1, 2	$10,000 - $50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 224 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 224 Superintendent	High	1, 2	$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 224 3	Conduct hazard mitigation education programs for students.	All hazards	USD 224 Superintendent	Medium	1, 2, 3	$2,000	School Budget	As required	New
USD 224 4	Conduct a xeriscaping program for all school facilities	Drought	USD 224 Superintendent	Low	1, 2	$10,000 -per location	HMGP, BRIC,	Ten years	New

Washington 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
							School Budget		
USD 224 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 224 Superintendent	Medium	1, 2	$500	HMGP, Jurisdiction budget	Five years	New
USD 224 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 224 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 224 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 224 Superintendent	Low	1, 2	$100,000 per location	Facility size dependent	Five years	New
USD 224 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 224 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Blue Stem Electric Coop-1	Refit poles and electrical wire throughout the county.	Infrastructure Failure	Operations Manager	Medium	1,2	$5,000,000	Local, State, Federal	Ten years	Carried over due to lack of funding
Nemaha-Marshall Electric Coop-1	The Nemaha Marshall Electric Cooperative will continue to coordinate mitigation efforts with county and local governments, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Infrastructure Failure	Operations Manager	Medium	4	$1,000,000	Local, State, Federal	Three years	Carried over due to lack of funding
Nemaha-Marshall Electric Coop-2	Refit poles and electrical wire throughout the county.	Infrastructure Failure	Operations Manager	Medium	1,2	$1,000,000	Local, State, Federal	Ten years	Carried over due to lack of funding

Washington 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
Rolling Hills Electric-1	Refit poles and electrical wire throughout the county.	Infrastructure Failure	Operations Manager	Medium	1,2	$5,000,000	Local, State, Federal	Ten years	Carried over due to lack of funding