

Draft Kansas Homeland Security Region G Hazard Mitigation Plan

Prepared For, and Developed With,
the Jurisdictions Within and Including:

Butler County, Cowley County, Harper County,
Harvey County, Kingman County, McPherson
County, Marion County, Reno County, Rice
County, Sedgwick County, and Sumner County

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Prepared By:



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Table of Contents

SECTION	PAGE
1.0 Introduction, Assurances and Adoption.....	1-1
1.1 Introduction.....	1-1
1.2 Participating Jurisdictions.....	1-2
1.3 Assurances.....	1-11
1.4 Authorities.....	1-12
1.5 Adoption Resolutions.....	1-13
2.0 Planning Process.....	2-1
2.1 Documentation of the Planning Process.....	2-1
2.2 2019 Plan Changes.....	2-2
2.3 Mitigation Planning Committee.....	2-3
2.4 Local and Regional Stakeholder Participation.....	2-4
2.5 Public Participation.....	2-5
2.6 Planning Meetings.....	2-9
2.7 Existing Plan Incorporation.....	2-10
3.0 Planning Area.....	3-1
3.1 Introduction.....	3-1
3.2 Regional Population Data.....	3-12
3.3 At Risk Population Data.....	3-19
3.4 Regional Housing Data.....	3-21
3.5 Regional Property Valuations.....	3-27
3.6 Critical Facilities.....	3-28
3.7 Unified School Districts.....	3-29
3.8 Regional Land Use.....	3-31
3.9 Regional Agricultural Data.....	3-33
3.10 Regional Development Trends.....	3-34
3.11 Regional Economic Activity Patterns.....	3-43
3.12 Climate Change.....	3-46
4.0 Hazard Profiles.....	4-1
4.1 Introduction.....	4-1
4.2 Methodology.....	4-1
4.3 Declared Federal Disasters.....	4-1
4.4 Identified Potential Hazards.....	4-2
4.5 Hazard Planning Significance.....	4-3
4.6 Hazard Profiles.....	4-5
4.7 Agricultural Infestation.....	4-6
4.8 Dam and Levee Failure.....	4-12
4.9 Drought.....	4-53
4.10 Earthquake.....	4-63
4.11 Expansive Soils.....	4-71





SECTION	PAGE
4.12	Extreme Temperatures 4-73
4.13	Flood 4-87
4.14	Hailstorms 4-124
4.15	Land Subsidence 4-139
4.16	Landslide 4-144
4.17	Lightning 4-147
4.18	Soil Erosion and Dust 4-155
4.19	Tornado 4-158
4.20	Wildfire 4-176
4.21	Windstorms 4-192
4.22	Winter Storms 4-208
4.23	Civil Disorder 4-220
4.24	Hazardous Materials 4-223
4.25	Major Disease 4-236
4.26	Radiological Incident 4-239
4.27	Terrorism 4-242
4.28	Utility/Infrastructure Failure 4-246
4.29	Future Development 4-250
5.0	Capability Assessment 5-1
5.1	Introduction 5-1
5.2	Granted Authority 5-1
5.3	Governance 5-3
5.4	Jurisdictional Capabilities 5-3
5.5	Opportunities for Capability Improvement 5-32
6.0	Mitigation Strategy 6-1
6.1	Introduction 6-1
6.2	Emergency Management Accreditation Program Integration 6-1
6.3	Identification of Goals 6-2
6.4	Completed Mitigation Actions 6-2
6.5	Review and Addition of Mitigation Actions 6-4
6.6	Prioritization Mitigation Actions 6-6
6.7	Jurisdictional Mitigation Actions 6-7
6.8	Mitigation Actions No Longer Under Consideration 6-156
6.9	Action Implementation and Monitoring 6-156
6.10	Jurisdictional Compliance with NFIP 6-157
6.11	Primary Mitigation Action Funding Sources 6-158
6.12	Additional Mitigation Action Funding Sources 6-159
7.0	Plan Maintenance 7-1
7.1	Hazard Mitigation Plan Monitoring and Evaluation 7-1
7.2	Jurisdictional Maintenance Requirements 7-2
7.3	Plan Maintenance and Update Process 7-2





SECTION		PAGE
7.4	Post-Disaster Declaration Procedures	7-3
7.5	Incorporation of HMP into Other Planning Mechanisms	7-3
7.6	Continued Public Involvement	7-4

List of Appendices

- A Adoption Resolutions
- B FEMA Approval Documentation





List of Commonly Used Acronyms

Acronym	Meaning
CPRI	Calculated Priority Risk Index
CDC	Centers for Disease Control and Prevention
CWD	Chronic Wasting Disease
CFR	Code of Federal Regulations
CRS	Community Rating System
CWPP	Community Wildfire Protection Plans
EAB	Emerald Ash Borer
EAP	Emergency Action Plan
EMAP	Emergency Management Accreditation Program
EPZ	Emergency Planning Zone
EF	Enhanced Fujita
EPA	Environmental Protection Agency
°F	Fahrenheit
FEMA	Federal Emergency Management Agency
HAZUS	FEMA Loss Estimation Software
FIRM	Flood Insurance Rate Map
GIS	Geographic Information System
GDP	Gross Domestic Product
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Planning
HazMat	Hazardous Materials
HD	Hemorrhagic Fever
KDA	Kansas Department of Agriculture
KDHE	Kansas Department of Health and Environment
KDOT	Kansas Department of Transportation
KDEM	Kansas Division of Emergency Management
KFS	Kansas Fire Service
KGS	Kansas Geological Survey
KSFM	Kansas State Fire Marshall
K.S.A	Kansas Statutes Annotated
KWO	Kansas Water Office
LEPC	Local Emergency Planning Committee
MPC	Mitigation Planning Committee
NCEI	National Centers for Environmental Information
NFIP	National Flood Insurance Program
NLCD	National Land Cover Database
NLD	National Levee Database
NLIR	National Levee Inventory Report
NLSP	National Levee Safety Program
NOAA	National Oceanic and Atmospheric Administration
NRCS	National Resource Conservation Service





Acronym	Meaning
NWS	National Weather Service
NSFHA	No Special Flood Hazard Area
NGO	Non-Governmental Organization
NRC	Nuclear Regulatory Commission
OHMS	Office of Hazardous Materials Safety
PDSI	Palmer Drought Severity Index
PHMSA	Pipeline and Hazardous Materials Safety Administration
PDM	Pre-Disaster Mitigation
PAL	Provisionally Accredited Levee
RL	Repetitive Loss
Risk MAP	Risk Mapping, Assessment and Planning
REC	Rural Electric Cooperative
SRL	Severe Repetitive Loss
SFHA	Special Flood Hazard Area
USD	Unified School District
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WUI	Wildland Urban Interface



1.0 Introduction, Assurances and Adoption

1.1 – Introduction

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

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

Specifically, this hazard mitigation plan was developed to:

- Update the Kansas Region G 2013 Hazard Mitigation Plan
- Build for a safer future for all citizens
- Foster cooperation for planning and resiliency
- Identify, prioritize and mitigate against hazards
- Assist with sensible and effective planning and budgeting
- Educate citizens about hazards, mitigation and preparedness
- Comply with federal requirements

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

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





1.2 – Participating Jurisdictions

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

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

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

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

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

Butler County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Butler County	X	X
Andover	X	X
Augusta	X	X
Benton	X	X
Cassoday	X	X
Douglass	X	X
Elbing	X	X
El Dorado	X	X
Latham	X	X
Leon	X	X
Potwin	X	X
Rose Hill	X	X
Towanda	X	X
Whitewater	X	X
Augusta Township	X	X
Benton Township	X	X
Bloomington Township	X	X
Bruno Township	X	X
Chelsea Township	X	X
Clay Township	X	X





Butler County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Clifford Township	X	X
Douglass Township	X	X
El Dorado Township	X	X
Fairmount Township	X	X
Fairview Township	X	X
Glencoe Township	X	X
Hickory Township	X	X
Lincoln Township	X	X
Little Walnut Township	X	X
Logan Township	X	X
Milton Township	X	X
Murdock Township	X	X
Pleasant Township	X	X
Plum Grove Township	X	X
Prospect Township	X	X
Richland Township	X	X
Rock Creek Township	X	X
Rosalia Township	X	X
Spring Township	X	X
Sycamore Township	X	X
Towanda Township	X	X
Union Township	X	X
Walnut Township	X	X
Butler Community College	X	X
USD 205 - Bluestem		X
USD 206 – Remington	X	X
USD 375 – Circle	X	X
USD 385 – Andover	X	X
USD 394 – Rose Hill	X	X
USD 396 – Douglass	X	X
USD 402 – Augusta	X	X
USD 490 – El Dorado	X	X
USD 492 – Flinthills	X	X
Butler Rural Electric Cooperative (REC)	X	X
Butler County Rural Fire Districts (all Districts)	X	X
Butler Rural Water Districts (all Districts)	X	X
Watershed District #18	X	X
Watershed District #22	X	X
Watershed District #27	X	X
Watershed District #28	X	X
Watershed District #33	X	X
Kansas Medical Center	X	X
Susan B Allen Hospital	X	X





Cowley County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Cowley County	X	X
Arkansas City	X	X
Atlanta	X	X
Burden	X	X
Cambridge	X	X
Dexter	X	X
Gueda Springs	X	X
Parkerfield	X	X
Udall	X	X
Winfield	X	X
Bolton Township	X	X
Fairview Township	X	X
Liberty Township	X	X
Maple Township	X	X
Ninnescah Township	X	X
Omnia Township	X	X
Pleasant Valley Township	X	X
Rock Creek Township	X	X
Salem Township	X	X
Sheridan Township	X	X
Silver Creek Township	X	X
Silverdale Township	X	X
Vernon Township	X	X
Windsor Township	X	X
Cowley Community College	X	X
USD 462 – Central	X	X
USD 463 – Udall	X	X
USD 465 – Winfield	X	X
USD 470 – Arkansas City	X	X
USD 471 – Dexter	X	X
Cowley County RFD #1	X	X
Cowley County RFD #2	X	X
Cowley County RFD #3	X	X
Cowley County RFD #4	X	X
Cowley County RFD #5	X	X
Cowley County RFD #8	X	X
Cowley County RWD #6	X	X

Harper County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Harper County	X	X
Anthony	X	X
Attica	X	X
Bluff City	X	X





Harper County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Danville	X	X
Harper	X	X
Waldron	X	X
USD 361 - Anthony / Harper	X	X
USD - 511 Attica	X	X
Hospital District #6	X	X

Harvey County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Harvey County	X	X
Burrton	X	X
Halstead	X	X
Hesston	X	X
Newton	X	X
North Newton	X	X
Sedgwick	X	X
Walton	X	X
Alta Township	X	X
Burrton Township	X	X
Darlington Township	X	X
Emma Township	X	X
Garden Township	X	X
Halstead Township	X	X
Highland Township	X	X
Lake Township	X	X
Lakin Township	X	X
Macon Township	X	X
Newton Township	X	X
Pleasant Township	X	X
Richland Township	X	X
Sedgwick Township	X	X
Walton Township	X	X
Bethel College	X	X
Hesston College	X	X
USD 369 - Burrton	X	X
USD 373 - Newton	X	X
USD 439 - Sedgwick	X	X
USD 440 - Halstead	X	X
USD 460 - Hesston	X	X
Alta Township Drainage District	X	X
Butler REC	X	X
Harvey County RFD #1	X	X
Harvey County RFD #5	X	X
Little Arkansas River Drainage District	X	X





Harvey County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Sand Creek Watershed	x	x

Kingman County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Kingman County	x	x
Cunningham	x	x
City of Kingman	x	x
Nashville	x	x
Norwich	x	x
Penalosa	x	x
Spivey	x	x
Zenda	x	x
Allen Township	x	x
Bennett Township	x	x
Canton Township	x	x
Chikaskia Township	x	x
Dresden Township	x	x
Eagle Township	x	x
Eureka Township	x	x
Evan Township	x	x
Galesburg Township	x	x
Hoosier Township	x	x
Kingman Township	x	x
Peter Township	x	x
Richland Township	x	x
Rural Township	x	x
Union Township	x	x
Valley Township	x	x
Vinita Township	x	x
White Township	x	x
St. Patrick Catholic School	x	x
USD 331 - Kingman/Norwich	x	x
USD 332 - Cunningham	x	x
Arkansas Valley Electric Cooperative	x	x
Kingman Community Hospital	x	x
Wheatland's Care Center	x	x

McPherson County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
McPherson County	x	x
Canton	x	x
Galva	x	x
Inman	x	x
Lindsborg	x	x





McPherson County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Marquette	X	X
City of McPherson	X	X
Moundridge	X	X
Windom	X	X
Bethany College		X
Central Christian College of Kansas	X	X
Elyria Christian School	X	X
Hutchinson Community College	X	X
McPherson College	X	X
St. Joseph Catholic School		X
USD 400 - Smoky Valley	X	X
USD 418 - McPherson	X	X
USD 419 - Canton	X	X
USD 423 - Moundridge	X	X
USD 444 - Windom	X	X
USD 448 - Inman	X	X
Arkansas Valley Electric	X	X
DS&O Electric	X	X
Flint Hills Electric	X	X
Lindsborg Community Hospital		X
McPherson Board of Public Utilities		X
McPherson Hospital		X
Mercy Hospital		X

Marion County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Marion County	X	X
Burns	X	X
Durham	X	X
Florence	X	X
Goessel	X	X
Hillsboro	X	X
Lehigh	X	X
Lincolnvilleville	X	X
Lost Springs	X	X
City of Marion	X	X
Peabody	X	X
Ramona	X	X
Tampa	X	X
Tabor College	X	X
USD 397 - Centre	X	X
USD 398 - Peabody / Burns	X	X
USD 408 - Marion / Florence	X	X





Marion County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
USD 410 - Hillsboro	x	x
USD 411 - Goessel	x	x
USD 617 - Florence		x
Flint Hills REC		x
Hillsboro Hospital		x
Marion County RFDs (all Districts)		x
MidWest Energy		x
St. Luke Hospital		x
WestStar		x

Reno County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Reno County	x	x
Abbyville	x	x
Arlington	x	x
Buhler	x	x
Haven	x	x
The Highlands		x
Hutchinson	x	x
Langdon	x	x
Nickerson	x	x
Partridge	x	x
Plevna	x	x
Pretty Prairie	x	x
South Hutchinson	x	x
Sylvia	x	x
Turon	x	x
Willowbrook	x	x
Enterprise Township	x	x
Castleton Township	x	x
Clay Township	x	x
Haven Township	x	x
Langdon Township	x	x
Loda Township	x	x
Miami Township	x	x
Reno Township	x	x
Salt Creek Township	x	x
Sumner Township	x	x
Sylvia Township	x	x
Walnut Township	x	x
Yoder Township	x	x
Central Christian School	x	x
Hutchinson Catholic Schools	x	x





Reno County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Hutchinson Community College	x	x
St. Joseph Catholic School		x
USD 308 - Hutchinson	x	x
USD 309 - Nickerson	x	x
USD 310 - Fairfield	x	x
USD 311 - Pretty Prairie		x
USD 312 - Haven	x	x
USD 313 - Buhler	x	x
Arkansas Valley Electric	x	
Cow Creek Drainage District #2	x	x
Drainage District #2		
Drainage District #2 of Reno, McPherson, Harvey	x	x
Hutchinson Correctional Facility	x	x
Hutchinson Regional Hospital		x
MidWest Energy		x
Reno County Drainage District	x	x
Reno County RFD #2	x	x
Reno County RWD #3	x	x

Rice County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Rice County	x	x
Alden	x	x
Bushton	x	x
Chase	x	x
Geneseo	x	x
Little River	x	x
Lyons	x	x
Raymond	x	x
Sterling	x	x
Sterling College		x
USD 112 - Central Plains		x
USD 376 - Sterling	x	x
USD 401 - Chase	x	x
USD 405 - Lyons	x	x
USD 444 - Windom	x	x
Arkansas Valley Electric	x	x
District Hospital #1	x	x
Hospital District #2		x
MidWest Energy		x





Sedgwick County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Sedgwick County	X	X
Andale	X	X
Bel Aire	X	X
Bentley	X	X
Cheney	X	X
Clearwater	X	X
Colwich	X	X
Derby	X	X
Eastborough	X	X
Garden Plain	X	X
Goddard	X	X
Haysville	X	X
Kechi	X	X
Maize	X	X
Mount Hope	X	X
Mulvane	X	X
Park City	X	X
Salem Township	X	X
City of Sedgwick	X	X
Valley Center	X	X
Viola	X	X
Wichita	X	X
KU School of Medicine, Wichita	X	X
USD 259 - Wichita	X	X
USD 260 - Derby	X	X
USD 261 - Haysville	X	X
USD 262 - Valley Center	X	X
USD 263 - Mulvane	X	X
USD 264 - Clearwater	X	X
USD 265 - Goddard	X	X
USD 266 - Maize	X	X
USD 267 - Renwick	X	X
USD 268 - Cheney	X	X
USD 312 - Haven	X	X
USD 356 - Conway Springs	X	X
USD 375 - Circle	X	X
USD 385 - Andover	X	X
USD 439 - Sedgwick	X	X
USD 440 - Halstead / Bentley	X	X
Wichita State University	X	X
Andale District Library	X	X
Butler REC	X	X
Cerebral Palsy Research Foundation	X	X
Resurrection Catholic Church	X	X





Sedgwick County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Sedgwick County Fire District #1	x	x
Sedgwick County REC	x	x
South Central Kansas Library District	x	x

Sumner County Participating Jurisdictions

Jurisdiction	2013 HMP Participant	2019 HMP Participant
Sumner County	x	x
Argonia	x	x
Belle Plaine	x	x
Caldwell	x	x
Geuda Springs	x	x
Mulvane	x	x
Oxford	x	x
South Haven	x	x
Wellington	x	x
USD 353 - Wellington		x
USD 356 - Conway Springs	x	x
USD 357 - Belle Plaine	x	x
USD 358 - Oxford		x
USD 359 - Argonia	x	x
USD 360 - Caldwell	x	x
USD 509 - South Haven	x	x
Wellington Christian Academy	x	x
Sumner/Cowley Electric Cooperative		x

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

1.3 – Assurances

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

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

- Code of Federal Regulation (44 CFR) pertaining to hazard mitigation planning
- FEMA planning directives and guidelines
- Interim final, and final rules pertaining to hazard mitigation planning and grant funding
- Relevant presidential directives





- Office of Management and Budget circulars
- Any additional and relevant federal government documents, guidelines, and rules.

1.4 – Authorities

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

- Regulation
- Acquisition
- Taxation
- Spending

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

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

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





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

1.5 – Adoption Resolutions

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

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

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

Adoption resolutions may be found in Appendix A.



2.0 Planning Process

2.1 – Documentation of the Planning Process

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

In September of 2018, Kansas Region G and its participating jurisdictions began the process to update the Kansas Region G 2013 HMP. It was determined that Jeanne Bunting, the State of Kansas Hazard Mitigation Planner would serve as the project manager, directing this plan update, and would act as the primary point-of-contact throughout the project.

The State of Kansas contracted with Blue Umbrella Solutions to assist in updating the 2013 Kansas Region G HMP. Blue Umbrella's roles included:

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

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

- Review of the 2013 Kansas Region G HMP
- Review of current related planning documents
- Delivery of organizational and planning meetings
- Solicitation of public input as to plan development
- Assessment of potential risks
- Assessment of vulnerabilities and assets
- Development of the mitigation actions
- Development of a draft multi-hazard mitigation plan
- Implementation, adoption, and maintenance of the plan

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

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





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

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

2.2 – 2019 Plan Changes

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

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

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

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





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

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

2.3 – Mitigation Planning Committee

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

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

- Attend and participate in meetings
- Assist with the collection of data and information
- Review planning elements and drafts
- Integrate hazard mitigation planning elements with other planning mechanisms
- Facilitate jurisdictional coordination and cooperation
- Assist with the revision and development of mitigation actions

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

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

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

The following participants were selected for the MPC.





Kansas Region G Mitigation Planning Committee

Participant	Title	Organization
Keri Korthals	Interim Director	Butler County
John Stradal	Assistant Coordinator	Cowley County
Christina Cintron	Coordinator	Harper County
Gary Denny	Coordinator	Harvey County
Randy Hill	Interim Coordinator	Kingman County
Julie McClure	Coordinator	McPherson County
Randy Frank	Director	Marion County
Todd Strain	Coordinator	Reno County
Greg Klein	Coordinator	Rice County
Cody Charvat	Interim Director	Sedgwick County
James Fair	Coordinator	Sumner County
Jeanne Bunting	Mitigation Planner	State of Kansas
Matt Eyer	Plan Author	Blue Umbrella Solutions

2.4 – Local and Regional Stakeholder Participation

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

The Kansas Region G MPC provided the opportunity for neighboring communities, counties, and local and regional development agencies to be involved in the planning process. Where applicable, these entities were kept informed of the hazard mitigation process during state, regional and local emergency management meetings, gatherings and conferences, in person by MPC members, or were solicited for planning information.

In addition, relevant federal, regional, state, local governmental, and private and non-profit entities were also invited to provide input and utilized for information and technical expertise. The following list indicates entities that were included in the outreach effort:

- Barber County, Kansas
- Barton County, Kansas
- Chautauqua County, Kansas
- Dickinson County, Kansas
- Elk County, Kansas
- Ellsworth County, Kansas
- Greenwood County, Kansas
- Lyon County, Kansas
- Morris County, Kansas
- Pratt County, Kansas





- Saline County, Kansas
- Stafford County, Kansas
- Alfalfa County, Oklahoma
- Grant County, Oklahoma
- Kay County, Oklahoma
- Osage County, Oklahoma
- Participating County Appraiser's Office
- Participating County Building Departments
- Participating County Zoning Departments
- National Oceanic and Atmospheric Administration
- United States Department of Agriculture
- United States Geological Survey
- Kansas Adjutant General's Office
- Kansas Department of Agriculture
- Kansas Department of Transportation
- Red Cross
- Salvation Army

2.5 – Public Participation

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

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

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

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

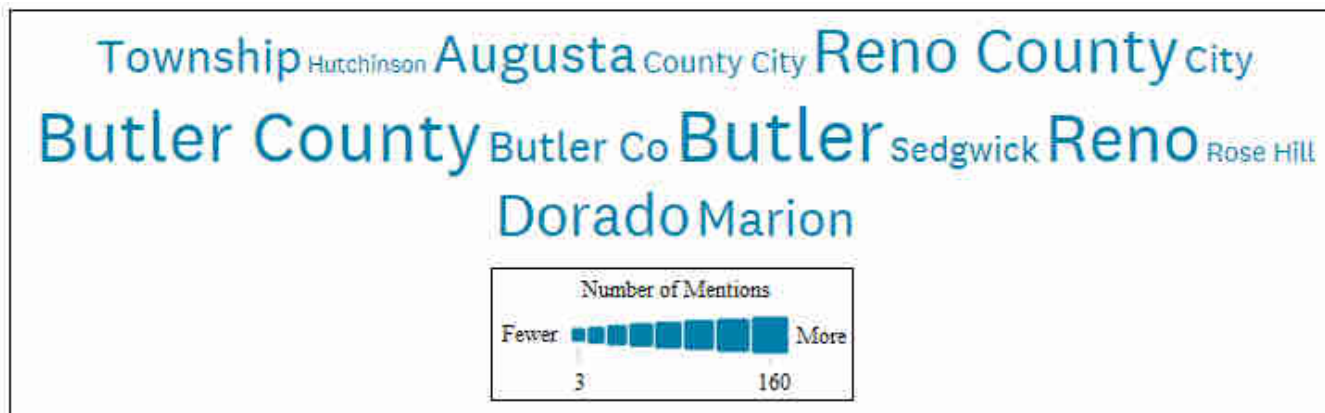
Additionally, as citizens were made more aware of potential hazards and the local process to mitigation against their impacts, it was believed that they would take a stronger role in making their homes, neighborhoods, schools, and businesses safer from the potential effects of natural hazards.

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

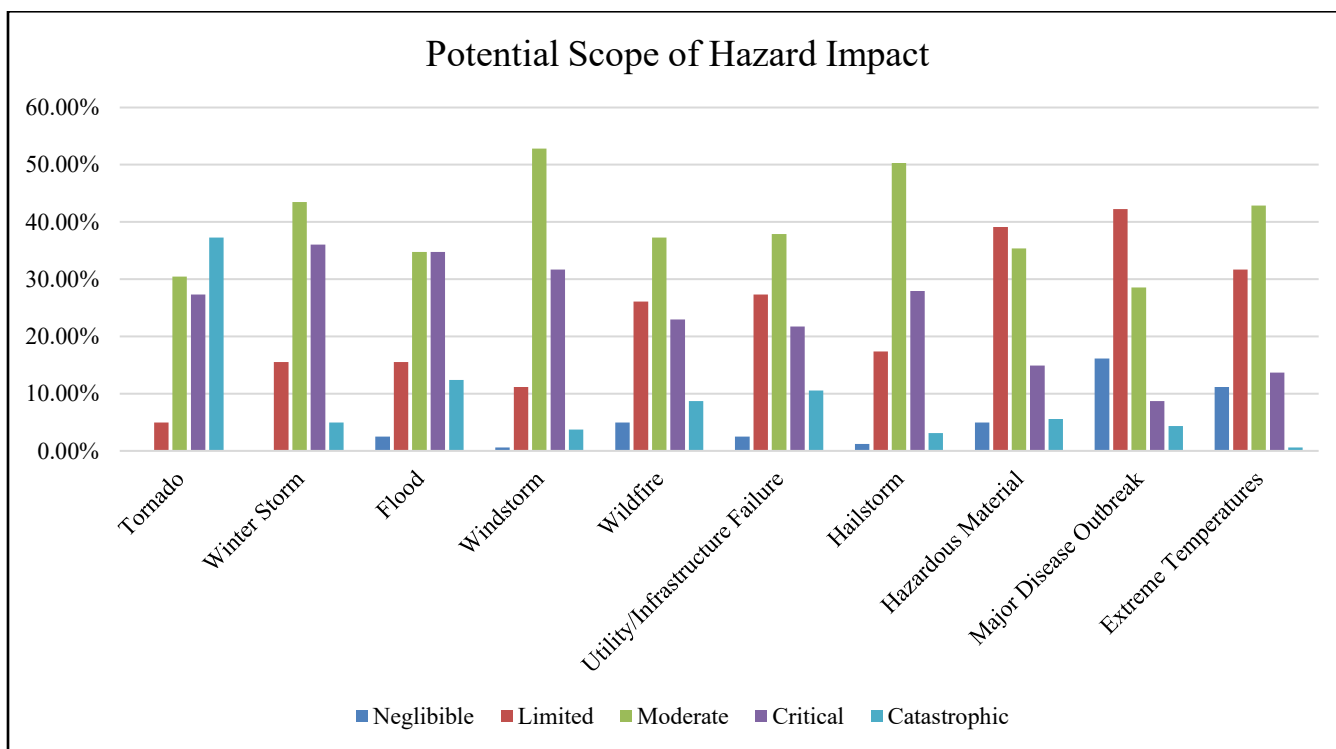




Question 1: In which county or jurisdiction do you live?

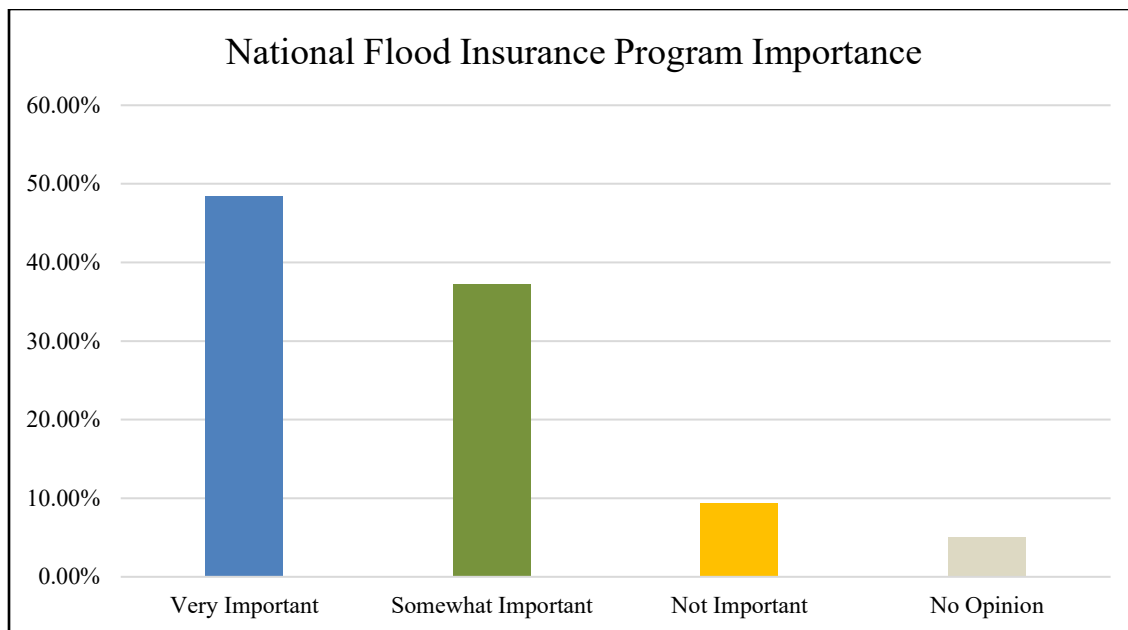


Question 2: In 2014, the Region consisting of Rice, McPherson, Marion, Reno, Harvey, Butler, Sedgwick, Kingman, Harper, Sumner, and Cowley Counties, the planning committee determined that the hazards listed below are of significance to the area. Please indicate the level of risk, or extent of potential impacts, in the Region, that you perceive for each hazard.

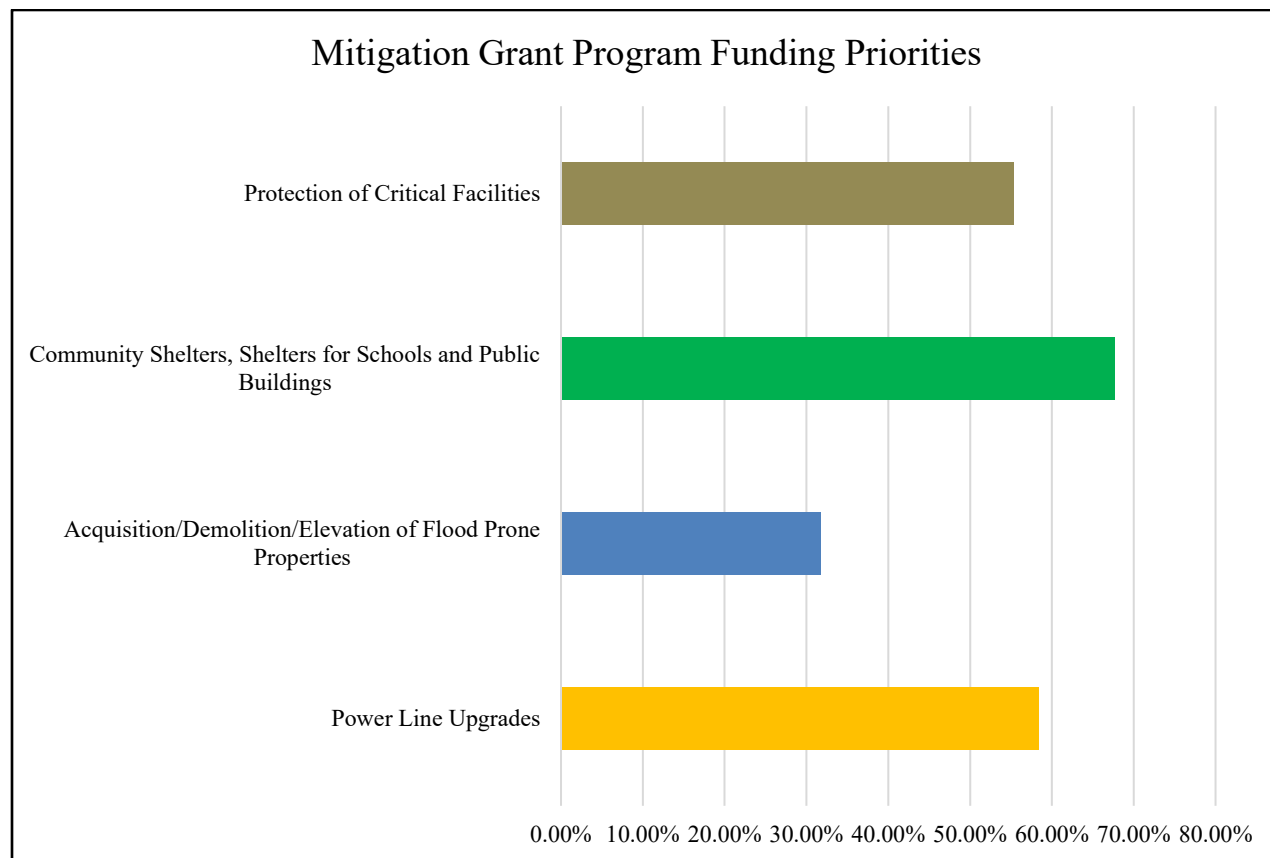


Question 3: In the Region, the planning committee has determined that a flood event is the third most critical hazard. How important is it for you to have your community participate in or continue to participate in the National Flood Insurance Program?



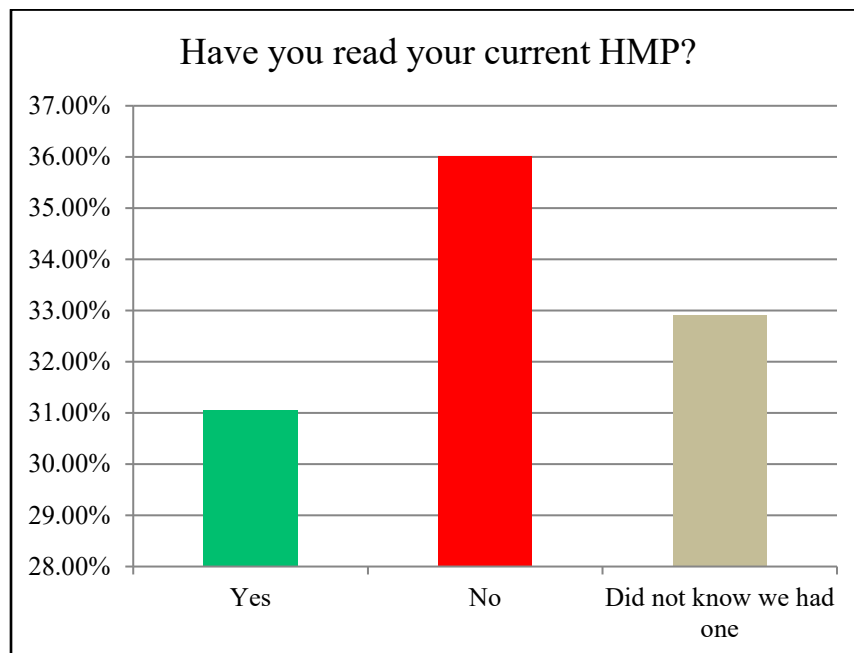


Question 4: The Kansas Division of Emergency Management currently reviews the application for funds for the FEMA Risk Mitigation Grant Program. Your current funding priorities are listed below. Please check those that could benefit your community.

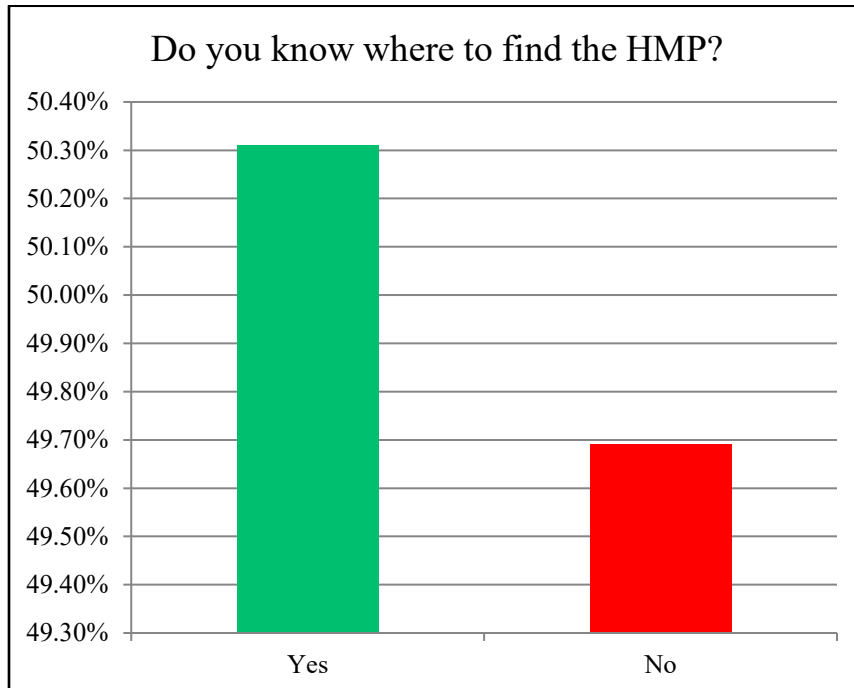




Question 5: Have you had the opportunity to read your current Risk Mitigation Plan?



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





In addition, respondents were given the opportunity to address any local concerns or issues of concern to them. These responses were provided to the relevant MPC member for review, and if necessary, action.

2.6 – Planning Meetings

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

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

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

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

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

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





Kansas Region G Planning Meetings

Meeting Number	Date	Location
1 (Kickoff)	10/24/2018	Butler County
	10/53/2018	Kingman County
	10/25/2018	Harvey County
2 (Mid-Term)	12/06/2108	Sumner County
3 (Final)	03/06/2019	Cowley County
	03/07/2019	Sedgwick County
	03/07/2019	McPherson County

2.7 – Existing Plan Incorporation

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

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

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

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

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

State and Federal Level Plan Integration

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

- State of Kansas Hazard Mitigation Plan





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

Integration Challenges

The 2013 plan update successfully integrated approved Kansas Region G local hazard mitigation plans into one regional HMP. This represents a success of our streamlined program of allowing jurisdictions to participate in multi-jurisdictional regional-level plans. This program not only reduces the cost and the burden to local jurisdictions, it also allows for closer collaboration and integration of local communities in all areas of planning and response. However, and as always, challenges exist due to the day to day demands of the working environment, including scheduling conflicts, budget restrictions, and staffing changes and shortages related to both the utilization and incorporation of the HMP and completion of identified hazard mitigation projects.



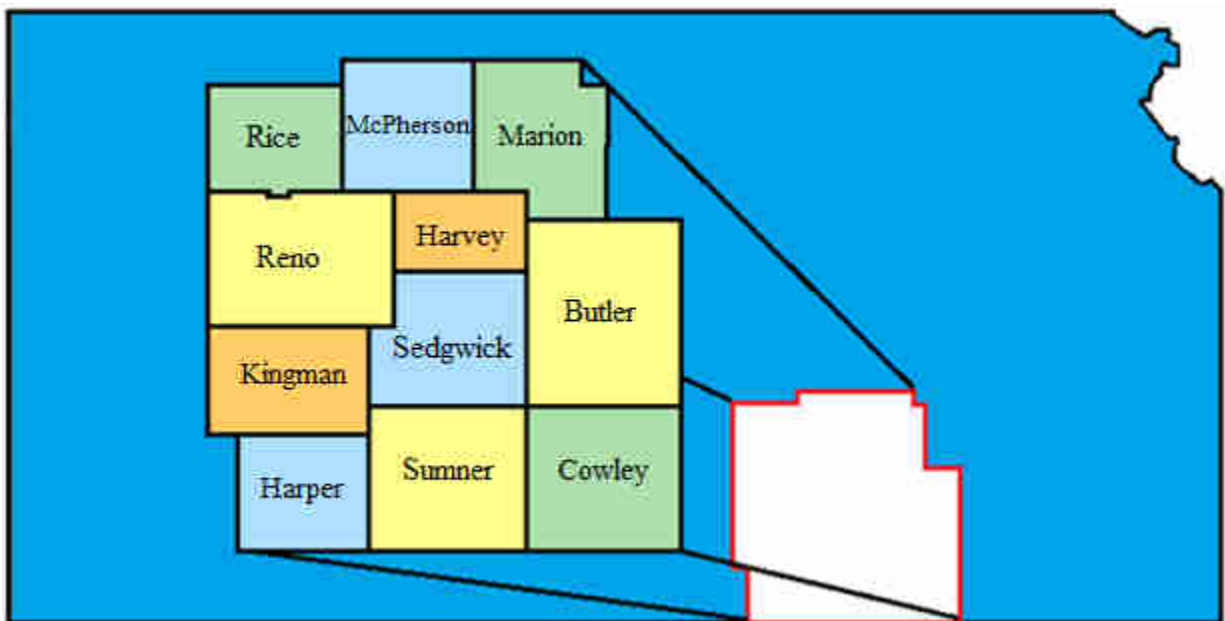
3.0 Planning Area

3.1 – Introduction

Kansas Region G consists of the following eleven participating counties and their participating jurisdictions:

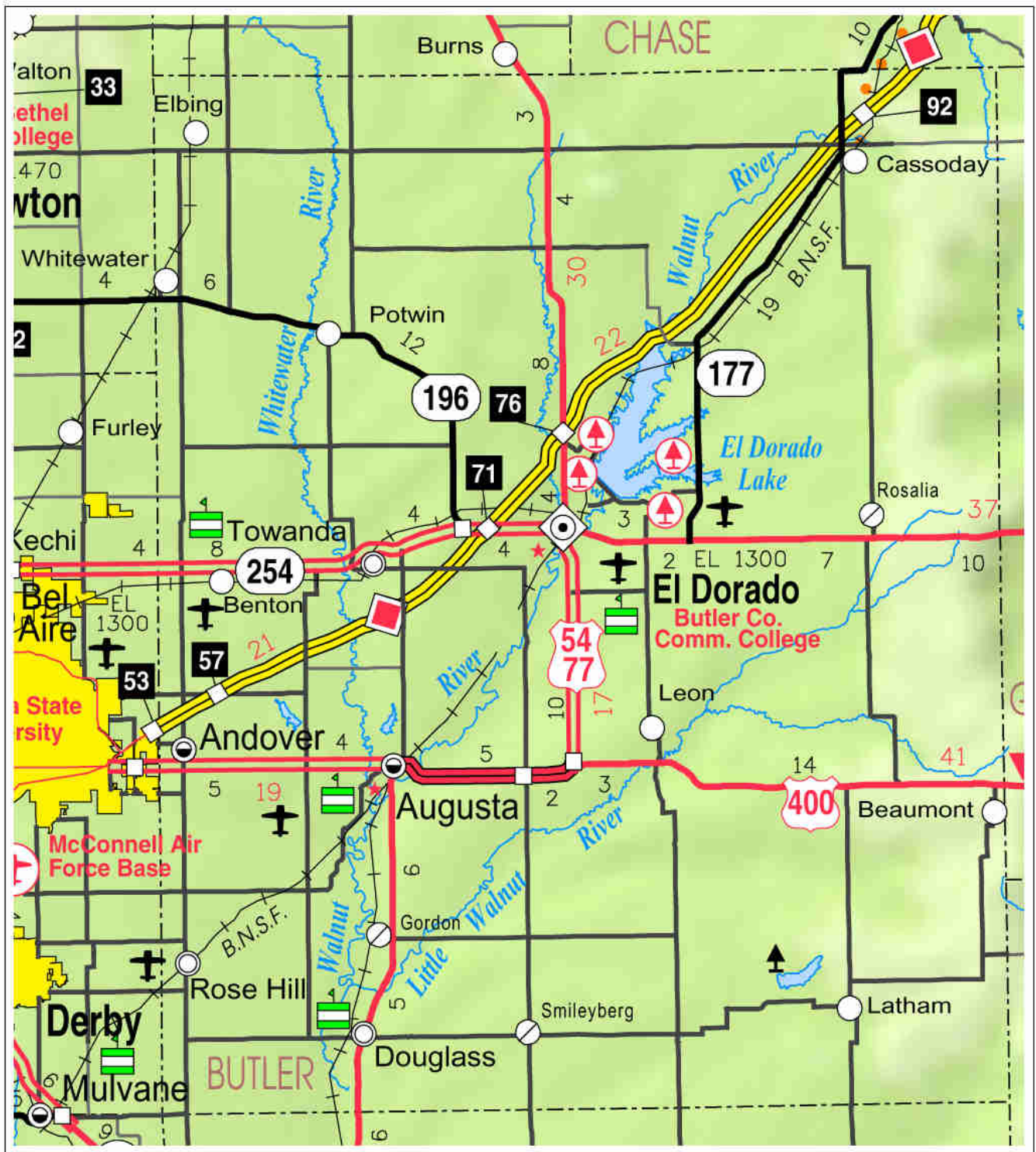
- Butler County
- Cowley County
- Harper County
- Harvey County
- Kingman County
- McPherson County
- Marion County
- Reno County
- Rice County
- Sedgwick County
- Sumner County

The following map details the locations of these counties.



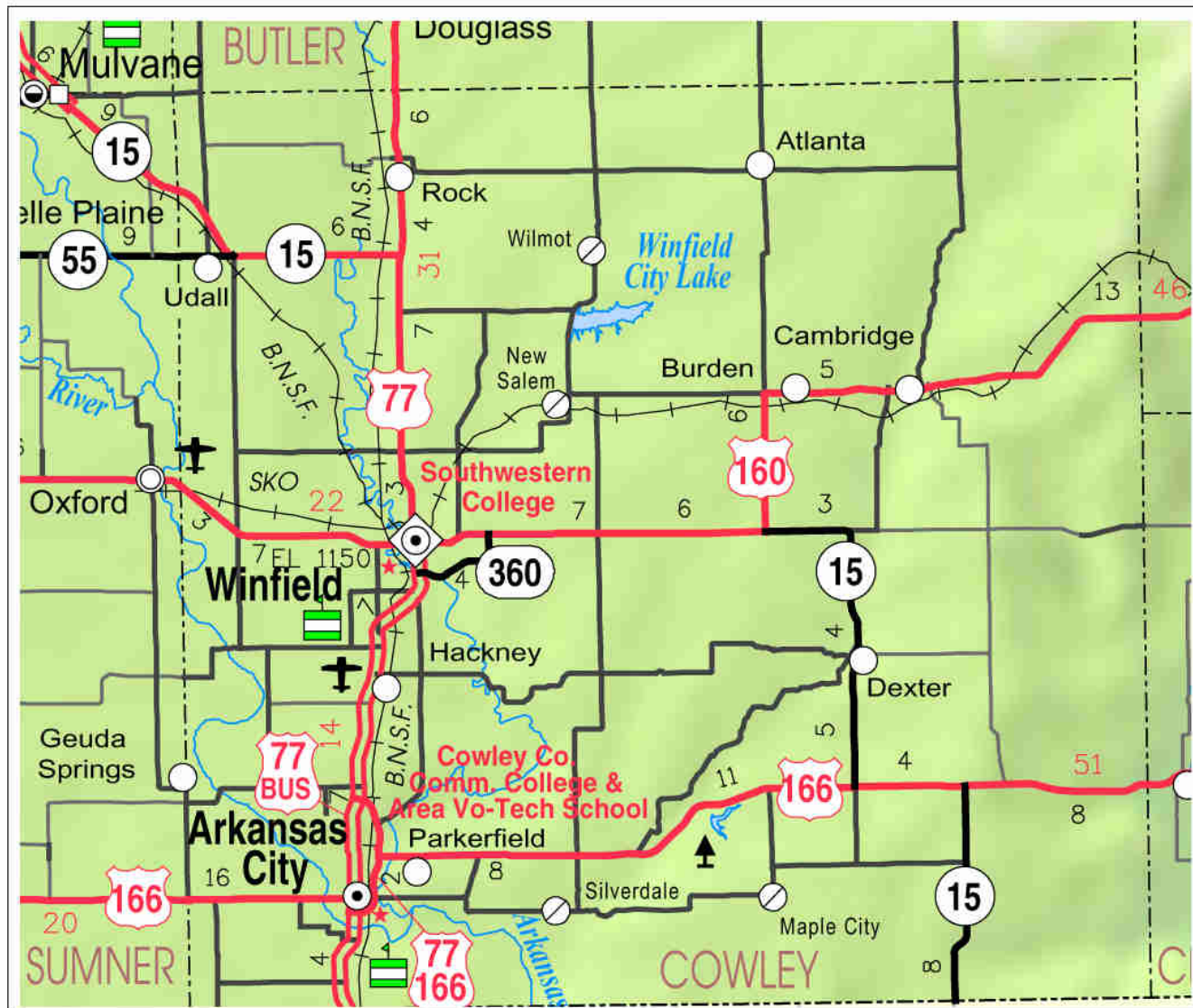


The map following details the locations of participating jurisdictions for **Butler County**:



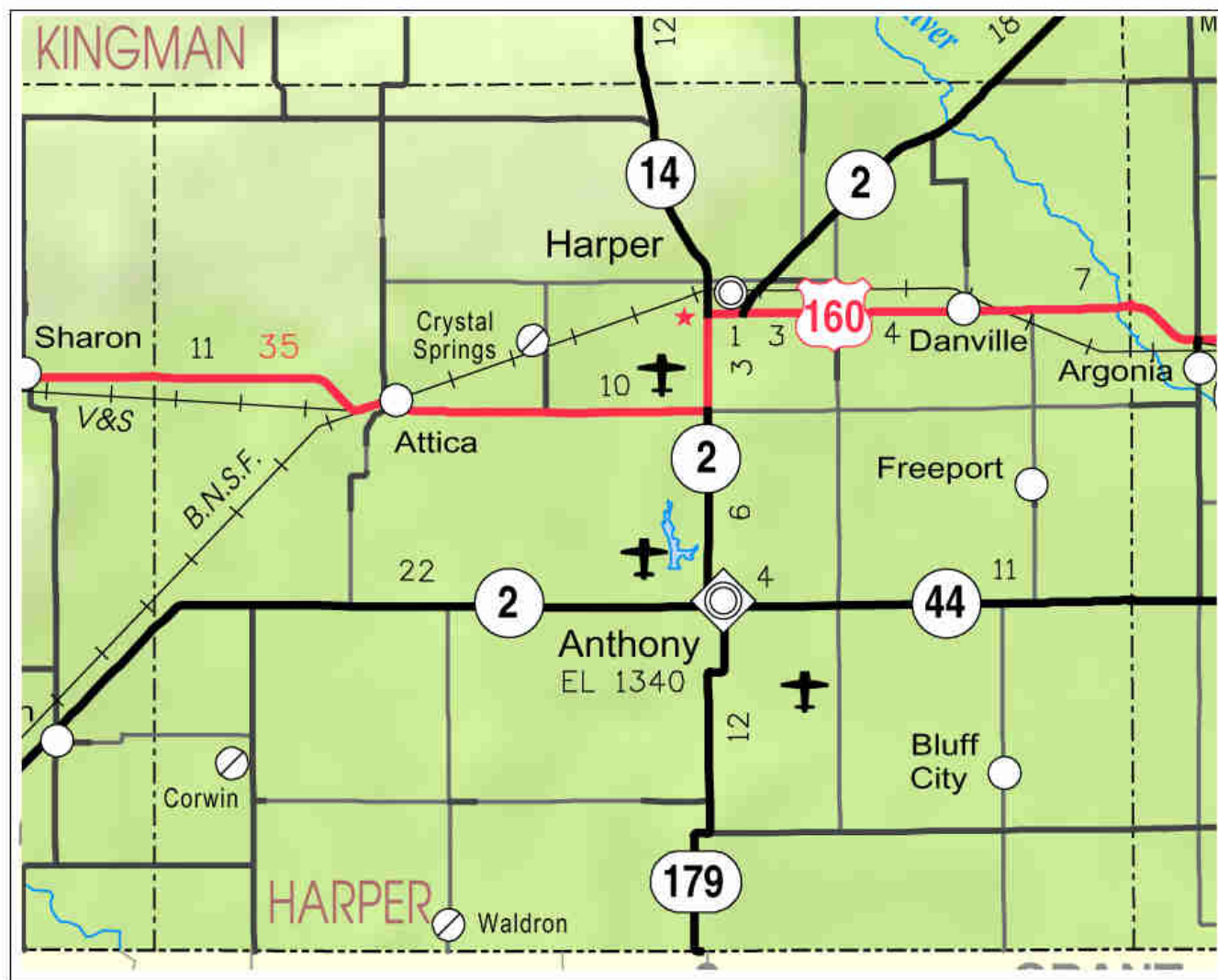


The following map details the locations of participating jurisdictions for **Cowley County**:





The following map details the locations of participating jurisdictions for **Harper County**:



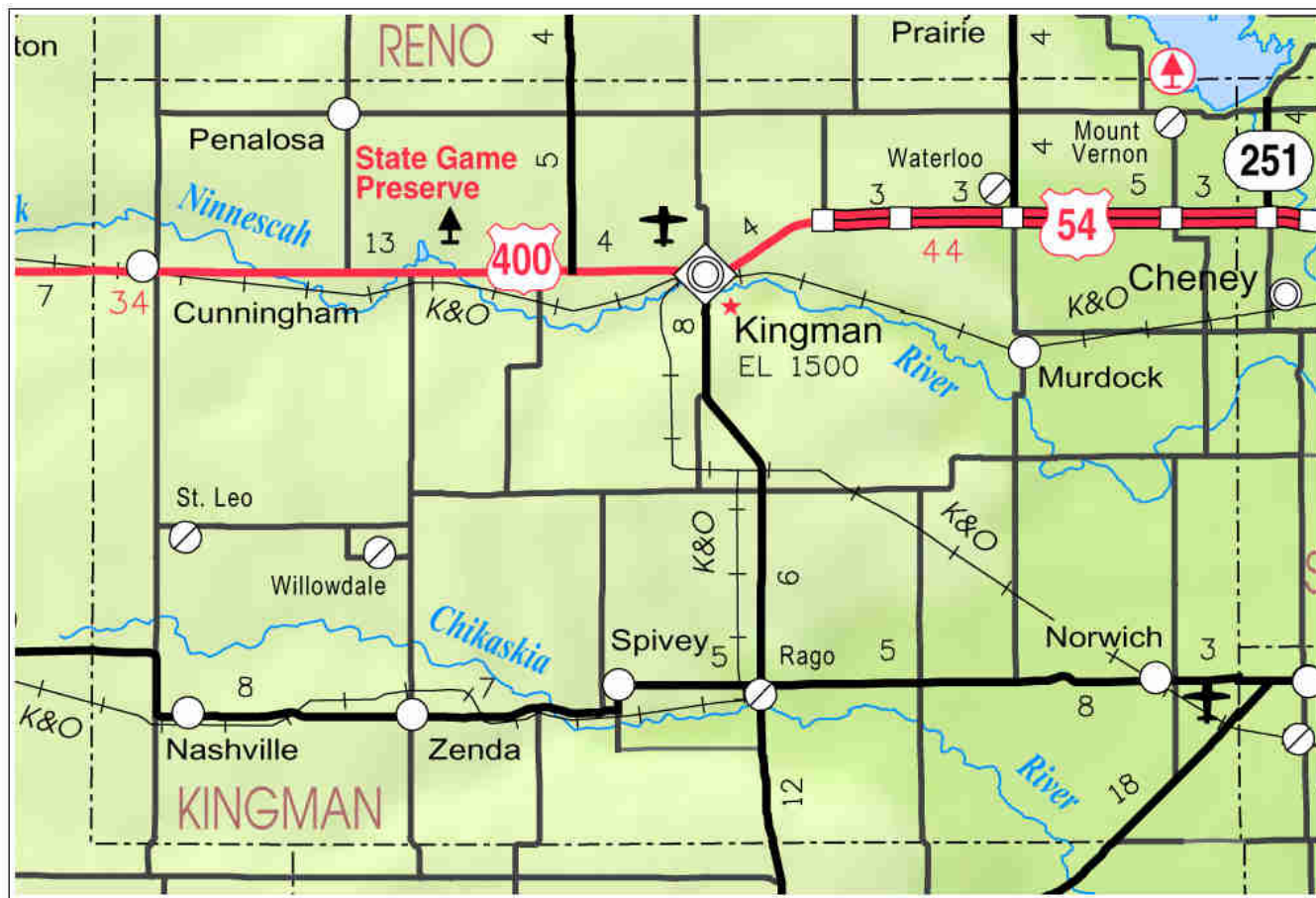


The following map details the locations of participating jurisdictions for **Harvey County**:



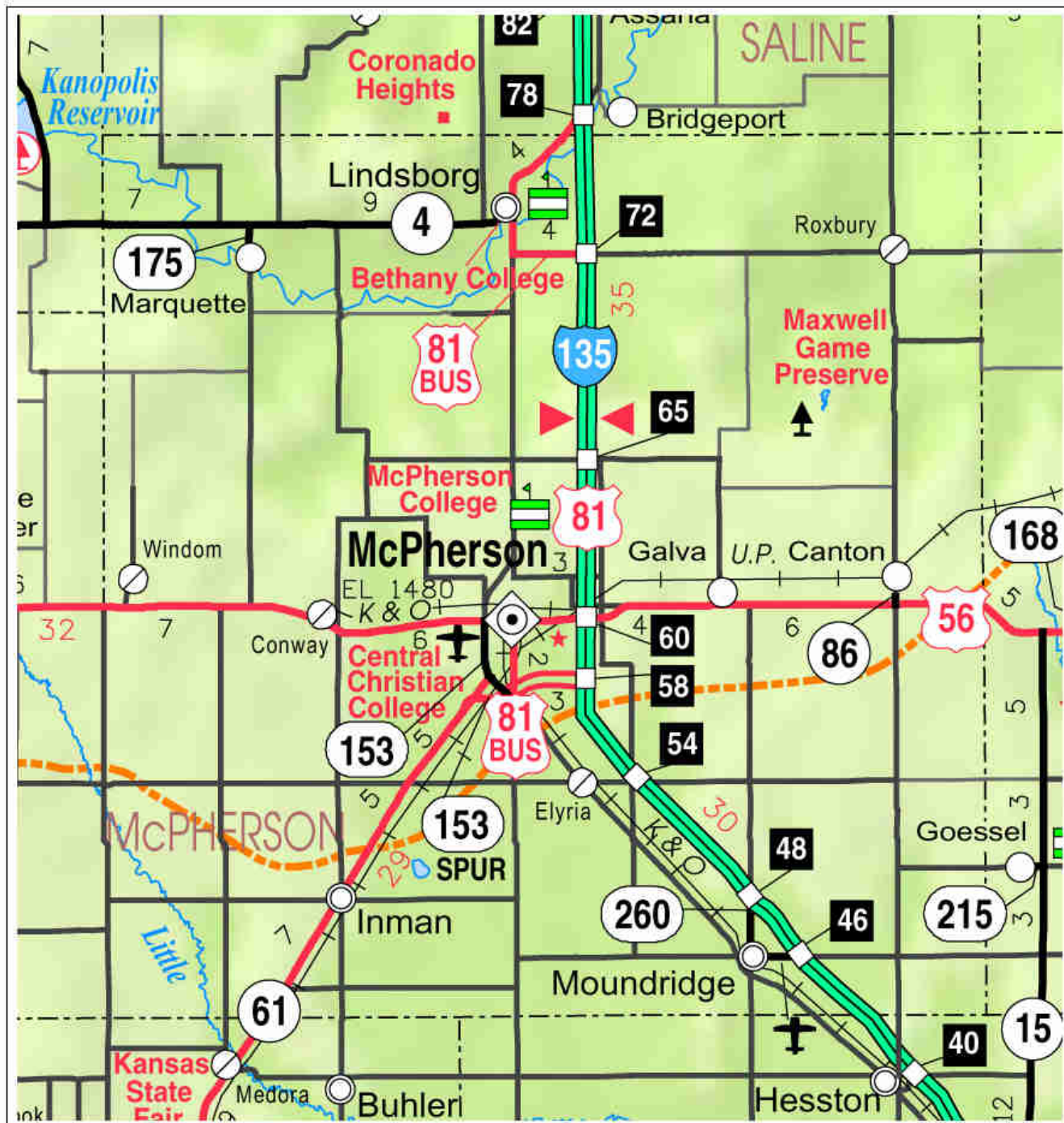


The following map details the locations of participating jurisdictions for **Kingman County**:



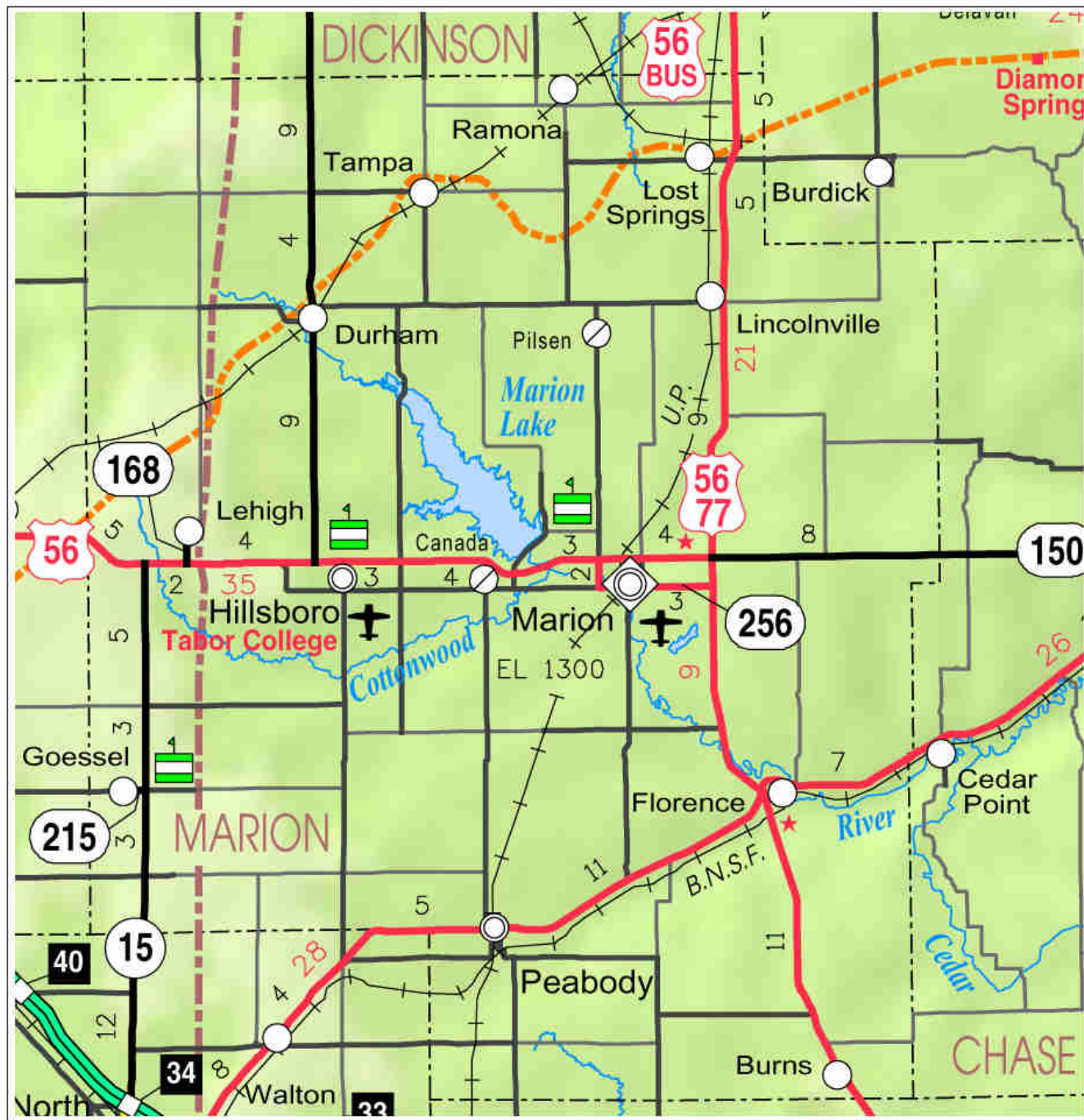


The following map details the locations of participating jurisdictions for **McPherson County**:





The following map details the locations of participating jurisdictions for **Marion County**:



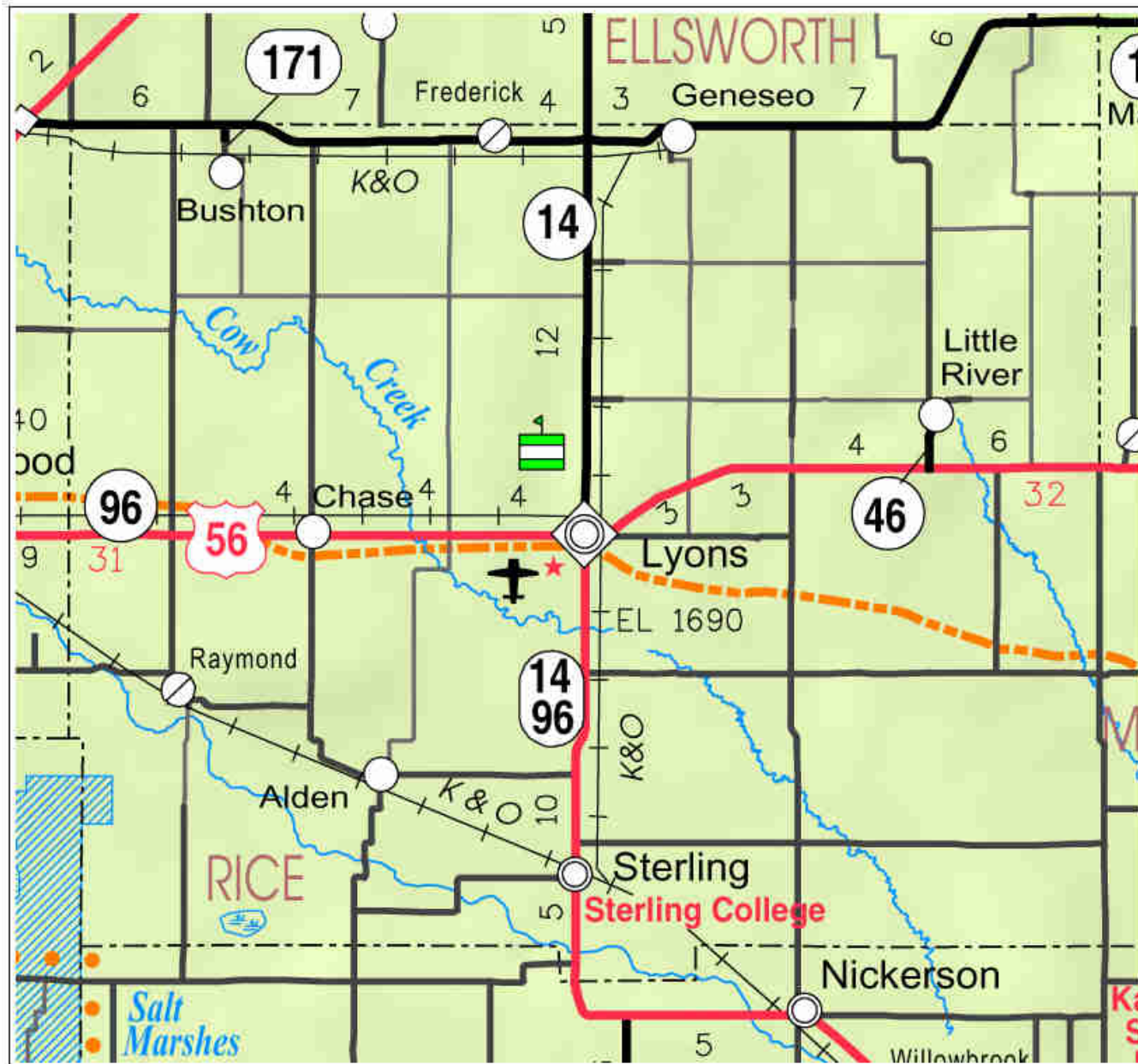


The following map details the locations of participating jurisdictions for **Reno County**:



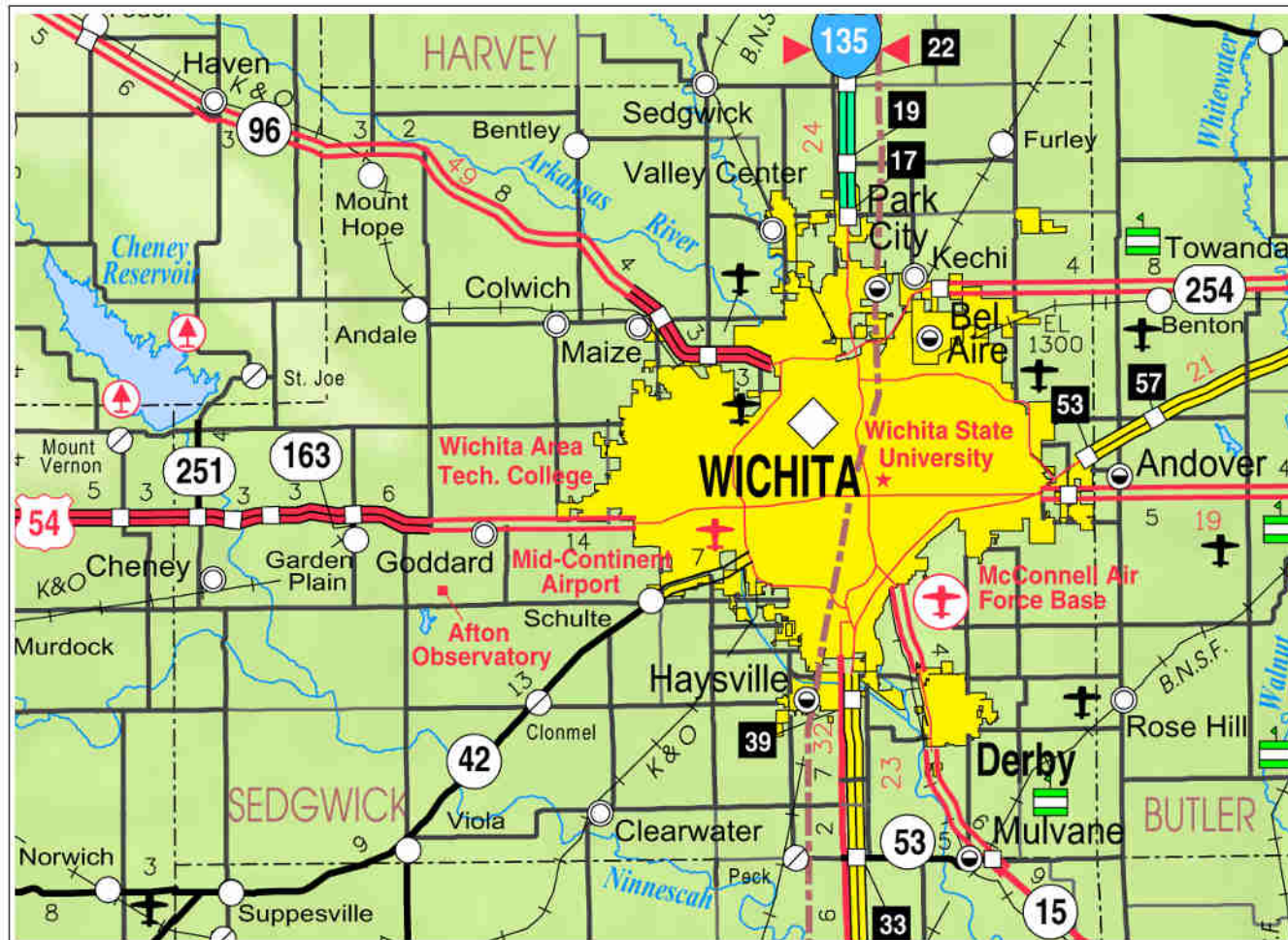


The following map details the locations of participating jurisdictions for **Rice County**:



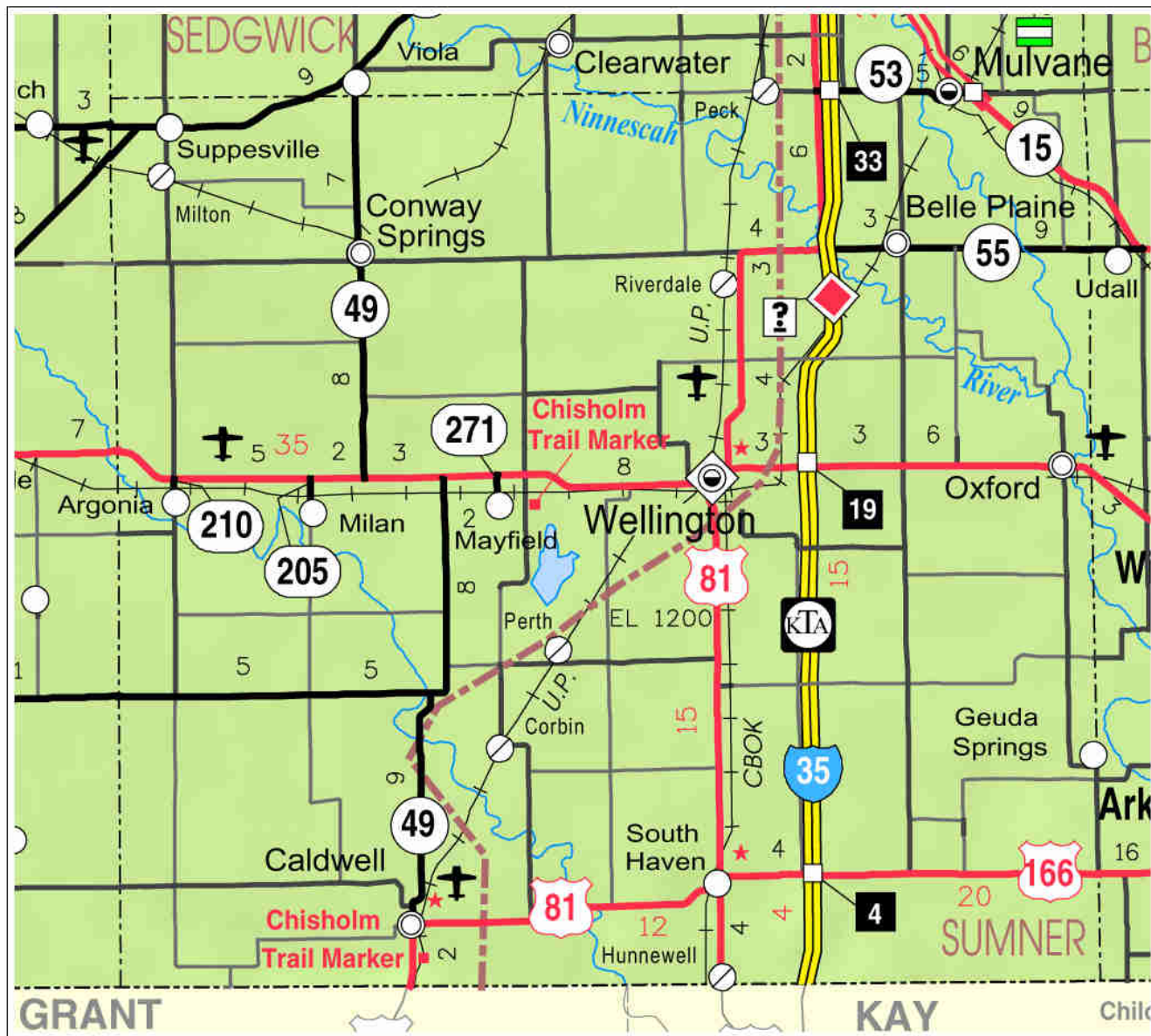


The following map details the locations of participating jurisdictions for Sedgwick County:





The following map details the locations of participating jurisdictions for **Sumner County**:



3.2 – Regional Population Data

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





Butler County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Butler County	59,482	65,880	66,878	7,396	12.4%	58
Andover	6,698	11,791	13,111	6,413	95.7%	1,311
Augusta	8,423	9,274	9,389	966	11.5%	1,977
Benton	827	880	873	46	5.6%	628
Cassoday	130	129	126	-4	-3.1%	323
Douglass	1,813	1,700	1,681	-132	-7.3%	1,556
Elbing	218	229	226	8	3.7%	1,189
El Dorado	12,057	13,021	12,993	936	7.8%	1,457
Latham	164	139	138	-26	-15.9%	552
Leon	645	704	732	87	13.5%	976
Potwin	457	449	438	-19	-4.2%	1,825
Rose Hill	3,432	3,391	3,980	548	16.0%	1,809
Towanda	1,338	1,450	1,470	132	9.9%	1,387
Whitewater	653	718	731	78	11.9%	1,828

Source: US Census Bureau

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

- A population gain was noted in Butler County, 12.4% as a whole
- Population gains were noted in 9 of the 13 participating cities
- The city of Andover saw a nearly triple digit percentage population growth (95.7%)

Cowley County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Cowley County	36,291	36,311	35,361	-930	-2.6%	31
Arkansas City	11,963	12,415	11,866	-97	-0.8%	1,265
Atlanta	255	195	183	-72	-28.2%	366
Burden	564	535	528	-36	-6.4%	978
Cambridge	103	82	82	-21	-20.4%	482
Dexter	364	278	274	-90	-24.7%	945
Gueda Springs	212	185	178	-34	-16.0%	509
Parkerfield	422	426	419	-3	-0.7%	446
Udall	794	753	718	-76	-9.6%	1,260
Winfield	12,206	12,301	12,104	-102	-0.8%	936

Source: US Census Bureau

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

- The population of Cowley County saw a small decline at -2.6%
- Population declines were noted in every participating city





- The cities of Atlanta, Cambridge and Dexter saw an over 20% decrease in population

Harper County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Harper County	6,536	6,034	5,590	-946	-14.5%	7
Anthony	2,440	2,269	2,132	-308	-12.6%	644
Attica	636	626	570	-66	-10.4%	891
Bluff City	80	65	59	-21	-26.3%	109
Danville	59	38	34	-25	-42.4%	425
Harper	1,567	1,473	1,355	-212	-13.5%	831
Waldron	17	11	10	-7	-41.2%	32

Source: US Census Bureau

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

- A population decline of -14.5% was noted in Harper County
- Population declines were noted in every participating city
- The cities of Danville and Waldron saw a decrease of over -40% in population
- Bluff City saw a decrease of over -25% in population

Harvey County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Harvey County	32,869	34,684	34,544	1,675	5.1%	64
Burrton	932	901	874	-58	-6.2%	971
Halstead	1,873	2,085	2,054	181	9.7%	1,568
Hesston	3,509	3,709	3,782	273	7.8%	970
Newton	17,190	19,132	18,869	1,679	9.8%	1,498
North Newton	1,522	1,759	1,773	251	16.5%	1,970
Sedgwick	1,537	1,695	1,665	128	8.3%	1,181
Walton	284	235	235	-49	-17.3%	653

Source: US Census Bureau

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

- A population gain was noted in Harvey County, 5.1% as a whole
- Population gains were noted in 5 out of 7 participating cities
- The city of North Newton saw double digit percentage population growth (16.5%)
- The city of Walton saw a decrease of -17.3% in population





Kingman County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Kingman County	8,673	7,858	7,360	-1,313	-15.1%	8
Cunningham	514	454	452	-62	-12.1%	1,291
City of Kingman	3,387	3,177	2,929	-458	-13.5%	830
Nashville	11	64	59	48	436.4%	268
Norwich	551	491	453	-98	-17.8%	985
Penalosa	27	17	18	-9	-33.3%	257
Spivey	80	78	80	0	0.0%	154
Zenda	123	90	80	-43	-35.0%	348

Source: US Census Bureau

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

- A population decline of -15.1% was noted in Kingman County
- Population declines were noted in every participating city except Nashville
- The cities of Penalosa and Zenda saw a decrease of over -30% in population
- The city of Nashville saw a population increase of 436.4%

McPherson County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
McPherson County	29,554	29,180	28,708	-846	-2.9%	32
Canton	829	748	708	-121	-14.6%	1,416
Galva	701	870	865	164	23.4%	1,802
Inman	1,142	1,337	1,335	193	16.9%	2,263
Lindsborg	3,321	3,458	3,268	-53	-1.6%	1,934
Marquette	542	641	610	68	12.5%	1,386
City of McPherson	13,770	13,155	13,201	-569	-4.1%	1,826
Moundridge	1,593	1,737	1,874	281	17.6%	1,329
Windom	137	130126		-11	-8.0%	504

Source: US Census Bureau

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

- A population decline of -2.9% was noted in McPherson County
- The cities of Galva, Inman, Marquette and Moundridge saw double digit percentage population growth
- The city of Canton saw a decrease of -14.6% in population





Marion County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Marion County	13,361	12,660	11,986	-1,375	-10.3%	13
Burns	268	228	204	-64	-23.9%	583
Durham	114	112	106	-8	-7.0%	530
Florence	671	465	440	-231	-34.4%	571
Goessel	565	539	503	-62	-11.0%	1,437
Hillsboro	2,854	2,993	2,850	-4	-0.1%	1,109
Lehigh	215	175	169	-46	-21.4%	563
Lincolnvilleville	225	203	193	-32	-14.2%	877
Lost Springs	71	70	84	14	18.3%	365
City of Marion	2,110	1,927	1,801	-309	-14.6%	602
Peabody	1,384	1,210	1,123	-261	-18.9%	838
Ramona	94	187	115	21	22.3%	371
Tampa	144	112	103	-41	-28.5%	572

Source: US Census Bureau

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

- A population decline of -10.3% was noted in Marion County
- Population declines were noted in 10 out of 12 participating cities
- The cities of Florence and Tampa saw a decrease of over -25% in population
- The cities of Burns and Lehigh saw a decrease of over -20% in population

Reno County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Reno County	64,790	64,511	62,510	-2,280	-3.5%	49
Abbyville	128	87	87	-41	-32.0%	458
Arlington	459	437	453	-6	-1.3%	423
Buhler	1,358	1,327	1,289	-69	-5.1%	1,790
Haven	1,175	1,237	1,199	24	2.0%	1,903
The Highlands	*	*	*	*	*	*
Hutchinson	40,787	42,080	40,772	-15	0.0%	1,792
Langdon	72	42	40	-32	-44.4%	333
Nickerson	1,194	1,070	1,009	-185	-15.5%	747
Partridge	259	248	242	-17	-6.6%	807
Plevna	99	98	97	-2	-2.0%	422
Pretty Prairie	615	680	654	39	6.3%	1,072
South Hutchinson	2,539	2,457	2,507	-32	-1.3%	867
Sylvia	297	218	207	-90	-30.3%	714
Turon	436	387	373	-63	-14.4%	811





Reno County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Willowbrook	36	87	83	47	130.6%	268

Source: US Census Bureau

*: Newly incorporated, no data available

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

- A population decline of -3.5% was noted in Reno County
- Population declines were noted in every participating city except Haven, Pretty Prairie and Willowbrook
- The cities of Abbyville, Langdon and Sylvia saw a decrease of over -30% in population
- The city of Willowbrook saw a population increase of 130.6%

Rice County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Rice County	10,761	10,083	9,660	-1,101	-10.2%	13
Alden	168	148	145	-23	-13.7%	763
Bushton	314	279	260	-54	-17.2%	1,130
Chase	490	477	444	-46	-9.4%	1,531
Geneseo	272	267	259	-13	-4.8%	447
Little River	536	557	527	-9	-1.7%	1,198
Lyons	3,732	3,739	3,565	-167	-4.5%	1,511
Raymond	95	79	78	-17	-17.9%	244
Sterling	2,642	2,328	2,230	-412	-15.6%	1,304

Source: US Census Bureau

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

- A population decline of -10.2% was noted in Rice County
- Population declines were noted in every participating city
- The cities of Alden, Bushton, and Raymond saw a double-digit percentage population decline

Sedgwick County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Sedgwick County	452,869	498,365	513,687	60,818	13.4%	509
Andale	766	928	997	231	30.2%	1,749
Bel Aire	5,836	6,769	7,914	2,078	35.6%	1,154





Sedgwick County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Bentley	368	530	525	157	42.7%	1,750
Cheney	1,783	2,094	2,170	387	21.7%	1,090
Clearwater	2,178	2,481	2,524	346	15.9%	1,350
Colwich	1,229	1,327	1,406	177	14.4%	1,057
Derby	17,807	22,158	26,673	8,866	49.8%	2,778
Eastborough	826	773	754	-72	-8.7%	1,885
Garden Plain	797	849	898	101	12.7%	1,497
Goddard	2,037	4,344	4,746	2,709	133.0%	1,057
Haysville	8,502	10,826	11,278	2,776	32.7%	2,441
Kechi	1,038	1,909	2,007	969	93.4%	333
Maize	1,868	3,402	4,557	2,689	144.0%	515
Mount Hope	830	813	805	-25	-3.0%	544
Mulvane	5,155	6,111	6,359	1,204	23.4%	1,407
Park City	151	126	116	-35	-23.2%	12
City of Sedgwick	1,537	1,695	1,665	128	8.3%	1,181
Valley Center	4,883	6,822	7,300	2,417	49.5%	1,050
Viola	211	130	129	-82	-38.9%	806
Wichita	344,284	382,368	390,591	46,307	13.5%	2,388

Source: US Census Bureau

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

- A population gain was noted in Wyandotte County, 13.4% as a whole
- Population gains were noted in 16 of 20 participating cities
- The cities of Goddard and Maize saw triple digit percentage population growth
- The city of Kechi saw nearly 100% population growth
- The cities of Bentley, Derby and Valley Center saw over 40% population growth
- The city of Viola saw a decrease of -38.9% in population
-

Sumner County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2015	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Sumner County	25,946	24,132	23,159	-2,787	-10.7%	20
Argonia	534	501	483	-51	-9.6%	732
Belle Plaine	1,708	1,681	1,581	-127	-7.4%	1,737
Caldwell	1,284	1,068	1,009	-275	-21.4%	926
Geuda Springs	212	185	178	-34	-16.0%	509
Mulvane	5,155	6,111	6,359	1,204	23.4%	1,407
Oxford	1,173	1,049	1,012	-161	-13.7%	1,219





Sumner County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2015	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
South Haven	390	363	351	-39	-10.0%	444
Wellington	8,647	8,172	7,822	-825	-9.5%	955

Source: US Census Bureau

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

- A population decline of -10.7% was noted in Sumner County
- Population declines were noted in every participating city except Mulvane
- The cities of Caldwell, Geuda Springs, Oxford, and South Haven saw a double-digit percentage population decline
- The city of Mulvane saw a 23.4% increase in population

3.3 – At-Risk Population Data

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

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

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

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

Kansas Region G Potentially Vulnerable Population Data, Jurisdictions Over 5,000 Persons

Jurisdiction	Percentage of Population 5 and Under (2017)	Percentage of Population 65+ (2017)	Percentage of Population Speaking Language Other Than English (2017)	Percentage of Population Living Below Poverty Level (2017)	Persons with a Disability, Under the Age of 65 (2017)
Butler County	6.1%	14.7%	3.4%	10.1%	7.8%
Andover	7.1%	11.2%	6.5%	3.3%	5.6%
Augusta	7.0%	16.1%	2.4%	12.2%	8.2%
El Dorado	7.0%	15.5%	3.1%	20.5%	10.3%
Cowley County	6.3%	17.8%	7.8%	17.6%	11.4%





Kansas Region G Potentially Vulnerable Population Data, Jurisdictions Over 5,000 Persons

Jurisdiction	Percentage of Population 5 and Under (2017)	Percentage of Population 65+ (2017)	Percentage of Population Speaking Language Other Than English (2017)	Percentage of Population Living Below Poverty Level (2017)	Persons with a Disability, Under the Age of 65 (2017)
Arkansas City	8.7%	16.3%	13.7%	20.5%	12.1%
Winfield	5.2%	15.0%	8.1%	17.8%	12.2%
Harper County	6.9%	22.1%	6.3%	14.5%	10.6%
Harvey County	6.3%	19.0%	7.6%	9.1%	8.8%
Newton	7.0%	17.7%	9.6%	13.3%	9.5%
Kingman County	5.5%	21.9%	3.7%	12.1%	10.7%
McPherson County	5.9%	19.2%	3.9%	8.5%	6.5%
City of McPherson	7.3%	16.7%	4.0%	8.4%	6.5%
Marion County	4.9%	22.8%	3.2%	10.9%	9.9%
Reno County	5.5%	19.4%	6.9%	13.4%	10.4%
Hutchinson	5.8%	18.0%	7.3%	16.7%	11.0%
Rice County	6.4%	18.5%	8.2%	12.3%	11.5%
Sedgwick County	7.1%	14.0%	14.3%	14.2%	8.8%
Bel Aire	10.3%	12.6%	10.4%	4.5%	5.3%
Derby	6.3%	13.7%	3.5%	5.3%	6.9%
Haysville	6.8%	12.7%	2.0%	8.4%	7.7%
Mulvane	3.9%	17.8%	0.7%	4.4%	8.3%
Valley Center	6.6%	13.6%	5.9%	4.4%	6.5%
Wichita	7.7%	13.1%	17.4%	16.9%	9.2%
Sumner County	6.2%	18.1%	2.5%	11.8%	9.3%
Mulvane	3.9%	17.8%	0.7%	4.4%	8.3%
Wellington	5.7%	18.7%	4.1%	16.1%	10.5%

Source: US Census Bureau

Of note for Kansas Region G and its participating jurisdictions:

- Regionally, 6.1% of the total population is under the age of 5
- There is a high percentage of adults over the age of 65 in all participating counties, approximately 18.9% of the total population
- Regionally, 6.2% of the total population speak a language other than English at home
- There is a high percentage of person living below the poverty line in all participating counties, approximately 12.2% of the total population
- Regionally, 9.6% of persons under the age of 65 have an identified disability





3.4 – Regional Housing Data

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

Butler County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Butler County	23,176	26,657	15.0%	23	7.4%
Andover	2,456	4,780	94.6%	478	7.1%
Augusta	3,842	3,585	-6.7%	755	6.0%
Benton	327	367	12.2%	264	7.4%
Cassoday	57	58	1.8%	149	8.6%
Douglass	733	767	4.6%	710	9.5%
Elbing	77	106	37.7%	558	11.3%
El Dorado	5,460	6,240	14.3%	700	2.8%
Latham	81	96	18.5%	384	9.4%
Leon	269	317	17.8%	423	19.6%
Potwin	208	219	5.3%	913	7.8%
Towanda	537	507	-5.6%	478	19.5%
Rose Hill	1,098	1,453	32.3%	660	0.0%
Whitewater	255	287	12.5%	718	0.0%

Source: US Census Bureau

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

- A housing gain was noted in Butler County, 15.0% as a whole
- Housing gains were noted in 11 of the 13 participating cities
- The city of Andover saw a nearly triple digit percentage housing growth (94.6%)
- The cities of Latham and Towanda have a relatively high percentage of mobile homes

Cowley County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Cowley County	15,673	16,155	3.1%	14	8.4%
Arkansas City	5,628	5,670	0.7%	604	3.1%
Atlanta	116	112	-3.4%	224	7.1%
Burden	236	316	33.9%	585	14.9%
Cambridge	55	67	21.8%	394	17.9%
Dexter	133	157	18.0%	541	16.6%
Gueda Springs	88	88	0.0%	251	29.5%
Parkerfield	-	173	-	184	14.5%
Udall	322	308	-4.3%	540	8.8%





Cowley County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Winfield	5,049	5,035	-0.3%	389	5.7%

Source: US Census Bureau

-: No Data

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

- A housing gain was noted in Cowley County, 3.1% as a whole
- Housing declines were noted in three participating cities
- Housing gains were noted in four participating cities, with Burden, Dexter and Cambridge seeing double digit percentage growth
- The city of Gueda Springs has a relatively high percentage of mobile homes

Harper County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Harper County	3,270	3,182	-2.7%	4	4.7%
Anthony	1,215	1,261	3.8%	381	1.5%
Attica	297	347	16.8%	542	6.1%
Bluff City	48	53	10.4%	98	18.9%
Danville	30	13	-56.7%	163	0.0%
Harper	787	760	-3.4%	466	7.5%
Freeport	5	3	-40.0%	15	0.0%
Waldron	13	26	100.0%	84	3.8%

Source: US Census Bureau

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

- A housing decline was noted in Harper County, -2.7% as a whole
- Housing declines were noted in three participating cities, with relatively large double digit percentage declines in Danville and Freeport
- Housing gains were noted in four participating cities, with Attica and Bluff City seeing double digit percentage growth
- Waldron saw a 100% increase in housing over the reporting period
- Bluff City has a relatively high percentage of mobile homes

Harvey County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Harvey County	13,378	14,695	9.8%	27	2.9%
Burrton	402	379	-5.7%	421	9.0%
Halstead	849	907	6.8%	692	0.3%





Harvey County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Hesston	1,308	1,494	14.2%	383	0.8%
Newton	7,277	8,487	16.6%	674	2.9%
North Newton	632	795	25.8%	883	0.3%
Sedgwick	568	609	7.2%	432	5.9%
Walton	118	99	-16.1%	275	15.2%

Source: US Census Bureau

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

- A housing gain was noted in Harvey County, 9.8% as a whole
- Housing declines were noted in two participating cities, Burrton and Walton
- Housing gains were noted in five participating cities, with Hesston, Newton and North Newton seeing double digit percentage growth

Kingman County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Kingman County	3,852	3,852	0.0%	4	4.3%
Cunningham	218	197	-9.6%	563	6.1%
City of Kingman	1,563	1,653	5.8%	468	0.5%
Nashville	56	46	-17.9%	209	0.0%
Norwich	216	178	-17.6%	387	3.9%
Penalosa	19	8	-57.9%	114	0.0%
Spivey	49	31	-36.7%	60	41.9%
Zenda	60	67	11.7%	291	0.0%

Source: US Census Bureau

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

- Housing remained static in Kingman County for the reporting period
- Housing declines were noted in five participating cities, with a large decline in Penalosa
- Housing gains were noted in five participating cities, with Hesston, Newton and North Newton seeing double digit percentage growth
- The city of Spivey has a relatively high percentage of mobile homes

McPherson County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
McPherson County	11,830	13,049	10.3%	14	3.5%
Canton	342	328	-4.1%	656	1.5%
Galva	297	501	68.7%	1,044	5.4%
Inman	518	655	26.4%	1,110	0.5%





McPherson County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Lindsborg	1,331	1,386	4.1%	820	3.8%
Marquette	271	365	34.7%	830	5.8%
City of McPherson	5,658	6,010	6.2%	831	5.0%
Moundridge	681	861	26.4%	611	1.0%
Windom	74	53	-28.4%	212	15.1%

Source: US Census Bureau

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

- A housing gain was noted in McPherson County, 10.3% as a whole
- Housing declines were noted in two participating cities, Canton and Windom
- Housing gains were noted in six participating cities, with Galva, Inman, Marquette and Moundridge seeing double digit percentage growth

Marion County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Marion County	5,882	5,984	1.7%	6	6.3%
Burns	116	128	10.3%	366	14.1%
Durham	64	64	0.0%	320	17.2%
Florence	301	304	1.0%	395	18.8%
Goessel	221	312	41.2%	891	2.6%
Hillsboro	1,209	1,258	4.1%	489	0.8%
Lehigh	83	81	-2.4%	270	14.8%
Lincolnvill	97	128	32.0%	582	16.4%
Lost Springs	34	54	58.8%	235	22.4%
City of Marion	968	990	2.3%	331	3.4%
Peabody	602	551	-8.5%	411	3.1%
Ramona	57	76	33.3%	245	11.8%
Tampa	69	54	-21.7%	300	7.4%

Source: US Census Bureau

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

- A small housing gain was noted in Marion County, 1.7% as a whole
- Housing declines were noted in three participating cities, Lehigh, Peabody and Tampa
- Housing gains were noted in six participating cities, with Goessel and Lincolnvill seeing double digit percentage growth
- The cities of Florence and Lost Springs have a relatively high percentage of mobile homes





Reno County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Reno County	27,625	28,441	3.0%	22	4.0%
Abbyville	51	52	2.0%	274	0.0%
Arlington	218	271	24.3%	253	7.0%
Buhler	521	582	11.7%	808	3.4%
Haven	498	533	7.0%	846	2.8%
Highlands	*	*	*	*	*
Hutchinson	17,693	18,986	7.3%	835	1.5%
Langdon	39	256	556.4%	2,133	8.0%
Nickerson	507	449	-11.4%	333	13.1%
Partridge	106	121	14.2%	403	14.0%
Plevna	52	60	15.4%	261	20.0%
Pretty Prairie	290	251	-13.4%	411	2.4%
South Hutchinson	1,210	1,156	-4.5%	400	7.1%
Sylvia	142	112	-21.1%	386	6.3%
Turon	218	243	11.5%	528	6.6%
Willowbrook	13	31	138.5%	100	0.0%

Source: US Census Bureau

*: Newly incorporated, no data available

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

- A small housing gain was noted in Reno County, 3.0% as a whole
- Housing declines were noted in four participating cities, Nickerson, Pretty Prairie, South Hutchinson and Sylvia
- Housing gains were noted in ten participating cities, with Arlington, Partridge, Plevna and Turon seeing double digit percentage growth
- The city of Langdon saw a housing increase of 556.4%
- The city of Willowbrook saw a population increase of 138.5%
- The city of Plevna has a relatively high percentage of mobile homes

Rice County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Rice County	4,609	4,582	-0.6%	6	4.4%
Alden	85	59	-30.6%	311	13.6%
Bushton	158	158	0.0%	687	0.0%
Chase	222	246	10.8%	848	14.6%
Geneseo	171	168	-1.8%	290	8.3%
Little River	234	264	12.8%	600	5.7%
Lyons	1,738	1,666	-4.1%	706	0.0%
Raymond	51	51	0.0%	159	15.7%
Sterling	963	1,002	4.0%	586	3.6%

Source: US Census Bureau





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

- A small housing decline was noted in Rice County, -0.6% as a whole
- Housing declines were noted in three participating cities, Alden, Geneseo and Lyons
- Housing gains were noted in three participating cities, with Little River seeing double digit percentage growth

Sedgwick County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Sedgwick County	191,133	216,296	13.2%	214	3.6%
Andale	247	292	18.2%	512	0.0%
Bel Aire	2,024	3,021	49.3%	440	0.0%
Bentley	150	181	20.7%	603	11.6%
Cheney	689	471	-31.6%	237	6.3%
Clearwater	791	941	19.0%	503	0.5%
Colwich	392	445	13.5%	335	0.0%
Derby	6,407	9,708	51.5%	1,011	1.3%
Eastborough	320	294	-8.1%	735	0.0%
Garden Plain	292	303	3.8%	505	1.0%
Goddard	698	1,405	101.3%	313	4.0%
Haysville	3,167	4,491	41.8%	972	2.2%
Kechi	370	990	167.6%	164	0.0%
Maize	668	1,453	117.5%	164	6.2%
Mount Hope	319	332	4.1%	224	2.7%
Mulvane	1,963	2,458	25.2%	544	5.3%
Park City	2,200	2,937	33.5%	309	6.5%
City of Sedgwick	568	609	7.2%	432	5.9%
Valley Center	1,826	2,717	48.8%	391	3.6%
Viola	79	56	-29.1%	350	8.9%
Wichita	152,119	169,732	11.6%	1,038	2.9%

Source: US Census Bureau

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

- A housing gain was noted in Sedgwick County, 13.4% as a whole
- Housing declines were noted in three participating cities, Cheney, Eastborough and Viola
- Housing gains were noted in 17 participating cities, with all but the city of Sedgwick seeing at least double-digit percentage growth
- The city of Goddard saw a housing increase of 101.3%
- The city of Kechi saw a housing increase of 167.6%
- The city of Maize saw a population increase of 117.5%





Sumner County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Sumner County	10,877	10,930	0.5%	9	10.4%
Argonia	255	272	6.7%	412	3.3%
Belle Plaine	712	771	8.3%	847	11.3%
Caldwell	668	640	-4.2%	587	5.3%
Geuda Springs	88	88	0.0%	251	29.5%
Mulvane	1,963	2,458	25.2%	544	5.3%
Oxford	503	501	-0.4%	604	4.2%
South Haven	182	182	0.0%	230	14.8%
Wellington	3,795	3,659	-3.6%	447	4.8%

Source: US Census Bureau

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

- A small housing increase was noted in Sumner County, 0.5% as a whole
- Housing declines were noted in three participating cities, Caldwell, oxford and Wellington
- Housing gains were noted in three participating cities, with Mulvane seeing double digit percentage growth
- The Geuda Springs has a relatively high percentage of mobile homes

3.5 – Regional Property Valuations

This section quantifies the built environment exposed to potential hazards in Kansas Region G. The following tables provide monetary value of structures, by category and where available, for each county in Kansas Region G. In addition to the population information presented above, this information forms the basis of the vulnerability and risk assessment presented in this plan. This information was derived from inventory data associated with FEMA’s loss estimation software HAZUS.

Kansas Region G Property Valuations, Residential, Commercial and Industrial

County	Residential	Commercial	Industrial
Butler	\$5,644,550,000	\$593,993,000	\$177,715,000
Cowley	\$2,863,141,000	\$467,222,000	\$84,565,000
Harper	\$558,034,000	\$114,005,000	\$46,536,000
Harvey	\$2,937,605,000	\$501,887,000	\$203,015,000
Kingman	\$809,962,000	\$93,499,000	\$72,146,000
McPherson	\$2,832,041,000	\$465,005,000	\$277,502,000
Marion	\$1,200,017,000	\$154,955,000	\$61,874,000
Reno	\$5,390,636,000	\$969,342,000	\$395,829,000
Rice	\$922,270,000	\$147,055,000	\$36,115,000
Sedgwick	\$42,651,853,000	\$8,588,902,000	\$3,208,594,000
Sumner	\$2,219,976,000	\$283,323,000	\$122,372,000





Kansas Region G Property Valuations, Agriculture, Government and Education

County	Agriculture	Government	Education
Butler	\$44,603,000	\$30,588,000	\$71,352,000
Cowley	\$27,072,000	\$17,500,000	\$101,307,000
Harper	\$17,675,000	\$7,102,000	\$15,369,000
Harvey	\$35,974,000	\$25,127,000	\$63,613,000
Kingman	\$21,440,000	\$9,372,000	\$14,682,000
McPherson	\$55,761,000	\$17,988,000,000	\$37,411,000
Marion	\$33,844,000	\$22,195,000	\$26,976,000
Reno	\$61,067,000	\$61,487,000	\$96,146,000
Rice	\$26,089,000	\$8,637,000	\$33,598,000
Sedgwick	\$113,725,000	\$180,708,000	\$582,890,000
Sumner	\$47,942,000	\$17,571,000	\$47,695,000

Kansas Region G Total Property Valuations

County	Total
Butler	\$6,664,946,000
Cowley	\$3,626,310,000
Harper	\$779,563,000
Harvey	\$3,863,763,000
Kingman	\$1,041,969,000
McPherson	\$3,766,723,000
Marion	\$1,538,178,000
Reno	\$7,100,181,000
Rice	\$1,198,508,000
Sedgwick	\$56,135,645,000
Sumner	\$2,800,707,000

3.6 – Critical Facility Data

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

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

Details concerning critical facilities have been deemed as sensitive information, and as such their specific information is not contained in this HMP.





3.7 – Unified School Districts

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

Participating USD Information

School District	Estimated Enrollment (2018)	Number of Offices and Schools (2018)	Total Insured Valuation of Structures (2018)
Butler County			
USD 205 - Bluestem	482	3	-
USD 206 – Remington	528	13	-
USD 375 – Circle	1,917	16	-
USD 385 – Andover	10,072	21	-
USD 394 – Rose Hill	1,684	15	-
USD 396 – Douglass	724	13	-
USD 402 – Augusta	2,269	19	\$92,942,000
USD 490 – El Dorado	1,998	18	-
USD 492 – Flinthills	295	14	-
Cowley County			
USD 462 – Central	316	2	\$16,801,622
USD 463 – Udall	371	3	\$24,000,000
USD 465 – Winfield	2,500	15	\$500,000,000
USD 470 – Arkansas City	2,955	16	\$92,658,532
USD 471 – Dexter	200	3	\$8,850,542
Harper County			
USD 361 - Anthony / Harper	892	8	-
USD - 511 Attica	162	6	-
Harvey County			
USD 369 - Burrton	243	7	\$30,000,000
USD 373 - Newton	3,749	21	-
USD 439 - Sedgwick	464	7	\$26,371,001
USD 440 - Halstead	798	8	\$33,401,800
USD 460 - Hesston	830	8	-
Kingman County			
St Patrick Catholic School	-	-	-
USD 331 - Kingman / Norwich	992	11	-
USD 332 - Cunningham	165	7	-
McPherson County			
Elyria Christian School			-
St. Joseph Catholic School	179	5	\$30,000,000
USD 400 - Smoky Valley	2,360	14	-
USD 418 - McPherson	399	9	-
USD 419 - Canton	340	2	\$25,000,000
USD 423 - Moundridge	424	9	-





Participating USD Information

School District	Estimated Enrollment (2018)	Number of Offices and Schools (2018)	Total Insured Valuation of Structures (2018)
USD 444 - Windom	439	8	-
USD 448 - Inman	420	4	\$34,465,383
Marion County			
USD 397 - Centre	205	1	\$13,795,295
USD 398 - Peabody / Burns	272	8	-
USD 408 - Marion / Florence	524	9	-
USD 410 - Hillsboro	567	13	-
USD 411 - Goessel	300	2	\$16,509,000
USD 617 - Florence			
Reno County			
Central Christian School	41	1	\$1,500,000
Hutchinson Catholic Schools	535	2	\$13,141,000
St. Joseph Catholic School	179	5	\$30,000,000
USD 308 - Hutchinson	1,159	12	\$169,502,552
USD 309 - Nickerson	1,266	7	\$41,000,000
USD 310 - Fairfield	320	1	\$9,879,000
USD 311- Pretty Prairie	262	-	-
USD 312 - Haven	800	12	\$41,669,403
USD 313 - Buhler	8,771	31	\$118,000,000
Rice County			
USD 376 - Sterling	504	2	\$61,000,000
USD 401 - Chase	159	8	-
USD 405 - Lyons	829	11	\$
USD 444 - Windom	300	8	\$15,000,000
Sedgwick County			
USD 259 - Wichita	50,303	98	-
USD 260 - Derby	7,022	18	-
USD 261 - Haysville	5,749	16	\$1,600,000
USD 262 - Valley Center	2,766	11	-
USD 263 - Mulvane	1,846	8	-
USD 264 - Clearwater	1,194	9	-
USD 265 - Goddard	5,504	19	-
USD 266 - Maize	7,069	16	-
USD 267 - Renwick	1,922	11	-
USD 268 - Cheney	802	8	-
USD 312 - Haven	800	5	\$41,669,408
USD 356 - Conway Springs	600	44	-
USD 375 - Circle	1,917	16	-
USD 385 - Andover	10,072	21	-
USD 439 - Sedgwick	810	3	\$30,000,000
USD 440 - Halstead / Bentley	799	8	-
Sumner County			
USD 353 - Wellington	1,561	1	1
USD 356 - Conway Springs	600	44	-





Participating USD Information

School District	Estimated Enrollment (2018)	Number of Offices and Schools (2018)	Total Insured Valuation of Structures (2018)
USD 357 - Belle Plaine	630	2	\$39,650,000
USD 358 - Oxford	443	-	-
USD 359 - Argonia	169	23	-
USD 360 - Caldwell	275	6	\$40,000,000
USD 509 - South Haven	179	24	-
Wellington Christian Academy	115	1	\$4,000,000

Source: Kansas State Department of Education

-: Information unavailable

Many participating counties are served by at least one institution of higher learning. The following table presents participating college and university enrollment information, the number of school structures, and the insured valuation of these structures and contents within (if information is available).

Participating College and University Information

School District	Estimated Enrollment (2018)	Number of Offices and Schools (2018)	Total Insured Valuation of Structures (2018)
Butler County			
Butler County Community College	8,561	31	\$169,000,000
Cowley County			
Cowley County Community College	3,500	24	-
Harvey County			
Bethel College	444	15	\$30,000,000
Hesston College	450	23	\$44,000,000
McPherson County			
Bethany College			
Central Christian College of Kansas	-	-	-
Hutchinson Community College	-	-	-
McPherson College			
Marion County			
Tabor College			
Reno County			
Hutchinson Community College	8,771	60-	\$118,000,000-
Sedgwick County			
KU School of Medicine, Wichita	-	-	-
Wichita State University	-	-	-

Source: Kansas State Department of Education

-: Information unavailable

3.8 – Regional Land Use

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





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

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

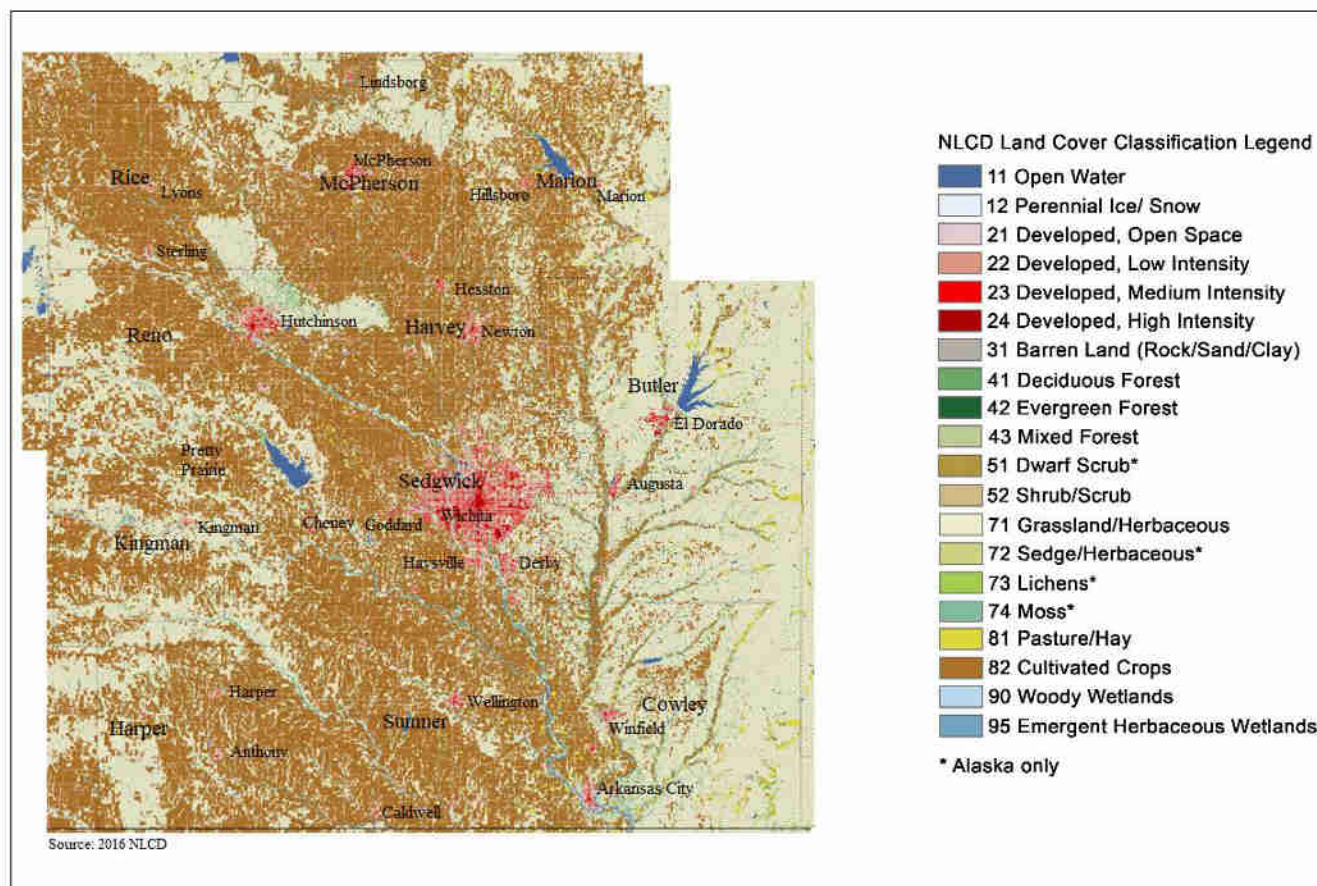
- Unrestricted residential growth which can increase a population's exposure to identified hazard prone areas
- Rapid, unchecked development that can put a strain on a community's vulnerable resources such as its energy infrastructure
- Residential development constructed quickly and inexpensively to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

The National Land Cover Database (NLDC) 2061 Land Cover Map illustrates land usage. As indicated by the following NLDC map, large areas of the region are grasslands and cultivated crops. Additionally, each county has at least one area of low to high intensity development corresponding with larger cities.





Kansas Region G Land Use Map



3.9 – Regional Agricultural Data

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

The following tables present information from the USDA National Agricultural Statistics Service 2012 Census of Agriculture (the latest available data) relating to farm totals, agricultural acreage and livestock (cattle, hogs and pigs) for Kansas Region G.

Kansas Region G Farm Data, 2012 Census of Agriculture

Jurisdiction	Number of Farms	Farm Acreage	Percent of Acreage as Cropland	Percent of Acreage as Pastureland	Percent of Acreage as Other Uses	Market Value of Products Sold (Yearly)
Butler	1,353	768,149	38.5%	56.9%	4.5%	\$282,338,000
Cowley	990	574,614	46.3%	49.0%	4.7%	\$108,976,000
Harper	495	506,006	65.0%	31.1%	3.9%	\$109,644,000
Harvey	744	339,584	87.5%	8.4%	4.0%	\$161,716,000





Kansas Region G Farm Data, 2012 Census of Agriculture

Jurisdiction	Number of Farms	Farm Acreage	Percent of Acreage as Cropland	Percent of Acreage as Pastureland	Percent of Acreage as Other Uses	Market Value of Products Sold (Yearly)
Kingman	808	542,010	60.8%	35.2%	4.0%	\$103,188,000
McPherson	1,142	571,577	71.6%	23.4%	5.0%	\$208,482,000
Marion	981	596,296	57.2%	37.9%	4.9%	\$151,478,000
Reno	1,633	789,525	74.9%	21.1%	4.0%	\$267,318,000
Rice	535	457,603	78.9%	18.2%	2.9%	\$258,181,000
Sedgwick	1,344	486,723	81.4%	13.8%	4.9%	\$148,484,000
Sumner	1,096	719,611	82.4%	13.2%	4.4%	\$168,713,000

Source: United States Department of Agriculture National Agricultural Statistics Service

Kansas Region G Livestock Data, 2012 Census of Agriculture

County	Cattle	Hogs and Pigs
Butler	133,113	41,627
Cowley	47,793	-
Harper	57,025	-
Harvey	35,702	12,989
Kingman	43,721	-
McPherson	39,083	16,939
Marion	93,938	6,974
Reno	79,307	14,191
Rice	48,298	13,437
Sedgwick	29,784	1,990
Sumner	29,132	1,076

Source: United States Department of Agriculture National Agricultural Statistics Service

:- Data not reported

3.10 – Regional Development Trends

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

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

The University of Kansas Institute for Policy and Social Research developed population projections for the region using historical and trend data. Indications are the region will experience steady growth in the population through the year 2044. This information is highly speculative but can assist with determining potential increased vulnerability to identified hazards.

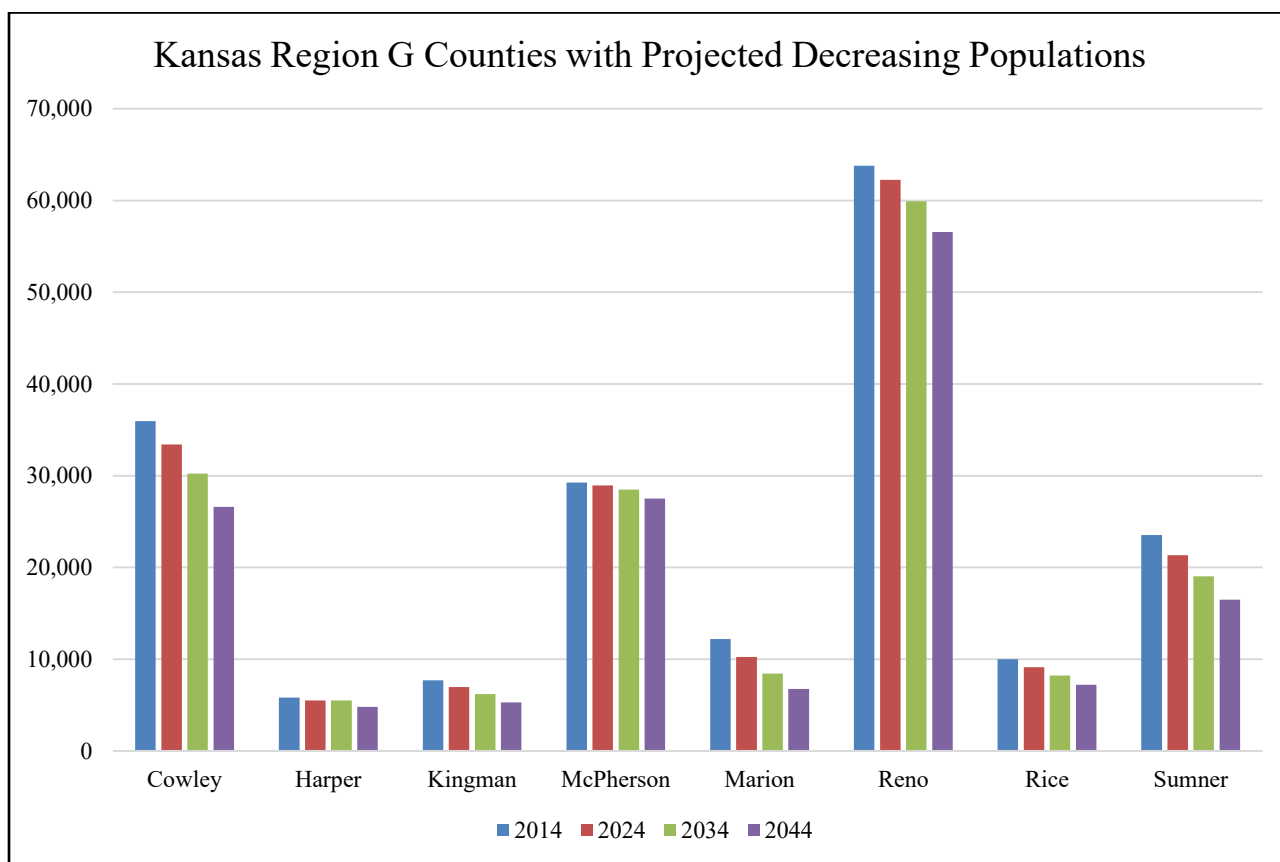


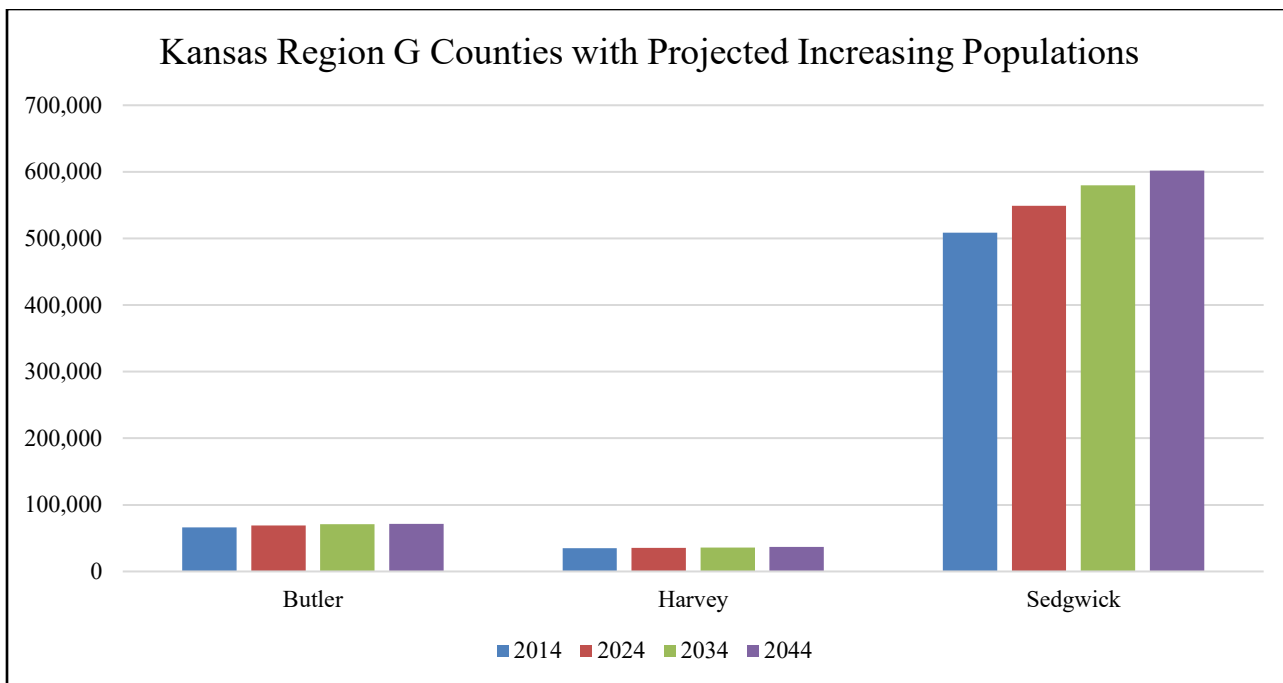


Kansas Region G Population Projections Through 2044

County	2014	2024	2034	2044	Projected Growth Percentage Through 2044
Butler	66,227	68,810	71,101	71,623	8.1%
Cowley	35,963	33,393	30,215	26,608	-26.0%
Harper	5,818	5,511	5,516	4,789	-17.7%
Harvey	34,820	35,501	35,925	35,793	2.8%
Kingman	7,698	6,972	6,195	5,296	-31.2
McPherson	29,241	28,939	28,489	27,504	-5.9
Marion	12,208	10,257	8,443	6,763	-44.6
Reno	63,794	62,246	59,924	56,577	-11.3
Rice	10,015	9,139	8,210	7,202	-28.1
Sedgwick	508,803	548,943	579,795	601,711	18.3
Sumner	23,528	21,325	19,027	16,495	-29.9

Source: University of Kansas Institute for Policy and Social Research





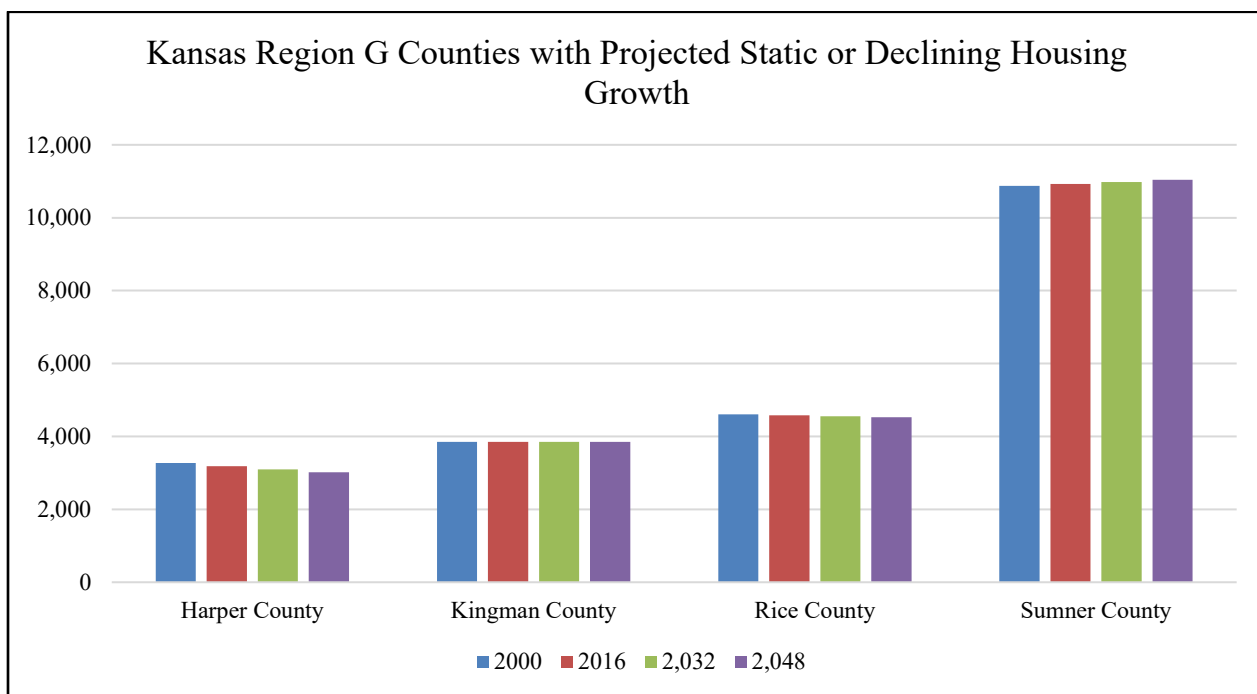
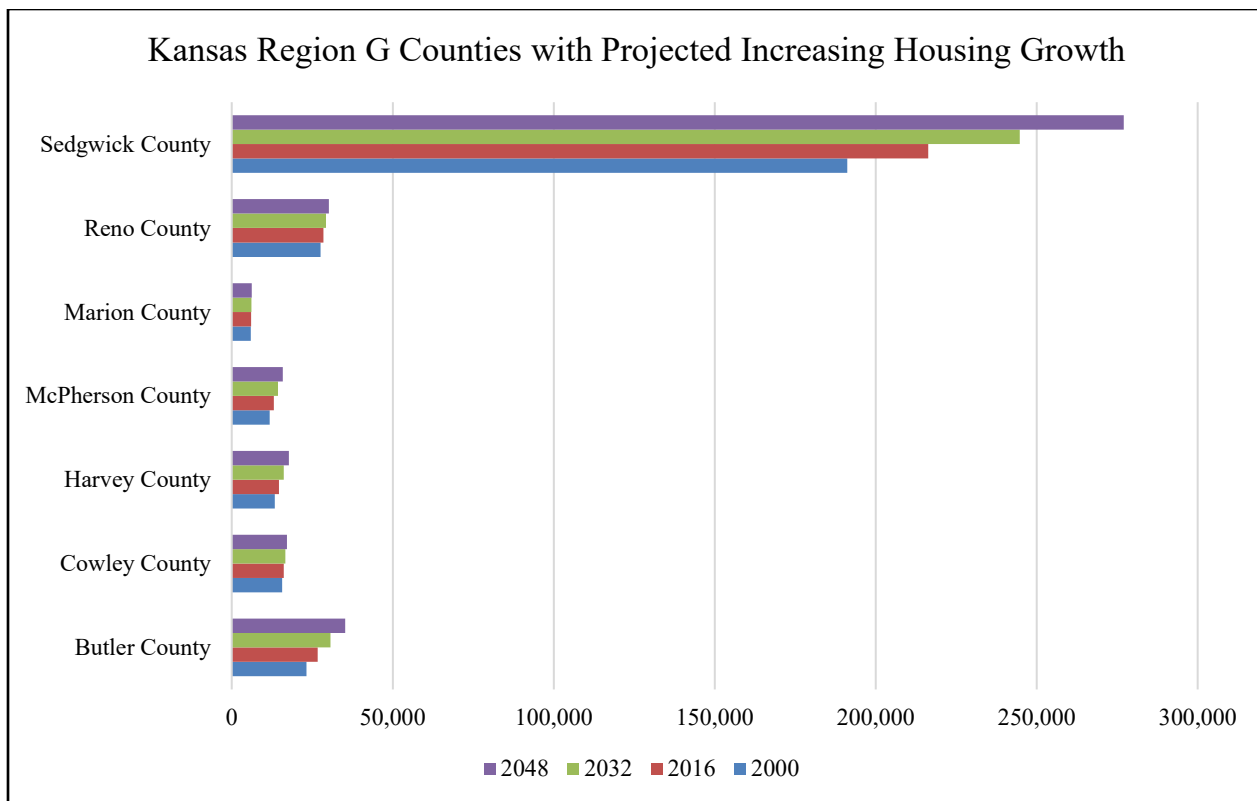
US Census Bureau data was used to develop housing projections for the region using historical and trend data. Indications are the region will experience steady to static growth in housing through the year 2051. This information is highly speculative but can assist with determining potential increased vulnerability to identified hazards.

Kansas Region G Housing Projections Through 2051

County	2000	2017	2034	2051	Projected Growth Percentage Through 2051
Butler	23,176	26,657	30,661	35,266	15.0%
Cowley	15,673	16,155	16,652	17,164	3.1%
Harper	3,270	3,182	3,096	3,013	-2.7%
Harvey	13,378	14,695	16,142	17,731	9.8%
Kingman	3,852	3,852	3,852	3,852	0.00%
McPherson	11,830	13,049	14,394	15,877	10.3%
Marion	5,882	5,984	6,088	6,193	1.7%
Reno	27,625	28,441	29,281	30,146	3.0%
Rice	4,609	4,582	4,555	4,528	-0.6%
Sedgwick	191,133	216,296	244,772	276,996	13.2%
Sumner	10,877	10,930	10,983	11,037	0.5%

Source: US Census Bureau





FEMA’s loss estimation software HAZUS data was used to developed property valuation projections for the region using historical and trend data. Indications are the region will experience steady growth in the property valuation through the year 2040. This information is highly speculative but can assist with determining potential increased vulnerability to identified hazards.

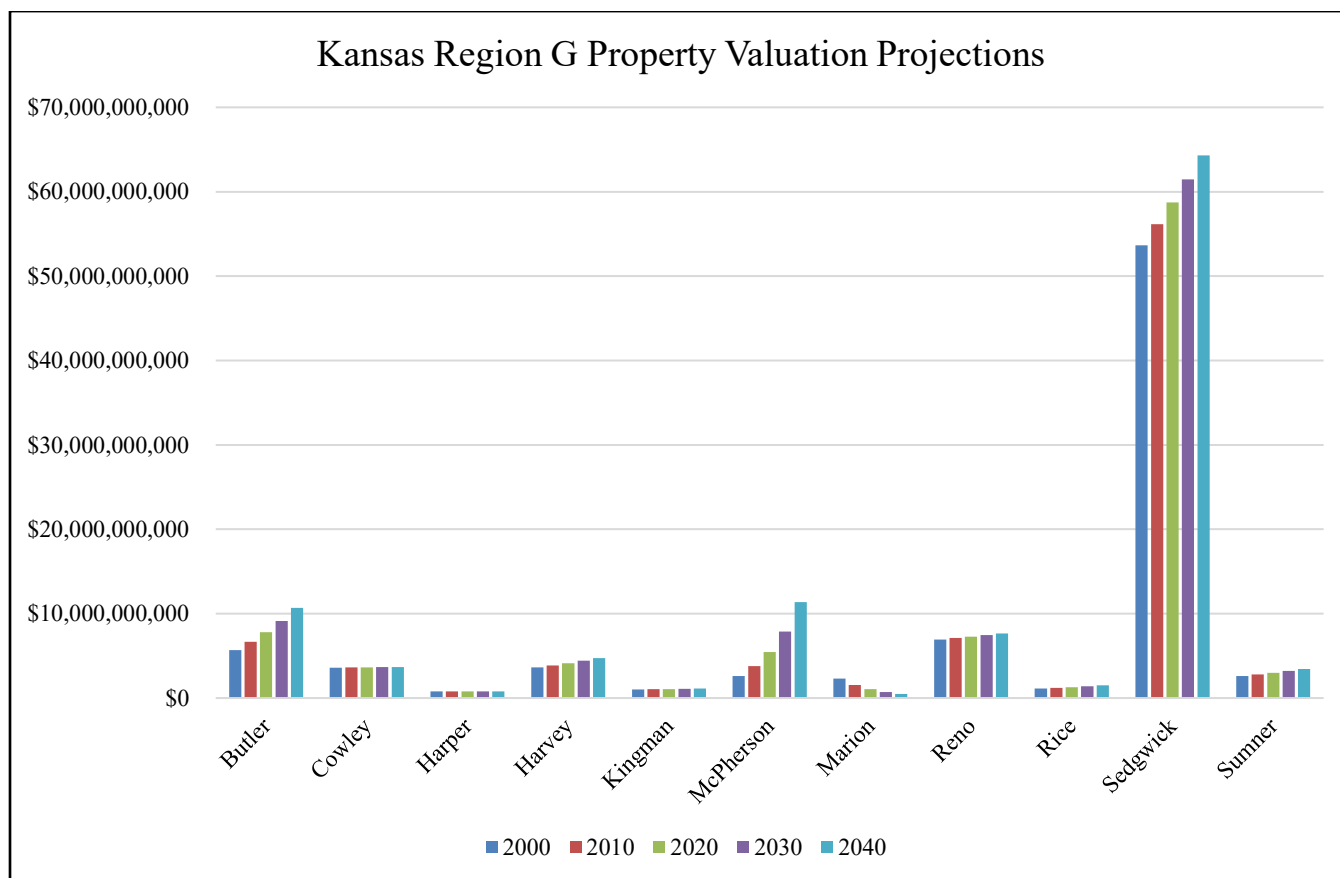




Kansas Region G Property Valuation Projections Through 2040

County	2010	2020	2030	2040	Projected Growth Percentage Through 2040
Butler	\$6,664,946,000	\$7,802,426,009	\$9,134,035,239	\$10,692,904,956	17.1%
Cowley	\$3,626,310,000	\$3,644,090,758	\$3,661,958,701	\$3,679,914,254	0.5%
Harper	\$779,563,000	\$778,511,420	\$777,461,259	\$776,412,515	-0.1%
Harvey	\$3,863,763,000	\$4,128,953,390	\$4,412,345,191	\$4,715,187,664	6.9%
Kingman	\$1,041,969,000	\$1,065,347,008	\$1,089,249,533	\$1,113,688,345	2.2%
McPherson	\$3,766,723,000	\$5,444,227,834	\$7,868,807,107	\$11,373,169,376	44.5%
Marion	\$1,538,178,000	\$1,032,676,317	\$693,301,020	\$465,456,887	-32.9%
Reno	\$7,100,181,000	\$7,280,997,397	\$7,466,418,546	\$7,656,561,713	2.5%
Rice	\$1,198,508,000	\$1,292,806,174	\$1,394,523,694	\$1,504,244,311	7.9%
Sedgwick	\$56,135,645,000	\$58,732,172,516	\$61,448,801,176	\$64,291,086,200	4.6%
Sumner	\$2,800,707,000	\$3,003,889,183	\$3,221,811,573	\$3,455,543,523	7.3%

Source: HAZUS



United States Department of Agriculture National Agricultural Statistics Service data was used to develop agricultural projections for the region using historical and trend data. Indications are the region will experience steady decline in agricultural activity through the year 2022 (the volatility of the agricultural





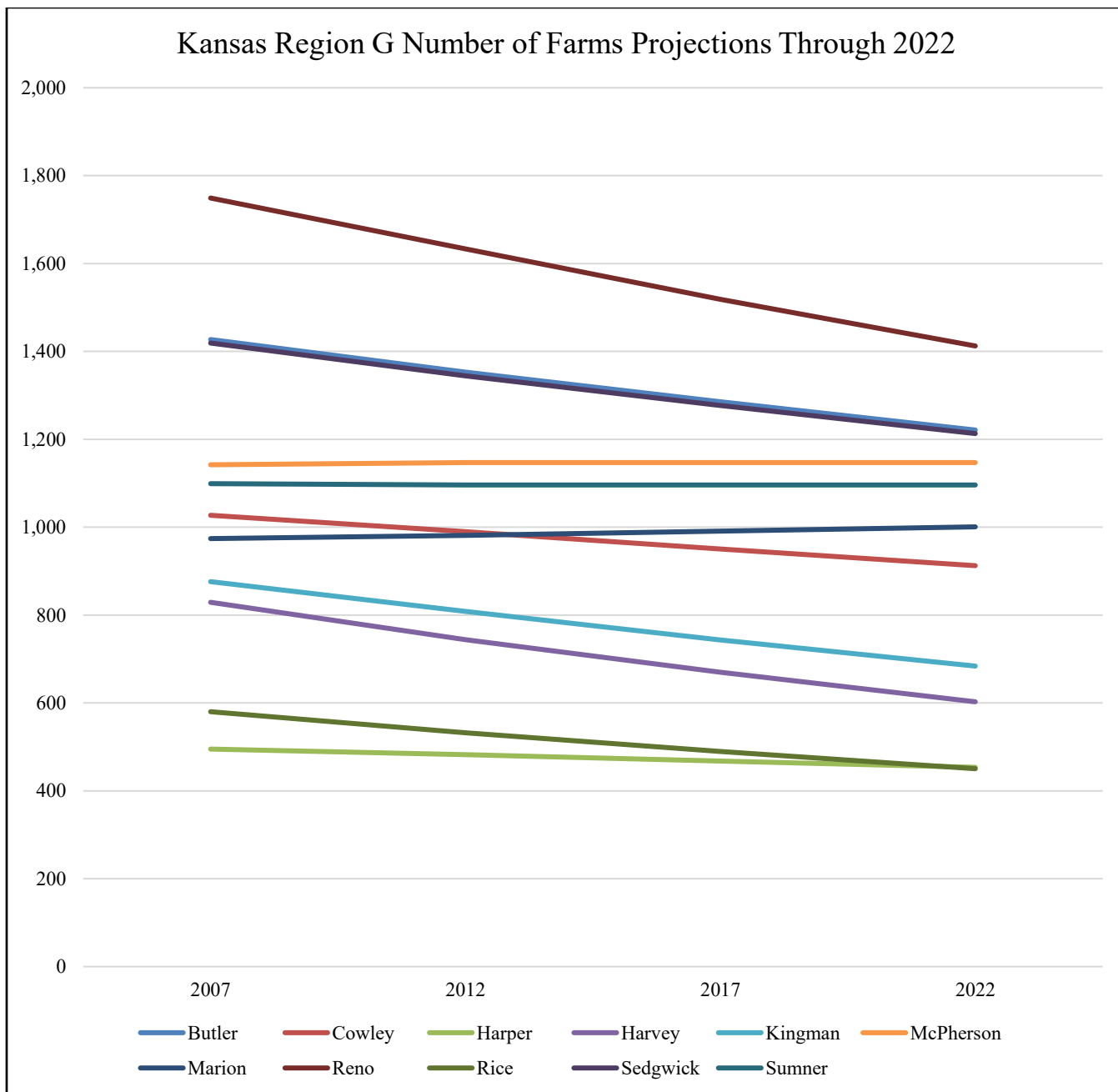
sector dictates projections beyond this would be not viable). This information is highly speculative but can assist with determining potential increased vulnerability to identified hazards.

Kansas Region G Number of Farms Data Projections Through 2022

County	Number of Farms, 2007	Number of Farms, 2012	Number of Farms, 2017	Number of Farms, 2022	Projected Growth Percentage Through 2022
Butler	1,427	1,353	1,285	1,221	-14.4%
Cowley	1,027	990	950	912	-11.2%
Harper	495	482	468	454	-8.3%
Harvey	829	744	670	603	-27.3%
Kingman	876	808	743	684	-21.9%
McPherson	1,142	1,147	1,147	1,147	0.4%
Marion	974	981	991	1,001	2.8%
Reno	1,749	1,633	1,519	1,412	-19.3%
Rice	580	532	489	450	-22.4%
Sedgwick	1,419	1,344	1,277	1,213	-14.5%
Sumner	1,099	1,096	1,096	1,096	-0.3%

Source: United States Department of Agriculture National Agricultural Statistics Service





Kansas Region G Farm Acreage Data Projections, 2002 to 2022

County	Farm Acreage, 2007	Farm Acreage, 2012	Farm Acreage, 2017	Farm Acreage, 2022	Projected Growth Percentage Through 2022
Butler	787,290	768,149	752,786	737,730	-6.3%
Cowley	575,584	574,614	574,614	574,614	-0.2%
Harper	481,291	506,006	531,306	557,872	15.9%
Harvey	338,598	339,584	339,584	339,584	0.3%
Kingman	546,231	542,010	536,590	531,224	-2.7%

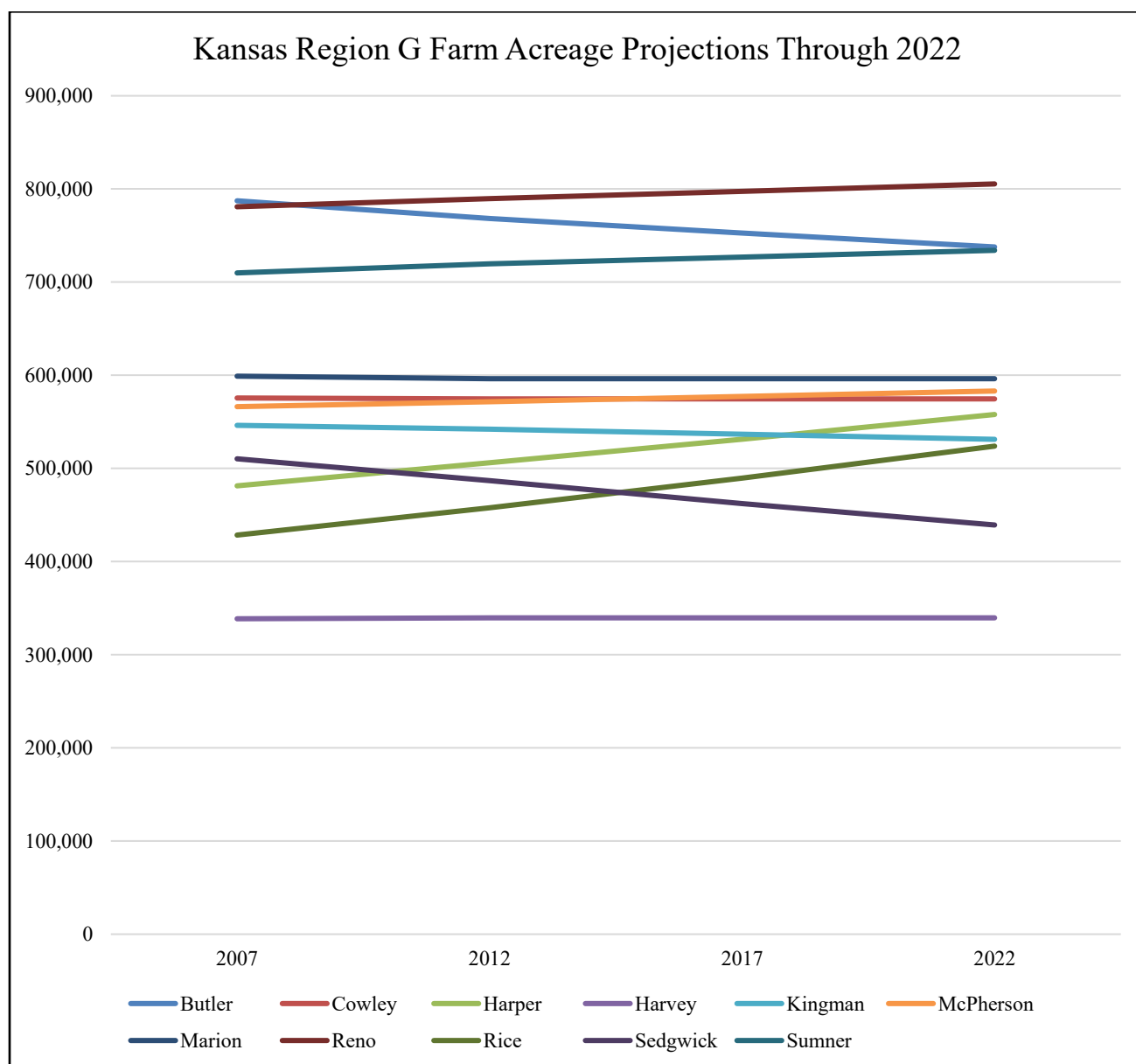




Kansas Region G Farm Acreage Data Projections, 2002 to 2022

County	Farm Acreage, 2007	Farm Acreage, 2012	Farm Acreage, 2017	Farm Acreage, 2022	Projected Growth Percentage Through 2022
McPherson	566,309	571,577	577,293	583,066	3.0%
Marion	599,022	596,296	596,296	596,296	-0.5%
Reno	780,893	789,525	797,420	805,394	3.1%
Rice	428,422	457,603	489,635	523,910	22.3%
Sedgwick	510,308	486,723	462,387	439,268	-13.9%
Sumner	709,865	719,611	726,807	734,075	3.4%

Source: United States Department of Agriculture National Agricultural Statistics Service



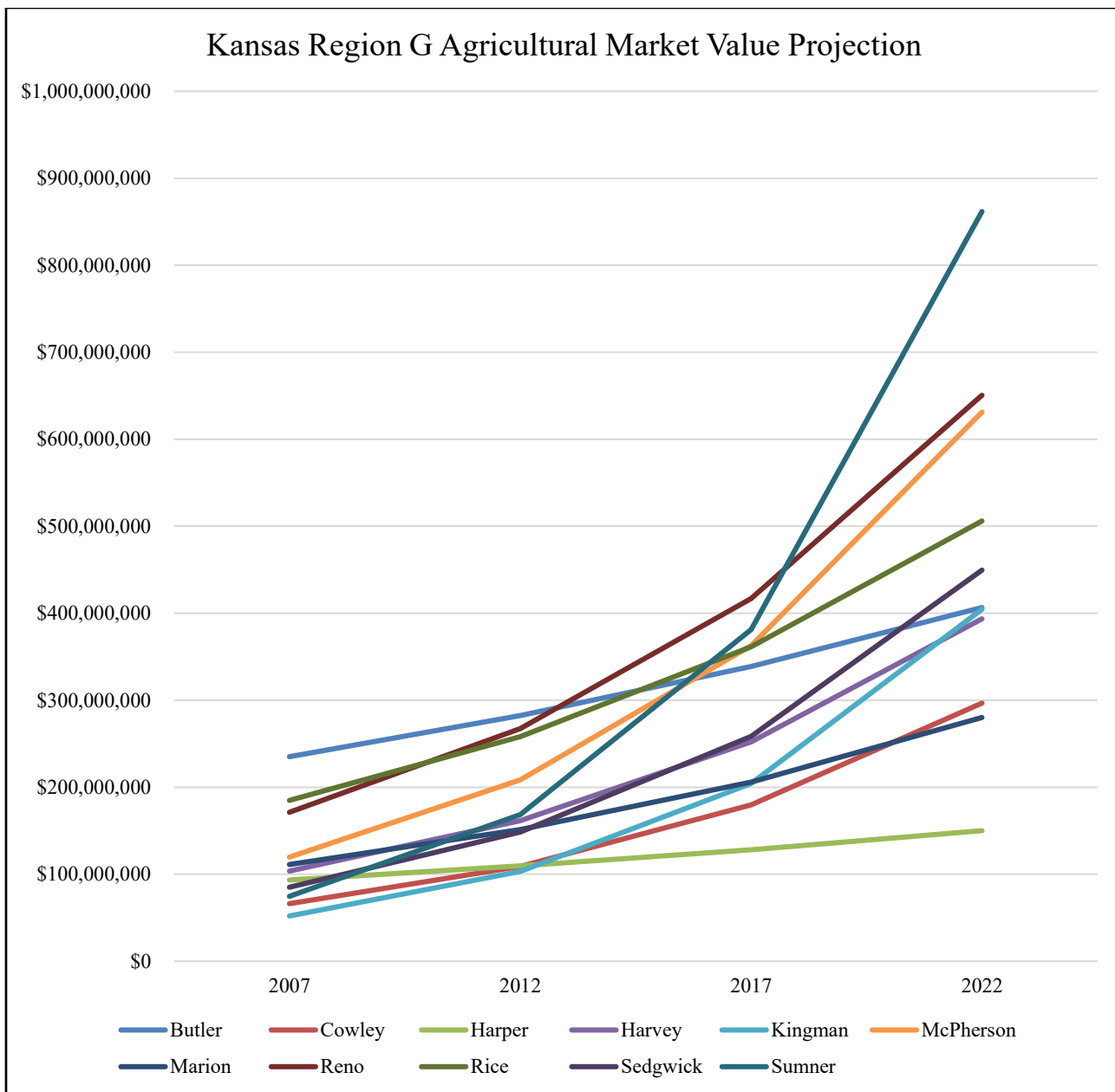


Kansas Region G Agricultural Market Value Data Projections, 2002 to 2022

County	Market Value, 2007	Market Value, 2012	Market Value, 2017	Market Value, 2022	Projected Growth Percentage Through 2022
Butler	\$235,138,000	\$282,338,000	\$338,805,600	\$406,566,720	72.9%
Cowley	\$66,214,000	\$108,976,000	\$179,810,400	\$296,687,160	348.1%
Harper	\$93,424,000	\$109,644,000	\$128,283,480	\$150,091,672	60.7%
Harvey	\$103,676,000	\$161,716,000	\$252,276,960	\$393,552,058	279.6%
Kingman	\$52,051,000	\$103,188,000	\$204,312,240	\$404,538,235	677.2%
McPherson	\$119,750,000	\$208,482,000	\$362,758,680	\$631,200,103	427.1%
Marion	\$111,206,000	\$151,478,000	\$206,010,080	\$280,173,709	151.9%
Reno	\$171,249,000	\$267,318,000	\$417,016,080	\$650,545,085	279.9%
Rice	\$184,927,000	\$258,181,000	\$361,453,400	\$506,034,760	173.6%
Sedgwick	\$85,109,000	\$148,484,000	\$258,362,160	\$449,550,158	428.2%
Sumner	\$74,683,000	\$168,713,000	\$381,291,380	\$861,718,519	1053.8%

Source: United States Department of Agriculture National Agricultural Statistics Service





3.11 – Regional Economic Activity Patterns

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

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





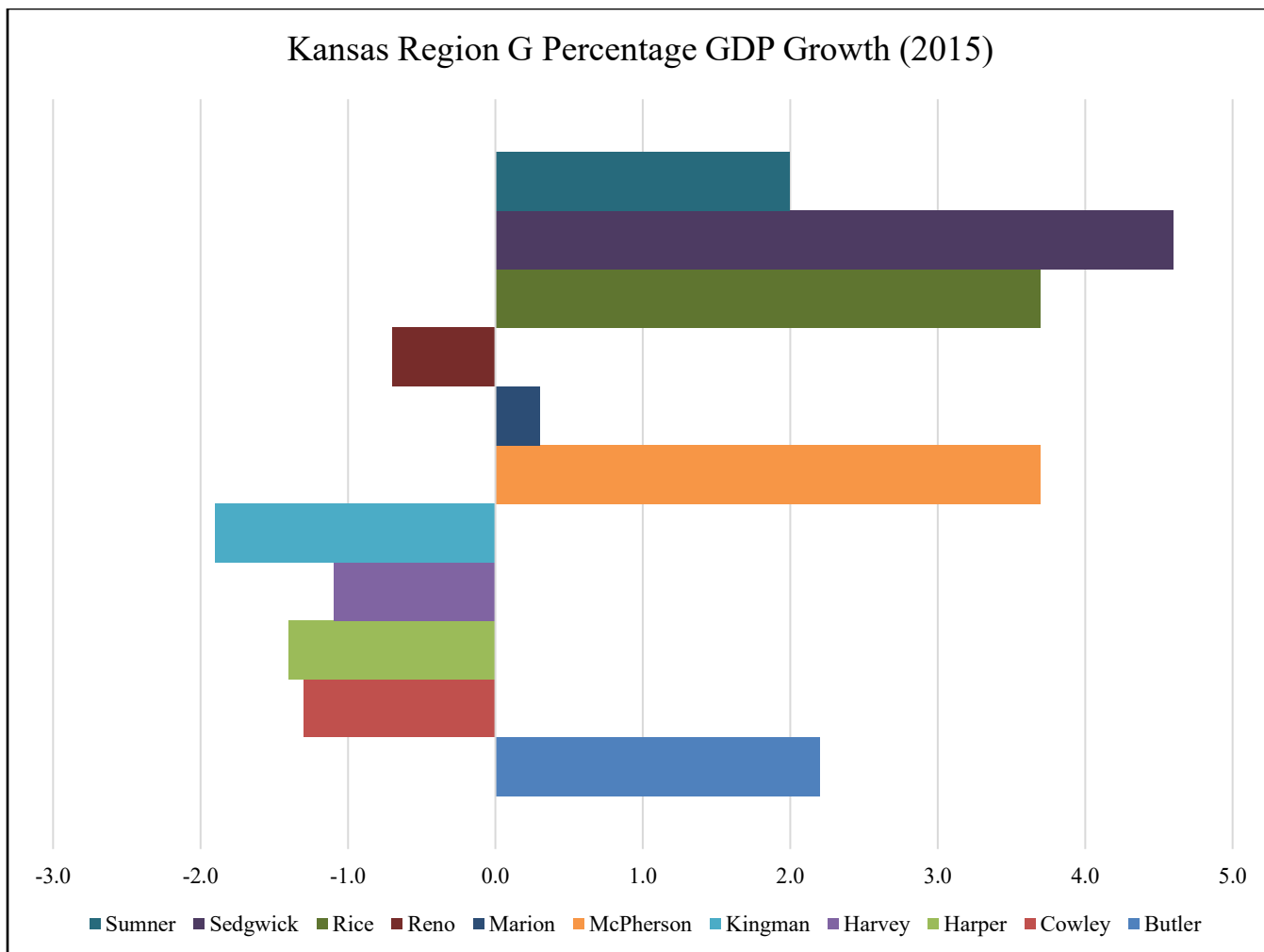
Kansas Region G Gross Domestic Product, 2012 to 2015

County	2012	2013	2014	2015	State Rank in 2015 (out of 105)
Butler	\$1,538,291,000	\$1,599,391,000	\$1,545,827,000	\$1,579,974,000	12
Cowley	\$1,079,168,000	\$1,020,370,000	\$1,017,949,000	\$1,005,200,000	23
Harper	\$296,881,000	\$372,642,000	\$352,518,000	\$347,665,000	45
Harvey	\$1,018,359,000	\$1,112,220,000	\$1,098,908,000	\$1,086,587,000	22
Kingman	\$243,079,000	\$255,190,000	\$227,002,000	\$222,777,000	62
McPherson	\$1,404,845,000	\$1,369,258,000	\$1,295,565,000	\$1,343,427,000	15
Marion	\$328,924,000	\$338,150,000	\$284,921,000	\$285,736,000	51
Reno	\$1,976,522,000	\$2,089,551,000	\$2,100,157,000	\$2,085,597,000	10
Rice	\$365,248,000	\$390,400,000	\$357,522,000	\$370,657,000	44
Sedgwick	\$25,498,577,000	\$23,627,772,000	\$24,877,336,000	\$26,029,309,000	2
Sumner	\$608,166,000	\$606,173,000	\$601,533,000	\$613,660,000	28

Source: Bureau of Economic Analysis

The following table, using data from the Bureau of Economic Analysis, details the percentage GDP growth rate for 2015 (the latest available data) for each county. The data indicates that five Kansas Region G counties, Cowley, Harper, Harvey, Kingman and Reno, have shown a decrease in GDP from 2012 to 2015 (the latest available data).

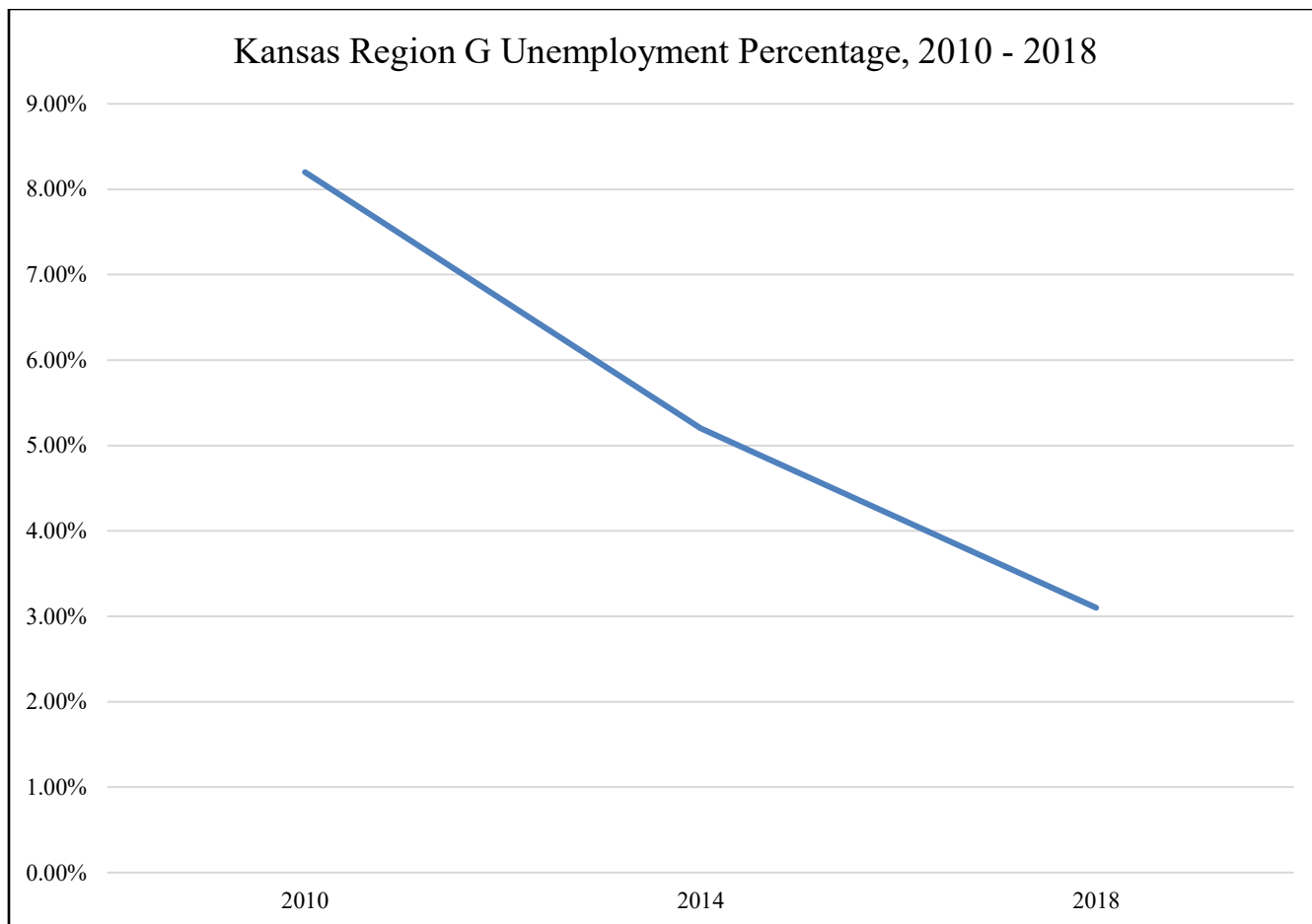




Source: Bureau of Economic Analysis

The average Kansas Region G unemployment rate of 3.1% in 2018 was lower than the average State of Kansas unemployment rate of 3.4%. The following chart details the regional unemployment rate, using data from the St. Louis Federal Reserve, for the period 2010 through the end of 2018.





Source: St. Louis Federal Reserve

3.12 – Climate Change

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

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

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

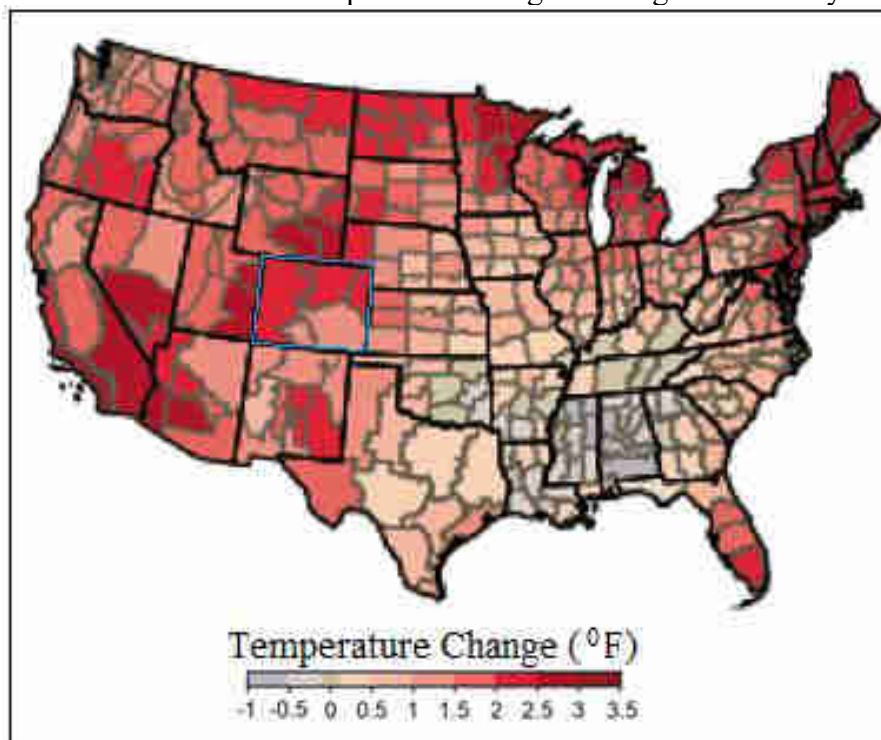




According to the United State Environmental Protection Agency (USEPA) “What Climate Change Means for Kansas” (August 2016), “In the past century, most of the state has warmed by at least half a degree (F). The soil is becoming drier. Rainstorms are becoming more intense, and floods are becoming more severe. Warming winters and changes in the timing and size of rainfall events have altered crop yields. In the coming decades, summers are likely to become increasingly hot and dry, creating problems for agriculture and possibly human health.”

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

USEPA Modeled Temperature Changes During Last Century



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

Concerning potential impacts on rainfall, flooding, and drought, the report states “Although summer droughts are likely to become more severe, floods may also intensify. During the last 50 years, the amount





of rain falling during the wettest four days of the year has increased about 15 percent in the Great Plains. River levels associated with flooding have increased in eastern Kansas. Over the next several decades, the amount of rainfall during the wettest days of the year is likely to continue to increase, which would increase flooding.”

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

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



4.0 Hazard Profiles

4.1 – Introduction

The ultimate purpose of this HMP is to minimize the loss of life and property. To accomplish this, all relevant hazards and vulnerabilities the region faces have been identified. Once this identification has been completed, Kansas Region G and all participating jurisdictions can use the accumulated data to assist in the development of and prioritization of mitigation action to defend against these potential risks.

4.2 – Methodology

Each hazard that has historically, or could potentially, affect Kansas Region G is reviewed and discussed in detail. In general, each hazard details the following information:

- Location and Extent
- Previous Occurrences
- Hazard Probability Analysis
- Vulnerability Assessment

In addition, to ensure compliance with EMAP standards, a hazard consequence analysis was conducted for each hazard detailing the following potential impacts:

- Health and Safety of the Public
- Health and Safety of Responders
- Continuity of Operations; Property, Facilities, and Infrastructure
- Environment
- Economic Conditions
- Public Confidence in the Jurisdiction’s Governance.

4.3 – Declared Federal Disasters

Historical events of significant magnitude or impact can result in a Secretarial or Presidential Disaster Declaration. The MPC reviewed the historical federal disaster declarations to assist in hazard identification. Since the approval of the previous Kansas Region G hazard mitigation plan in 2013, there have been two federal disaster declarations for the region, as follows:

- DR 4287: Declared on October 20, 2016 – Severe Storms and Flooding
- DR 4230: Declared on July 20, 2015 – Severe Storms, Tornadoes, Straight-Line Winds and Flooding

In addition, since the 2013 plan, there has been one Fire Management Assistance Declaration, as follows:

- FM 5170: Declared on March 5, 2017 – Kansas Highland Hills Fire

For the 20-year period from 2009 to 2018, Kansas Region G has had 20 federal disaster declarations. These declarations included the following identified hazards:





- Flooding
- Severe Storms
- Straight-Line Winds
- Severe Winter Storms
- Tornadoes

Information on past declared disasters are presented in the subsequent, relevant sections.

4.4 – Identified Potential Hazards

Based on the above data, and data contained in previous mitigation plans, Kansas Region G’s MPC met to discuss previously identified hazards and deliberate on any changes or additions. Based on this review, no changes, additions or subtractions were indicated for any identified hazard. Additionally, a thorough and comprehensive revision of data for each hazard was completed as part of this plan update.

The MPC confirmed sixteen natural hazards that may impact Kansas Region G, as listed below:

- Agricultural Infestation
- Dam/Levee Failure
- Drought
- Earthquake
- Expansive Soils
- Extreme Temperatures
- Flood
- Hailstorm
- Land Subsidence
- Landslide
- Lightning
- Soil Erosion and Dust
- Tornado
- Wildfire
- Wind Storm
- Winter Storm

Additionally, the MPC confirmed six man-made hazards that may impact Kansas Region G, as listed below:

- Civil Disorder
- Hazardous Materials Incident
- Major Disease Outbreak
- Radiological Event
- Terrorism/Agri-Terrorism
- Utility/Infrastructure Failure





Based on discussion with the MPC, a lack of identified risk or history, and geographic improbability, numerous FEMA identified hazards such as coastal erosion, hurricane, tsunami were not included in the scope of this plan.

4.5 – Hazard Planning Significance

Previous planning efforts used the calculated priority risk index (CPRI) methodology to assign a planning significance to each of the identified hazards. CPRI considers the following four elements of risk:

- Probability of an Impactful Event
- Magnitude/Severity
- Warning Time
- Duration

Each element was then assigned a number based on pre-established rating parameters. The following tables provide a summary for each of the risk elements, including a rationale behind each numerical rating.

CPRI Element Ratings

CPRI Element	Rating Number and Definition			
	1	2	3	4
Probability	Unlikely (10% chance of occurrence)	Occasional (20% chance of occurrence)	Likely (33% chance of occurrence)	Highly Likely (100% chance of occurrence)
Magnitude	Negligible (Minor injuries and <10% of property severely damaged)	Limited (Multiple injuries and 10-25% of property severely damaged)	Critical (Multiple disabling injuries and 25-50% of property severely damaged)	Catastrophic (Multiple deaths and 50% of property severely damaged)
Warning Time	24+ hours	12-24 hours	6-12 hours	<6 hours
Duration	< 6 hours	< 1 day	< 1 week	1 week +

Using the rankings, the following weighted formula was used to determine each hazard’s CPRI:

$$(\text{Probability} \times 0.45) + (\text{Magnitude/Severity} \times 0.30) + (\text{Warning Time} \times 0.15) + (\text{Duration} \times 0.10)$$

Each planning significance category was assigned a CPRI range, with a higher score indicating greater planning criticality. The following table details planning significance CPRI ranges.

CPRI Planning Significance Range

Planning Significance	CPRI Range	
	Low CPRI	High CPRI
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 following table shows the CPRI ratings for Kansas Region G.

Kansas Region G Natural Hazard CPRI Planning Significance

Hazard	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Agricultural Infestation	2.0	3.0	1.0	4.0	2.4
Dam and Levee Failure	1.5	2.0	2.5	3.0	2.0
Drought	3.0	2.0	1.0	4.0	2.5
Earthquake	1.5	1.0	4.0	1.0	1.7
Expansive Soils	1.5	1.0	1.0	4.0	1.5
Extreme Temperature	3.0	2.0	1.5	3.5	2.5
Flood	3.5	3.0	3.0	3.0	3.2
Hailstorm	4.0	2.0	3.5	1.0	3.0
Land Subsidence	1.5	1.0	1.0	2.5	1.4
Landslide	1.0	1.0	3.0	1.0	1.3
Lightning	2.0	1.5	3.0	1.0	1.9
Soil Erosion & Dust	2.0	1.5	2.0	3.0	2.0
Tornado	4.0	3.5	4.0	1.5	3.6
Wildfire	3.5	2.0	4.0	3.0	3.1
Windstorm	4.0	2.0	3.5	2.5	3.2
Winter Storm	4.0	2.5	2.5	3.0	3.2

Kansas Region G Man-Made Hazard CPRI Planning Significance

Hazard	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Civil Disorder	1.0	2.0	2.0	1.0	1.5
Hazardous Materials Event	2.0	2.0	4.0	2.0	2.3
Major Disease Outbreak	1.5	2.0	1.0	4.0	1.8
Radiological Event	1.0	1.0	4.0	4.0	1.8
Terrorism, Agri-Terrorism	1.0	2.0	3.5	2.0	1.8
Utility / Infrastructure Failure	3.0	2.0	3.5	3.0	2.8

In general, the average CPRI for each identified hazard remained similar to the calculated CPRI for the 2013 planning effort, where individual county rankings were combined into a regional ranking. Notable changes for calculated CPRIs include the Civil Disorder, Radiological Event and Terrorism/Agri-Terrorism CPRIs being lowered due to no reported events and a negligible potential of occurrence.





4.6 – Hazard Profiles

44 CFR 201.6(c)(2)(i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

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.

With each update of this plan, new information will be incorporated to provide for better evaluation and prioritization of the hazards.

The following hazards are presented in alphabetical order, and not by planning significance, for ease of reference. Additionally, man-made hazards are presented, again in alphabetical order, after natural hazards.





4.7 – Agricultural Infestation

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.

4.7.1 –Location and Extent

The entire planning area may be affected by agricultural infestation. While rural areas within the region are more susceptible to crop and livestock infestation, urban and suburban areas are also at risk due to landscaping, urban gardens and parks, all of which add value to homes and communities, may be susceptible to damage or loss. The magnitude and severity of an agricultural infestation is relative to the type of infestation. A foreign animal disease like foot and mouth could potentially cause the economy to crumble, whereas an infestation of fleas would be manageable. The MPC has determined that the magnitude of this hazard in the planning area would be limited, as most infestations are manageable in scope.

Animal Disease

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 (BSE) 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. It would affect not only farmers, ranchers, and butchers, but also support and related industries

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.





Crop Pests and Diseases

Many factors influence disease development in plants, including hybrid/variety genetics, plant growth stage at the time of infection, weather (e.g., temperature, rain, wind, hail, etc.), single versus mixed infections, and genetics of the pathogen populations.

Field crops in the region are also subject to various types of infestation. According to KDA, Plant Protection and Weed Control Division, the following are the highest risk crop pests to this region and the potentially impacted crop:

- Aspergillus Ear Rot (Alfatoxin): Corn
- Austro-Asian Rust: Soybean
- Black Stem Rust, Blast: Wheat
- South American strains, Stripe Rust, Leaf Rust, Karnal: Wheat

Infestation is not only a risk to crops in the field, but insect infestation can also cause major losses to stored grain. It is estimated that damage to stored grain by the lesser grain borer, rice weevil, red flour beetle, and rusty grain beetle costs the United States about \$500 million annually.

Tree Pests

According to the KDA, Plant Protection and Weed Control Division, the following are the highest risk plant pests by host to Kansas Region G:

- Emerald Ash Borer (EAB): Ash Trees
- Asian Longhorned Beetle: Maple, Birch, Willow, Mimosa, Ash, Sycamore & Poplar Trees
- Thousand Cankers: Walnut Trees

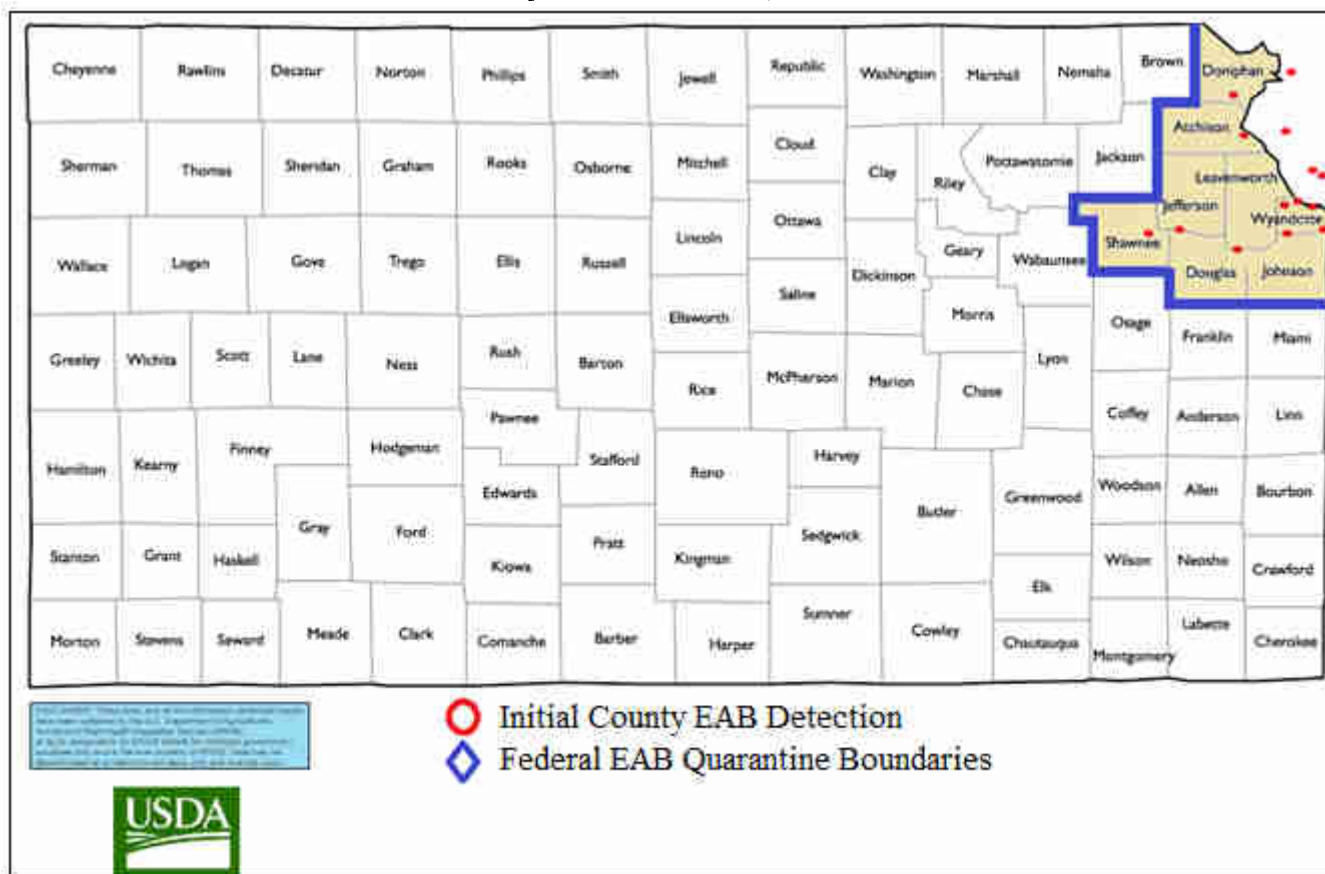
As of this plan, neither the Asian Longhorned Beetle nor Thousand Cankers have been detected in Kansas.

As of this plan, the EAB has been discovered in numerous Kansas counties, including all three Kansas Region G counties. The following map from the USDA shows the Federal EAB Quarantine area for the State of Kansas, and Kansas Region G.





Initial County EAB Detections, December 2018



Wildlife Pests

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. Also of concern are the following wildlife diseases:

- Chronic Wasting Disease (CWD), affecting deer and captive elk populations.
- Hemorrhagic Disease (HD), affecting white-tailed deer

There have been 48 positive cases of CWD found in Kansas since surveillance started in 1996 and regular occurrences of HD seasonally in late summer and fall. These diseases can seriously damage the populations of the captive deer and elk farms and the wild deer populations but also affect the annual \$350 million-dollar regional and statewide hunting economy.

4.7.2 – Previous Occurrences

There have been no major reported or recorded agricultural infestations, above what is considered a normal level, for Kansas Region G.





The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data, from the period 2015-2018 allows us to quantify the monetary and acreage impact of infestation on the agricultural sector.

USDA Risk Management Agency Cause of Loss Indemnities, Agricultural Infestation

County	USDA Crop Loss, 2015-2018	Acres Impacted	Number of Claims
Butler	\$23,726	245	7
Cowley	\$149,310	1,160	10
Harper	\$174,665	2,024	10
Harvey	\$123,964	2,344	12
Kingman	\$128,543	1,496	13
McPherson	\$350,973	6,000	20
Marion	\$51,729	1,042	6
Reno	\$329,450	3,832	22
Rice	\$227,972	2,758	16
Sedgwick	\$397,722	4,043	18
Sumner	\$429,851	4,921	22

Source: USDA

4.7.3 – Hazard Probability Analysis

Kansas Region G experiences agricultural losses every year because of insects, vermin or diseases that impact plants and livestock. Data from the UDSA Risk Management Agency indicates that there has been at least one claimed incident of agricultural infestation for Kansas Region G for the period 2015 through 2018. Using the binomial probability equation (number of years with an event divided by total number of years in reporting period) we derive a probability 100% of a reportable agricultural infestation event in a given year. However, the large majority of events are expected to be small and limited in scope.

4.7.4 – Vulnerability Assessment

Regional populations and facilities are not directly vulnerable to losses as a result of agricultural infestation. The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. The USDA Risk Management Agency provides information on insured crop losses related to identified hazards, with data from the years 2015 to 2018 used for analysis. In general, the higher the percentage loss, the higher the vulnerability the county has to drought events.





Agricultural Infestation Acres Impacted and Crop Insurance Paid per County from 2015-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Butler	768,149	61	0.01%	\$282,338,000	\$5,931	0.002%
Cowley	574,614	290	0.05%	\$108,976,000	\$37,327	0.03%
Harper	506,006	506	0.10%	\$109,644,000	\$43,666	0.04%
Harvey	339,584	586	0.17%	\$161,716,000	\$30,991	0.02%
Kingman	542,010	374	0.07%	\$103,188,000	\$32,136	0.03%
McPherson	571,577	1,500	0.26%	\$208,482,000	\$87,743	0.04%
Marion	596,296	260	0.04%	\$151,478,000	\$12,932	0.01%
Reno	789,525	958	0.12%	\$267,318,000	\$82,363	0.03%
Rice	457,603	689	0.15%	\$258,181,000	\$56,993	0.02%
Sedgwick	486,723	1,011	0.21%	\$148,484,000	\$99,431	0.07%
Sumner	719,611	1,230	0.17%	\$168,713,000	\$107,463	0.06%

Source: USDA

This table only reflects insured losses that were claimed. According to the 2017 Kansas Crop Insurance Profile Report issued by the USDA Risk Management Agency, 75-94% percent of major Kansas row crops were insured. Data regarding the number or value of livestock and wildlife lost to disease or infestation was not available for this planning effort.

In addition, threats have been identified which, while currently not impacting Kansas, may present a future risk. According to the KDA, Plant Protection and Weed Control Division the following table lists the highest risk plant pests to Kansas.

Potential High-Risk Plant Pests

Pest (Disease Insect, or weed)	Crop or Host Plant	Current Distribution	Type of Loss
Rust, Austro-Asian	Soybean	Australia, Japan, Pacific, Gulf of Mexico	Direct Loss to production
Aspergillus ear rot (Alfatoxin)	Corn	Worldwide, endemic to Kansas	Toxin renders the grain unusable
Black Stem Rust UG99 strain	Wheat	Africa, Asia	Direct Loss to production
Blast – South American strains	Wheat	South America	Direct Loss to production
Stripe Rust (new races)	Wheat	North America	Direct Loss to production
Leaf Rust (new races)	Wheat	North America	Direct Loss to production
Karnal Bunt	Wheat	Asia, Mexico, Arizona	International export quarantines, degradation of flour quality
Thousand Cankers	Walnut	Western US states and PA, VA, Tenn	Death of municipal trees, loss of nut crop, loss of timber
Emerald Ash Borer	Ash	North Central and North Eastern U.S., including Kansas (Wyandotte County)	Death of trees. Cost of removal and re-vegetation.





Potential High-Risk Plant Pests

Pest (Disease Insect, or weed)	Crop or Host Plant	Current Distribution	Type of Loss
Asian Longhorned Beetle	Maples, Birches, Willows, Mimosa, Ash, Sycamore, Poplar trees	Small parts of Ohio, New York, and Massachusetts	Death of trees. Cost of removal and re-vegetation.
Hydrilla	Water Bodies	Southern U.S. and one park pond in Olathe	Economic and environmental.

4.7.5 – Impact and Consequence Analysis

As per EMAP standards, the information in the following table provides the Consequence Analysis.

Agricultural Infestation Consequence Analysis

Subject	Impacts of Agricultural Infestation
Health and Safety of the Public	Impact in the area would be minimal. If the infestation is unrecognized, then there is the potential for the food supply to be contaminated.
Health and Safety of Responders	Impact would be minimal with protective clothing, gloves, etc as these diseases cause no risk to humans.
Continuity of Operations	Minimal expectation of execution of the COOP.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the incident area is minimal to non-existent.
Environment	Impact could be severe to the incident area, specifically, plants, trees, bushes, and crops.
Economic Conditions	Impacts to the economy will depend on the severity of the infestation. The potential for economic loss to the community and state could be severe if the infestation is hard to contain, eliminate, or reduce. Impact could be minimized due to crop insurance.
Public Confidence in the Jurisdiction’s 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 – Dam and Levee Failure

A dam is a barrier across flowing water that obstructs, directs or slows down the flow, often creating a reservoir, lake or impoundments. Common reasons for dam failure include:

- 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



A levee is an artificial barrier, usually an earthen embankment, constructed along rivers to protect adjacent lands from flooding. Common reasons for levee failure include:

- Surface erosion due to water velocities
- Subsurface actions
- Flood waters exceeding the design capacity of the structure

4.8.1 – Dam Location and Extent

In Kansas, the State has regulatory jurisdiction over non-federal dams that meet the following definition of a “jurisdictional” dam as defined by K.S.A. 82a-301 et seq, and amendments thereto:

- *any artificial barrier including appurtenant works with the ability to impound water, waste water or other liquids that has a height of 25 feet or more; or has a height of six feet or greater and also has the capacity to impound 50 or more acre feet. The height of a dam or barrier shall be determined as follows: (1) A barrier or dam that extends across the natural bed of a stream or watercourse shall be measured from the downstream toe of the barrier or dam to the top of the barrier or dam; or (2) a barrier or dam that does not extend across a stream or watercourse shall be measured from the lowest elevation of the outside limit of the barrier or dam to the top of the barrier or dam.*

The KDA Division of Water Resources (KDA-DWR) is the State agency responsible for regulation of jurisdictional dams. Within the DWR, the Water Structures Program has the following responsibilities:

- Reviewing and approving of plans for constructing new dams and for modifying existing dams
- Ensuring quality control during construction,
- Monitoring dams that, if they failed, could cause loss of life, or interrupt public utilities or services





The KDA-DWR uses a three-tiered classification system to describe the potential risk and severity associated with dam failure, with the tiers relating to potential downstream impact rather than the physical condition of the dam.

- **High Hazard (Class C):** Dams assigned the high hazard-potential classification are those where failure could result in any of the following: extensive loss of life, damage to more than one home, damage to industrial or commercial facilities, interruption of a public utility serving a large number of customers, damage to traffic on high-volume roads that meet the requirements for hazard class C dams or a high-volume railroad line, inundation of a frequently used recreation facility serving a relatively large number of persons, or two or more individual hazards described in hazard class B. Emergency Action Plans (EAPs) are required for all High Hazard Dams.
- **Significant Hazard (Class B):** Dams assigned the significant hazard-potential classification are those dams where failure could endanger a few lives, damage an isolated home, damage traffic on moderate volume roads that meet the requirements for hazard class B dams, damage low-volume railroad tracks, interrupt the use or service of a utility serving a small number of customers, or inundate recreation facilities, including campground areas intermittently used for sleeping and serving a relatively small number of persons.
- **Low Hazard (Class A):** Dams assigned the low hazard-potential classification are those where failure could damage only farm or other uninhabited buildings, agricultural or undeveloped land including hiking trails, or traffic on low-volume roads that meet the requirements for hazard class A dams.

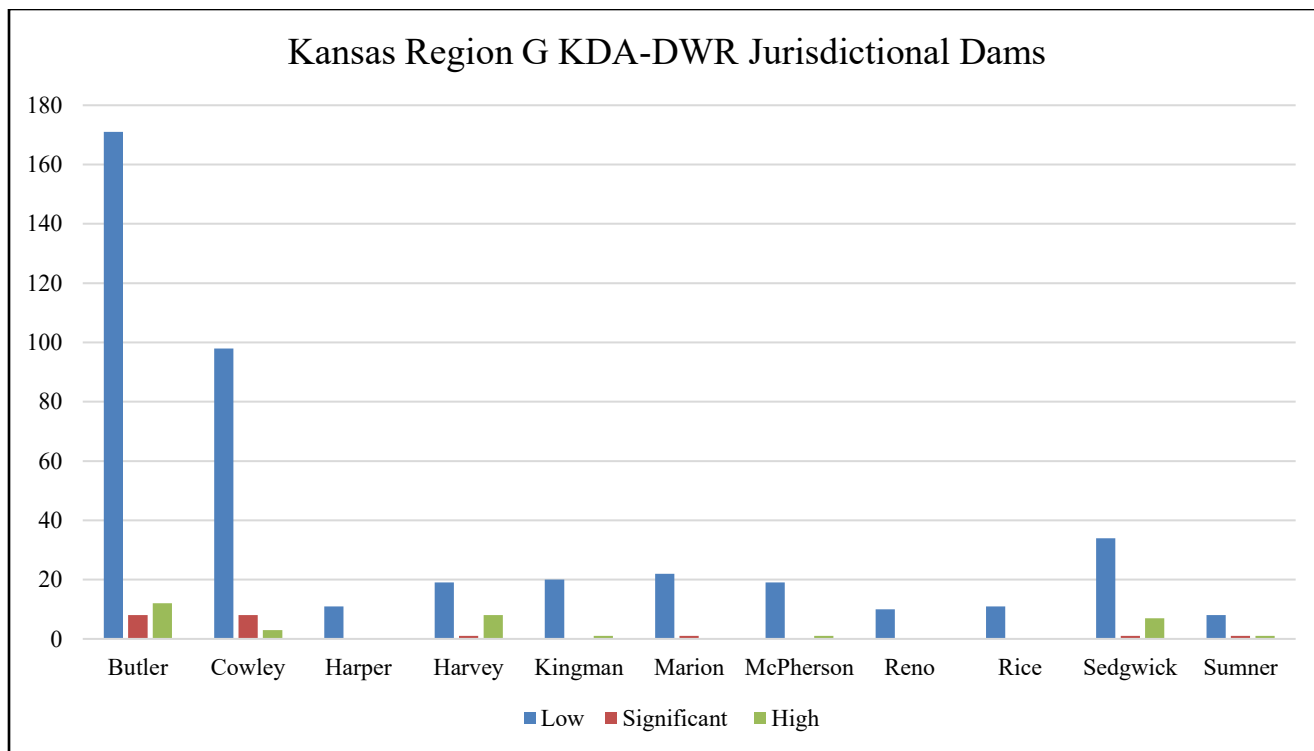
According to the KDA-DWR, there are 476 jurisdictional dams in Kansas Region G. These dams are classified as follows.

Kansas Region G KDA-DWR Jurisdictional Dams

County	Low	Significant	High	High Hazard Without EAP
Butler	171	8	12	3
Cowley	98	8	3	2
Harper	11	0	0	0
Harvey	19	1	8	0
Kingman	20	0	1	0
McPherson	19	0	1	0
Marion	22	1	0	0
Reno	10	0	0	0
Rice	11	0	0	0
Sedgwick	34	1	7	2
Sumner	8	1	1	0

Source: KDA-DWR



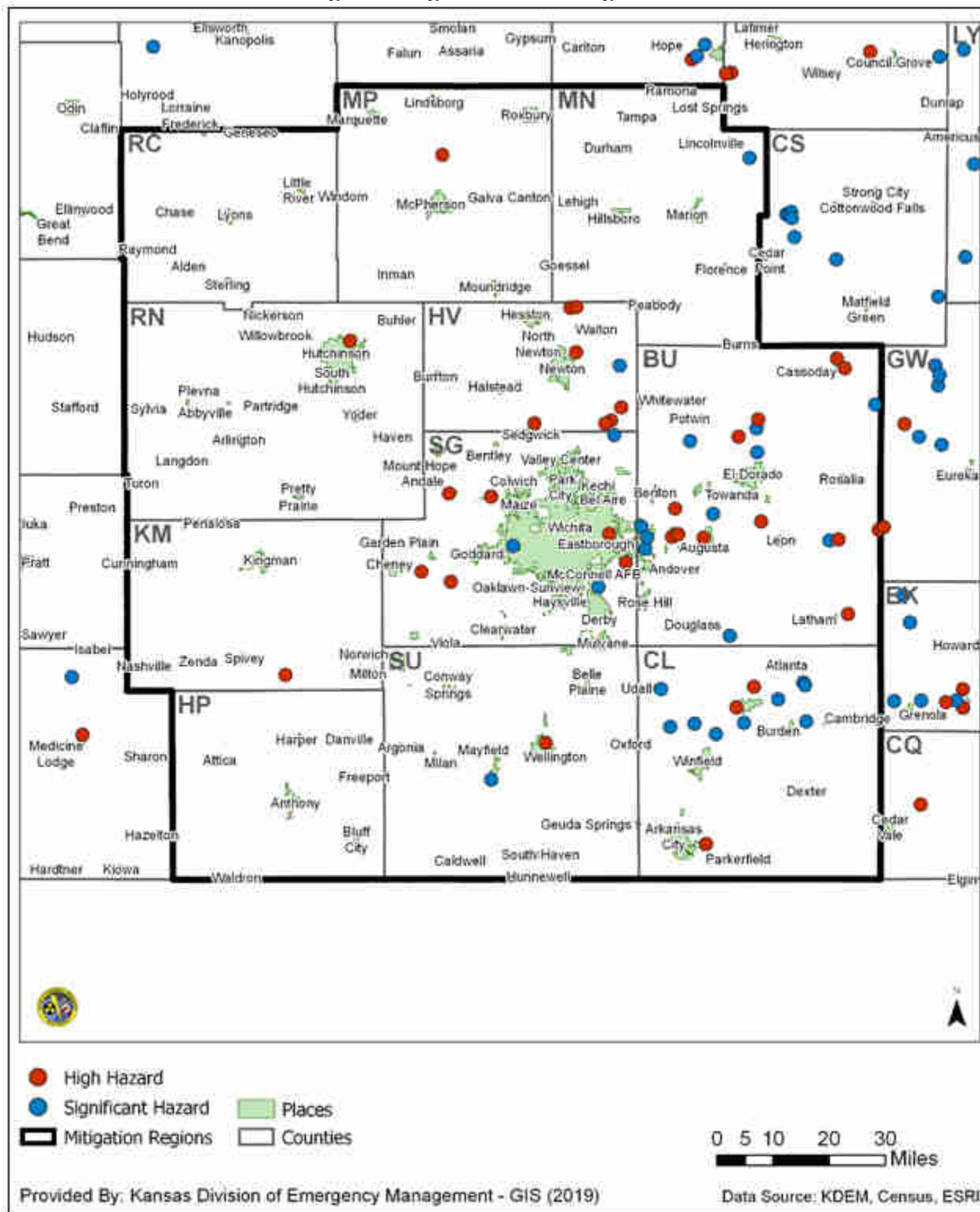


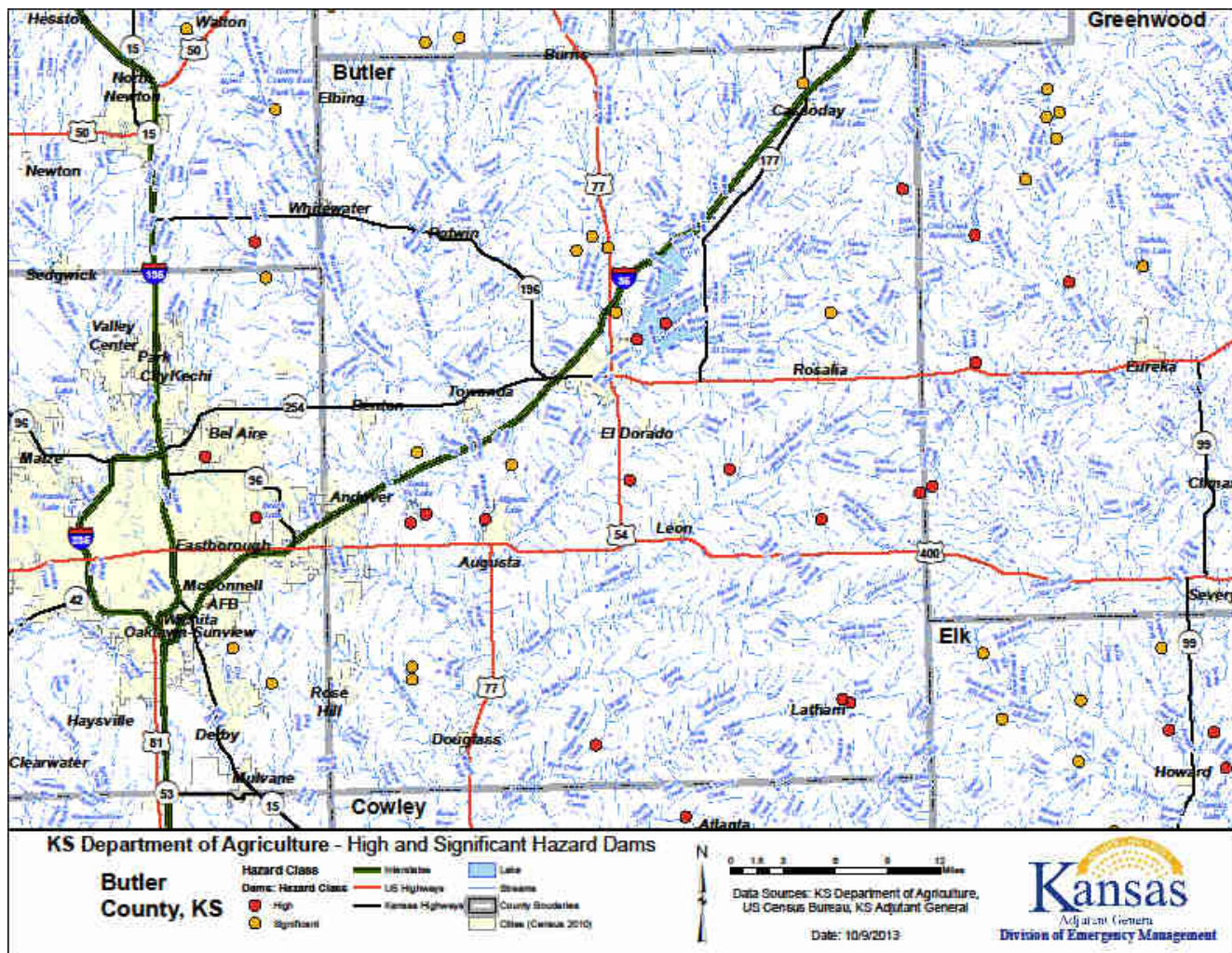
The following map show all identified dams within Kansas Region G with a Significant or High classification.

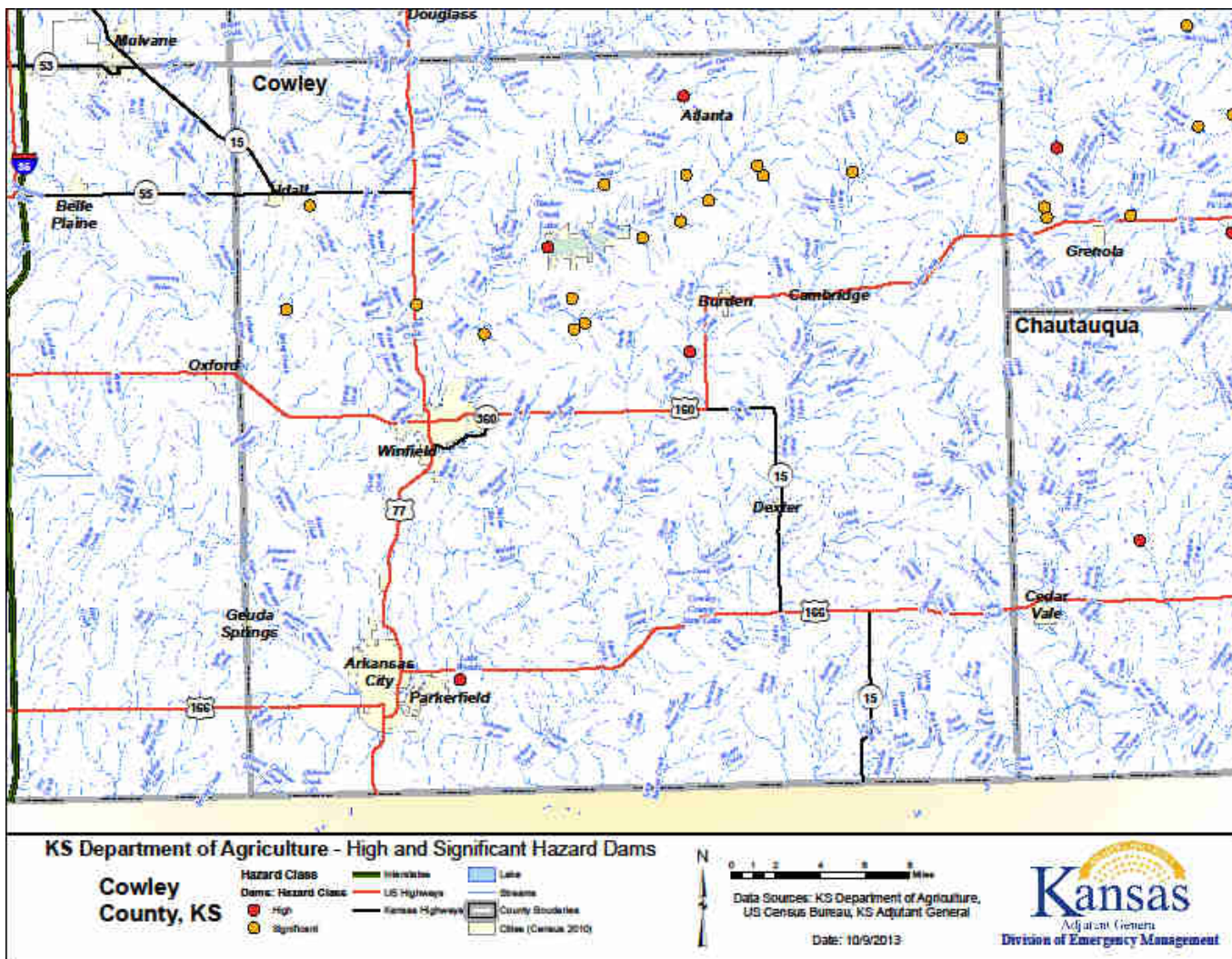


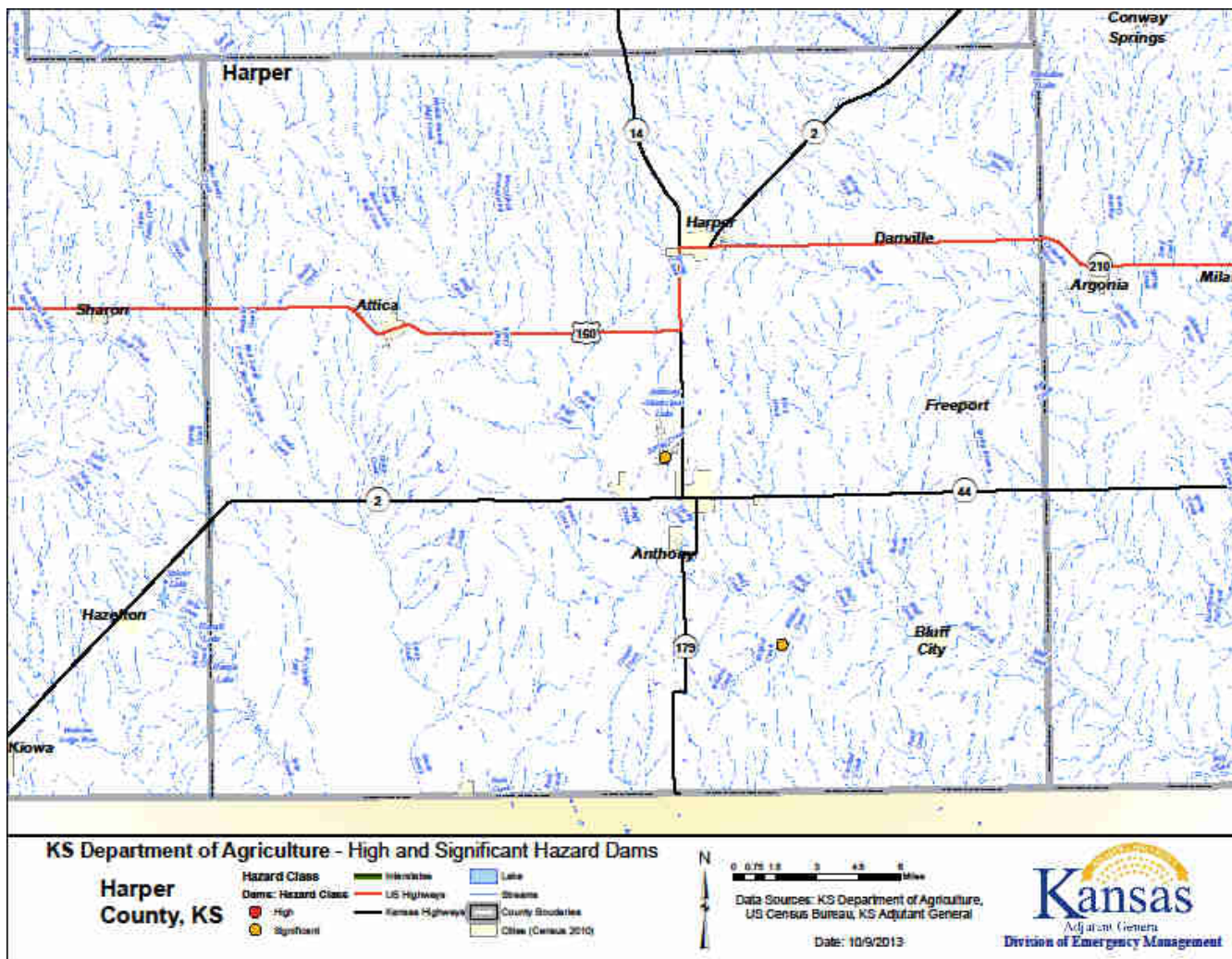


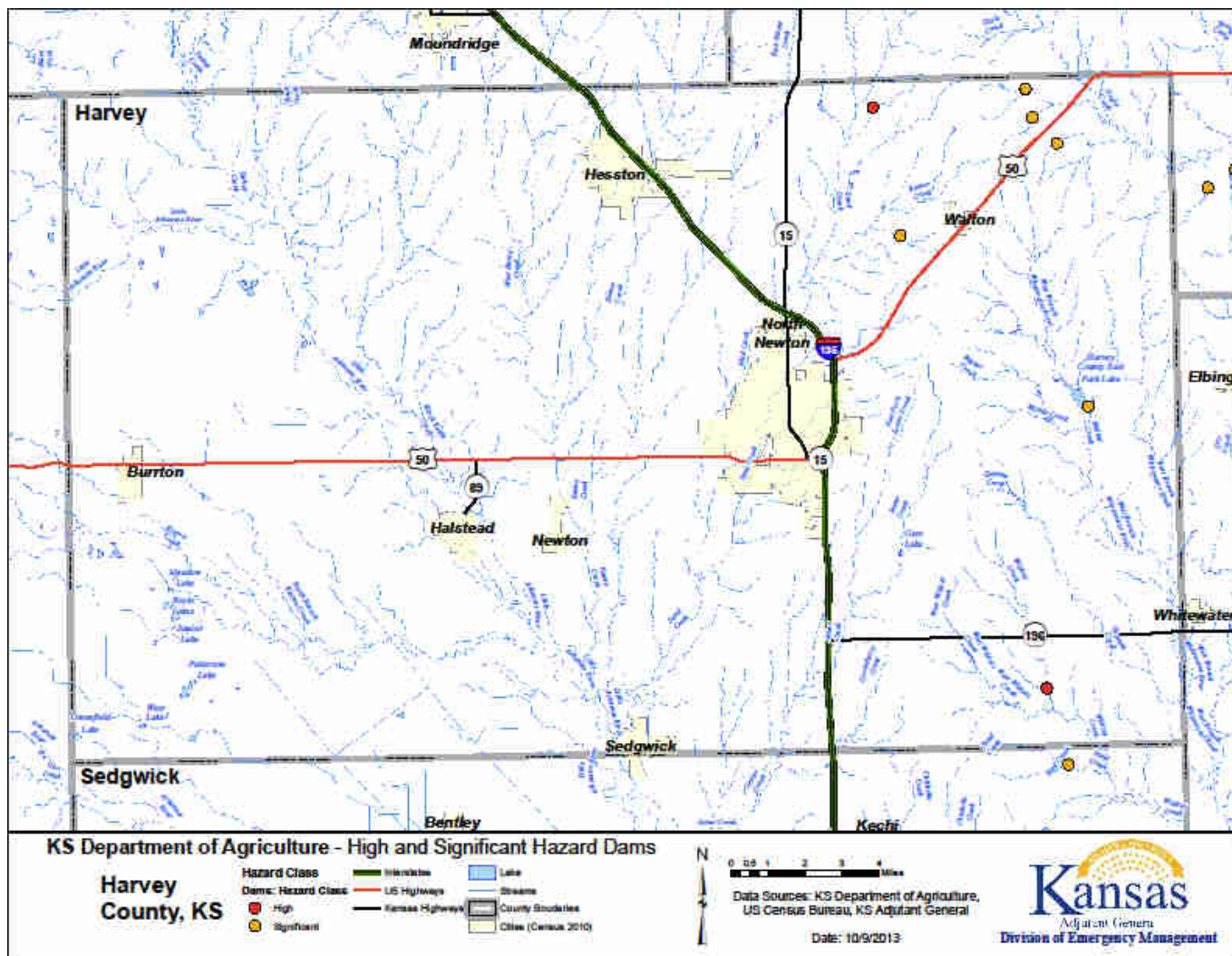
Kansas Region G Significant and High Hazard Dams

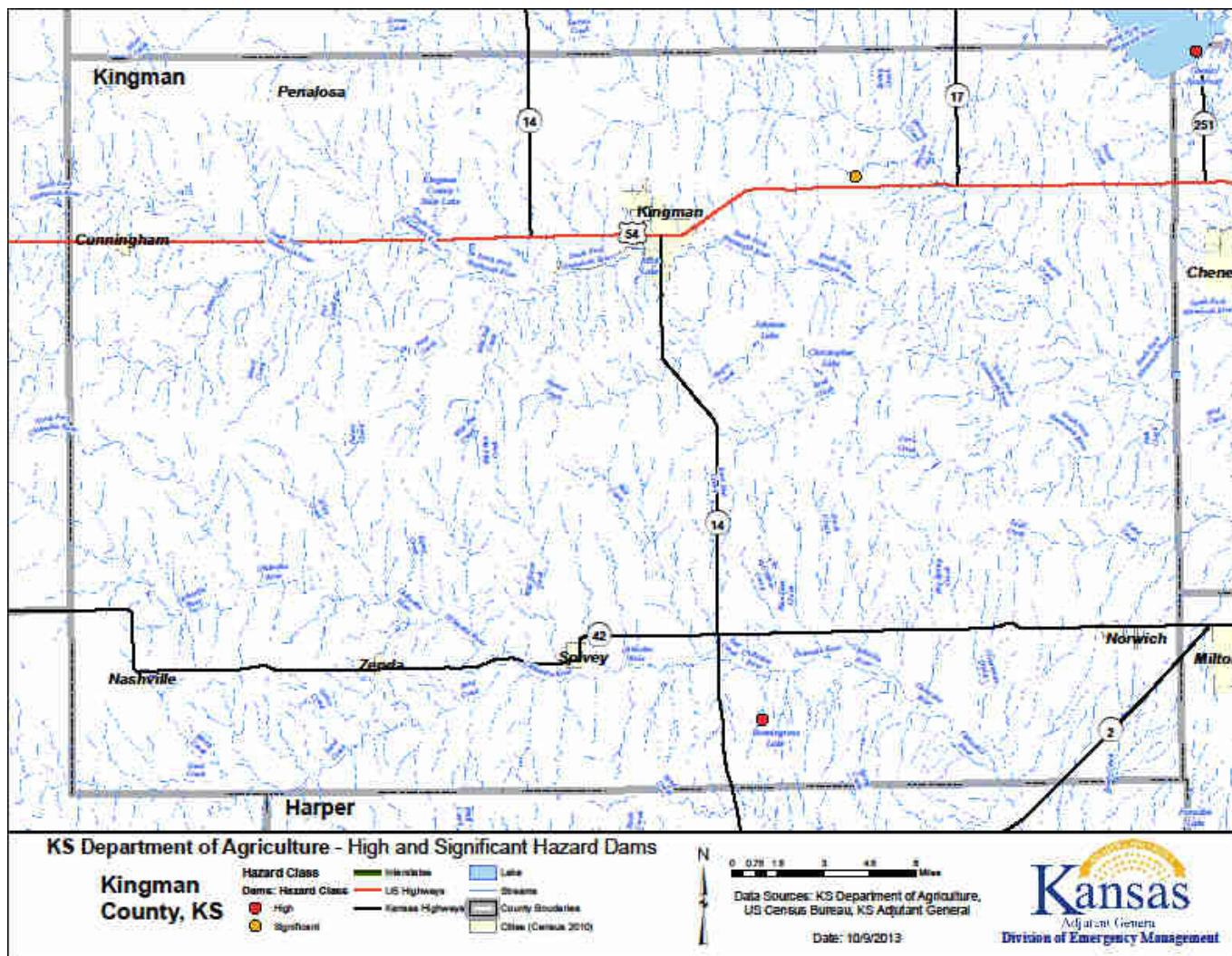


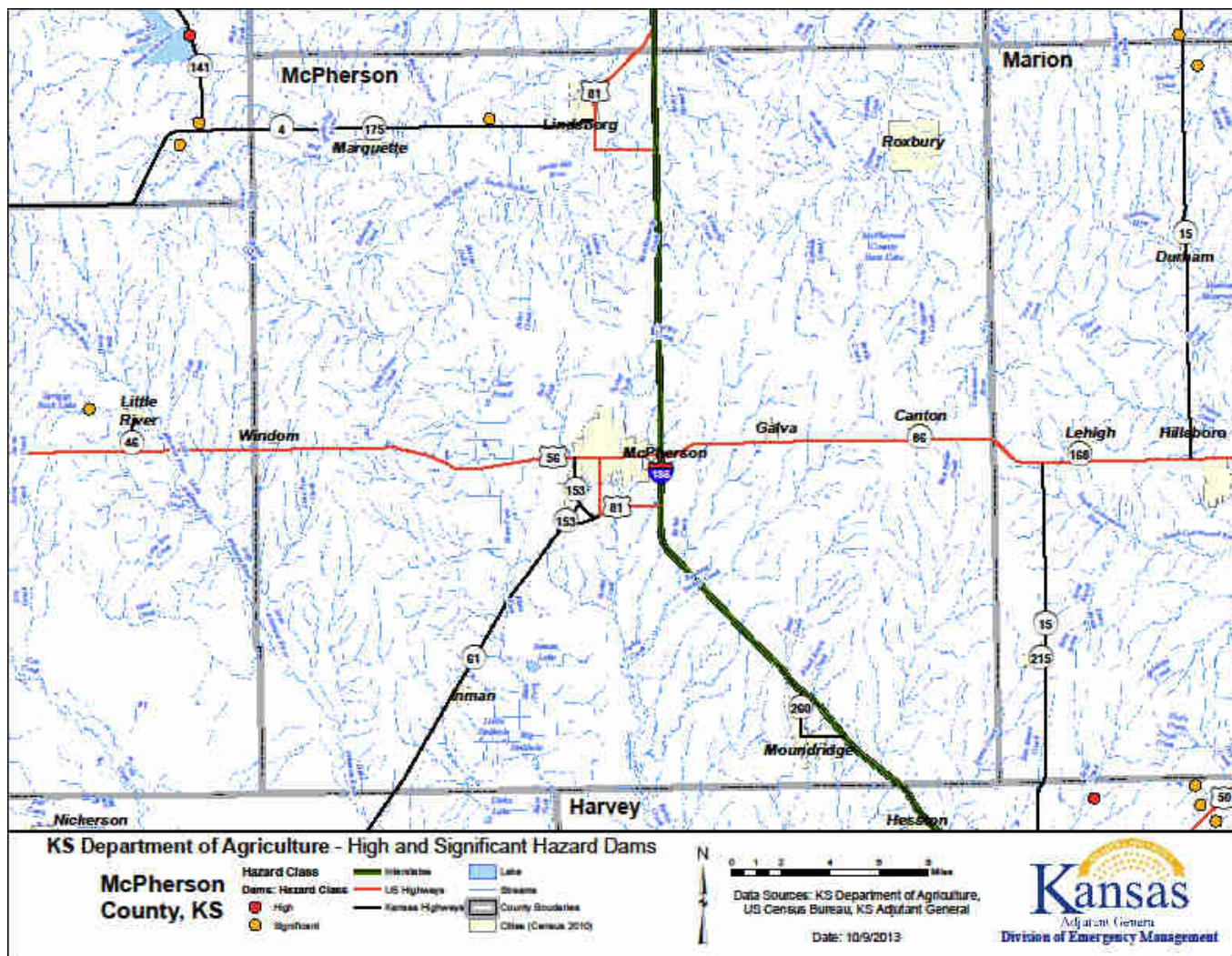


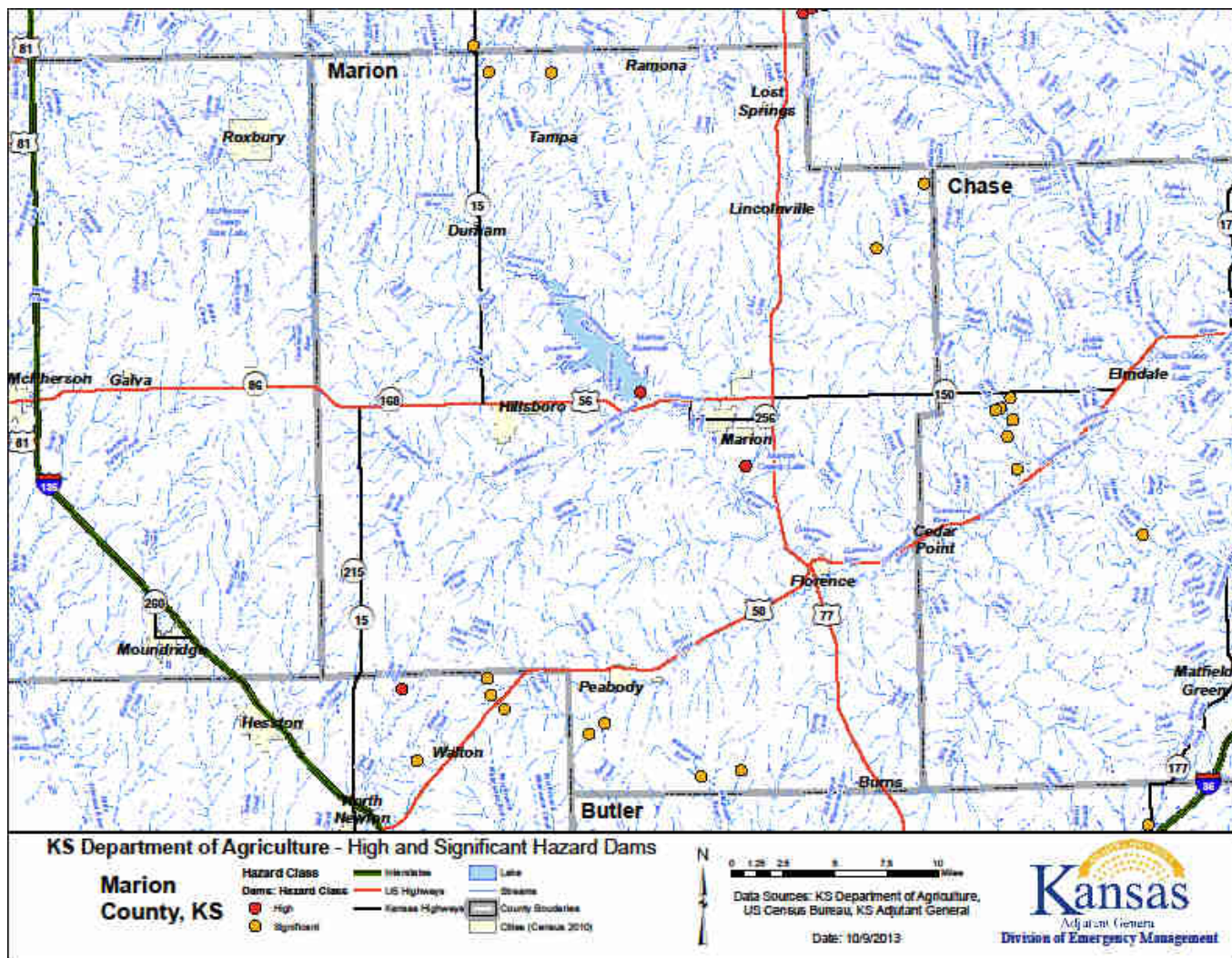


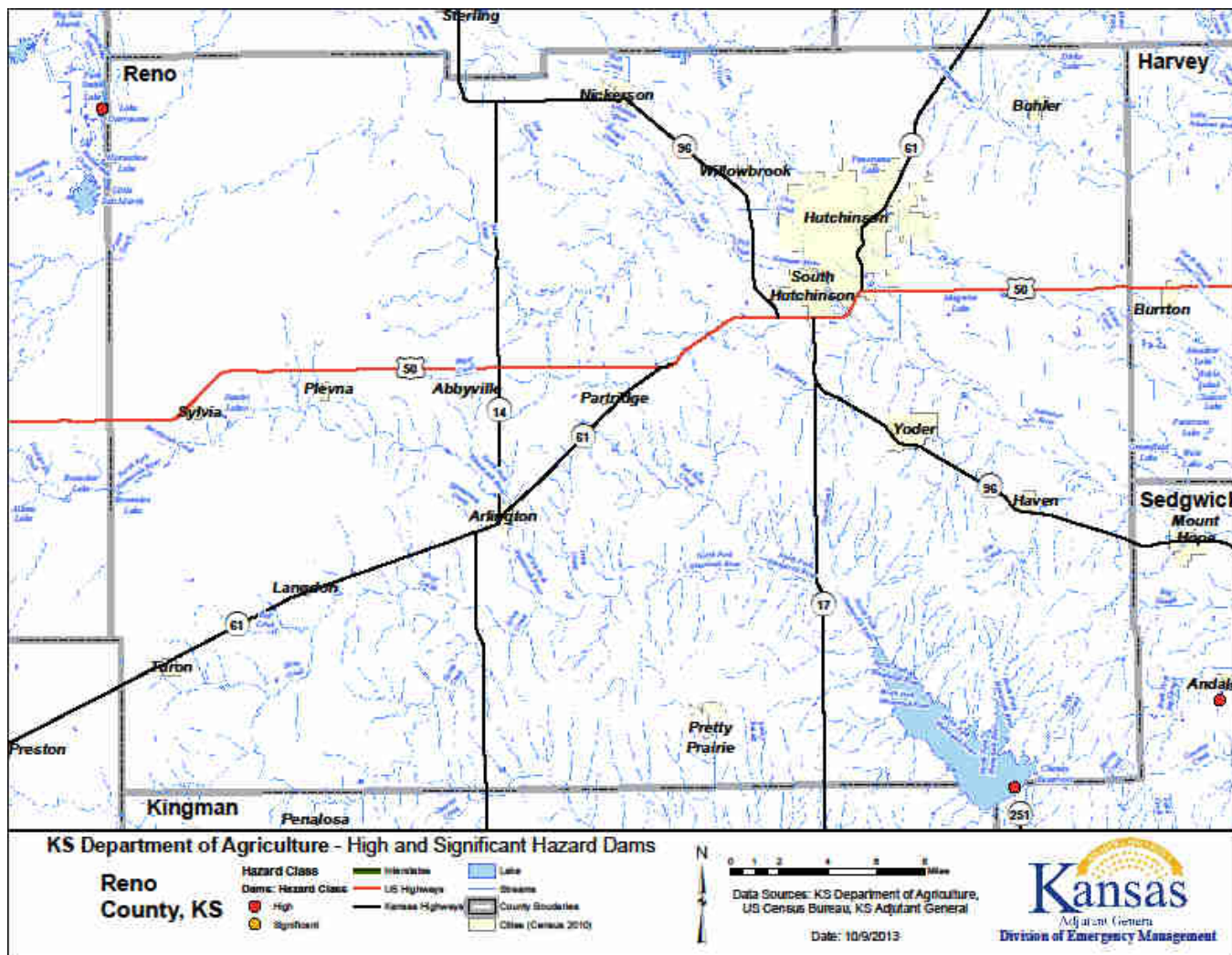


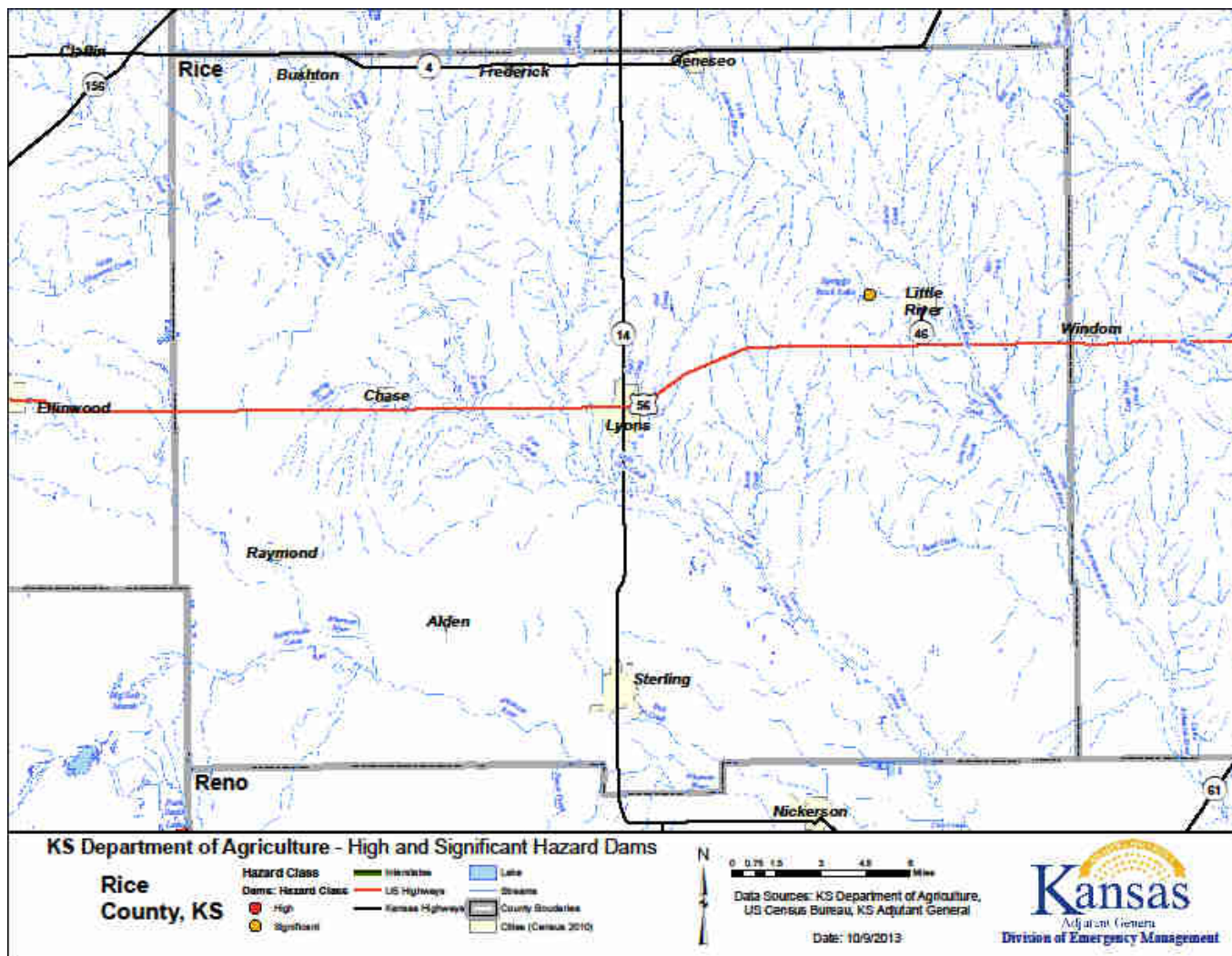


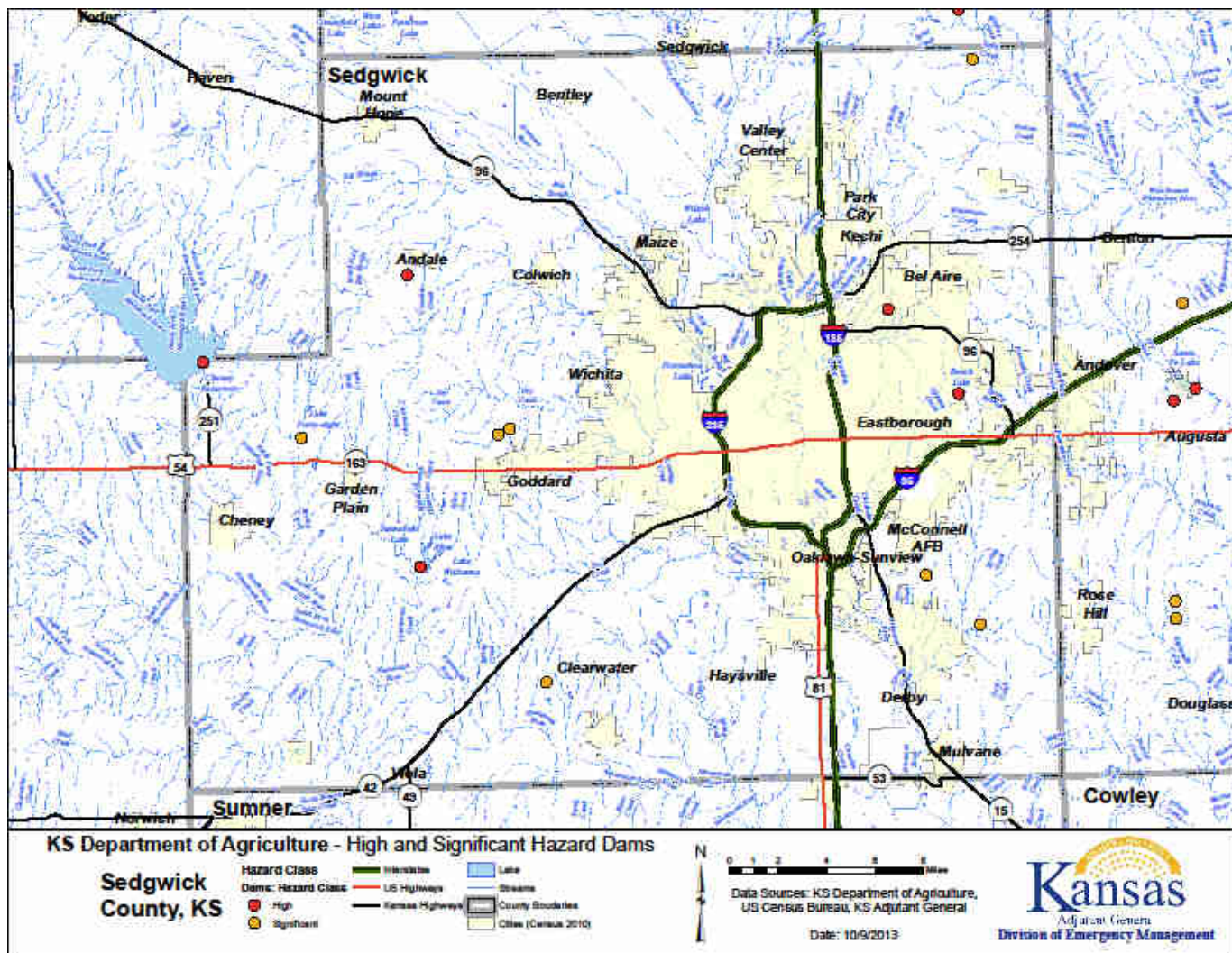


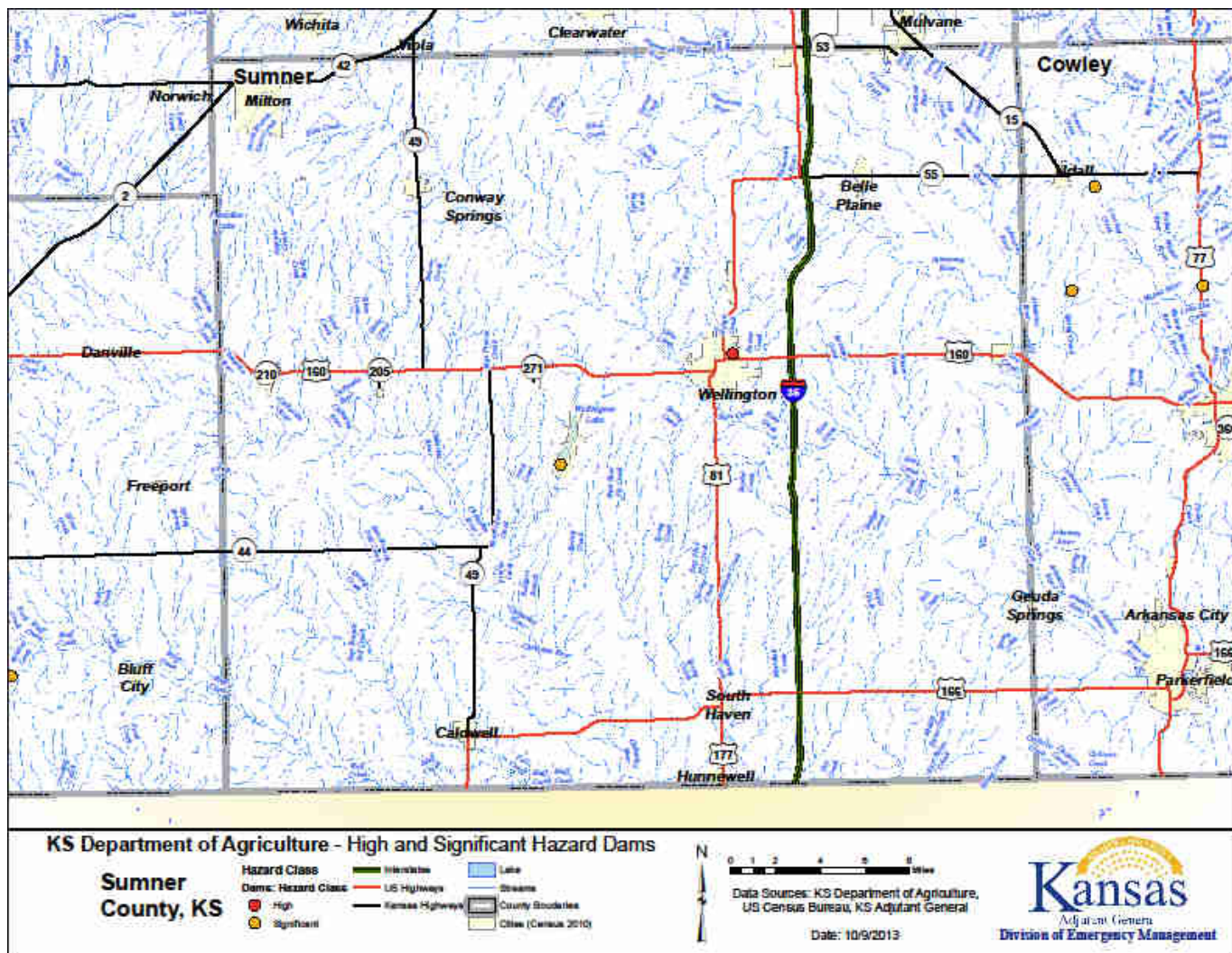












In addition, the KDA-DWR indicates that there are three dams within the state that are operated by Federal Government agencies.

Kansas Region G Federally Operated Dams

County	Federal Reservoir Name	Operating Agency
Butler	EL Dorado	United States Army
Marion	Marion	United States Army
Kingman, Reno and Sedgwick	Cheney	United States Army

Source: KDA-DWR

Of additional potential concern are high hazard dams in neighboring regions. These dams, and the relevant county they are in, are as follows:

- Dickinson: Two high hazard dams
- Elk: Three high hazard dams
- Ellsworth: One high hazard dam
- Hodgeman: One high hazard dam





4.8.2 – Levee Location and Extent

As there is no one, comprehensive list of all levees within the region, two sources of data were reviewed to determine a list of all known levees. These sources are:

- The U.S. Army Corps of Engineers (USACE) Integrated National Levee Database (NLD), containing levees enrolled in the USACE National Levee Safety Program (NLSP).
- The FEMA National Levee Inventory Report (NLIR)

According to the USACE Integrated NLD, there are 63 levees in the NLSP in Kansas Region G. The following table provides available information on these levees.

Kansas Region G USACE NLD Levees

County(ies)	Jurisdiction(s)	Name	Waterway	Segments	Levee Miles	Leveed Area in Square Miles	Inspection Rating Description	Sponsors
Butler	Augusta	Augusta Levee	Whitewater River	1	3.76	0.99	Minimally Acceptable	-
Butler	El Dorado	El Dorado Levee	Walnut River	1	0.29	0.026	Unacceptable	-
Butler	Leon	LBU-0006	-	1	0.78	0.15	-	-
Butler	Augusta	Walnut River Levee S. 1	Whitewater River	1	0.21	0.023	Not Inspected	-
Butler	Augusta	Walnut River Levee S. 2	-	1	0.56	0.42	Not Inspected	-
Cowley	Arkansas City	Arkansas City Levee	Arkansas River, Walnut River	1	9.16	3.88	Minimally Acceptable	City of Arkansas City
Cowley	Arkansas City	LCL-0019	-	1	0.29	0.11	-	-
Cowley	Oxford	LCL-0026	-	1	0.49	0.23	-	-
Cowley	Arkansas City	LCL-0048	-	1	0.45	0.02	-	-
Cowley	Winfield	Winfield Levee	Walnut River	1	4.30	1.76	Minimally Acceptable	City of Winfield
Harper	Attica	LHP-014-C	-	1	0.58	0.053	-	-
Harvey, Reno, Sedgwick	Mount Hope	Arkansas River North Bank Levee 6	Arkansas River	1	3.51	1.22	-	Eagle Drainage District
Harvey	Halstead	Halstead Arkansas River Levee	Little Arkansas River	1	4.10	3.43	Minimally Acceptable	City of Halstead
Harvey	Moundridge	LHV-0051-C	-	1	0.23	0.03	-	-
Kingman	Penalosa	LKM0002-C	-	1	0.22	0.041	Not Inspected	-
Reno	Hutchinson	Arkansas River North Bank	Arkansas River	1	1.03	0.36	-	City of Hutchinson





Kansas Region G USACE NLD Levees

County(ies)	Jurisdiction(s)	Name	Waterway	Segments	Levee Miles	Leveed Area in Square Miles	Inspection Rating Description	Sponsors
Reno, Sedgwick	Mount Hope	Arkansas River South Bank Levee 2	Arkansas River	1	0.71	0.50	-	-
Reno, Sedgwick	Mount Hope	Arkansas River South Bank Levee 3	Arkansas River	1	1.54	0.30	-	-
Reno	Hutchinson	Hutchinson Levee - Levee A & D - Arkansas NW Bank	Arkansas River	1	9.27	4.17	Minimally Acceptable	City of Hutchinson
Reno	Hutchinson	Hutchinson Levee - Levee A & E - Arkansas NE Bank	Arkansas River	1	7.98	6.51	Minimally Acceptable	City of Hutchinson
Reno	South Hutchinson	Hutchinson Levee - Levee B - Arkansas South Bank	Arkansas River	1	3.90	3.17	Minimally Acceptable	City of Hutchinson
Reno	Hutchinson	Hutchinson Levee - Levee C	Arkansas River	1	7.49	3.48	Minimally Acceptable	City of Hutchinson
Reno	Willowbrook	Hutchinson Levee - Levee F-Ring Levee	Arkansas River	1	1.69	0.20	Minimally Acceptable	City of Hutchinson
Reno	Haven	LRN-0004	-	1	1.48	0.60	-	-
Reno	Yoder	LRN-0005	-	1	0.57	0.08	-	-
Reno	Yoder	LRN-0012	-	1	1.52	0.48	-	-
Reno	Nickerson	LRN-0024	-	1	0.67	0.15	-	-
Reno	Hutchinson	LRN-0029	-	1	1.92	0.45	-	-
Reno	Hutchinson	LRN-0073-S	-	1	0.35	0.06	-	-
Rice	Lyons	LRC-0035	-	1	0.3	0.069	-	-
Sedgwick	Bentley	Arkansas River North Bank Levee	Arkansas River	1	2.41	0.26	-	Eagle Drainage District
Sedgwick	Maize	Arkansas River North Bank Levee 2	Arkansas River	1	3.09	0.84	-	Eagle Drainage District
Sedgwick	Bentley	Arkansas River North Bank Levee 3	Arkansas River	1	2.64	0.81	-	Eagle Drainage District





Kansas Region G USACE NLD Levees

County(ies)	Jurisdiction(s)	Name	Waterway	Segments	Levee Miles	Leveed Area in Square Miles	Inspection Rating Description	Sponsors
Sedgwick	Bentley	Arkansas River North Bank Levee 4	Arkansas River	1	1.06	0.50	-	Eagle Drainage District
Sedgwick	Mount Hope	Arkansas River North Bank Levee 6	Arkansas River	1	4.81	2.10	-	Eagle Drainage District
Sedgwick	Bentley	Arkansas River South Bank Levee	Arkansas River	1	7.06	5.66	-	Big Arkansas Drainage District
Sedgwick, Sumner	Mulvane	Cowskin Creek Levee 2 - Right	Cowskin Creek South	1	4.66	5.20	-	-
Sedgwick	Haysville	Cowskin Creek South Levee Left	Cowskin Creek South	1	3.19	2.58	-	-
Sedgwick	Haysville	Cowskin Creek South Levee Right	Cowskin Creek South	1	3.18	0.99	-	-
Sedgwick	Derby	LSG-0009, LSG-0016	-	1	0.52	0.14	-	-
Sedgwick	Bentley	Sedgwick Ditch Levee 1	Sedgwick Ditch	1	2.87	5.45	-	-
Sedgwick	Bentley	Sedgwick Ditch Levee 2	Sedgwick Ditch	1	3.01	1.73	-	Eagle Drainage District
Sedgwick	Park City	WB Chisholm Creek EB S1/WVC Chisholm Levee S & T	Chisholm Creek, Unnamed Creek/Stream	3	5.76	1.52	-	City of Wichita
Sedgwick	Valley Center	West Branch Chisholm Creek East Bank Spoil 2	Unnamed Creek/Stream	1	3.68	1.46	Minimally Acceptable	City of Wichita
Sedgwick	Valley Center	West Branch Chisholm Creek East Bank Spoil 3	Unnamed Creek/Stream	1	1.68	0.32	Minimally Acceptable	City of Wichita
Sedgwick	Valley Center	West Branch Chisholm Creek East Bank Spoil 4	Unnamed Creek/Stream	1	0.92	0.10	Minimally Acceptable	City of Wichita





Kansas Region G USACE NLD Levees

County(ies)	Jurisdiction(s)	Name	Waterway	Segments	Levee Miles	Leveed Area in Square Miles	Inspection Rating Description	Sponsors
Sedgwick	Wichita	Wichita Valley Center Floodway Levee 1	Wichita Valley Center Floodway	1	0.27	0.03	-	City of Wichita
Sedgwick	Wichita	WVC Big Slough Levee C North	Arkansas River, Big Slough	1	24.93	57.78	Minimally Acceptable	City of Wichita
Sedgwick	Haysville	WVC Big Slough Levee C South	Big Slough, Cowskin Creek	1	5.82	7.33	Minimally Acceptable	City of Wichita
Sedgwick	Wichita	WVC Big Slough Levee D/WVC Riverside Levee P, R, S	Arkansas River, Big Slough, Cowskin Creek, Middle Fork Chisholm Creek	4	29.12	58.56	Minimally Acceptable	City of Wichita
Sedgwick	Park City	WVC Chisholm Levee P & N/Park City Levee	Chisholm Creek, Little Arkansas River, Middle Fork Chisholm Creek	4	7.02	1.95	-	City of Park City, City of Wichita
Sedgwick	Wichita	WVC Little Ark Levee F,K,L,M/WB Chisholm Creek WB	Arkansas River, Canal/Ditch, Chisholm Creek, Jester Creek, Little Arkansas River, Unnamed Creek/Stream	5	23.69	19.55	Minimally Acceptable	City of Wichita
Sedgwick	Valley Center	WVC Little Ark Levee J	Arkansas River, Canal/Ditch, Little Arkansas River	1	6.78	6.44	Minimally Acceptable	City of Wichita
Sumner	Mulvane	Cowskin Creek Levee - Left	Cowskin Creek	1	4.00	1.51	-	-





Kansas Region G USACE NLD Levees

County(ies)	Jurisdiction(s)	Name	Waterway	Segments	Levee Miles	Leveed Area in Square Miles	Inspection Rating Description	Sponsors
Sumner	Oxford	LSU-0001,LSU-0014,LSU-0015 - 16,LSU-0032,LSU-0050	-	1	1.87	0.70	-	-
Sumner	Belle Plaine	LSU-0005, LSU-0007	-	1	0.64	0.20	-	-
Sumner	Oxford	LSU-0008, LSU-0033	-	1	0.62	0.07	-	-
Sumner	Belle Plaine	LSU-0009	-	1	0.43	0.08	-	-
Sumner	Oxford	LSU-0017	-	1	0.50	0.06	-	-
Sumner	Belle Plaine	LSU-0031	-	1	0.47	0.23	-	-
Sumner	Belle Plaine	LSU-0034	-	1	0.29	0.08	-	-
Sumner	Wellington	LSU-0037	-	1	0.82	0.24	-	-
Sumner	Mulvane	Ninnescah River	Ninnescah River	1	0.45	0.12	-	-

Source: USACE

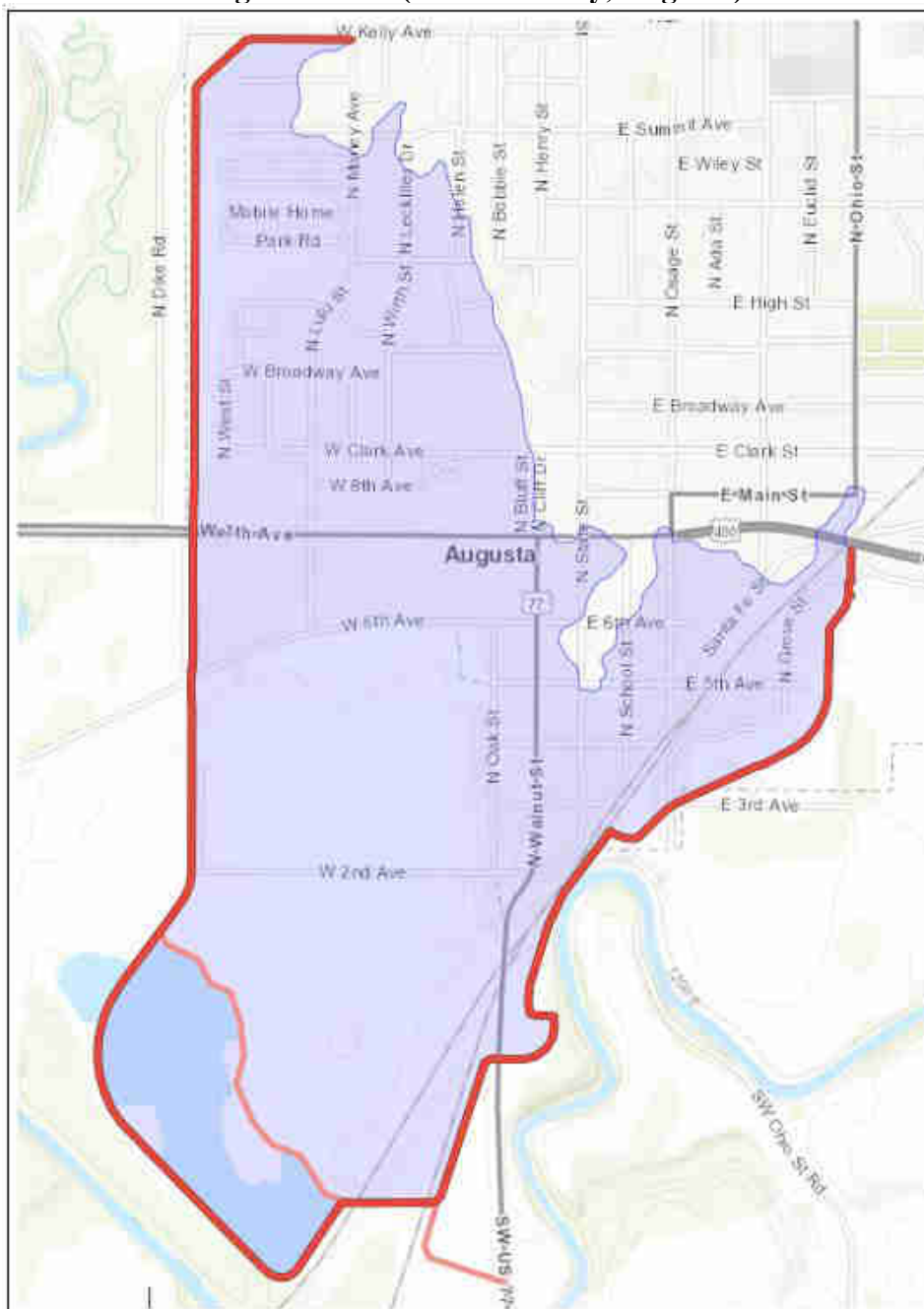
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The following maps detail individual levees identified as protecting larger populations (greater than 1,000 people). Additional, both the county and jurisdiction for the levee are noted in parenthesis.



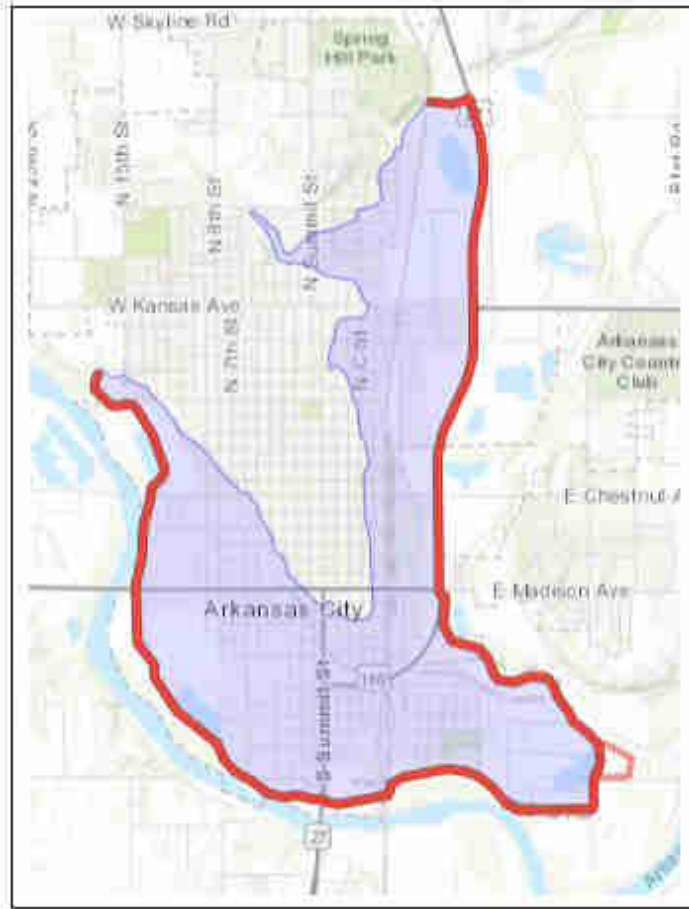


Augusta Levee (Butler County, Augusta)



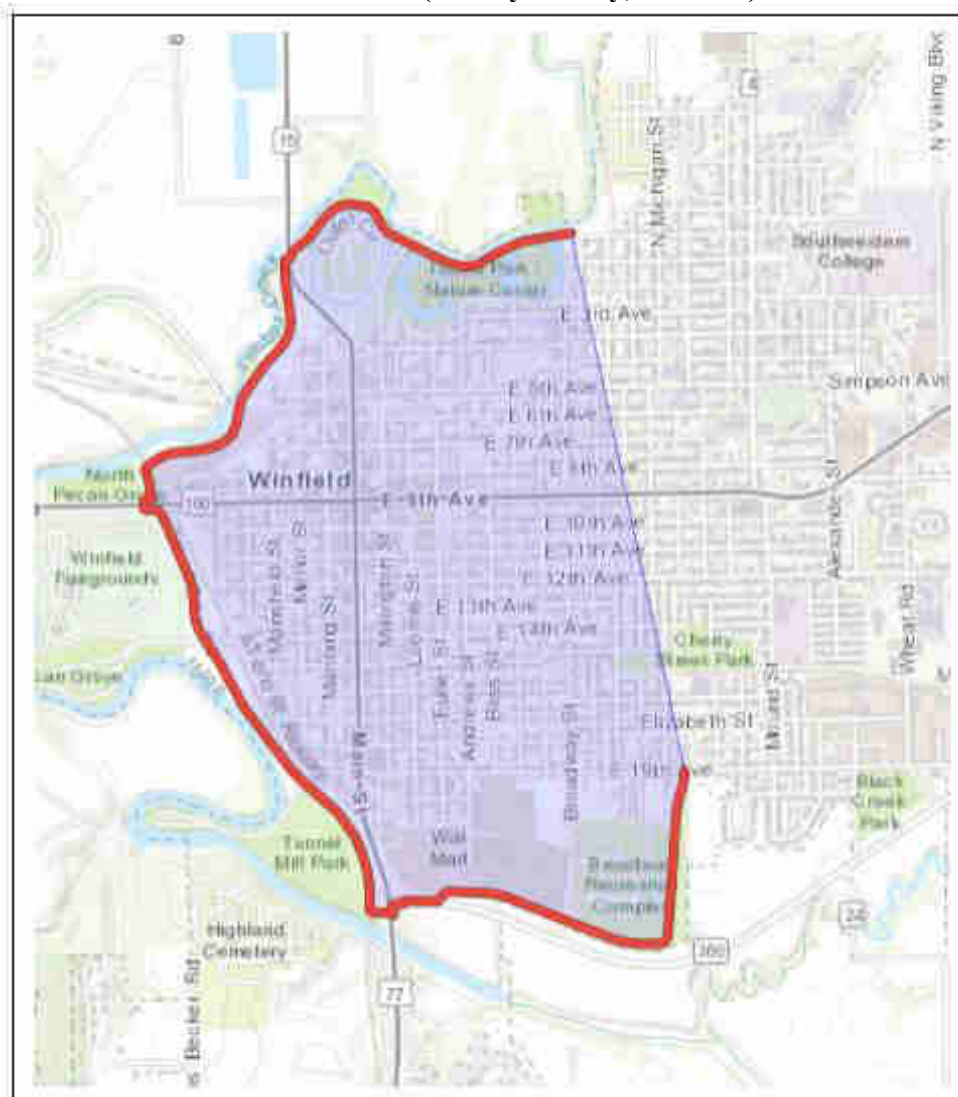


Arkansas City Levee (Cowley County, Arkansas City)



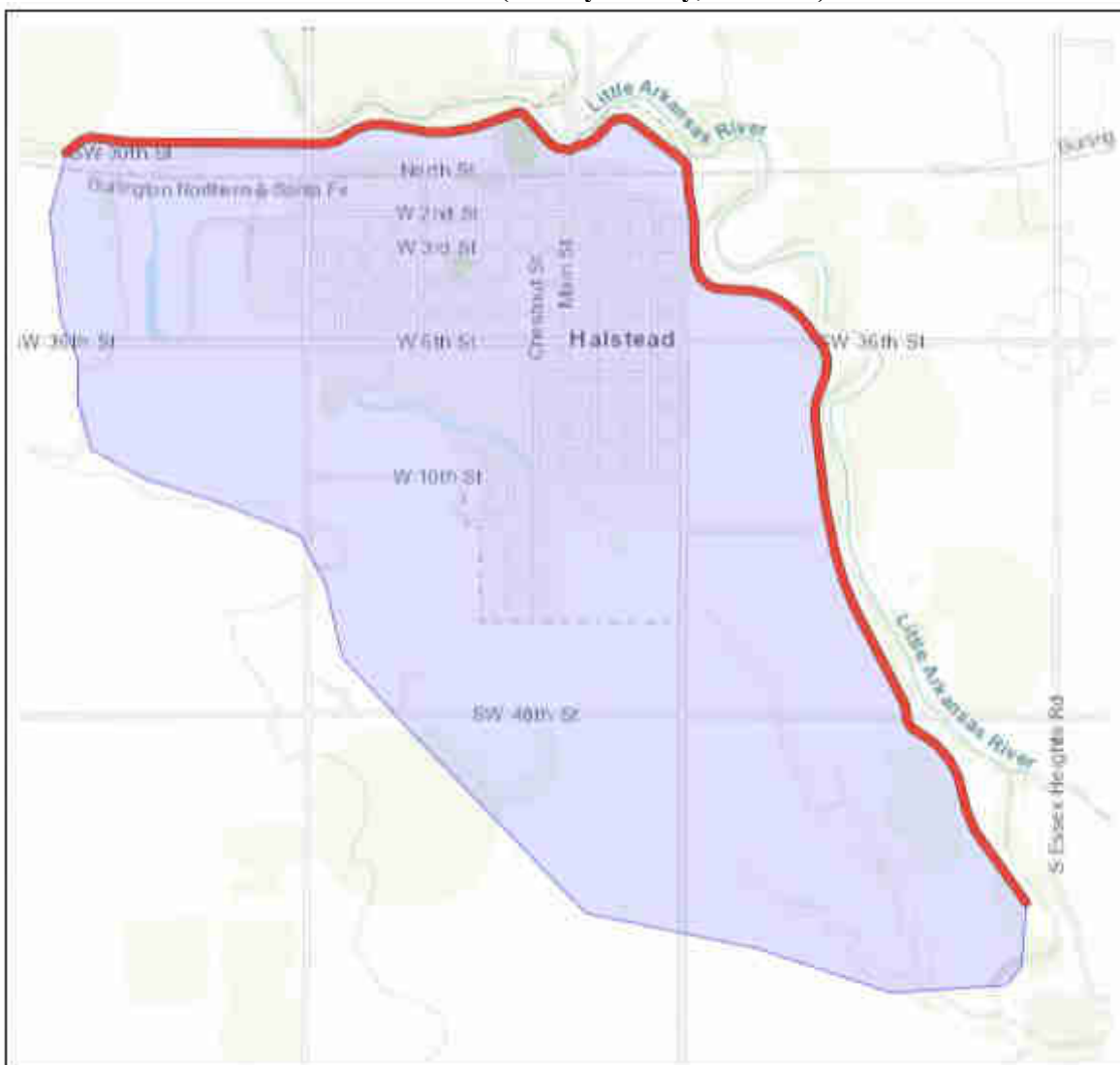


Winfield Levee (Cowley County, Winfield)





Halstead Levee (Harvey County, Halstead)



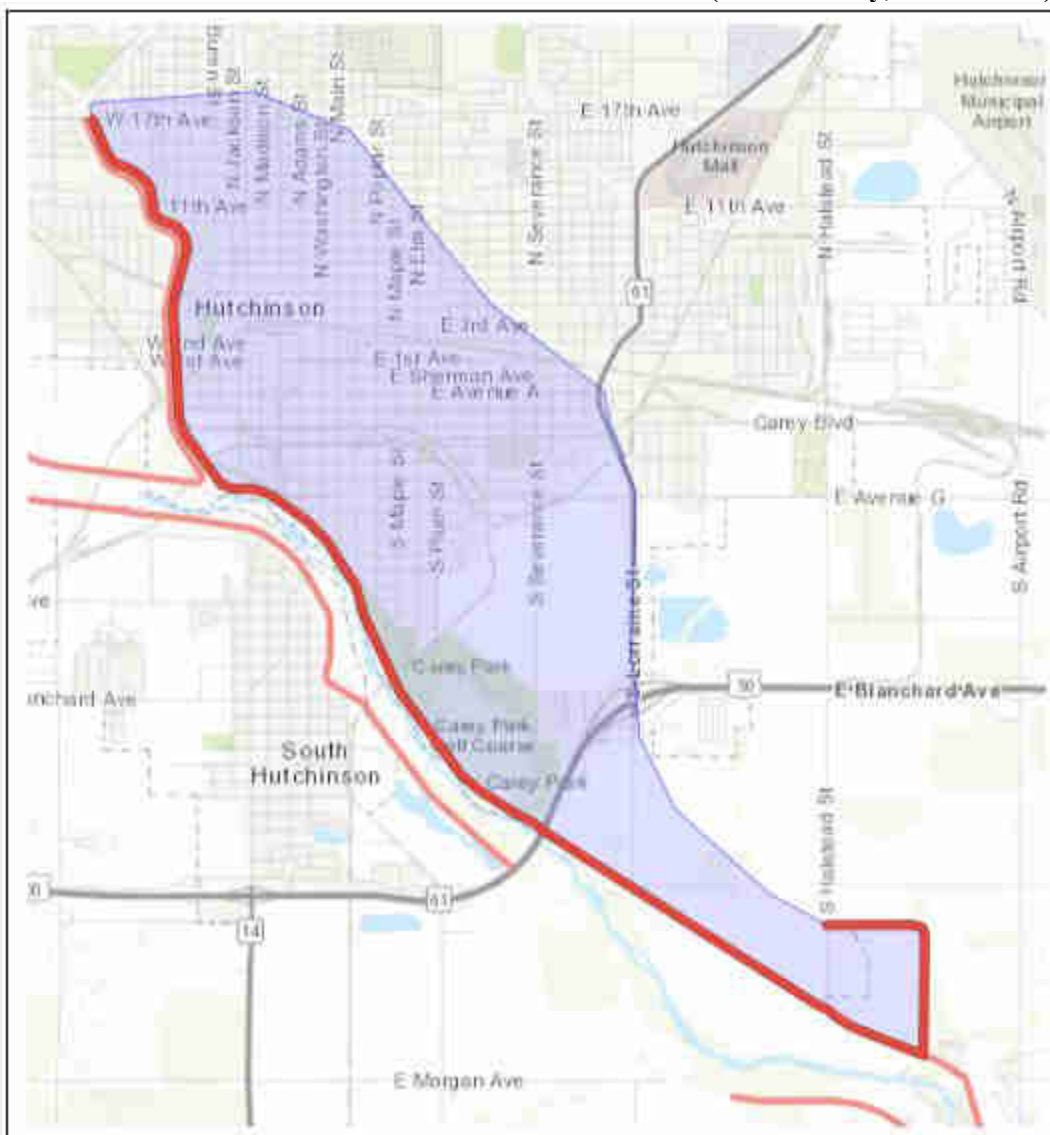


Hutchinson Levee - Levee A & D - Arkansas NW Bank (Reno County, Hutchinson)



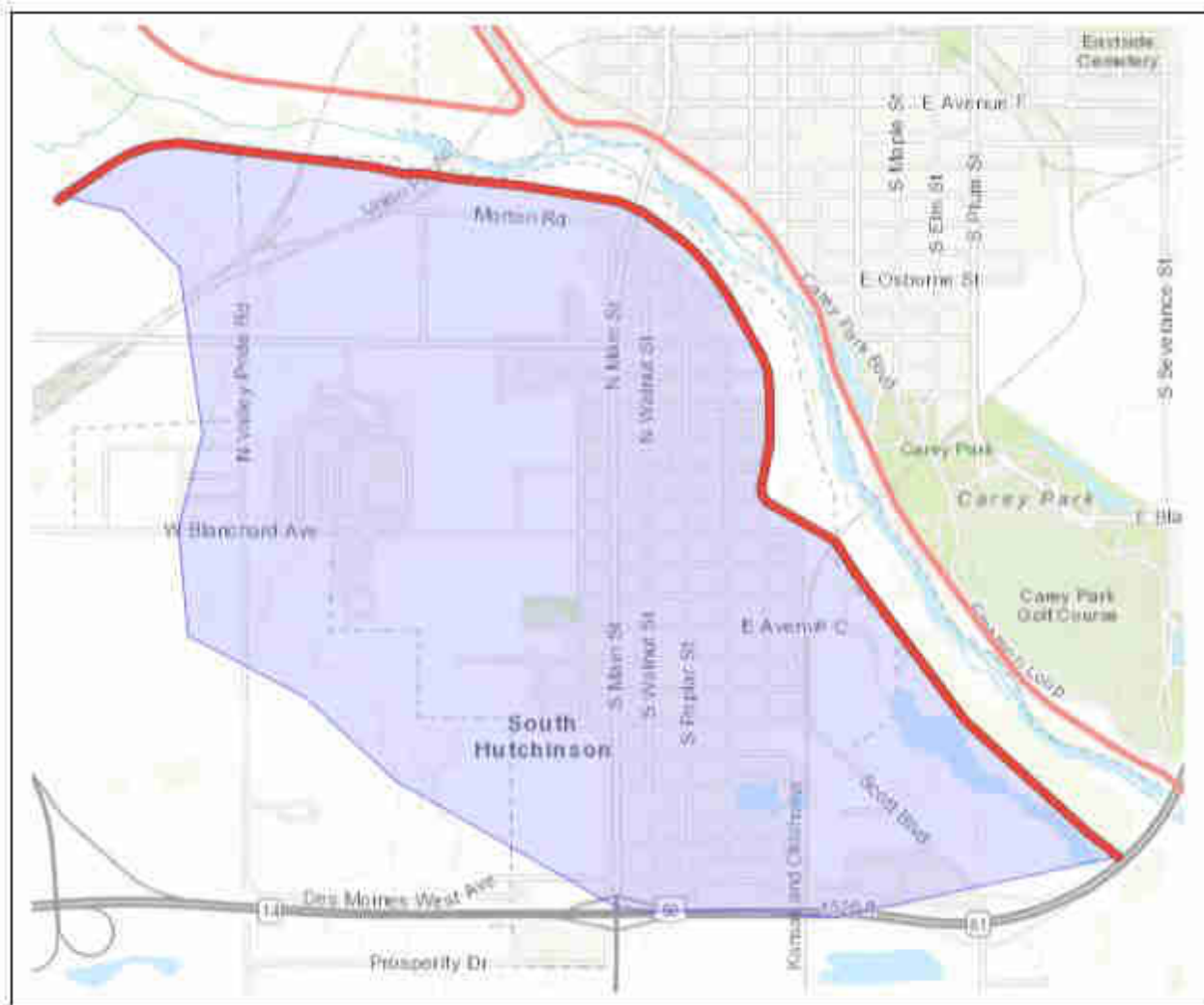


Hutchinson Levee - Levee A & E - Arkansas NE Bank (Reno County, Hutchinson)





Hutchinson Levee - Levee B -Arkansas South Bank (Reno County, South Hutchinson)



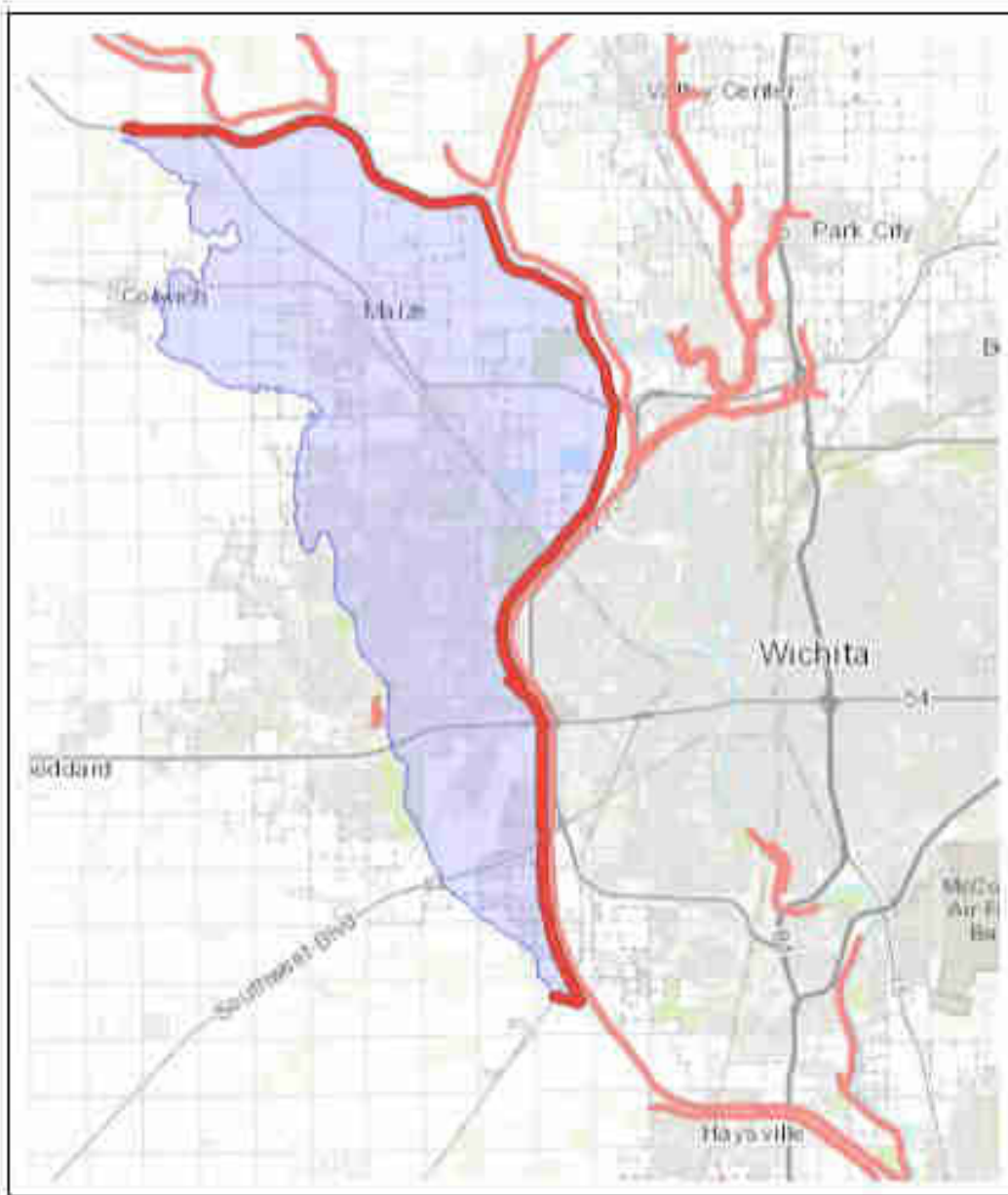


Cowskin Creek South Levee Left (Sedgwick County, Haysville)



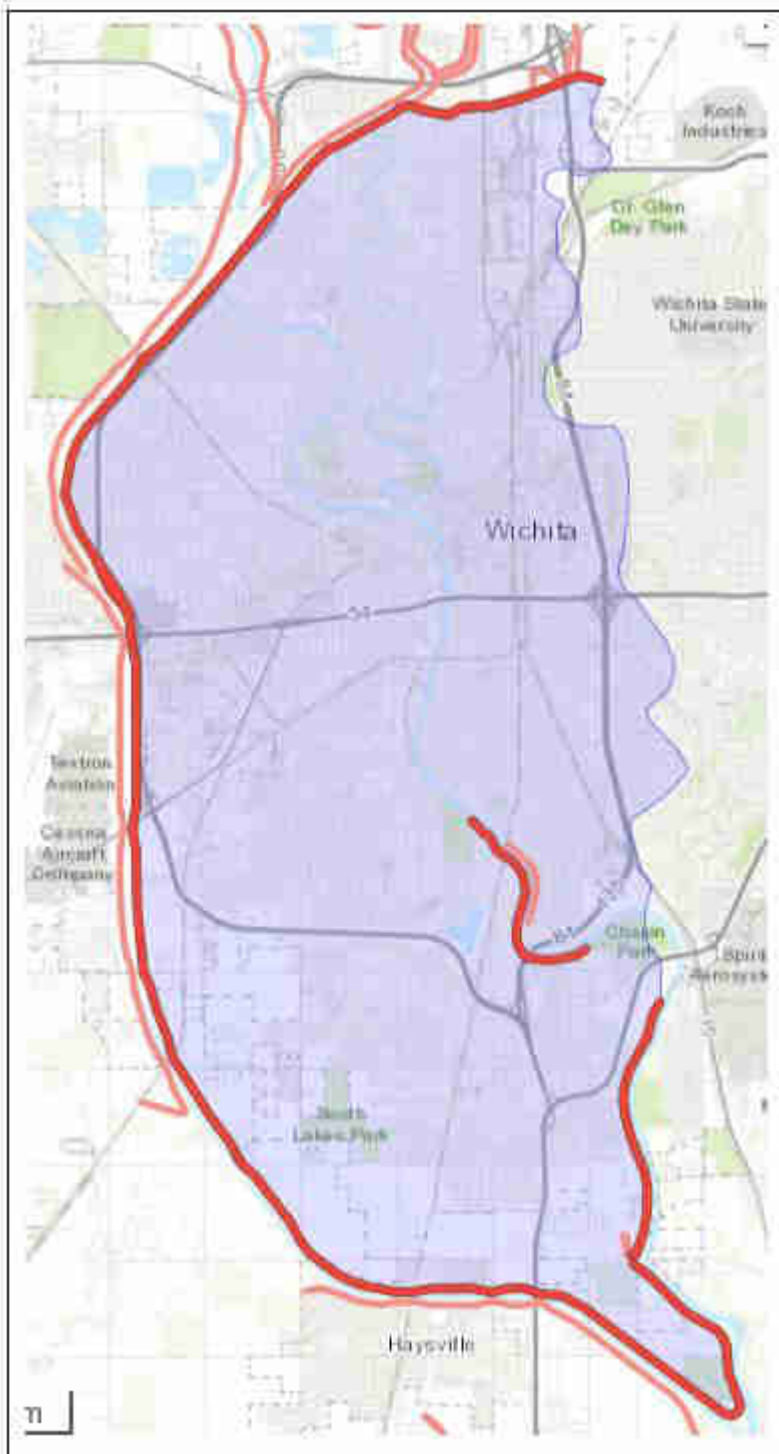


WVC Big Slough Levee C North (Sedgwick County, Wichita)



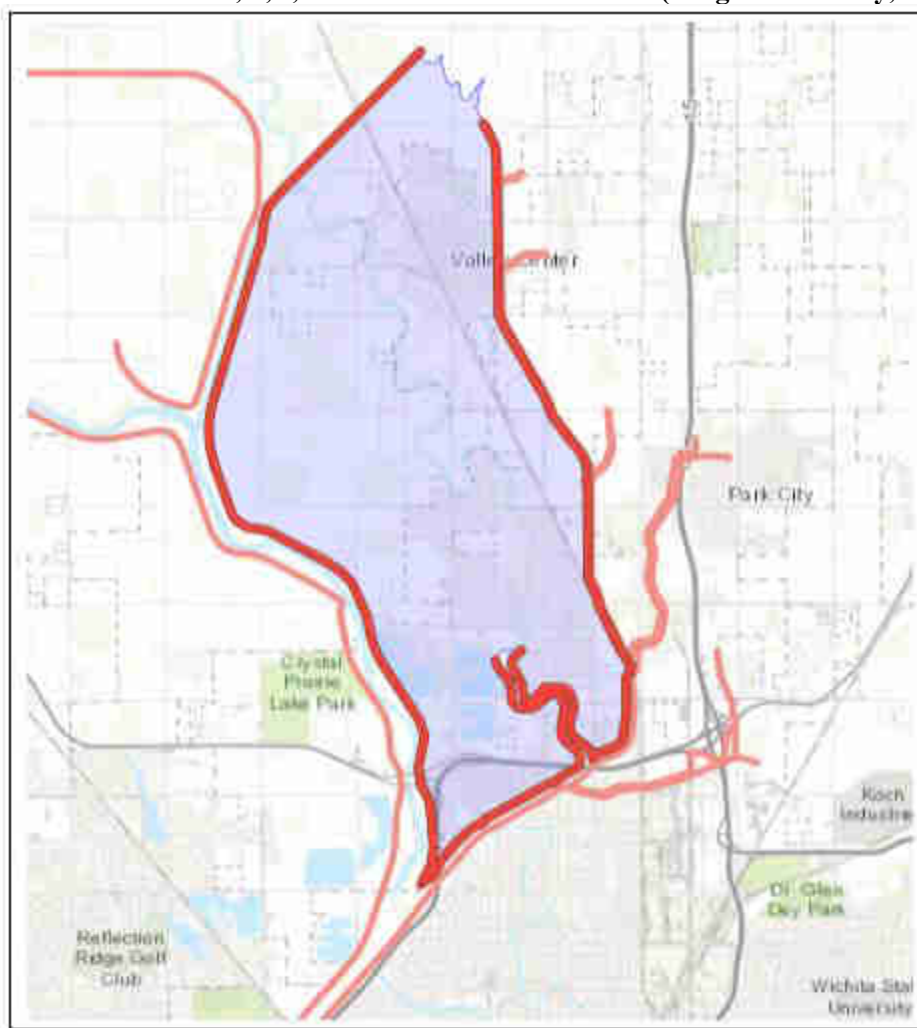


WVC Big Slough Levee D/WVC Riverside Levee P, R, S (Sedgwick County, Wichita)





WVC Little Ark Levee F,K,L,M/WB Chisholm Creek WB (Sedgwick County, Wichita)



4.8.3 – Previous Occurrences

Kansas Region G has been fortunate enough to not have any catastrophic dam failures. Below are the reported dam failures for the region for the 20-year period from 1999-2018.

Kansas Region G Dam Incidents

County	Dam Name	Incident Type	Failure	Incident Date	Deaths
Butler	Augusta Waterworks Dam	Erosion/Slides	No	3/8/2001	None Reported
Kingman	Yeager Lakes Dam	Seepage	No	1/7/2002	None Reported
Butler	Augusta Waterworks Dam	Embankment Slide	No	3/13/2002	None Reported

Source: Stanford University National Performance of Dams Program

There have been no notable or reported levee failures in Kansas Region G in the past 10 years.





4.8.4 – Hazard Probability Analysis

Due to the variability of the size and construction of the dams in Region G, estimating the probability of dam failure is difficult on any scale greater than a case-by-case basis. Historically, the limited available data indicates there have been three reported dam failure events in Kansas Region G over a 20-year period. Using the binomial probability equation (number of years with an event divided by total number of years in reporting period) we derive a probability 15% of a dam failure in a given year. However, it is worth noting that none of the historically reported event resulted in a catastrophic failure, had no loss of life, and no property damages.

Historically, the limited available data indicates there have been no reported levee failure events in Kansas Region G over a 20-year period. Using the binomial probability equation, we derive a probability of 0% for a levee failure in a given year. However, because past non-occurrence does not guarantee future non-occurrence, both federal and nonfederal levees may be damaged in future catastrophic regional flood events.

4.8.5 – Vulnerability Assessment, Dams

Following the metric established in the State of Kansas 2018 Hazard Mitigation Plan, an analysis of vulnerability to dam failure was completed by points being assigned to each type of dam and then aggregated for a total point score for each county. This analysis does not intend to demonstrate vulnerability in terms dam structures that are likely to fail, but rather provides a general overview of the counties that have a high number of dams, with weighted consideration given to dams whose failure would result in greater damages. Points were assigned as follows:

- Low Hazard Dams: 1 point
- Significant Hazard Dams: 2 point
- High Hazard Dams: 3 points
- High Hazard Dams without an EAP: 2 points
- Federal Reservoir Dams: 3 points.

Based on these categories, an awarded point total was determined for each participating county and a vulnerability rating assigned based on the following schedule.

Dam Vulnerability Rating Schedule

	Low	Medium-Low	Medium	Medium-High	High
Awarded Point Range	0 – 26	27 – 50	51 – 100	101 – 200	201 - 327

The following table presents the dam failure vulnerability rating for each Kansas Region G participating county.





Kansas Region G County Vulnerability Assessment for Dam Failure

County	Low Hazard Dams	Significant Hazard Dams	High Hazard Dams	High Hazard Dams Without EAP	Federal Reservoirs	Vulnerability Rating	Vulnerability Level
Butler	171	8	12	3	1	232	High
Cowley	98	8	3	2	0	127	Medium-High
Harper	11	0	0	0	0	11	Low
Harvey	19	1	8	0	0	45	Medium-Low
Kingman	20	0	1	0	1	26	Low
McPherson	19	0	1	0	0	22	Low
Marion	22	1	0	0	1	27	Medium-Low
Reno	10	0	0	0	1	13	Low
Rice	11	0	0	0	0	11	Low
Sedgwick	34	1	7	2	1	64	Medium
Sumner	8	1	1	0	0	13	Low

Source: Analysis by KDEM utilizing data from: Kansas Department of Agriculture, Division of Water Resources, Water Structures program; U.S. Army Corps of Engineers; Bureau of Reclamation; U.S. Army, U.S. Fish and Wildlife.

Counties with a higher identified population are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential dam failure event. The following table indicates the total county population and registered growth over the period 2000 to 2017.

Kansas Region G Population Vulnerability Data for Dam Failure

County	2017 Population	Percent Population Change 2000 to 2017
Butler	66,878	12.4%
Cowley	35,361	-2.6%
Harper	5,590	-14.5%
Harvey	34,544	5.1%
Kingman	7,360	-15.1%
McPherson	28,708	-2.9%
Marion	11,986	-10.3%
Reno	62,510	-3.5%
Rice	9,660	-10.2%
Sedgwick	513,687	13.4%
Sumner	23,159	-10.7%

Source: US Census Bureau

In general counties with a high population and/or a growing population are at increased risk. As such, it is worth highlighting the eight Kansas Region G counties may have decreased vulnerability to dam failure events due to decreasing populations.





4.8.6 – Vulnerability Assessment, Levees

Data was obtained from the USACE NLD to help determine the vulnerability of participating jurisdictions to potential levee failure. Available data includes:

- Number of people at risk
- Structures at risk
- Property value for structures at risk
- Levee safety action risk classification

Additionally, 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

The following table presents the above information for each vulnerable jurisdiction.

Kansas Region G Levee Failure Vulnerability Data

County(ies)	Jurisdiction	Name	People at Risk	Structures at Risk	Property Value	Levee Safety Action Risk Classification	Levee System Status on Effective FIRM
Butler	Augusta	Augusta Levee	1,364	745	\$154,000,000	Low	PAL
Butler	El Dorado	El Dorado Levee	4	2	\$1,270,000	Not Screened	PAL
Butler	Leon	LBU-0006	0	0	\$0	Not Screened	-
Butler	Augusta	Walnut River Levee S. 1	0	0	\$0	Not Screened	Non-Accredited
Butler	Augusta	Walnut River Levee S. 2	557	141	\$108,000,000	Not Screened	PAL
Cowley	Arkansas City	Arkansas City Levee	3,825	2,118	\$335,000,000	Low	Accredited
Cowley	Arkansas City	LCL-0019	6	3	\$703,000	Not Screened	-
Cowley	Oxford	LCL-0026	5	1	\$350,000	Not Screened	-





Kansas Region G Levee Failure Vulnerability Data

County(ies)	Jurisdiction	Name	People at Risk	Structures at Risk	Property Value	Levee Safety Action Risk Classification	Levee System Status on Effective FIRM
Cowley	Arkansas City	LCL-0048	0	0	\$0	Not Screened	-
Cowley	Winfield	Winfield Levee	4,129	2,508	\$511,000,000	Low	Accredited
Harper	Attica	LHP-014-C	0	0	\$0	Not Screened	-
Harvey, Reno, Sedgwick	Mount Hope	Arkansas River North Bank Levee 6	7	5	\$1,500,000	Not Screened	Non-Accredited
Harvey	Halstead	Halstead Arkansas River Levee	2,123	1,208	\$240,000,000	Low	Accredited
Harvey	Moundridge	LHV-0051-C	0	0	\$0	Not Screened	-
Reno	Hutchinson	Arkansas River South Bank Levee	0	0	\$0	Not Screened	PAL
Reno, Sedgwick	Mount Hope	Arkansas River South Bank Levee 2	2	1	\$315,000	Not Screened	Non-Accredited
Reno, Sedgwick	Mount Hope	Arkansas River South Bank Levee 3	6	2	\$700,000	Not Screened	Non-Accredited
Reno	Hutchinson	Hutchinson Levee - Levee A & D - Arkansas NW Bank	1,702	961	\$213,000,000	Low	PAL
Reno	Hutchinson	Hutchinson Levee - Levee A & E - Arkansas NE Bank	12,909	6,272	\$1,510,000,000	Low	PAL
Reno	South Hutchinson	Hutchinson Levee - Levee B - Arkansas South Bank	2,313	1,354	\$333,000,000	Low	PAL
Reno	Hutchinson	Hutchinson Levee - Levee C	786	278	\$49,300,000	Low	PAL
Reno	Willowbrook	Hutchinson Levee - Levee F-Ring Levee	80	13	\$2,300,000	Low	PAL
Reno	Haven	LRN-0004	7	5	\$1,640,000	Not Screened	-
Reno	Yoder	LRN-0005	0	0	\$0	Not Screened	-





Kansas Region G Levee Failure Vulnerability Data

County(ies)	Jurisdiction	Name	People at Risk	Structures at Risk	Property Value	Levee Safety Action Risk Classification	Levee System Status on Effective FIRM
Reno	Yoder	LRN-0012	0	0	\$0	Not Screened	-
Reno	Nickerson	LRN-0024	0	0	\$0	Not Screened	-
Reno	Hutchinson	LRN-0029	0	0	\$0	Not Screened	-
Reno	Hutchinson	LRN-0073-S	0	0	\$0	Not Screened	-
Rice	Lyons	LRC-0035	0	0	\$0	Not Screened	-
Sedgwick	Bentley	Arkansas River North Bank Levee	7	2	\$701,000	Not Screened	Non-Accredited
Sedgwick	Maize	Arkansas River North Bank Levee 2	4	2	\$835,000	Not Screened	Non-Accredited
Sedgwick	Bentley	Arkansas River North Bank Levee 3	0	0	\$0	Not Screened	Non-Accredited
Sedgwick	Bentley	Arkansas River North Bank Levee 4	11	1	\$190,000,000	Not Screened	Non-Accredited
Sedgwick	Mount Hope	Arkansas River North Bank Levee 6	7	5	\$1,500,000	Not Screened	Non-Accredited
Sedgwick	Bentley	Arkansas River South Bank Levee	63	12	\$3,940,000	Not Screened	Non-Accredited
Sedgwick	Haysville	Cowskin Creek South Levee Left	1,868	763	\$248,000,000	Not Screened	Non-Accredited
Sedgwick	Haysville	Cowskin Creek South Levee Right	200	78	\$24,200,000	Not Screened	Non-Accredited
Sedgwick	Derby	LSG-0009, LSG-0016	6	3	\$1,050,000	Not Screened	-
Sedgwick	Bentley	Sedgwick Ditch Levee 1	233	101	\$32,000,000	Not Screened	Non-Accredited
Sedgwick	Bentley	Sedgwick Ditch Levee 2	41	13	\$3,450,000	Not Screened	Non-Accredited
Sedgwick	Park City	WB Chisholm Creek EB S1/WVC Chisholm Levee S & T	1,337	637	\$181,000,000	Low	Accredited
Sedgwick	Valley Center, Sedgwick	West Branch Chisholm	346	119	\$47,500,000	Not Screened	Accredited





Kansas Region G Levee Failure Vulnerability Data

County(ies)	Jurisdiction	Name	People at Risk	Structures at Risk	Property Value	Levee Safety Action Risk Classification	Levee System Status on Effective FIRM
	County, Kansas	Creek East Bank Spoil 2					
Sedgwick	Valley Center	West Branch Chisholm Creek East Bank Spoil 3	123	33	\$18,900,000	Not Screened	Accredited
Sedgwick	Valley Center	West Branch Chisholm Creek East Bank Spoil 4	0	2	\$1,080,000	Not Screened	Accredited
Sedgwick	Wichita	Wichita Valley Center Floodway Levee 1	0	0	\$0	Not Screened	Accredited
Sedgwick	Wichita	WVC Big Slough Levee C North	63,336	20,048	\$5,430,000,000	Low	Accredited
Sedgwick	Haysville	WVC Big Slough Levee C South	9,257	3,515	\$1,380,000,000	Low	Accredited
Sedgwick	Wichita	WVC Big Slough Levee D/WVC Riverside Levee P, R, S	3,643	71	\$554,000,000	Low	Accredited
Sedgwick	Park City	WVC Chisholm Levee P & N/Park City Levee	907	387	\$183,000,000	Not Screened	Accredited
Sedgwick	Wichita	WVC Little Ark Levee F,K,L,M/WB Chisholm Creek WB	12,070	4,893	\$1,120,000,000	Moderate	Accredited
Sedgwick	Valley Center	WVC Little Ark Levee J	719	228	\$39,700,000	Low	Accredited
Sedgwick, Sumner	Mulvane	Cowskin Creek Levee 2 - Right	280	122	\$46,300,000	Not Screened	Non-Accredited
Sumner	Mulvane	Cowskin Creek Levee - Left	174	79	\$30,100,000	Not Screened	Non-Accredited





Kansas Region G Levee Failure Vulnerability Data

County(ies)	Jurisdiction	Name	People at Risk	Structures at Risk	Property Value	Levee Safety Action Risk Classification	Levee System Status on Effective FIRM
Sumner	Oxford	LSU-0001,LSU-0014,LSU-0015 -16,LSU-0032,LSU-0050	3	3	\$1,250,000	Not Screened	-
Sumner	Belle Plaine	LSU-0005, LSU-0007	3	1	\$420,000	Not Screened	-
Sumner	Oxford	LSU-0008, LSU-0033	0	0	\$0	Not Screened	-
Sumner	Belle Plaine	LSU-0009	0	0	\$0	Not Screened	-
Sumner	Oxford	LSU-0017	0	0	\$0	Not Screened	-
Sumner	Belle Plaine	LSU-0031	4	2	\$840,000	Not Screened	-
Sumner	Belle Plaine	LSU-0034	0	0	\$0	Not Screened	-
Sumner	Wellington	LSU-0037	0	0	\$0	Not Screened	-
Sumner	Mulvane	Ninnescah River	0	1	\$420,000	Not Screened	-

Source: USACE NLD

The following table indicates the total number of county structures and the associated percentage of the total number of county structures, and the total population and associated percentage of the total county population identified as at risk to levee failure.

Kansas Region G Population Vulnerability Data for Levee Failure

County	Structures Identified as at Risk to Levee Failure	Percentage of Structures Identified at Risk	Population Identified as at Risk to Levee Failure	Percentage of Population Identified at Risk
Butler	888	3.3%	1,925	2.9%
Cowley	4,630	28.7%	7,965	22.5%
Harper	0	0.0%	0	0.0%
Harvey	1,213	8.3%	2,130	6.2%
Kingman	0	0.0%	0	0.0%
McPherson	0	0.0%	0	0.0%
Marion	0	0.0%	0	0.0%
Reno	8,886	31.2%	17,805	28.5%
Rice	0	0.0%	0	0.0%
Sedgwick	31,035	14.6%	94,458	18.4%
Sumner	86	0.8%	184	0.8%

Source: US Census Bureau and FEMA





4.8.7 – Impact and Consequence Analysis

As per EMAP standards, the information in the following table provides the Consequence Analysis.

Dam and Levee Failure Consequence Analysis

Subject	Impacts of Dam and Levee Failure
Health and Safety of the Public	In areas of inundation, the impact to the public is expected to be severe. Impacts to the public in adjacent or minimally impacted areas is expected to be minimal to moderate.
Health and Safety of Responders	Impact to responders is expected to be minimal with proper training. Impact could be severe if there is lack of training.
Continuity of Operations	Temporary relocation may be necessary if facilities or infrastructure is damaged.
Property, Facilities, and Infrastructure	In areas of inundation, impacts could be severe to facilities and infrastructure.
Environment	In areas of inundation, impact to the environment are expected to be severe. Impact will lessen as distance increases.
Economic Conditions	In areas of inundation, impacts to the economy will depend on the scope of the inundation and the time it takes for the water to recede.
Public Confidence in the Jurisdiction's Governance	Perception of whether the failure could have been prevented, warning time, and response and recovery time will greatly impact the public's confidence.





4.9 – Drought

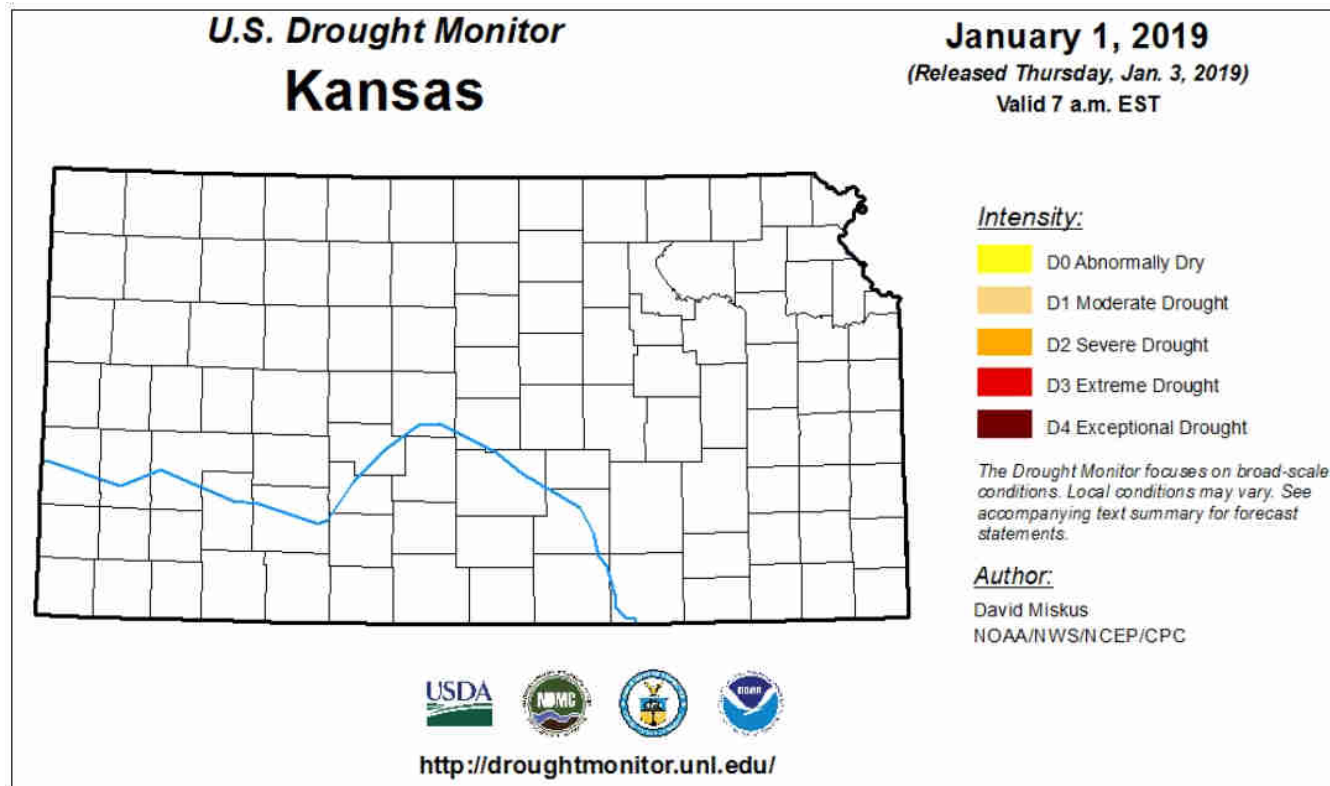
Drought is an abnormally dry period lasting months or years when an area has a deficiency of water and precipitation in its surface and/or underground water supply. The hydrological imbalance can be grouped into the following non-exclusive categories.



- **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.

4.9.1 – Location and Extent

While all of Kansas Region G is vulnerable to drought, it is most disastrous in the rural areas where the majority of agricultural businesses are located. The most commonly used drought index to determine the onset and the severity of a drought is the Palmer Drought Severity Index. The map below indicates the drought conditions for Kansas Region G through January 1, 2019.





4.9.2 – Previous Occurrences

One of the best indicators of historic drought periods is provided by the U.S. Drought Monitor, which lists weekly drought conditions for the State of Kansas. The following table details the U.S. Drought Monitor categories.

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

Historical data was gathered from the U.S. Drought Monitor weekly reports from the 10-year period 2009 through 2018. This data was compiled and aggregated to provide a yearly estimate of the percentage of the year Kansas Region G was in each Drought Monitor category.

Percentage of Kansas Region G in U.S. Drought Monitor Category, 2009-2018

Year	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2018	29.0%	71.0%	62.2%	29.1%	2.6%	0.0%
2017	70.4%	29.6%	0.5%	0.0%	0.0%	0.0%
2016	85.1%	14.9%	5.4%	0.0%	0.0%	0.0%
2015	45.9%	54.1%	28.6%	7.5%	0.0%	0.0%
2014	0.0%	100.0%	71.1%	29.0%	8.4%	0.0%
2013	31.2%	68.8%	57.4%	55.5%	29.5%	0.0%
2012	18.1%	81.9%	74.7%	50.8%	40.1%	3.1%
2011	0.4%	99.6%	85.6%	42.3%	17.1%	0.0%
2010	94.3%	5.7%	2.1%	0.0%	0.0%	0.0%
2009	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: U.S. Drought Monitor

Another good indicator of historical droughts is USDA Disaster Declarations. The following table details USDA Drought Declarations during the period 2013 through 2018 for Kansas Region G.

Kansas Region G Secretarial Drought Declarations, 2012 - 2017

Year	Number of Secretarial Drought Disaster Declarations
2018	6
2017	2
2016	0
2015	5
2014	7

Source: USDA Farm Service Agency





Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of drought on the Region’s agricultural base. Crop loss data for the years 2015- 2018, for the region, indicates 1,366 drought related claims on 1,228,107 acres for \$72,412,521.

Kansas Region G USDA Risk Management Agency Cause of Loss Indemnities, Drought

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Butler	66	38,996	\$3,663,737
Cowley	83	37,476	\$2,485,375
Harper	132	225,502	\$11,267,550
Harvey	108	61,890	\$3,389,412
Kingman	108	87,071	\$3,817,556
McPherson	130	108,150	\$6,511,153
Marion	107	110,431	\$9,145,444
Reno	152	98,111	\$4,713,168
Rice	120	112,153	\$6,097,791
Sedgwick	130	93,454	\$5,157,607
Sumner	164	215,877	\$12,499,991
Butler	66	38,996	\$3,663,737

Source: USDA Farm Service Agency

4.9.3 – Hazard Probability Analysis

Reviewing historical data from the U.S. Drought Monitor weekly reports from the years 2009 through 2018 a yearly average can be created indicating the percentage of the region in each Drought Monitor category. This average can be used to extrapolate the potential likelihood of future drought conditions.

Kansas Region G Estimated Probability of Being in U.S. Drought Monitor Category

None	D0-D4	D1-D4	D2-D4	D3-D4	D4
47.4%	52.6%	38.8%	21.4%	9.8%	0.3%

Additionally, over the five-year period 2014 to 2018 every year recorded a USDA Declared Secretarial Drought Disaster, equating to 100% chance of occurrence.

Data was reviewed from the USDA Risk Management agency to determine vulnerability to drought. The following table summarizes drought event data for **Butler County**

Butler County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	66
Average Number of Claims per Year	17
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	38,996
Average Number of Acres Damaged per Year	9,749
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$3,663,737
Average Crop Damage per Year	\$915,934

Source: USDA





According to the USDA Risk Management Agency, Butler County can expect on a yearly basis, relevant to drought occurrences:

- 17 insurance claims
- 9,749 acres impacted
- \$915,934 in insurance claims

The following table summarizes drought event data for **Cowley County**.

Cowley County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	83
Average Number of Claims per Year	21
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	37,476
Average Number of Acres Damaged per Year	9,369
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$2,485,375
Average Crop Damage per Year	\$621,344

Source: USDA

According to the USDA Risk Management Agency, Cowley County can expect on a yearly basis, relevant to drought occurrences:

- 21 insurance claims
- 9,369 acres impacted
- \$621,344 in insurance claims

The following table summarizes drought event data for **Harper County**.

Harper County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	132
Average Number of Claims per Year	33
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	225,502
Average Number of Acres Damaged per Year	56,376
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$11,267,550
Average Crop Damage per Year	\$2,816,887

Source: USDA

According to the USDA Risk Management Agency, Harper County can expect on a yearly basis, relevant to drought occurrences:

- 33 insurance claims
- 56,376 acres impacted
- \$2,816,887 in insurance claims

The following table summarizes drought event data for **Harvey County**.





Harvey County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	108
Average Number of Claims per Year	27
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	61,890
Average Number of Acres Damaged per Year	15,473
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$3,389,412
Average Crop Damage per Year	\$847,353

Source: USDA

According to the USDA Risk Management Agency, Harvey County can expect on a yearly basis, relevant to drought occurrences:

- 27 insurance claims
- 15,473 acres impacted
- \$847,353 in insurance claims

The following table summarizes drought event data for **Kingman County**.

Kingman County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	108
Average Number of Claims per Year	27
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	87,071
Average Number of Acres Damaged per Year	21,768
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$3,817,556
Average Crop Damage per Year	\$954,389

Source: USDA

According to the USDA Risk Management Agency, Kingman County can expect on a yearly basis, relevant to drought occurrences:

- 27 insurance claims
- 21,768 acres impacted
- \$954,389 in insurance claims

The following table summarizes drought event data for **McPherson County**.

McPherson County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	130
Average Number of Claims per Year	33
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	108,150
Average Number of Acres Damaged per Year	27,037
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$6,511,153
Average Crop Damage per Year	\$1,627,788

Source: USDA





According to the USDA Risk Management Agency, McPherson County can expect on a yearly basis, relevant to drought occurrences:

- 33 insurance claims
- 27,037 acres impacted
- \$1,627,788 in insurance claims

The following table summarizes drought event data for **Marion County**.

Marion County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	107
Average Number of Claims per Year	27
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	110,431
Average Number of Acres Damaged per Year	27,608
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$9,145,444
Average Crop Damage per Year	\$2,286,361

Source: USDA

According to the USDA Risk Management Agency, Marion County can expect on a yearly basis, relevant to drought occurrences:

- 27 insurance claims
- 27,608 acres impacted
- \$2,286,361 in insurance claims

The following table summarizes drought event data for **Reno County**.

Reno County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	152
Average Number of Claims per Year	38
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	98,111
Average Number of Acres Damaged per Year	24,528
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$4,713,168
Average Crop Damage per Year	\$1,178,292

Source: USDA

According to the USDA Risk Management Agency, Reno County can expect on a yearly basis, relevant to drought occurrences:

- 38 insurance claims
- 24,528 acres impacted
- \$1,178,292 in insurance claims

The following table summarizes drought event data for **Rice County**.





Rice County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	120
Average Number of Claims per Year	30
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	112,153
Average Number of Acres Damaged per Year	28,038
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$6,097,791
Average Crop Damage per Year	\$1,524,448

Source: USDA

According to the USDA Risk Management Agency, Rice County can expect on a yearly basis, relevant to drought occurrences:

- 30 insurance claims
- 28,038 acres impacted
- \$1,524,448 in insurance claims

The following table summarizes drought event data for **Sedgwick County**.

Sedgwick County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	130
Average Number of Claims per Year	33
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	93,454
Average Number of Acres Damaged per Year	23,363
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$5,157,607
Average Crop Damage per Year	\$1,289,998

Source: USDA

According to the USDA Risk Management Agency, Sedgwick County can expect on a yearly basis, relevant to drought occurrences:

- 33 insurance claims
- 23,363 acres impacted
- \$1,289,998 in insurance claims

The following table summarizes drought event data for **Sumner County**.

Sumner County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	164
Average Number of Claims per Year	41
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	215,877
Average Number of Acres Damaged per Year	53,969
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$12,499,991
Average Crop Damage per Year	\$3,124,998

Source: USDA





According to the USDA Risk Management Agency, Sumner County can expect on a yearly basis, relevant to drought occurrences:

- 41 insurance claims
- 53,969 acres impacted
- \$3,124,998 in insurance claims

4.9.4 Vulnerability Analysis

In general, structures and populations are not directly vulnerable to losses as a result of drought. However, there is a small potential that bridges could be impacted by shrinking soil as a result of drought conditions that could cause foundational or support damages.

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data (2015 – 2018) allows us to quantify the monetary impact of drought conditions on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to drought events.

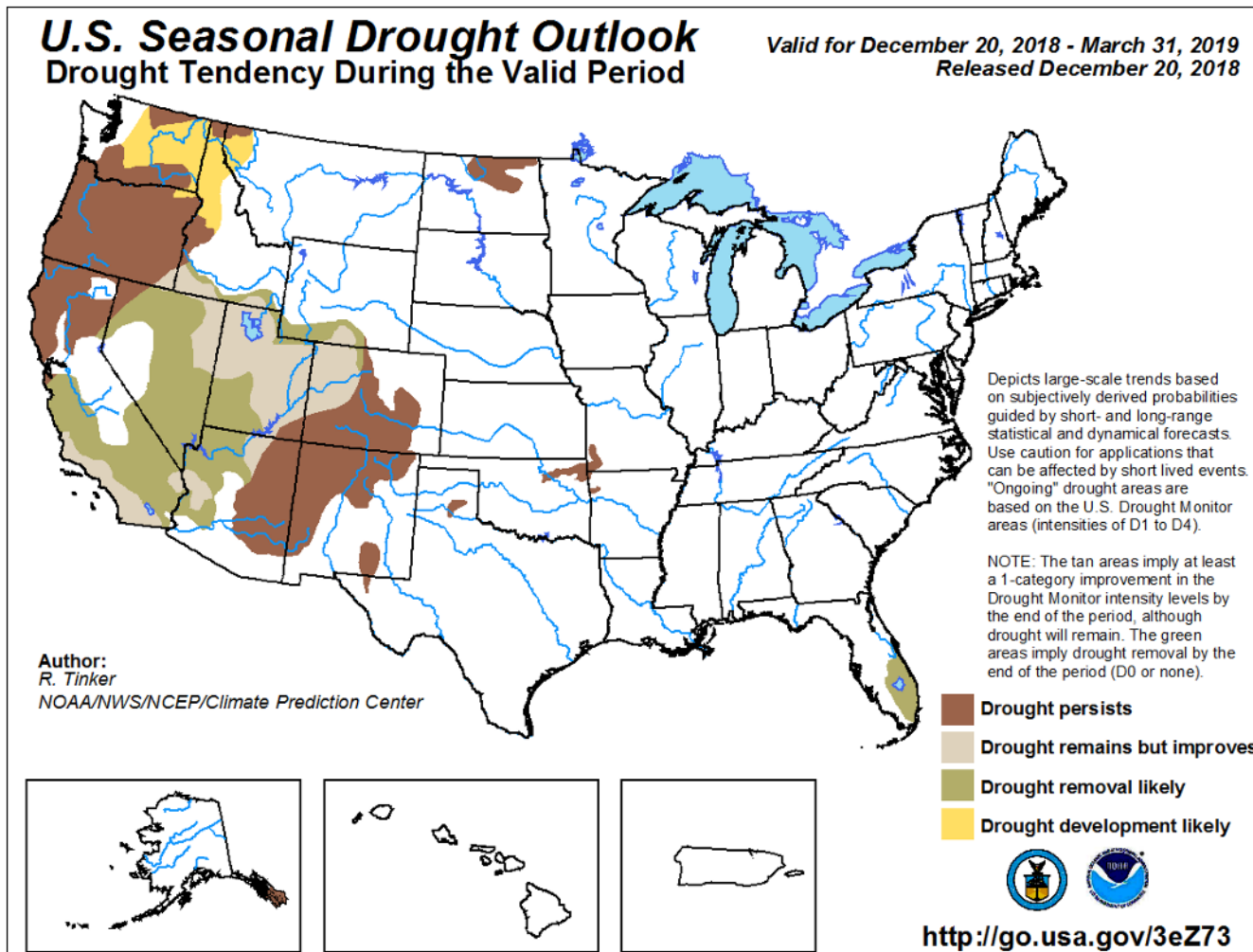
Drought Acres Impacted and Crop Insurance Paid per County from 2015-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Butler	768,149	9,749	1.27%	\$282,338,000	\$915,934	0.32%
Cowley	574,614	9,369	1.63%	\$108,976,000	\$621,344	0.57%
Harper	506,006	56,376	11.14%	\$109,644,000	\$2,816,887	2.57%
Harvey	339,584	15,473	4.56%	\$161,716,000	\$847,353	0.52%
Kingman	542,010	21,768	4.02%	\$103,188,000	\$954,389	0.92%
McPherson	571,577	27,037	4.73%	\$208,482,000	\$1,627,788	0.78%
Marion	596,296	27,608	4.63%	\$151,478,000	\$2,286,361	1.51%
Reno	789,525	24,528	3.11%	\$267,318,000	\$1,178,292	0.44%
Rice	457,603	28,038	6.13%	\$258,181,000	\$1,524,448	0.59%
Sedgwick	486,723	23,363	4.80%	\$148,484,000	\$1,289,402	0.87%
Sumner	719,611	53,969	7.50%	\$168,713,000	\$3,124,998	1.85%

Source: USDA

Additional predictions about drought vulnerability can be made by reviewing data with the National Weather Service (NWS) Climate Prediction Center at www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php. The following map was the latest published data at the time of this report, and indicates no predicted drought conditions for the region..





4.9.5 – Impact and Consequence Analysis

As per EMAP standards, the following table provides the consequence analysis for drought conditions.

Drought Consequence Analysis

Subject	Impacts of Drought
Health and Safety of the Public	Drought impact tends to be agricultural however, because of the lack of precipitation water supply disruptions can occur which can affect people. Impact is expected to be minimal.
Health and Safety of Responders	Impact to responders is expected to be minimal.
Continuity of Operations	Minimal expectation for utilization of the COOP.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the length and intensity of the drought. Structural integrity of buildings, and buckling of roads could occur.
Environment	The impact to the environment could be severe. Drought can severely affect farming, ranching, wildlife and plants due to the lack of precipitation.





Drought Consequence Analysis

Subject	Impacts of Drought
Economic Conditions	Impacts to the economy will be dependent on how extreme the drought is and how long it lasts. Communities that depend on an agricultural economic engine will likely be severely stressed.
Public Confidence in the Jurisdiction's Governance	Confidence could be an issue during periods of extreme drought if planning is not in place to address intake needs and loss of crops.





4.10 – Earthquake

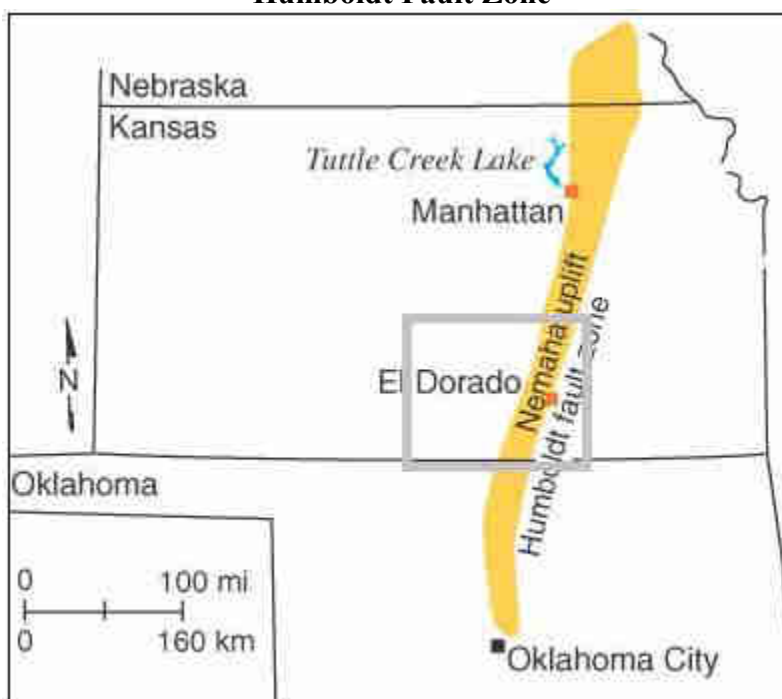
An earthquake is the result of a sudden release of energy in the Earth’s crust that creates seismic waves that are typically caused by the rupturing of geological faults.

4.10.1 – Location and Extent

Kansas Region G is in an area of potential seismic activity, with the Humboldt Fault (also known as the Nemaha Uplift) passing through the eastern portion of the region. Most earthquakes in the Humboldt Fault Zone are small and are detected only with instruments.



Humboldt Fault Zone



Two scales are used when referring to earthquake activity. Estimating the total force of an earthquake is the Richter scale, and the observed damage from an earthquake is the Modified Mercalli Intensity Scale. Additionally, both Acceleration (%g) and Velocity (cm/s) can be used to measure and quantify force and movement.

The following table equates the above referenced earthquake scales.

Earthquake Magnitude Scale Comparison

Mercalli Scale Intensity	Verbal Description	Richter Scale Magnitude	Acceleration (%g)	Velocity (cm/s)	Witness Observations
I	Instrumental	1 to 2	0.17%	<0.1	None





Earthquake Magnitude Scale Comparison

Mercalli Scale Intensity	Verbal Description	Richter Scale Magnitude	Acceleration (%g)	Velocity (cm/s)	Witness Observations
II	Feeble	2 to 3	1.40%	1.1	Noticed only by sensitive people
III	Slight	3 to 4	1.40%	1.1	Resembles vibrations caused by heavy traffic
IV	Moderate	4	3.90%	3.4	Felt by people walking; rocking of free standing objects
V	Rather Strong	4 to 5	9.20%	8.1	Sleepers awakened; bells ring
VI	Strong	5 to 6	18.00%	16	Trees sway, some damage from falling objects
VII	Very Strong	6	34.00%	31	General alarm, cracking of walls
VIII	Destructive	6 to 7	65.00%	60	Chimneys fall and some damage to building
IX	Ruinous	7	124.00%	116	Ground crack, houses begin to collapse, pipes break
X	Disastrous	7 to 8	>124.0%	>116	Ground badly cracked, many buildings destroyed. Some landslides
XI	Very Disastrous	8	>124.0%	>116	Few buildings remain standing, bridges destroyed.
XII	Catastrophic	8 or greater	>124.0%	>116	Total destruction; objects thrown in air, shaking and distortion of ground

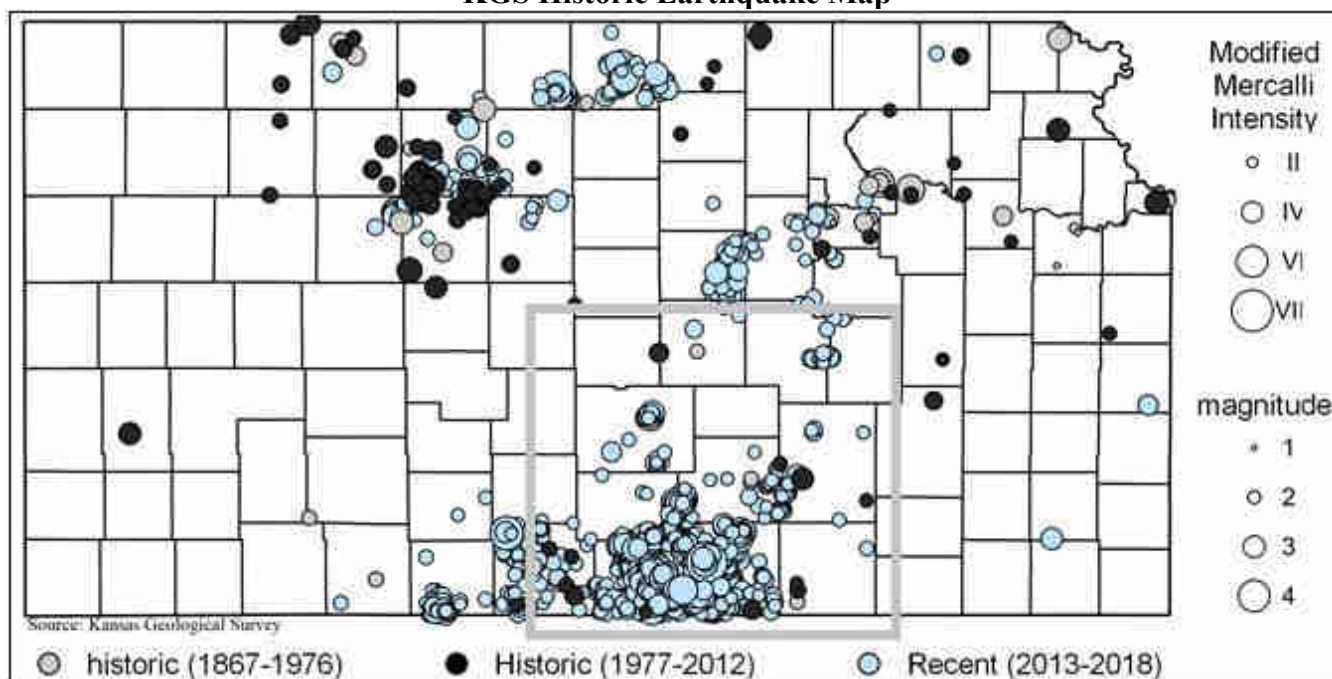
4.10.2 – Previous Occurrences

The following map, from the KGS, shows all recorded earthquakes from 1867 through 2018.





KGS Historic Earthquake Map



The KGS Earthquake Catalogue records earthquake events from 1979 through present. According to this archive, Kansas Region G has had one earthquake since 1979.

The following table details the Richter Scale Magnitude of any recorded events.

Region G Number of Earthquakes by Richter Scale Magnitude, 1978 - 2018

	0.1 -3.9	4.0 – 4.9	5.0 – 5.9	6.0 – 6.9	7.0- 7.9	8.0 +	Highest
Butler	34	0	0	0	0	0	3.0
Cowley	3	0	0	0	0	0	2.34
Harper	1,451	5	0	0	0	0	4.4
Harvey	0	0	0	0	0	0	-
Kingman	92	0	0	0	0	0	3.7
McPherson	3	0	0	0	0	0	2.6
Marion	17	0	0	0	0	0	2.6
Reno	72	0	0	0	0	0	2.5
Rice	1	0	0	0	0	0	2.7
Sedgwick	90	0	0	0	0	0	3.8
Sumner	852	1	0	0	0	0	4.9

Source: KGS

Recently, concern about earthquakes caused by oil and gas exploration and production operations, has grown. Commonly, detected seismic activity associated with oil and gas operations, also known as induced seismicity, is thought to be triggered when wastewater is injected into disposal wells. According to the KGS, linking earthquakes to wastewater injection is difficult. Complex subsurface geology and limited data about that geology make it hard to pinpoint the cause seismic events. However, an established



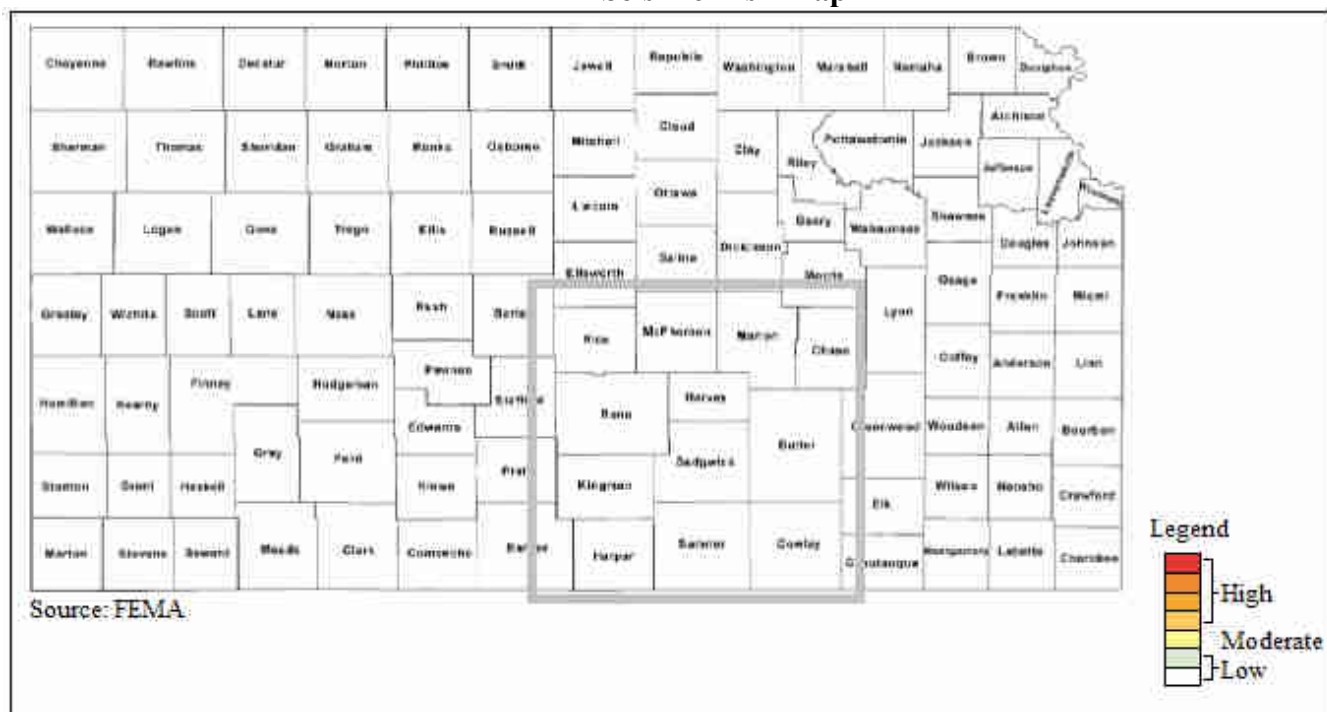


pattern of increased earthquake activity in an area over time may indicate a correlation between injection and seismic events.

4.10.3 – Hazard Probability Analysis

The following FEMA Seismic Risk Map for the United States indicates that all of the State of Kansas, including Kansas Region G, falls into the low hazard rankings.

FEMA Seismic Risk Map

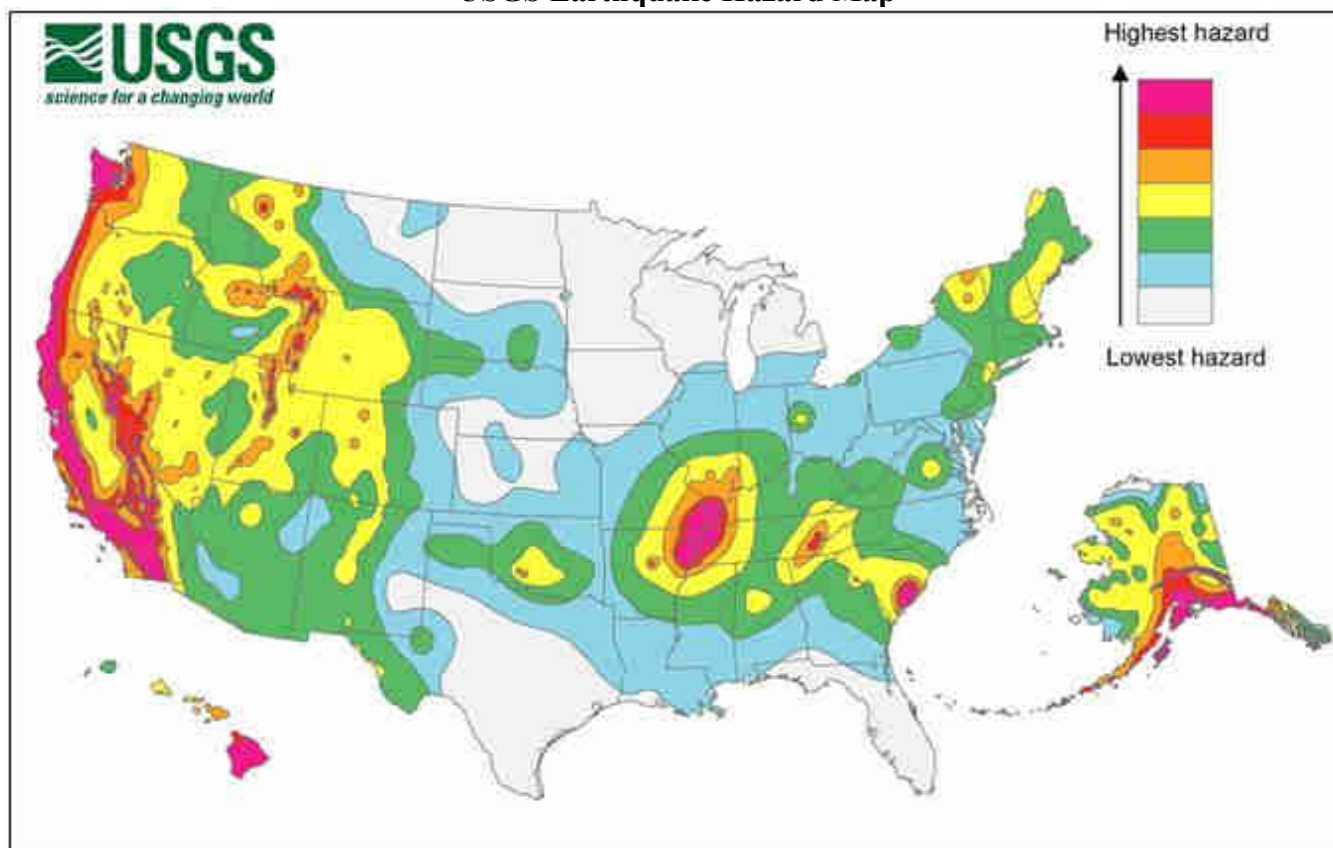


The USGS also published a map that indicates hazard rankings based on acceleration (%g) for the United States, with the data correlating with the indicated FEMA risk. This map indicates the probability that ground shaking will exceed a certain level over a 50-year period. The low-hazard areas have a 2% chance of exceeding a designated low level of shaking and the high-hazard areas have a 2% chance of topping a much greater level.





USGS Earthquake Hazard Map



New research by Stanford University shows that oil and gas production injection limits enacted by the State Legislature has reduced the frequency of induced seismicity. Current modelling predicts that at current injection rates the number of widely felt earthquakes in Kansas will decrease to as few as 100 by 2020.

4.10.4 – Vulnerability Analysis

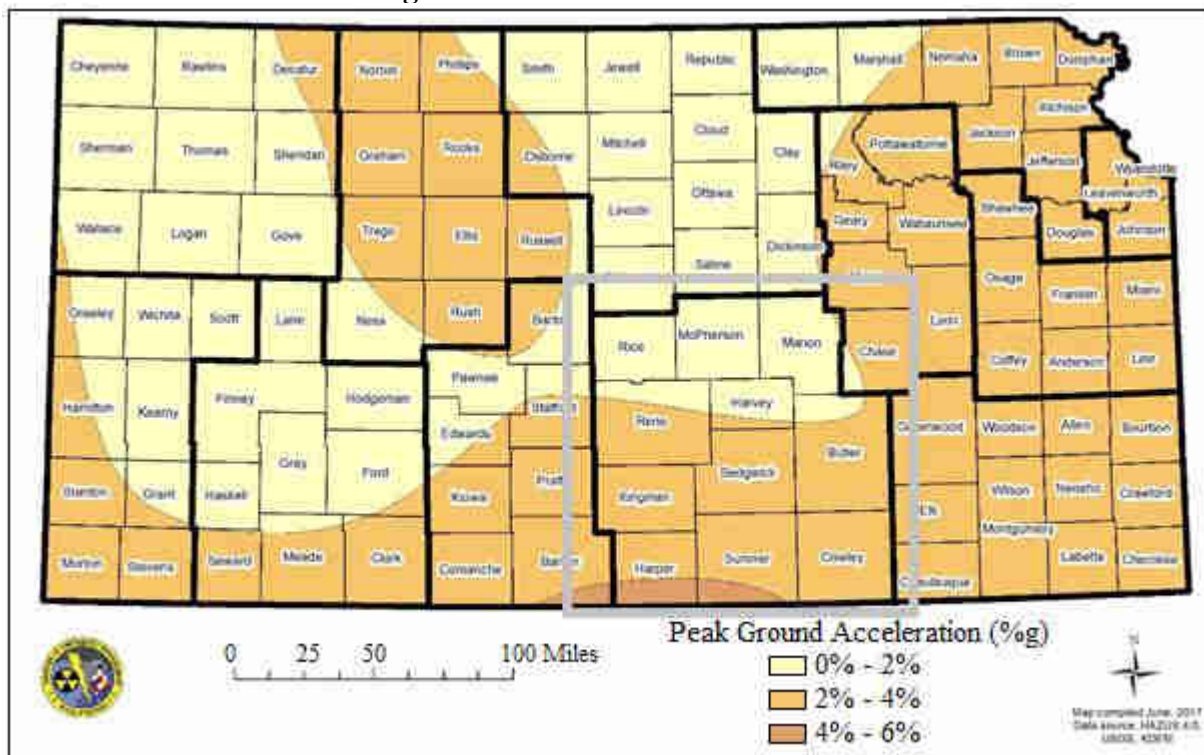
HAZUS, using the default inventory 2010 building valuations, was used to analyze vulnerability and estimate potential losses to earthquakes. A probabilistic, 2,500 Year 6.7 magnitude earthquake scenario was chosen to reveal areas of the region and state that are most vulnerable. These results are not meant to indicate annualized losses or damages as a result of a more typical low-magnitude event, but rather reveal vulnerabilities and losses for the worst-case scenario.

The following map, created using available HAZUS data, shows the ground shaking potential of a worst-case scenario 2,500-year 6.7 magnitude earthquake.





Regional Peak Ground Acceleration



Using available HAZUS data, the following potential losses from a worst-case scenario 2,500-year 6.7 Magnitude earthquake. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential earthquake event.

Kansas Region G Probabilistic 6.7 Magnitude Earthquake Damages

County	Total Earthquake Losses	Displaced Households
Butler	\$25,491,000	9
Cowley	\$22,998,000	9
Harper	\$5,855,000	1
Harvey	\$14,206,000	7
Kingman	\$4,740,000	1
Marion	\$5,276,000	2
McPherson	\$11,837,000	4
Reno	\$25,671,000	11
Rice	\$3,738,000	1
Sedgwick	\$251,757,000	138
Sumner	\$16,563,000	4

Source: KDEM and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential earthquake event. The following table indicates the total county population and registered growth over the period 2000 to 2017.





Kansas Region G Population Vulnerability Data for Earthquakes

County	2017 Population	Percent Population Change 2000 to 2017
Butler	66,878	12.4%
Cowley	35,361	-2.6%
Harper	5,590	-14.5%
Harvey	34,544	5.1%
Kingman	7,360	-15.1%
McPherson	28,708	-2.9%
Marion	11,986	-10.3%
Reno	62,510	-3.5%
Rice	9,660	-10.2%
Sedgwick	513,687	13.4%
Sumner	23,159	-10.7%

Source: US Census Bureau

In general counties with a high population and/or a growing population are at increased risk. As such, it is worth highlighting the majority of Kansas Region G counties may have decreased vulnerability to earthquake events due to decreasing populations.

Counties with a higher number of structures are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential earthquake event. The following table indicates the total number of housing units in each county (used as a representative figure for the total number of structures in each county, as housing numbers are closely tied to commercial structures) and the percentage change over the period 2000 to 2017.

Kansas Region G Structure Vulnerability Data for Earthquakes

County	2017 Housing Units	Percent Change 2000 to 2017
Butler	26,657	15.0%
Cowley	16,155	3.1%
Harper	3,182	-2.7%
Harvey	14,695	9.8%
Kingman	3,852	0.0%
McPherson	13,049	10.3%
Marion	5,984	1.7%
Reno	28,441	3.0%
Rice	4,582	-0.6%
Sedgwick	216,296	13.2%
Sumner	10,930	0.50%

Source: US Census Bureau

In general counties with a large and/or a growing number of structures are at increased risk. As such, it is worth highlighting the majority of Kansas Region G counties may have increased vulnerability to earthquake events due to an increasing number of structures.





4.10.5 – Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis

Earthquake Consequence Analysis

Subject	Impacts of Earthquake
Health and Safety of the Public	Severity and location dependent. Impacts on persons near the epicenter are expected to be severe.
Health and Safety of Responders	Severity and location dependent. Impacts on persons near the epicenter are expected to be severe.
Continuity of Operations	Severity and location dependent. Event will likely require relocation, essential function prioritization based on capabilities and severe disruption of services.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location of the facility and the severity of the event. Loss of structural integrity of buildings and infrastructure could occur.
Environment	The impact to the environment could be severe, including topological changes and severe destruction.
Economic Conditions	Impacts to the economy will be dependent severity of earthquake and proximity to the epicenter. Impacts will likely be long lasting and possibly permanent for most severely impacted businesses.
Public Confidence in the Jurisdiction's Governance	Confidence could be an issue if planning is not in place to address need of population, including mass sheltering and mass care.





4.11 – Expansive Soils

Expansive soils are slow to develop and do not usually pose a risk to public safety. The slow expansion and contraction of the clays and soils places pressure on structural foundations and subsurface dwellings. This pressure can become so great it damages foundations, cracks walls, and deforms structures.

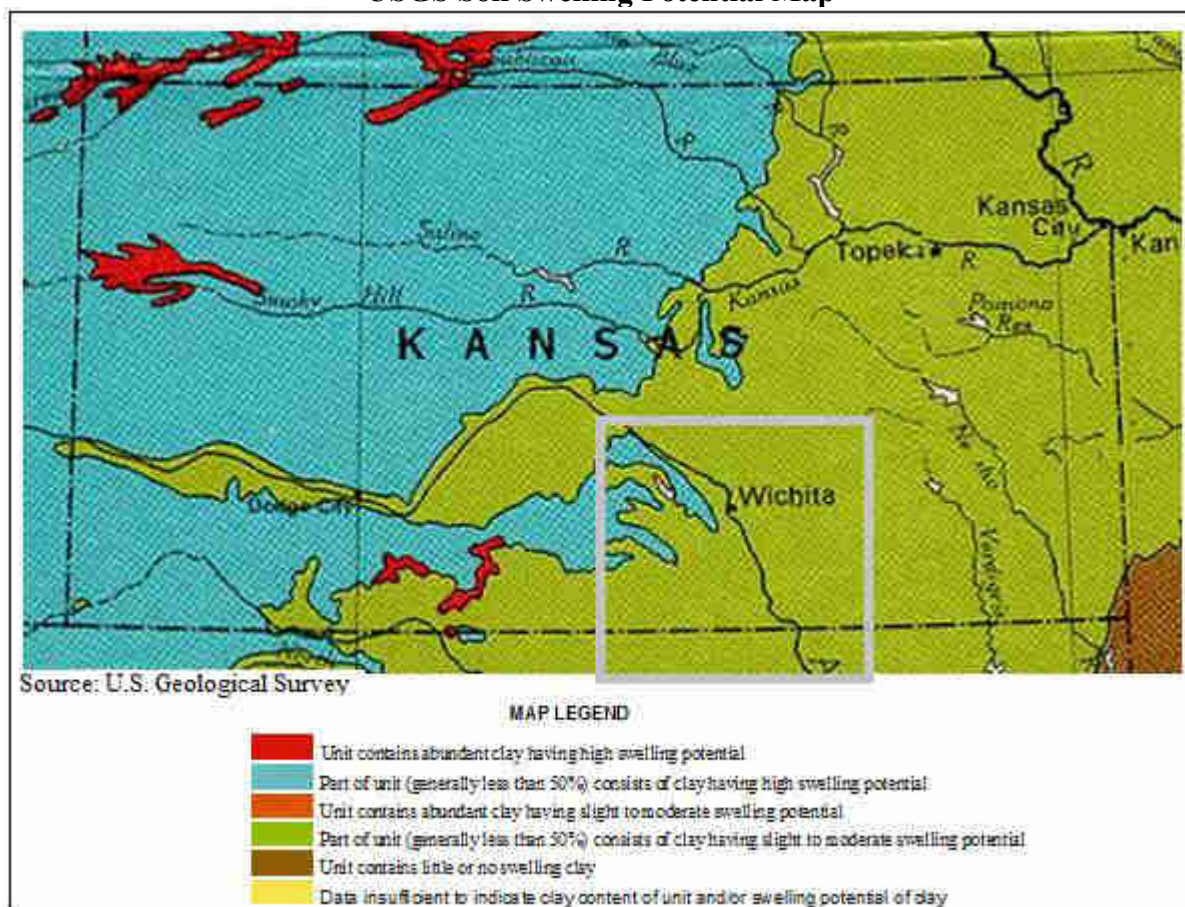


4.11.1 – Location and Extent

Kansas Region G possesses a wide array of soils with a range of permeability from moderate to low. Generally, the permeability of the soils is related to the clay content. Clay soils tend to shrink when dry and swell when wet which has large implications on underground utility infrastructure and home foundations.

The map shows the swelling potential of soils in Kansas Region G, indicating it is located in an area where the majority of the soil unit consists of clay having slight to moderate swelling potential.

USGS Soil Swelling Potential Map





4.11.2 – Previous Occurrences

No statewide database of expansive soils events is available.

Locally, there have been no reported expansive soil events within the past five years.

4.11.3 – Hazard Probability Analysis

Currently there is limited available data on this hazard, but it is held that each year in the United States, expansive soils cause billions of dollars in damage to buildings, roads, pipelines, and other structures. But, as expansive soils cause damage over extended periods of time damages caused may be attributed to other factors such as extended drought or heavy periods of moisture, both of which may exacerbate the hazard.

Because there is high clay content, high swell soils in the region, the probability of shrink/swell occurrence is 100%. However, the probability of damage is so poorly documented that is presently not possible to quantify the potential occurrence of a major damaging expansive soils event.

4.11.4 – Vulnerability Analysis

Physical structures are potentially vulnerable to highly expansive soil. It is estimated by KDEM that approximately 10% of the homes built on expansive soils could experience significant damage. Based on this, and using current available building valuations, the following table estimates the potential damages assuming a 50% impact on the value of the structure.

Kansas Region G Estimated Potential Structural Damages, Expansive Soil

County	Property Valuation	Property Valuation for 10% of Building Stock	Estimated 50% Damage
Butler	\$6,664,946,000	\$666,494,600	\$333,247,300
Cowley	\$3,626,310,000	\$362,631,000	\$181,315,500
Harper	\$779,563,000	\$77,956,300	\$38,978,150
Harvey	\$3,863,763,000	\$386,376,300	\$193,188,150
Kingman	\$1,041,969,000	\$104,196,900	\$52,098,450
McPherson	\$3,766,723,000	\$376,672,300	\$188,336,150
Marion	\$1,538,178,000	\$153,817,800	\$76,908,900
Reno	\$7,100,181,000	\$710,018,100	\$355,009,050
Rice	\$1,198,508,000	\$119,850,800	\$59,925,400
Sedgwick	\$56,135,645,000	\$5,613,564,500	\$2,806,782,250
Sumner	\$2,800,707,000	\$280,070,700	\$140,035,350

Source: US Census Bureau

4.11.5 – Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.





Expansive Soils Consequence Analysis

Subject	Impacts of Expansive Soils
Health and Safety of the Public	Minimal impact.
Health and Safety of Responders	Minimal impact.
Continuity of Operations	Minimal expectation for utilization of COOP unless structures have extensive damage.
Property, Facilities, and Infrastructure	Localized impact could be moderate, including structural integrity to be lost, and roadways, railways to buckle.
Environment	Expansive soils could cause moderate damage to dams, levees, watersheds.
Economic Conditions	Economic impacts include rebuilding of the properties and infrastructure. Drought and extreme rain events could increase impact.
Public Confidence in the Jurisdiction's Governance	Confidence will be dependent on development trends and mitigation efforts at reducing the effect of expansive soils on new construction.





4.12 – Extreme Temperatures

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.

4.12.1 – Location and 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 G is vulnerable to both extreme heat and extreme cold, defined as follows.

Extreme Temperature Definitions

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

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

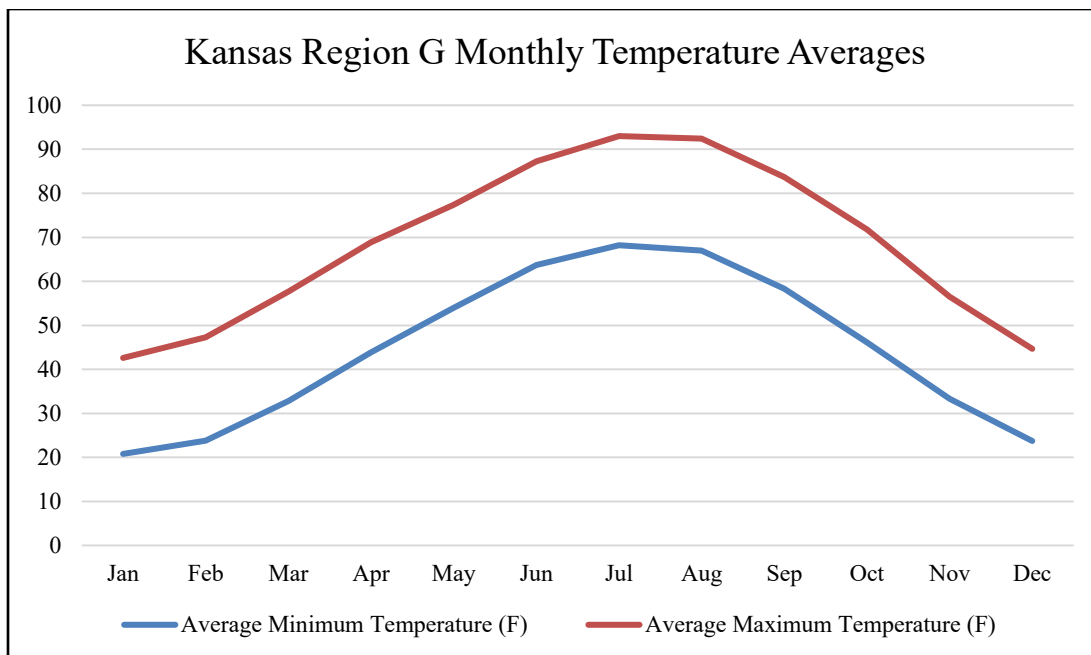
Regional Average Temperatures

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Minimum Temperature (F)	20.8	23.8	32.8	43.9	54.0	63.7	68.2	67.0	58.3	46.1	33.3	23.7	44.6
Average Maximum Temperature (F)	42.6	47.3	57.7	68.9	77.4	87.3	93.0	92.4	83.7	71.8	56.5	44.7	68.6

Source: High Plains Regional Climate Center

The following graph illustrates the above data.





When discussing weather patterns climate change should be taken into account as it may markedly change future weather-related events. 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.

4.12.2 – Previous Occurrences

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

Kansas Region G Historic Temperatures

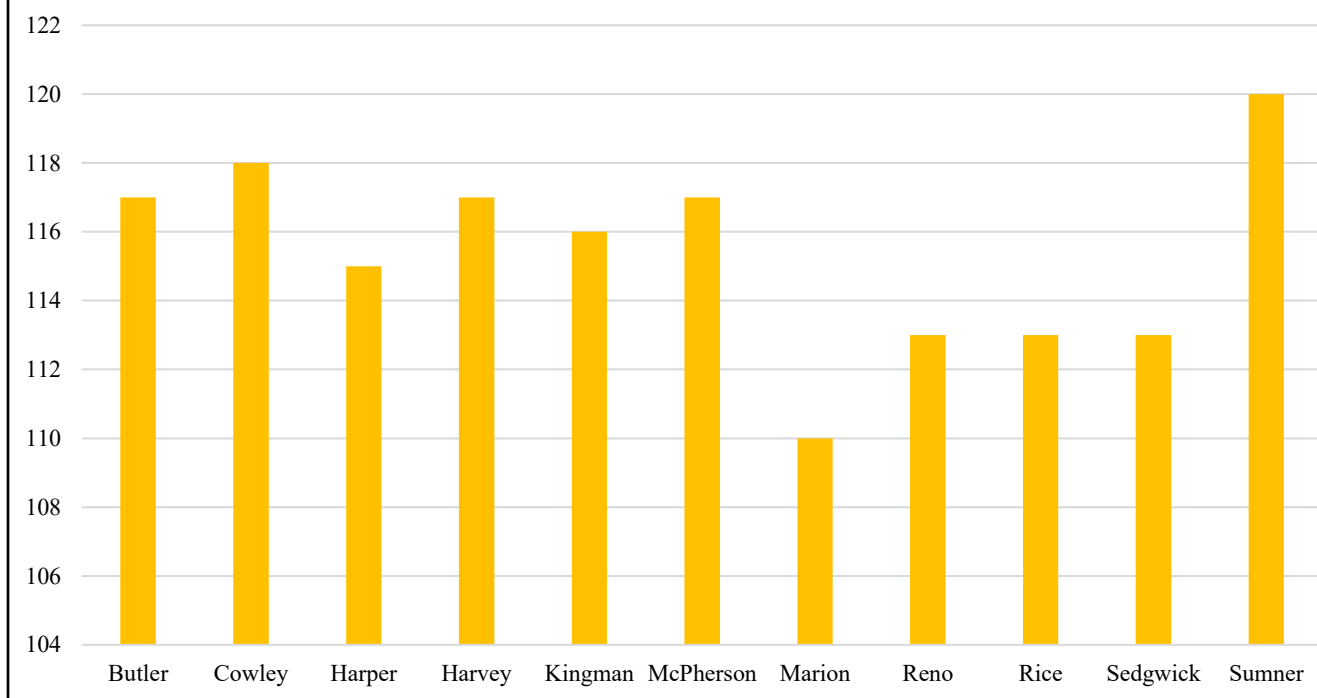
County	Historic Low Temperature (F)	Historic High Temperature (F)
Butler	-28	117
Cowley	-27	118
Harper	-15	115
Harvey	-28	117
Kingman	-17	116
McPherson	-22	117
Marion	-24	110
Reno	-20	113
Rice	-18	113
Sedgwick	-21	113
Sumner	-20	120

Source: High Plains Regional Climate Center

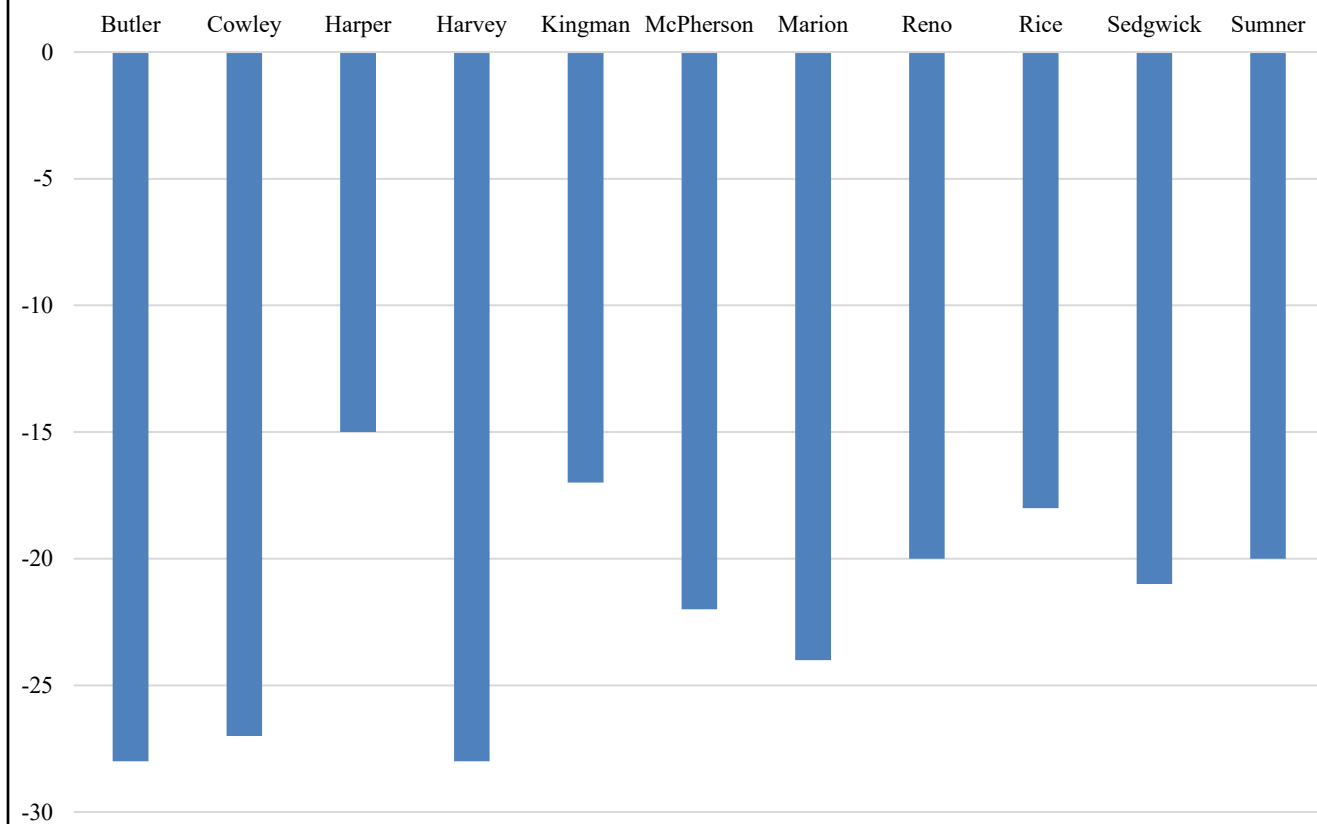




Kansas Region G Historic High Temperatures (F)



Kansas Region G Historic Low Temperatures (F)





The following table presents National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI) identified extreme temperature events (Excessive Heat and Extreme Cold/Wind Chill) and the resulting damage totals in Kansas Region G from the period 2013-2018.

Kansas Region G NCEI Extreme Temperature Events, 2009 - 2018

County	Event Type	Number of Events	Property Damage	Crop Damage	Deaths	Injuries
Butler	Cold	0	\$0	\$0	0	0
	Heat	0	\$0	\$0	0	0
Cowley	Cold	0	\$0	\$0	0	0
	Heat	0	\$0	\$0	0	0
Harper	Cold	0	\$0	\$0	0	0
	Heat	0	\$0	\$0	0	0
Harvey	Cold	0	\$0	\$0	0	0
	Heat	0	\$0	\$0	0	0
Kingman	Cold	0	\$0	\$0	0	0
	Heat	0	\$0	\$0	0	0
McPherson	Cold	0	\$0	\$0	0	0
	Heat	0	\$0	\$0	0	0
Marion	Cold	0	\$0	\$0	0	0
	Heat	0	\$0	\$0	0	0
Reno	Cold	0	\$0	\$0	0	0
	Heat	0	\$0	\$0	0	0
Rice	Cold	0	\$0	\$0	0	0
	Heat	0	\$0	\$0	0	0
Sedgwick	Cold	0	\$0	\$0	0	0
	Heat	0	\$0	\$0	0	0
Sumner	Cold	0	\$0	\$0	0	0
	Heat	0	\$0	\$0	0	0

Source: NOAA NCEI

Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of extreme temperatures on the Region’s agricultural base. Crop loss data for the years 2015- 2018, for the region, indicates 443 extreme temperature related claims on 103,282 acres for \$8,210,287.

USDA Risk Management Agency Cause of Loss Indemnities, Extreme Temperatures

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Butler	20	2,736	\$316,787
Cowley	21	5,882	\$580,756
Harper	22	2,106	\$133,122
Harvey	41	9,318	\$776,608
Kingman	45	6,215	\$384,773
McPherson	50	12,712	\$838,684
Marion	29	5,999	\$608,150





USDA Risk Management Agency Cause of Loss Indemnities, Extreme Temperatures

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Reno	54	12,166	\$887,198
Rice	48	14,331	\$1,148,640
Sedgwick	60	10,394	\$799,833
Sumner	53	21,422	\$1,735,737

Source: USDA Farm Service Agency

4.12.3 – Hazard Probability Analysis

Although periods of extreme heat and cold occur on an annual basis, events that create a serious public health risk or threaten infrastructure capacity occur less often. An extreme heat event is more likely to occur in the months of June, July, August, and September, and an extreme cold event is more likely to occur in the months of November, December, January, February, and March. Also, the EPA has projected that with climate changes in the Great Plains, temperatures will continue to increase and impact all Kansas Region G communities.

The following table summarizes extreme temperature event data for **Kansas Region G**.

Kansas Region G Extreme Temperature Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	0
Average Events per Year	0
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Kansas Region G can expect on a yearly basis, relevant to extreme temperature events:

- No events
- No deaths
- No injuries
- \$0 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to extreme temperatures. The following table summarizes extreme temperature event data for **Butler County**





Butler County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	20
Average Number of Claims per Year	5
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	2,736
Average Number of Acres Damaged per Year	684
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$316,787
Average Crop Damage per Year	\$79,197

Source: USDA

According to the USDA Risk Management Agency, Butler County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Five insurance claims
- 684 acres impacted
- \$79,197 in insurance claims

The following table summarizes extreme temperatures event data for **Cowley County**.

Cowley County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	21
Average Number of Claims per Year	5
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	5,882
Average Number of Acres Damaged per Year	1,471
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$580,756
Average Crop Damage per Year	\$145,189

Source: USDA

According to the USDA Risk Management Agency, Cowley County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Five insurance claims
- 1,471 acres impacted
- \$145,189 in insurance claims

The following table summarizes extreme temperatures event data for **Harper County**.

Harper County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	22
Average Number of Claims per Year	6
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	2,106
Average Number of Acres Damaged per Year	527
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$133,122
Average Crop Damage per Year	\$33,280

Source: USDA





According to the USDA Risk Management Agency, Harper County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Six insurance claims
- 527 acres impacted
- \$33,280 in insurance claims

The following table summarizes extreme temperatures event data for **Harvey County**.

Harvey County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	41
Average Number of Claims per Year	10
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	9,318
Average Number of Acres Damaged per Year	2,329
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$776,608
Average Crop Damage per Year	\$194,152

Source: USDA
12

According to the USDA Risk Management Agency, Harvey County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Ten insurance claims
- 2,329 acres impacted
- \$194,152 in insurance claims

The following table summarizes extreme temperatures event data for **Kingman County**.

Kingman County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	45
Average Number of Claims per Year	11
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	6,215
Average Number of Acres Damaged per Year	1,554
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$384,773
Average Crop Damage per Year	\$96,193

Source: USDA

According to the USDA Risk Management Agency, Kingman County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- 11 insurance claims
- 1,554 acres impacted
- \$96,193 in insurance claims

The following table summarizes extreme temperatures event data for **McPherson County**.





McPherson County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	50
Average Number of Claims per Year	13
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	12,172
Average Number of Acres Damaged per Year	3,178
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$836,684
Average Crop Damage per Year	\$209,671

Source: USDA

According to the USDA Risk Management Agency, McPherson County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- 13 insurance claims
- 3,178 acres impacted
- \$209,671 in insurance claims

The following table summarizes extreme temperatures event data for **Marion County**.

Marion County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	29
Average Number of Claims per Year	7
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	5,999
Average Number of Acres Damaged per Year	1,500
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$608,150
Average Crop Damage per Year	\$152,038

Source: USDA

According to the USDA Risk Management Agency, Marion County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Seven insurance claims
- 1,500 acres impacted
- \$152,038 in insurance claims

The following table summarizes extreme temperatures event data for **Reno County**.

Reno County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	54
Average Number of Claims per Year	14
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	12,166
Average Number of Acres Damaged per Year	3,042
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$887,198
Average Crop Damage per Year	\$221,800

Source: USDA





According to the USDA Risk Management Agency, Reno County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- 14 insurance claims
- 3,042 acres impacted
- \$221,800 in insurance claims

The following table summarizes Extreme temperatures event data for **Rice County**.

Rice County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	48
Average Number of Claims per Year	12
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	14,331
Average Number of Acres Damaged per Year	3,583
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$1,148,640
Average Crop Damage per Year	\$287,160

Source: USDA

According to the USDA Risk Management Agency, Rice County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- 12 insurance claims
- 3,583 acres impacted
- \$287.160 in insurance claims

The following table summarizes extreme temperatures event data for **Sedgwick County**.

Sedgwick County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	60
Average Number of Claims per Year	15
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	10,394
Average Number of Acres Damaged per Year	2,599
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$799,833
Average Crop Damage per Year	\$199,934

Source: USDA

According to the USDA Risk Management Agency, Sedgwick County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- 15 insurance claims
- 2,599 acres impacted
- \$199,934 in insurance claims

The following table summarizes extreme temperatures event data for **Sumner County**.





Sumner County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	53
Average Number of Claims per Year	13
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	21,422
Average Number of Acres Damaged per Year	5,356
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$1,737,737
Average Crop Damage per Year	\$433,934

Source: USDA

According to the USDA Risk Management Agency, Sumner County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- 13 insurance claims
- 5,356 acres impacted
- \$433,934 in insurance claims

4.12.4 – Vulnerability Analysis

The primary concerns with this hazard are human health safety issues. Specific at-risk groups identified were outdoor workers, farmers, and senior citizens. Due to the potential for fatalities and the possibility for the loss of electric power due to increased strain on power generation and distribution for air conditioning, periods of extreme heat can affect the planning area.

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 table discusses potential impacts on human health related to excessive heat.

Extreme Heat Impacts on Human Health

Heat Index (HI) 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 with prolonged exposure and/or physical activity
105-130° F	Heatstroke/sunstroke highly likely with continued exposure

Source: National Weather Service Heat Index Program

Extreme cold can cause hypothermia, an extreme lowering of the body’s temperature, frostbite and death. Infants and the elderly are particularly at risk, but anyone can be affected. Other impacts of extreme cold include asphyxiation from toxic fumes from emergency heaters, household fires, which can be caused by fireplaces and emergency heaters, and frozen/burst water pipes. There are no specific data sources recording cold related deaths in east-central Kansas.

Counties with a higher identified population are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the





tremendous number of variables involved in a potential extreme temperature event. The following table indicates the total county population and registered growth over the period 2000 to 2017.

Kansas Region G Population Vulnerability Data for Extreme Temperatures

County	2017 Population	Percent Population Change 2000 to 2017
Butler	66,878	12.4%
Cowley	35,361	-2.6%
Harper	5,590	-14.5%
Harvey	34,544	5.1%
Kingman	7,360	-15.1%
McPherson	28,708	-2.9%
Marion	11,986	-10.3%
Reno	62,510	-3.5%
Rice	9,660	-10.2%
Sedgwick	513,687	13.4%
Sumner	23,159	-10.7%

Source: US Census Bureau

In general counties with a high population and/or a growing population are at increased risk. As such, it is worth highlighting the majority of Kansas Region G counties may have decreased vulnerability to extreme temperature events due to decreasing populations.

Additionally, there is an increased likelihood of mortality for very young and very old populations due to extreme temperatures. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential extreme temperature event. The following table indicates the percentage of the total county population that may be considered especially vulnerable to a extreme temperatures.

Kansas Region G Vulnerable Population Vulnerability Data for Extreme Temperatures

County	Percentage of Population 5 and Under (2017)	Percentage of Population 65+ (2017)
Butler	6.1%	14.7%
Cowley	6.3%	17.8%
Harper	6.9%	22.1%
Harvey	6.3%	19.0%
Kingman	5.5%	21.9%
McPherson	5.9%	19.2%
Marion	4.9%	22.8%
Reno	5.5%	19.4%
Rice	6.4%	18.5%
Sedgwick	7.1%	14.0%
Sumner	6.2%	18.1%

Source: US Census Bureau





In addition, extreme temperatures may exacerbate agricultural and economic losses. The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data (2015 – 2018) allows us to quantify the monetary impact of extreme temperature conditions on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to extreme temperature events.

Extreme Temperature Acres Impacted and Crop Insurance Paid per County from 2015-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Butler	768,149	684	0.09%	\$282,338,000	\$79,197	0.03%
Cowley	574,614	1,471	0.26%	\$108,976,000	\$145,189	0.13%
Harper	506,006	527	0.10%	\$109,644,000	\$33,280	0.03%
Harvey	339,584	2,329	0.69%	\$161,716,000	\$194,152	0.12%
Kingman	542,010	1,554	0.29%	\$103,188,000	\$96,193	0.09%
McPherson	571,577	3,178	0.56%	\$208,482,000	\$209,671	0.10%
Marion	596,296	1,500	0.25%	\$151,478,000	\$152,038	0.10%
Reno	789,525	3,042	0.39%	\$267,318,000	\$221,800	0.08%
Rice	457,603	3,583	0.78%	\$258,181,000	\$287,160	0.11%
Sedgwick	486,723	2,599	0.53%	\$148,484,000	\$199,958	0.13%
Sumner	719,611	5,356	0.74%	\$168,713,000	\$433,934	0.26%

Source: USDA

4.12.5 – Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Extreme Temperature Consequence Analysis

Subject	Impacts of Expansive Soils
Health and Safety of the Public	Depending on the duration of the event, impact is expected to be severe for unprepared and unprotected persons. Impact will be minimal to moderate for prepared and protected persons.
Health and Safety of Responders	Impact could be severe if proper precautions are not taken, i.e. hydration in heat, clothing in extreme cold. With proper preparedness and protection, the impact would be minimal.
Continuity of Operations	Minimal expectation for utilization of the COOP.
Property, Facilities, and Infrastructure	Impact to infrastructure could be minimal to severe depending on the temperature extremes.
Environment	The impact to the environment could be severe. Extreme heat and extreme cold could seriously damage wildlife and plants, trees, crops, etc.
Economic Conditions	Impacts to the economy will be dependent on how extreme the temperatures get, but only in the sense of whether people will venture





Extreme Temperature Consequence Analysis

Subject	Impacts of Expansive Soils
	out to spend money. Utility bills could increase causing more financial hardship.
Public Confidence in the Jurisdiction's Governance	Confidence will be dependent on how well utilities hold up as they are stretched to provide heat and cool air, depending on the extreme. Planning and response could be challenged.





4.13 – Flood

Floods are most common in seasons of rain and thunderstorms. Floods that threaten Kansas Region G can be generally classified under two categories:

- **Flash Flood:** The product of heavy, localized precipitation in a short time period over a given location
- **Riverine Flood:** Occurs when precipitation over a given river basin for a long period of time causes the overflow of rivers, streams, lakes and drains



4.13.1 – Location and Extent

Flash Flooding

The NWS provides the following definitions of warnings for actual and potential flood conditions for Flash Floods:

- **Flash Flood Watch:** Issued to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain or imminent.
- **Flash Flood Warning:** Issued to inform the public, emergency management and other cooperating agencies that flash flooding is in progress, imminent, or highly likely.
- **Flash Flood Statement:** In hydrologic terms, a statement by the NWS which provides follow-up information on flash flood watches and warnings.

In general, flash flooding occurs in those locations in the planning area that are low-lying and/or do not have adequate drainage. Data from University of Kansas indicates that the average annual precipitation for Kansas Region G counties for 2017:

- Butler County: 33.00 inches
- Cowley County: 38.75 inches
- Harper County: 29.19 inches
- Harvey County: 30.78 inches
- Kingman County: 32.23 inches
- McPherson County: 27.04 inches
- Marion County: 27.87 inches
- Reno County: 25.65 inches
- Rice County: 25.70 inches
- Sedgwick County: 28.52 inches
- Sumner County: 33.47 inches

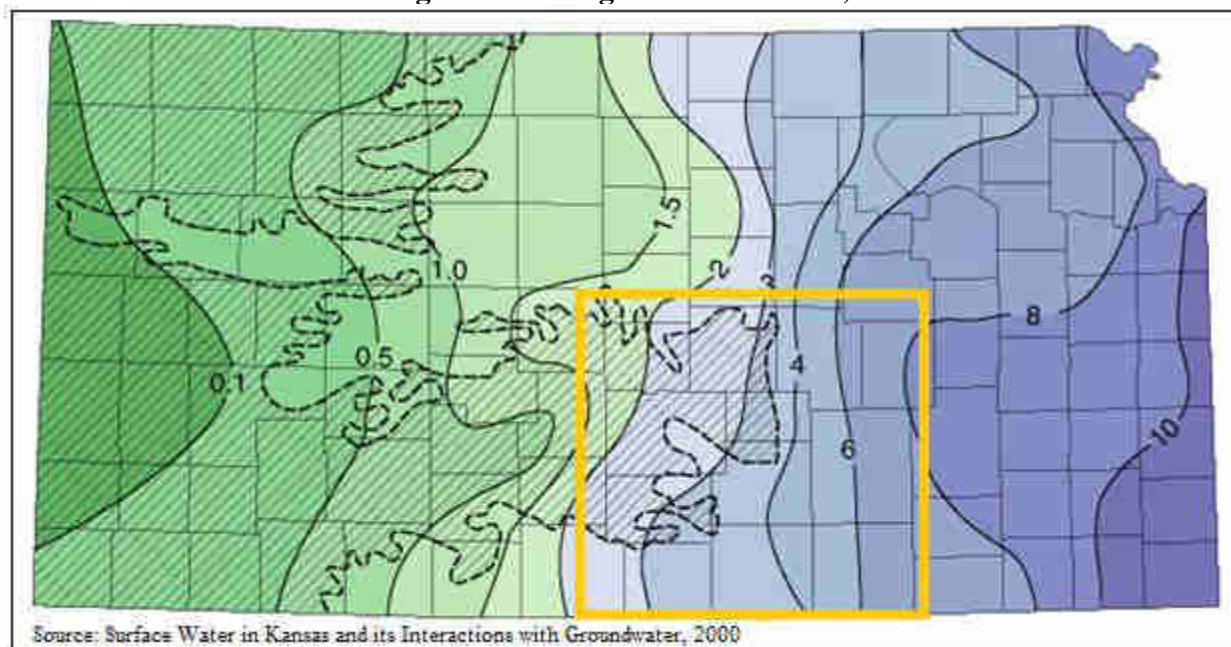




This equates to a regional average of 30.29 inches of precipitation for 2017.

The following map illustrates the distribution of water runoff in Kansas. Surface runoff is water from rain or snowmelt that flows on the surface and does not percolate into the subsurface. In general, the higher the surface runoff, the higher the potential for flash flooding.

Kansas Region G Average Annual Runoff, In Inches



Riverine Flooding

In general, riverine flooding occurs from the overflow of rivers, streams, drains, and lakes due to excessive rainfall. The NWS provides the following definitions of warnings for actual and potential flood conditions for riverine flooding:

- **Flood Potential Outlook:** In hydrologic terms, a NWS outlook that is issued to alert the public of potentially heavy rainfall that could send rivers and streams into flood or aggravate an existing flood.
- **Flood Watch:** Issued to inform the public and cooperating agencies that current and developing hydro meteorological conditions are such that there is a threat of flooding, but the occurrence is neither certain nor imminent.
- **Flood Warning:** In hydrologic terms, a release by the NWS to inform the public of flooding along larger streams in which there is a serious threat to life or property. A flood warning will usually contain river stage (level) forecasts.
- **Flood Statement:** In hydrologic terms, a statement issued by the NWS to inform the public of flooding along major streams in which there is not a serious threat to life or property. It may also follow a flood warning to give later information.





All areas of Kansas Region G located near a stream or river are at risk of riverine flooding. While riverine floods can and do occur at various levels, the one percent annual chance flood has been chosen as the basis for this risk assessment. This level is the accepted standard for flood insurance and regulatory purposes. In general, flood probability can be expressed by recurrence interval, the average period of time for a flood that equals or exceeds a given magnitude, expressed as a period of years. The probability of occurrence of a given flood can also be expressed as the odds of recurrence of one or more similar or bigger floods in a certain number of years. Large, catastrophic floods have a very low frequency or probability of occurrence, whereas smaller floods occur more often. The larger the number of years in a recurrence interval, the smaller the chances of experiencing that flood in a year. However, the odds are never zero, even very large, uncommon floods always have a very small chance of recurring every year. When reviewing flood probability, it is important to note that once a flood occurs its chance of recurring the next year remains the same.

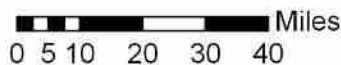
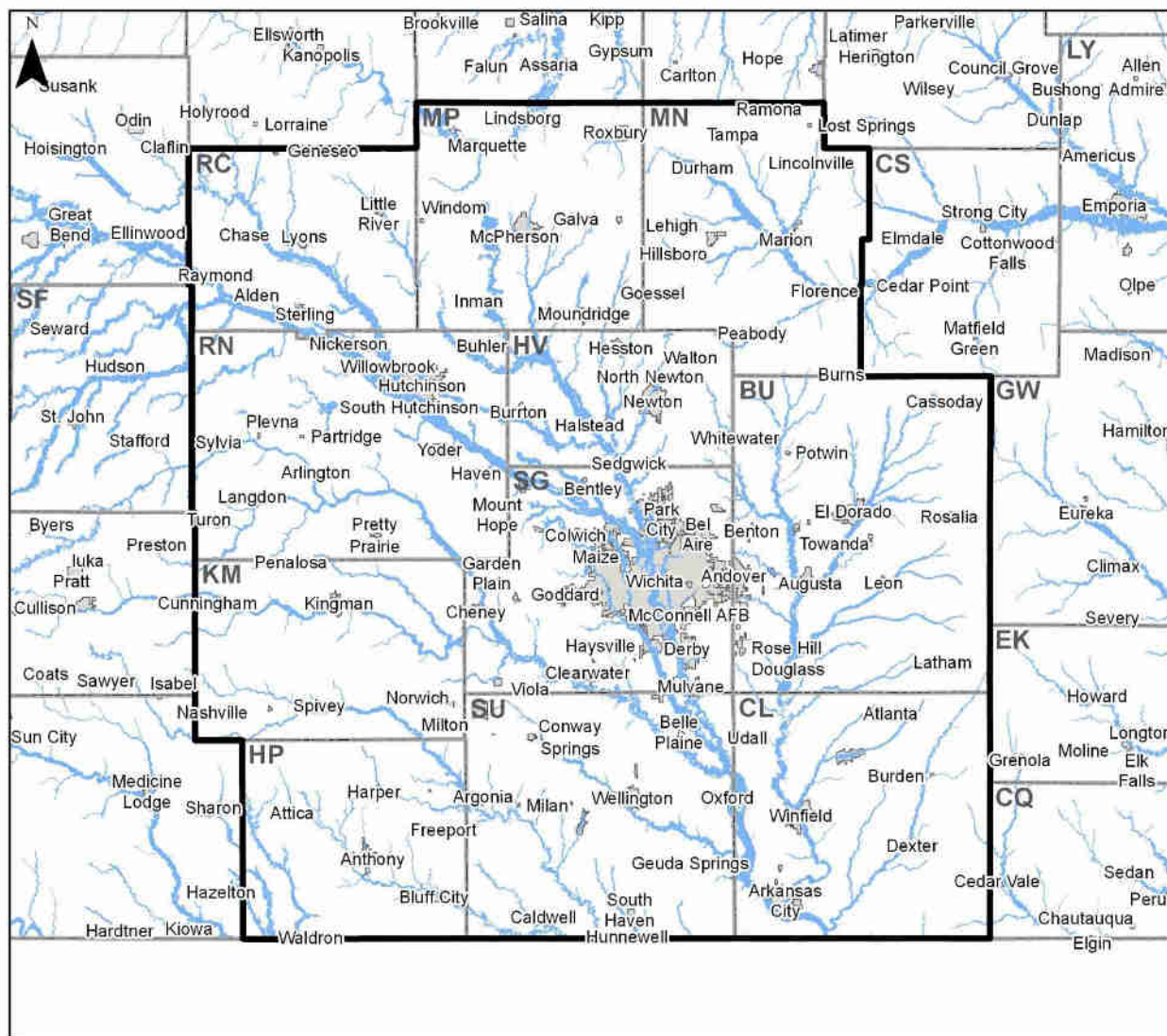
Flood Recurrence Interval Probability

Recurrence Interval, in Years	Probability of Occurrence in Any Given Year	Percent Chance of Occurrence in Any Given Year
100	1 in 100	1
50	1 in 50	2
25	1 in 25	4
10	1 in 10	10
5	1 in 5	20
2	1 in 2	50

Source: FEMA

The following map, generated by KDEM using available data, depicts regional one percent annual flood areas.





Floodplain Boundary

Region G.

Data Source: KDEM, USCB, ESRI

Provided By: Kansas Division of Emergency Management - GIS (2019)



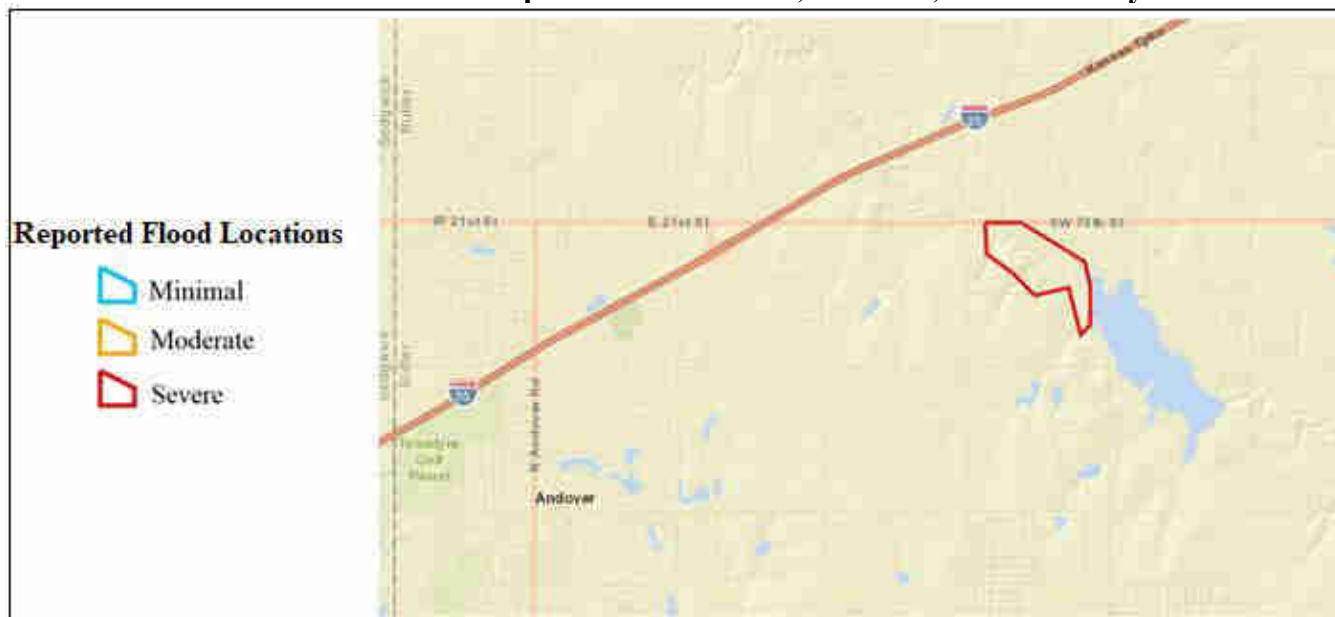
Local Concerns

Many local jurisdictions are subject to areas of repeat flooding. In an effort to identify these areas the KDA, in conjunction with the USACE Silver Jackets, has created a mapping system under the Recurring Flood Identification Project. This system allows for the local mapping of known flood areas within regional jurisdictions. Three classifications of flooding areas are used, minimal moderate and severe. The following map indicates identified repeat flood areas within the region.

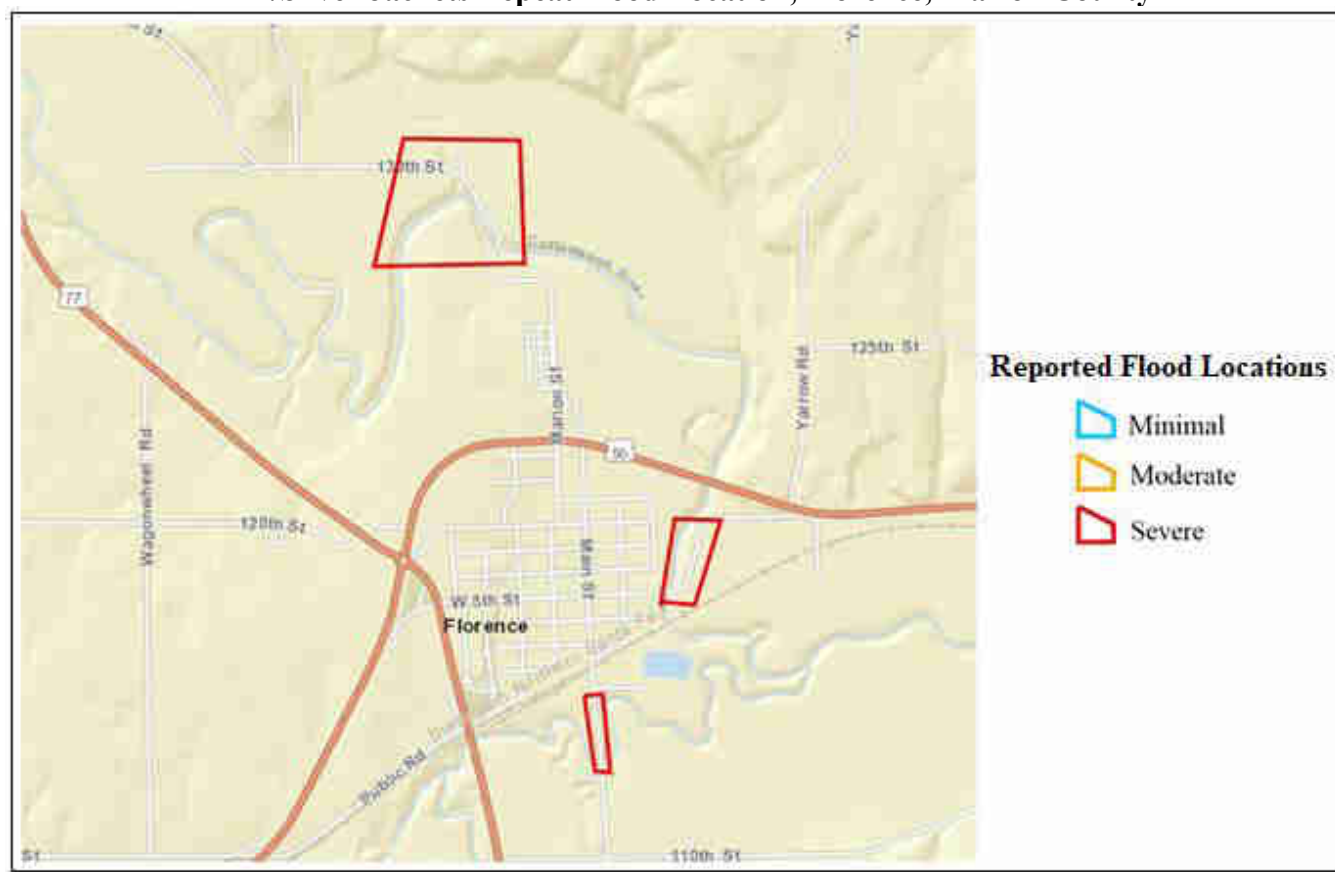




KDA/Silver Jackets Repeat Flood Location, Andover, Butler County

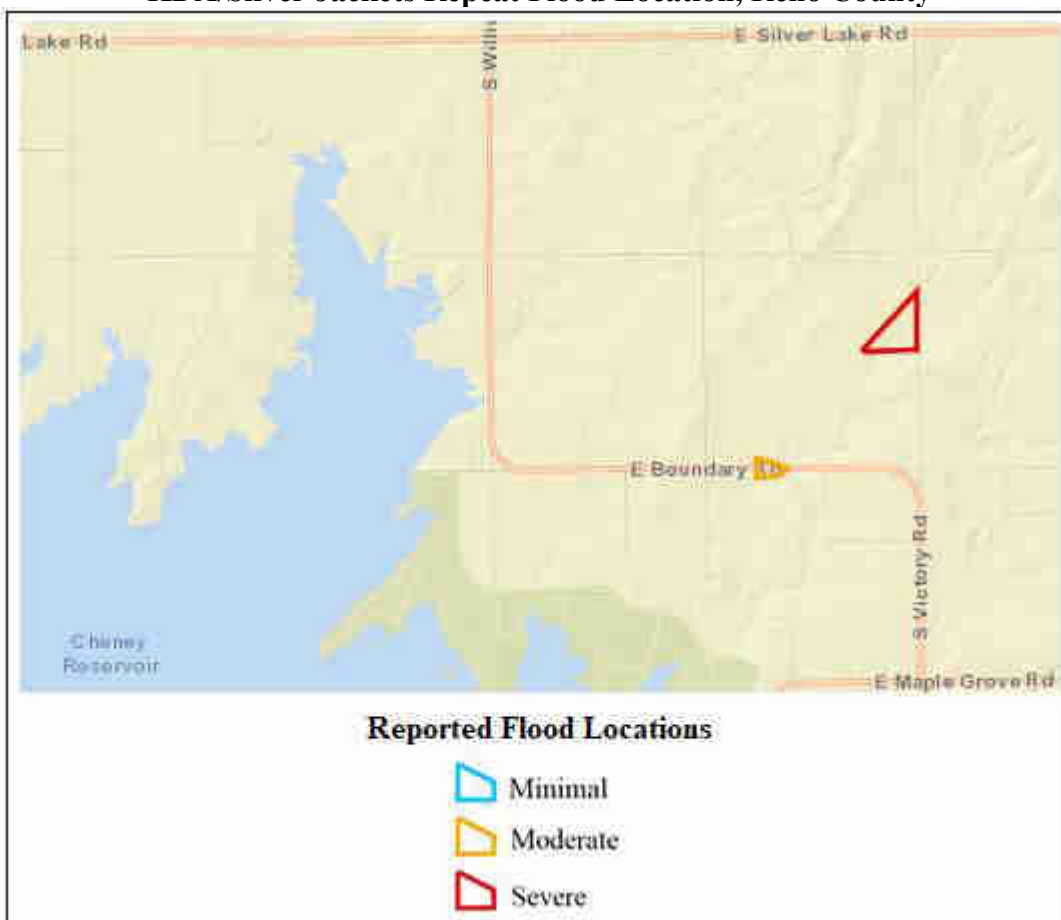


KDA/Silver Jackets Repeat Flood Location, Florence, Marion County

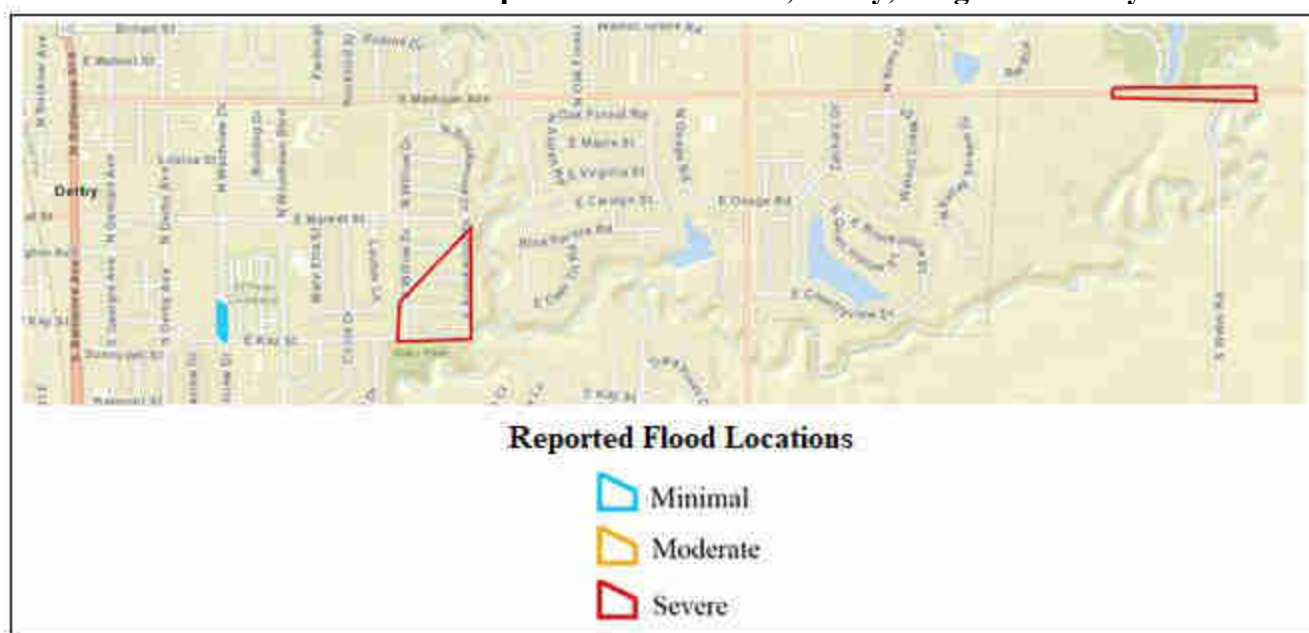




KDA/Silver Jackets Repeat Flood Location, Reno County

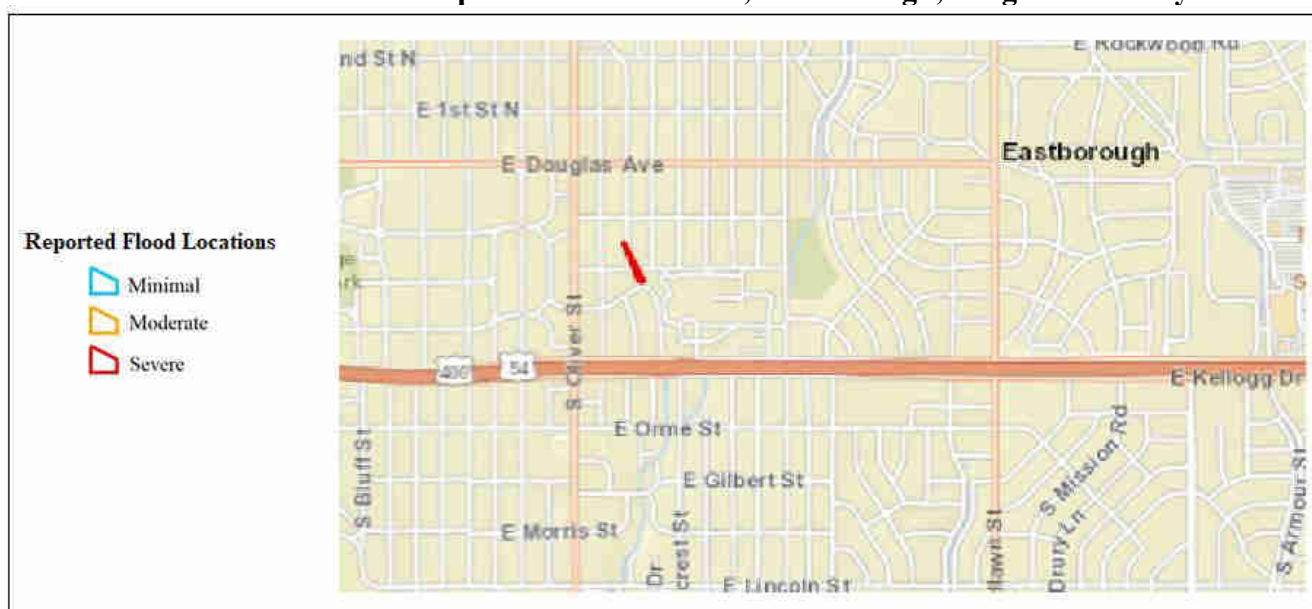


KDA/Silver Jackets Repeat Flood Locations, Derby, Sedgwick County





KDA/Silver Jackets Repeat Flood Locations, Eastborough, Sedgwick County



In addition, information was solicited from participating jurisdictions on low water crossings and roads or areas of concern for flooding. The following tables details provided information.

Marion County Low Water Crossings, Roads, and Areas of Concern, Flooding

County	Road or Area	Location
Marion	20 th	Quail Creek – Sunflower
Marion	60 th	Limestone – Mustang
Marion	70 th	Chisholm Trail – Diamond
Marion	80 th	Diamond – Eagle
Marion	90 th	Falcon – Goldenrod
Marion	140 th	Upland – Hwy 77
Marion	160 th	Indigo – Jade
Marion	190 th	Quail Creek – Remington
Marion	250 th	Upland – Ulysses
Marion	260 th	Old Mill – Pawnee
Marion	290 th	Old Mill – Pawnee, Pawnee – Remington, Remington – Sunflower, Upland – Vista
Marion	330 th	Eagle – Falcon
Marion	Bison	300 th – 310 th
Marion	Bluestem	230 th – 235 th
Marion	Diamond	70 th – 80 th
Marion	Old Mill	150 th – 160 th
Marion	Kanza	150 th – 175 th
Marion	Lakeshore Drive	Inlet/Outlet
Marion	Nighthawk	110 th – 130 th and 170 th – 190 th
Marion	Quail Creek	170 th – 180 th and 290 th – 300 th





Marion County Low Water Crossings, Roads, and Areas of Concern, Flooding

County	Road or Area	Location
Marion	Remington	10 th – 20 th and 220 th – 240 th
Marion	Sunflower	160 th – 180 th
Marion	Timber	130 th – 140 th and 340 th – 350 th

Source: Local Jurisdictions

4.13.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been 14 Presidential Disaster Declarations for Kansas Region G for floods (along with other associated hazard events such as tornados or severe storms). The following 20-year information on past declared disasters is presented to provide a historical perspective on flood events that have impacted Kansas Region G. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2013.

Kansas Region G FEMA Flood Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4287	10/20/2016 (09/02/2016 – 09/12/2016)	Severe Storms and Flooding	Cowley and Sumner	\$6,959,536
4230	07/20/2015 (05/04/2015 – 06/21/2015)	Severe Storms, Tornados, Straight-Line Winds, and Flooding	Butler, Cowley, Harper, McPherson, Rice, and Sumner	\$13,848,325
4150	10/22/2013 (07/22/2013 – 08/15/2013)	Severe Storms, Straight-line Winds, Tornados, and Flooding	Butler, Cowley Harper, Kingman, Reno, Rice, and Sumner.	\$1,102,861 (Estimate)
4063	05/24/2012 (4/14-4/15/2012)	Severe Storms, Tornadoes, Straight-line Winds and Flooding	Harper, Rice, Sedgwick, and Sumner	\$6,923,919
4010	07/29/2011 (5/19-6/4/2011)	Severe Storms, Straight-Line Winds, Tornados and Flooding	Marion	\$8,259,620
1932	08/10/2010 (6/7-7/21/2010)	Severe Storms, Flooding and Tornados	Butler, Harvey, Marion, and McPherson	\$9,279,257
1860	09/30/2009 (7/8-7/14/2009)	Severe Storms and Flooding	Sedgwick	\$3,347,662
1849	06/25/2009 (4/25-5/16/2009)	Severe Storms, Flooding , Straight-Line Winds, and Tornados	Butler, Cowley, Harper, Harvey, Kingman, Marion, Reno, Rice, and Sumner	\$15,013,488
1808	10/31/2008	Severe Storms, Flooding , and Tornados	Butler, Cowley, Harper, Harvey, and Sumner	\$4,167,044
1776	07/09/2008	Severe Storms, Flooding , and Tornados	Butler, Cowley, Harper, Kingman, Reno, and Sumner	\$70,629,544
1711	7/2/2007 (6/26-30/2007)	Severe Storms and Flooding	Butler, Cowley and Harper	\$40,238,600
1699	5/6/2007 (5/4/2007)	Severe Storms, Tornados, and Flooding	Cowley, Harper, Harvey, Kingman, McPherson, Reno, Rice, and Sumner	\$117,565,269





Kansas Region G FEMA Flood Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1579	2/8/2005 (1/4-6/2005)	Severe Winter Storm, Heavy Rains, and Flooding	Butler, Cowley, Harper, Harvey, Kingman, Marion, McPherson, Reno, Rice, Sedgwick, and Sumner	\$106,873,672
1535	8/3/2004 (6/12-7/25/2004)	Severe Storms, Flooding , and Tornados	Butler and Marion	\$12,845,892

Source: FEMA

-: Data unavailable

The following provides details of the two Presidential Disaster Declarations for Kansas Region G since the last plan update in 2013.

Kansas – Severe Storms and Flooding FEMA-4287-DR

Declared October 20, 2016

On October 10, 2016, Governor Sam Brownback requested a major disaster declaration due to severe storms and flooding during the period of September 2-12, 2016. The Governor requested a declaration for Public Assistance for 11 counties and Hazard Mitigation statewide. During the period of September 28 to October 7, 2016, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On October 20, 2016, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms and flooding in Cheyenne, Cowley, Ellis, Graham, Greenwood, Kingman, Norton, Rooks, Russell, Sedgwick, and Sumner Counties. This declaration also made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

Kansas – Severe Storms, Tornados, Straight-Line Winds, and Flooding FEMA-4230-DR

Declared July 20, 2015

On July 1, 2015, Governor Sam Brownback requested a major disaster declaration due to severe storms, tornadoes, straight-line winds, and flooding during the period of May 4 to June 21, 2015. The Governor requested a declaration for Public Assistance, including direct federal assistance for 42 counties and Hazard Mitigation statewide. During the period of May 4 to June 27, 2015, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.





On July 20, 2015, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms, tornadoes, straight-line winds, and flooding in Atchison, Barton, Brown, Butler, Chase, Chautauqua, Cherokee, Cheyenne, Clay, Cloud, Coffey, Cowley, Doniphan, Edwards, Elk, Ellsworth, Franklin, Gray, Greenwood, Harper, Haskell, Hodgeman, Jackson, Jefferson, Jewell, Lyon, Marion, Marshall, McPherson, Meade, Miami, Morris, Nemaha, Neosho, Osage, Pottawatomie, Republic, Rice, Stevens, Sumner, Wabaunsee, and Washington Counties. Direct Federal assistance was also authorized. Finally, this declaration made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

In addition to the above reported events, the following table presents NOAA NCEI identified flood events and the resulting damage totals in Kansas Region G from the period 2009 - 2018.

Kansas Region G NCEI Flood and Flash Flood Events, 2009 - 2018

County	Event Type	Number of Days with Events	Property Damage	Crop Damage	Deaths	Injuries
Butler	Flood	17	\$2,000	\$1,200	0	0
	Flash Flood	3	\$10,300	\$400	0	0
Cowley	Flood	5	\$200	\$200	0	0
	Flash Flood	1	\$100	\$100	0	0
Harper	Flood	5	\$100	\$100	0	0
	Flash Flood	3	\$0	\$0	0	0
Harvey	Flood	12	\$800	\$700	0	0
	Flash Flood	3	\$0	\$0	0	0
Kingman	Flood	9	\$100,800	\$900	0	0
	Flash Flood	2	\$100,000	\$200	0	0
McPherson	Flood	21	\$9,500	\$1,100	0	0
	Flash Flood	3	\$500	\$500	0	0
Marion	Flood	8	\$100	\$100	0	0
	Flash Flood	2	\$0	\$0	0	0
Reno	Flood	14	\$5,900	\$900	0	0
	Flash Flood	3	\$1,540,000	\$400	0	0
Rice	Flood	10	\$11,300	\$1,400	0	0
	Flash Flood	2	\$100,100	\$200	0	0
Sedgwick	Flood	26	\$32,300	\$2,000	0	0
	Flash Flood	15	\$1,568,000	\$12,500	0	0
Sumner	Flood	9	\$400	\$400	0	0
	Flash Flood	2	\$45,000	\$100	0	0

Source: FEMA

The following provides both **local accounts** and NOAA NCEI descriptions of notable recorded events:





- **October 9, 2018: Sedgwick (Harvey County)**
Flooding closed USD 439 for two days.
- **October, 2018: Lyons (Kingman County)**
Flooding closed multiple roads. Damages were estimated at \$300,000.
- **June 14-15, 2015: Newton (Harvey County)**
Flooding damaged areas of the city.
- **August 4, 2013: Reno County**
Extreme street flooding and flash flooding occurred across the area, as 6 to 7 inches of rainfall fell over Hutchinson and Nickerson during the early morning hours. Numerous cars stalled out and were abandoned on city streets, with widespread basement flooding reported. During a 90-minute period, between 130am and 3am, some locations in Hutchinson picked up 3 to 5 inches of rainfall. At least 325 homes in the city of Hutchinson reported some property damage due to flooding, with 10 to 24 of the homes receiving major damage. 150 residents from a nursing home in Northwest Hutchinson were evacuated to a local hospital, because water was coming into the building. The water on city streets was so deep, at times, that large military type vehicles could not venture down the roads. Property damage was recorded at \$1,440,000.
- **August 4, 2013: Sedgwick County**
Significant flash flooding occurred in the town of Mulvane, Kansas. Three buildings in downtown were flooded. Styx Creek ran out of banks and caused extensive flooding to homes along it. A water rescue occurred in town due the high water. Property damage was recorded at \$500,000.

Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of flooding on the Region’s agricultural base. Crop loss data for the years 2015- 2018, for the region, indicates 443 extreme temperature related claims on 103,282 acres for \$8,210,287.

USDA Risk Management Agency Cause of Loss Indemnities, Flooding

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Butler	5	1,965	\$361,774
Cowley	6	1,894	\$287,904
Harper	0	0	\$0
Harvey	5	818	\$85,987
Kingman	3	164	\$3,953
McPherson	12	1,207	\$84,737
Marion	6	151	\$4,690
Reno	7	754	\$74,161
Rice	23	1,443	\$128,838
Sedgwick	14	1,686	\$175,486
Sumner	14	2,794	\$480,030

Source: USDA Farm Service Agency





4.13.3 – Hazard Probability Analysis

The following table summarizes riverine flood probability data for **Butler County**.

Butler County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	17
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$2,000
Average Property Damage per Year	\$333

Source: NCEI

Data from the NCEI indicates that Butler County can expect on a yearly basis, relevant to riverine flood events:

- Three events
- No deaths or injuries
- \$333 in property damages

The following table summarizes flash flood probability data for **Butler County**.

Butler County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	3
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$10,300
Average Property Damage per Year	\$1,717

Source: NCEI

Data from the NCEI indicates that Butler County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$1,717 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Butler County**





Butler County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	5
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	1,965
Average Number of Acres Damaged per Year	491
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$361,774
Average Crop Damage per Year	\$90,444

Source: USDA

According to the USDA Risk Management Agency, Butler County can expect on a yearly basis, relevant to flooding occurrences:

- One insurance claim
- 491 acres impacted
- \$90,444 in insurance claims

The following table summarizes riverine flood probability data for **Cowley County**.

Cowley County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	5
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$200
Average Property Damage per Year	\$33

Source: NCEI

Data from the NCEI indicates that Cowley County can expect on a yearly basis, relevant to riverine flood events:

- <1 event
- No deaths or injuries
- \$33 in property damages

The following table summarizes flash flood probability data for **Cowley County**.

Cowley County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	1
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$100
Average Property Damage per Year	\$17

Source: NCEI





Data from the NCEI indicates that Cowley County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$17 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Cowley County**

Cowley County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	6
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	1,894
Average Number of Acres Damaged per Year	473
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$287,904
Average Crop Damage per Year	\$71,976

Source: USDA

According to the USDA Risk Management Agency, Cowley County can expect on a yearly basis, relevant to flooding occurrences:

- Two insurance claims
- 473 acres impacted
- \$71,976 in insurance claims

The following table summarizes riverine flood probability data for **Harper County**.

Harper County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	5
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$100
Average Property Damage per Year	\$17

Source: NCEI

Data from the NCEI indicates that County can expect on a yearly basis, relevant to riverine flood events:

- <1 event
- No deaths or injuries
- \$17 in property damages

The following table summarizes flash flood probability data for **Harper County**.





Harper County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	5
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$100
Average Property Damage per Year	\$17

Source: NCEI

Data from the NCEI indicates that Harper County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$17 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Harper County**

Harper County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: USDA

According to the USDA Risk Management Agency, Harper County can expect on a yearly basis, relevant to flooding occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes riverine flood probability data for **Harvey County**.

Harvey County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	12
Average Events per Year	2
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$800
Average Property Damage per Year	\$133

Source: NCEI





Data from the NCEI indicates that County can expect on a yearly basis, relevant to riverine flood events:

- Two events
- No deaths or injuries
- \$133 in property damages

The following table summarizes flash flood probability data for **Harvey County**.

Harvey County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	3
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Harvey County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$0 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Harvey County**

Harvey County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	5
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	818
Average Number of Acres Damaged per Year	205
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$85,987
Average Crop Damage per Year	\$21,497

Source: USDA

According to the USDA Risk Management Agency, Harvey County can expect on a yearly basis, relevant to flooding occurrences:

- One insurance claim
- 205 acres impacted
- \$21,497 in insurance claims

The following table summarizes riverine flood probability data for **Kingman County**.





Kingman County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	9
Average Events per Year	2
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$108,800
Average Property Damage per Year	\$16,800

Source: NCEI

Data from the NCEI indicates that Kingman County can expect on a yearly basis, relevant to riverine flood events:

- Two events
- No deaths or injuries
- \$16,800 in property damages

The following table summarizes flash flood probability data for **Kingman County**.

Kingman County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	2
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$100,000
Average Property Damage per Year	\$16,667

Source: NCEI

Data from the NCEI indicates that Kingman County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$16,667 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Kingman County**

Kingman County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	3
Average Number of Claims per Year	<1
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	164
Average Number of Acres Damaged per Year	41
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$3,953
Average Crop Damage per Year	\$988

Source: USDA





According to the USDA Risk Management Agency, Kingman County can expect on a yearly basis, relevant to flooding occurrences:

- <1 insurance claim
- 41 acres impacted
- \$988 in insurance claims

The following table summarizes riverine flood probability data for **McPherson County**.

McPherson County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	21
Average Events per Year	4
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$9,500
Average Property Damage per Year	\$1,583

Source: NCEI

Data from the NCEI indicates that McPherson County can expect on a yearly basis, relevant to riverine flood events:

- Four events
- No deaths or injuries
- \$1,583 in property damages

The following table summarizes flash flood probability data for **McPherson County**.

McPherson County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	3
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$500
Average Property Damage per Year	\$83

Source: NCEI

Data from the NCEI indicates that McPherson County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$83 in property damages





Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **McPherson County**

McPherson County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	12
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	1,207
Average Number of Acres Damaged per Year	302
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$84,737
Average Crop Damage per Year	\$21,184

Source: USDA

According to the USDA Risk Management Agency, McPherson County can expect on a yearly basis, relevant to flooding occurrences:

- Three insurance claims
- 302 acres impacted
- \$21,184 in insurance claims

The following table summarizes riverine flood probability data for **Marion County**.

Marion County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	8
Average Events per Year	1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$100
Average Property Damage per Year	\$17

Source: NCEI

Data from the NCEI indicates that Marion County can expect on a yearly basis, relevant to riverine flood events:

- One event
- No deaths or injuries
- \$17 in property damages

The following table summarizes flash flood probability data for **Marion County**.

Marion County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	2
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0





Marion County Flash Flood Probability Summary

Data	Recorded Impact
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Marion County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$0 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Marion County**

Marion County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	6
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	151
Average Number of Acres Damaged per Year	38
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$4,690
Average Crop Damage per Year	\$1,173

Source: USDA

According to the USDA Risk Management Agency, Marion County can expect on a yearly basis, relevant to flooding occurrences:

- Two insurance claims
- 38 acres impacted
- \$1,173 in insurance claims

The following table summarizes riverine flood probability data for **Reno County**.

Reno County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	14
Average Events per Year	2
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$5,900
Average Property Damage per Year	\$983

Source: NCEI

Data from the NCEI indicates that Reno County can expect on a yearly basis, relevant to riverine flood events:





- Two events
- No deaths or injuries
- \$983 in property damages

The following table summarizes flash flood probability data for **Reno County**.

Reno County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	3
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$1,540,000
Average Property Damage per Year	\$256,667

Source: NCEI

Data from the NCEI indicates that Reno County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$256,667 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Reno County**

Reno County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	7
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	754
Average Number of Acres Damaged per Year	188
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$74,161
Average Crop Damage per Year	\$18,540

Source: USDA

According to the USDA Risk Management Agency, Reno County can expect on a yearly basis, relevant to flooding occurrences:

- Two insurance claims
- 188 acres impacted
- \$18,540 in insurance claims

The following table summarizes riverine flood probability data for **Rice County**.





Rice County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	10
Average Events per Year	2
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$11,300
Average Property Damage per Year	\$1,883

Source: NCEI

Data from the NCEI indicates that Rice County can expect on a yearly basis, relevant to riverine flood events:

- Two events
- No deaths or injuries
- \$1,883 in property damages

The following table summarizes flash flood probability data for **Rice County**.

Rice County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	2
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$100,100
Average Property Damage per Year	\$16,683

Source: NCEI

Data from the NCEI indicates that Rice County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$16,683 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Rice County**

Rice County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	23
Average Number of Claims per Year	6
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	1,443
Average Number of Acres Damaged per Year	361
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$128,838
Average Crop Damage per Year	\$32,210

Source: USDA





According to the USDA Risk Management Agency, Rice County can expect on a yearly basis, relevant to flooding occurrences:

- Six insurance claims
- 361 acres impacted
- \$32,210 in insurance claims

The following table summarizes riverine flood probability data for **Sedgwick County**.

Sedgwick County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	26
Average Events per Year	4
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$32,300
Average Property Damage per Year	\$1,883

Source: NCEI

Data from the NCEI indicates that Sedgwick County can expect on a yearly basis, relevant to riverine flood events:

- Four events
- No deaths or injuries
- \$1,883 in property damages

The following table summarizes flash flood probability data for **Sedgwick County**.

Sedgwick County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	15
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$
Average Property Damage per Year	\$261,333

Source: NCEI

Data from the NCEI indicates that Sedgwick County can expect on a yearly basis, relevant to flash flood events:

- Six events
- No deaths or injuries
- \$261,333 in property damages





Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Sedgwick County**

Sedgwick County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	14
Average Number of Claims per Year	4
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	1,686
Average Number of Acres Damaged per Year	421
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$175,486
Average Crop Damage per Year	\$43,872

Source: USDA

According to the USDA Risk Management Agency, Sedgwick County can expect on a yearly basis, relevant to flooding occurrences:

- Four insurance claims
- 421 acres impacted
- \$43,872 in insurance claims

The following table summarizes riverine flood probability data for **Sumner County**.

Sumner County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	9
Average Events per Year	1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$400
Average Property Damage per Year	\$67

Source: NCEI

Data from the NCEI indicates that Sumner County can expect on a yearly basis, relevant to riverine flood events:

- One events
- No deaths or injuries
- \$67 in property damages

The following table summarizes flash flood probability data for **Sumner County**.

Sumner County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	2
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0





Sumner County Flash Flood Probability Summary

Data	Recorded Impact
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$45,000
Average Property Damage per Year	\$7,500

Source: NCEI

Data from the NCEI indicates that Sumner County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$7,500 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Sumner County**

Sumner County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	14
Average Number of Claims per Year	4
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	2,794
Average Number of Acres Damaged per Year	699
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$480,030
Average Crop Damage per Year	\$120,007

Source: USDA

According to the USDA Risk Management Agency, Sumner County can expect on a yearly basis, relevant to flooding occurrences:

- Four insurance claims
- 699 acres impacted
- \$120,007 in insurance claims

In addition, Kansas Region G has had 14 Presidentially Declared Disasters relating to flooding (and other causes) in the last 20 years. This represents an average of one declared flood disaster every year.

4.13.4 – Vulnerability Analysis

The results of the HAZUS analysis were utilized to estimate potential losses for riverine flooding. The intent of this analysis was to enable Kansas Region G 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 10 square miles or more.





HAZUS determines the displaced population based on the inundation area, not necessarily impacted buildings. As a result, there may be 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 percent increments up to 50%. Buildings that sustain more than 50% damage are considered to be substantially damaged.

The following table provides the HAZUS results for vulnerable populations and the population estimated to seek short term shelter as well as the numbers of damaged and substantially damaged buildings for each Kansas Region G county.

Kansas Region G HAZUS Flood Scenario Displaced Population Building Damages

County	Population Vulnerable to Displacement	Population with Short Term Shelter Needs	Vulnerable Buildings	Damaged Buildings	Substantially Damaged Buildings
Butler	2,448	770	1,423	201	3
Cowley	797	175	1,705	54	0
Harper	90	3	92	5	0
Harvey	2,964	1,087	1,332	268	1
Kingman	182	8	307	15	0
McPherson	1,127	362	1,204	83	2
Marion	580	82	543	43	0
Reno	12,871	9,329	7,212	2,378	0
Rice	355	32	282	10	0
Sedgwick	74,781	65,712	34,270	16,524	344
Sumner	871	225	607	69	0

Source: FEMA and HAZUS

The HAZUS analysis also provides an estimate 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 building damages and lost income due to these damages.

Kansas Region G HAZUS Flood Scenario Structural Damage and Income Loss

County	Structural Damage	Contents Damage	Inventory Loss	Total Direct Loss	Total Income Loss	Total Direct and Income Loss
Butler	\$48,890,000	\$41,159,000	\$1,233,000	\$91,282,000	\$305,000	\$91,587,000
Cowley	\$15,920,000	\$11,363,000	\$337,000	\$27,620,000	\$117,000	\$27,737,000
Harper	\$2,383,000	\$1,214,000	\$28,000	\$3,625,000	\$1,000	\$3,626,000
Harvey	\$29,720,000	\$27,723,000	\$813,000	\$58,256,000	\$271,000	\$58,527,000
Kingman	\$1,718,000	\$1,525,000	\$27,000	\$3,270,000	\$87,000	\$3,357,000
McPherson	\$19,165,000	\$19,723,000	\$937,000	\$39,825,000	\$59,000	\$39,884,000
Marion	\$11,287,000	\$12,881,000	\$373,000	\$24,541,000	\$246,000	\$24,787,000
Reno	\$88,724,000	\$101,833,000	\$4,370,000	\$194,927,000	\$2,023,000	\$196,950,000
Rice	\$3,585,000	\$3,217,000	\$152,000	\$6,954,000	\$62,000	\$7,016,000
Sedgwick	\$1,195,515,000	\$1,562,920,000	\$51,997,000	\$2,810,432	\$27,181	\$2,837,613
Sumner	\$11,537,000	\$6,657,000	\$109,000	\$18,303,000	\$7,000	\$18,311,000

Source: FEMA and HAZUS

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data, from 2015-2018, allows us to quantify the monetary impact of flood conditions on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to flood events.





Flood Acres Impacted and Crop Insurance Paid per County from 2015-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Butler	768,149	684	0.09%	\$282,338,000	\$79,197	0.03%
Cowley	574,614	1,471	0.26%	\$108,976,000	\$145,189	0.13%
Harper	506,006	527	0.10%	\$109,644,000	\$33,280	0.03%
Harvey	339,584	2,329	0.69%	\$161,716,000	\$194,152	0.12%
Kingman	542,010	1,554	0.29%	\$103,188,000	\$96,193	0.09%
McPherson	571,577	3,178	0.56%	\$208,482,000	\$209,671	0.10%
Marion	596,296	1,500	0.25%	\$151,478,000	\$152,038	0.10%
Reno	789,525	3,042	0.39%	\$267,318,000	\$221,800	0.08%
Rice	457,603	3,583	0.78%	\$258,181,000	\$287,160	0.11%
Sedgwick	486,723	2,599	0.53%	\$148,484,000	\$199,958	0.13%
Sumner	719,611	5,356	0.74%	\$168,713,000	\$433,934	0.26%

Source: USDA

Flood risk can also change over time because of new building and development, weather patterns and other factors. Although the frequency or severity of impacts cannot be changed, FEMA is working with federal, state, tribal and local partners across the nation to identify flood risk and promote informed planning and development practices to help reduce that risk through the Risk Mapping, Assessment and Planning (Risk MAP) program. Risk MAP uses the watershed boundaries to conduct studies. This watershed approach allows communities to come together to develop partnerships, combine resources, share flood risk information with FEMA, and identify broader opportunities for mitigation action.

The Flood Risk Products and datasets present information that can enhance hazard mitigation planning activities, especially the risk and vulnerability assessment portion of a hazard mitigation plan, and the development of risk-based mitigation strategies. Risk MAP can also help guide land use and development decisions and help you take mitigation action by highlighting areas of highest risk, areas in need of mitigation, and areas of floodplain change. Currently Kansas Region G has no current or scheduled Risk Map projects.

Mold

In general, mold is plant-like organism that obtains nourishment it directly from surrounding organic materials. Mold can grow on a variety of materials and thrives in damp environments. As such, a recently flooded home or business provides an ideal environment for mold growth, especially on materials such as drywall and carpeting. The young, old and ill may be specifically susceptible to the effects of mold, with symptoms including:

- congestion
- cough
- breathing difficulties
- sore throat
- membrane irritation
- upper respiratory infections





As such, any instance of flood related mold should be remediated as soon as possible.

4.13.5 – National Flood Insurance Program Communities

The National Flood Insurance Program (NFIP) is a federal program, managed by FEMA, that 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 the number of NFIP participating communities in each county.

Kansas Region G NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
Butler County			
Butler County	2/21/1978	3/2/1981	6/2/2009
City of Andover	8/6/1976	12/4/1986	6/2/2009
City of Augusta	2/1/1974	8/15/1980	6/2/2009
City of Cassoday	-	6/4/1980	6/2/2009
City of Douglass	7/18/1975	6/2/2009	6/2/2009
City of El Dorado	5/10/1974	3/5/1976	6/2/2009
City of Elbing		6/2/2009	(NSFHA)
City of Latham	-	6/2/2009	6/2/2009
City of Leon	3/26/1976	6/2/2009	6/2/2009
City of Potwin	9/26/1975	6/2/2009	6/2/2009
City of Rose Hill	8/8/1975	6/2/2009	6/2/2009
City of Towanda	8/8/1975	6/2/2009	6/2/2009
City of Whitewater	9/19/1975	12/21/1984	6/02/09(M)
Cowley County			
Cowley County	7/19/1977	8/5/1991	10/19/2010
Arkansas City	11/23/1973	5/15/1985	10/19/2010
City of Burden	9/19/1975	10/19/2010	10/19/2010
City of Cambridge	-	10/19/2010	10/19/10(M)
City of Dexter	7/25/1975	10/19/2010	10/19/10(M)
City of Parkerfield	-	10/19/2010	10/19/2010
City of Udall	-	10/19/2010	10/19/10(M)
City of Winfield	1/25/1974	3/16/1981	10/19/2010
Harper County			
Harper County	7/1/1980	2/1/2013	02/01/13(L)
City of Anthony	6/28/1974	2/1/2013	2/1/2013
City of Attica	6/28/1974	-	(NSFHA)
City of Harper	8/16/1974	10/23/1979	10/23/79(M)
Harvey County			
Harvey County	3/7/1978	8/15/1983	10/6/2010
City of Burrton	3/15/1974	4/22/1977	10/06/10(M)
City of Halstead	6/7/1974	9/1/1978	10/6/2010
City of Hesston	6/28/1974	11/1/1979	10/6/2010
City of Newton	2/1/1974	12/5/1989	10/6/2010





Kansas Region G NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
City of North Newton	11/5/1976	6/15/1979	10/6/2010
Kingman County			
Kingman County	10/18/1977	2/1/1990	02/01/90(L)
City of Kingman	2/15/1974	6/18/1980	6/18/1980
McPherson County			
McPherson County	6/28/1977	4/4/1983	1/16/2009
City of Galva	8/15/1975	11/17/1982	1/16/2009
City of Inman	-	1/16/2009	(NSFHA)
City of Lindsborg	12/17/1973	5/15/1978	1/16/2009
City of Marquette	12/17/1973	8/1/1978	1/16/2009
City of McPherson	3/15/1974	3/16/1983	1/16/2009
City of Moundridge	3/8/1974	12/15/1982	1/16/2009
Marion County			
Marion County	8/22/1978	3/1/2005	3/17/2011
City of Burns	3/26/1976	3/17/2011	03/17/11(M)
City of Durham	1/3/1975	5/15/1986	03/17/11(M)
City of Florence	8/6/1976	2/4/1987	3/17/2011
City of Goessel	11/22/1974	2/1/2008	03/17/11(M)
City of Hillsboro	9/26/1975	3/17/2011	03/17/11(M)
City of Lehigh	-	3/17/2011	(NSFHA)
City of Marion	1/25/1974	12/4/1979	3/17/2011
City of Peabody	6/28/1974	11/19/1986	3/17/2011
City of Ramona	-	3/17/2011	3/17/2011
City of Tampa	-	3/17/2011	3/17/2011
Reno County			
Reno County	8/16/1977	9/28/1990	1/6/2010
City of Abbyville	-	1/6/2010	(NSFHA)
City of Arlington	9/26/1975	9/28/1990	1/6/2010
City of Buhler	7/25/1975	7/19/2000	01/06/10(M)
City of Haven	-	9/28/1990	1/6/2010
City of Hutchinson	6/28/1974	9/5/1978	1/6/2010
City of Langdon	-	1/6/2010	(NSFHA)
City of Nickerson	3/8/1974	1/3/1979	1/6/2010
City of Partridge	12/17/1976	9/28/1990	(NSFHA)
City of Plevna	-	1/6/2010	(NSFHA)
City of Pretty Prairie	8/13/1976	9/28/1990	1/6/2010
City of South Hutchinson	7/25/1975	9/28/1990	1/6/2010
City of Sylvania	-	1/6/2010	01/06/10(M)
City of Turon	-	9/28/1990	1/6/2010
City of Willowbrook	12/13/1974	8/1/1986	1/6/2010
Rice County			
Rice County	5/10/1977	7/1/1987	9/3/1997





Kansas Region G NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
City of Alden	12/27/1974	-	(NSFHA)
City of Bushton	11/22/1974	-	(NSFHA)
City of Chase	3/8/1974	9/18/1985	09/18/85(M)
City of Little River	11/22/1974	3/1/1987	03/01/87(L)
City of Lyons	2/15/1974	1/1/1987	3/16/1998
City of Raymond	12/27/1974	6/1/1987	06/01/87(L)
City of Sterling	3/8/1974	8/1/1978	9/3/1997
Sedgwick County			
Sedgwick County	8/2/1974	6/3/1986	5/2/2012
City of Andale	8/16/1974	2/2/2007	(NSFHA)
City of Bel Aire	3/18/1985	3/18/1987	2/2/2007
City of Bentley	-	2/2/2007	(NSFHA)
City of Cheney	3/26/1976	2/2/2007	2/2/2007
City of Clearwater	9/5/1975	8/15/1980	2/2/2007
City of Colwich	9/26/1975	7/11/1978	2/2/2007
City of Derby	6/28/1974	10/15/1981	2/2/2007
City of Eastborough	9/19/1975	2/2/2007	2/2/2007
City of Garden Plain	8/15/1975	9/18/1985	2/2/2007
City of Goddard	7/16/1976	2/2/2007	5/2/2012
City of Haysville	6/28/1974	8/17/1981	2/2/2007
City of Kechi	4/23/1976	8/15/1980	2/2/2007
City of Maize	10/29/1976	2/2/2007	5/2/2012
City of Mount Hope	10/18/1974	2/2/2007	2/2/2007
City of Park City	-	11/19/1986	2/2/2007
City of Sedgwick	6/7/1974	9/15/1978	10/6/2010
City of Valley Center	6/28/1974	1/14/1977	2/2/2007
City of Viola	-	2/2/2007	2/2/2007
City of Wichita	12/27/1974	5/15/1986	5/2/2012
Sumner County			
Sumner County	6/10/1977	4/16/1990	11/18/2009
City of Argonia	-	4/16/1990	11/18/2009
City of Belle Plaine	3/26/1976	7/17/1978	11/18/2009
City of Caldwell	9/19/1975	4/16/1990	11/18/2009
City of Conway Springs	-	4/16/1990	11/18/2009
City of Gueda Springs	9/12/1975	11/18/2009	11/18/2009
City of Milan		4/16/1990	11/18/2009
City of Mulvane	6/28/1974	9/29/1978	11/18/2009
City of Oxford	8/8/1975	4/16/1990	11/18/2009
City of South Haven	9/19/1975	4/16/1990	11/18/2009
City of Wellington	2/15/1974	4/16/1990	11/18/2009

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





Additionally, the NFIP’s Community Rating System (CRS) incentive rewards communities for the work they do managing their floodplains. Eligible communities that qualify for this voluntary program go above the minimum NFIP requirements and can offer their citizens discounted flood insurance in both Special Flood Hazard Areas (SFHAs) areas or non-SFHA areas. Additionally, work already being done by the state of Kansas (e.g., dam safety program and state freeboard requirements) gives communities additional discounts. The following Region G communities are currently CRS participants:

Kansas Region G CRS Participating Jurisdictions

Jurisdiction	County	CRS Entry Date	CRS Class	% Discount for SFHA	% Discount for Non-SFHA	Status
Bel Aire	Sedgwick	05/01/14	8	10%	5%	Current
Butler County	Butler	10/01/13	8	10%	5%	Current
Derby	Sedgwick	10/01/12	8	10%	5%	Current
Florence	Marion	05/01/15	9	5%	5%	Current
Galva-	McPherson	05/01/14	9	5%	5%	Current
Harvey County	Harvey	05/01/12	9	5%	5%	Current
Haysville	Sedgwick	10/01/13	8	10%	5%	Current
Lyons	Rice	05/01/12	8	10%	5%	Current
Newton	Harvey	05/01/15	8	10%	5%	Current
Valley Center	Sedgwick	05/01/13	8	10%	5%	Current

Source: FEMA and KDEM

4.13.6 – FEMA Flood Policy and Loss Data

Kansas Region G flood-loss information was pulled from FEMA’s “Policy and Loss Data by Community with County and State Data.” There are several limitations to this data, including:

- Only losses to participating NFIP communities are represented
- Communities joined the NFIP at various times since 1978
- The number of flood insurance policies in effect may not include all structures at risk to flooding
- Some of the historical loss areas have been mitigated with property buyouts

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 and loss statistics for each county in Kansas Region G. Loss statistics include losses through December 31, 2018.

Kansas Region G NFIP Policy and Loss Statistics, As of December 31, 2018

Jurisdiction	Number of Policies in Force	Insurance in Force	Number of Closed Losses	Total Payments
Butler County				
Butler County	91	\$18,137,700	155	\$3,954,585
Andover	16	\$4,777,900	3	\$163,542
Augusta	58	\$21,649,200	121	\$4,616,342





Kansas Region G NFIP Policy and Loss Statistics, As of December 31, 2018

Jurisdiction	Number of Policies in Force	Insurance in Force	Number of Closed Losses	Total Payments
El Dorado	94	\$12,051,500	111	\$1,894,473
Rose Hill	4	\$756,500	1	\$22,004
Towanda	0	\$0	1	\$18,504
White Water	0	\$0	2	\$40,287
Cowley County				
Cowley County	36	\$4,589,200	26	\$397,390
Arkansas City	28	\$4,265,200	49	\$604,370
Cambridge	1	\$105,000	0	\$0
Dexter	3	\$285,000	0	\$0
Winfield	22	\$6,442,000	22	\$542,388
Harper County				
Harper	11	\$436,200	0	\$0
Harvey County				
Harvey County	77	\$15,073,300	30	\$371,173
Burrton	0	\$0	1	\$5,000
Halstead	3	\$875,000	175	\$2,088,938
Hesston	9	\$1,676,100	3	\$29,410
Newton	98	\$12,800,300	48	\$230,707
North Newton	4	\$1,400,000	0	\$0
Sedgwick	25	\$4,901,100	46	\$360,436
Kingman County				
Kingman County	11	\$1,343,600	1	\$5,956
Kingman	35	\$5,915,400	3	\$944,320
McPherson County				
McPherson County	44	\$6,819,400	4	\$25,430
Galva	5	\$205,000	0	\$0
Lindsborg	21	\$5,316,200	4	\$23,235
McPherson	65	\$9,212,600	8	\$16,859
Moundridge	6	\$647,000	5	\$12,909
Marion County				
Marion County	14	\$1,388,600	2	\$20,538
Florence	1	\$28,000	2	\$3,561
Goessel	2	\$142,600	0	\$0
Peabody	7	\$650,600	3	\$20,870
Reno County				
Reno County	117	\$15,629,300	29	\$412,412
Arlington	6	\$487,500	0	\$0
Buhler	8	\$1,117,900	0	\$0
Hutchinson	38	\$8,731,300	10	\$80,551
Nickerson	43	\$2,612,300	8	\$30,099
Pretty Prairie	13	\$864,600	2	\$10,648
South Hutchinson	10	\$2,641,000	1	\$11,059
Willowbrook	3	\$517,500	0	\$0





Kansas Region G NFIP Policy and Loss Statistics, As of December 31, 2018

Jurisdiction	Number of Policies in Force	Insurance in Force	Number of Closed Losses	Total Payments
Rice County				
Rice County	39	\$4,527,000	6	\$140,430
Little River	1	\$65,000	0	\$0
Lyons	7	\$721,700	1	\$86,000
Sterling	32	\$2,116,000	1	\$7,163
Sedgwick County				
Sedgwick County	260	\$52,090,500	158	\$2,621,645
Andale	1	\$175,000	0	\$0
Bel Aire	10	\$2,395,000	2	\$3,997
Bentley	1	\$210,000	0	\$0
Cheney	1	\$350,000	0	\$0
Clearwater	2	\$123,000	3	\$51,302
Colwich	7	\$1,354,200	5	\$73,279
Derby	112	\$28,908,600	25	\$164,406
Garden Plain	5	\$690,000	0	\$0
Goddard	3	\$1,050,000	0	\$0
Haysville	25	\$5,188,400	3	\$29,050
Maize	10	\$2,577,000	1	\$16,923
Mount Hope	1	\$280,000	0	\$0
Mulvane	100	\$16,396,500	55	\$1,067,528
Park City	16	\$4,247,500	0	\$0
Valley Center	67	\$16,222,000	4	\$132,722
Wichita	886	\$210,683,300	350	\$8,022,431
Sumner County				
Sumner County	78	\$11,039,200	118	\$2,426,711
Argonia	1	\$100,000	0	\$0
Belle Plaine	4	\$793,200	9	\$87,270
Wellington	20	\$2,139,300	3	\$11,202

Source: FEMA, "Policy and Loss Data by Community with County and State Data"

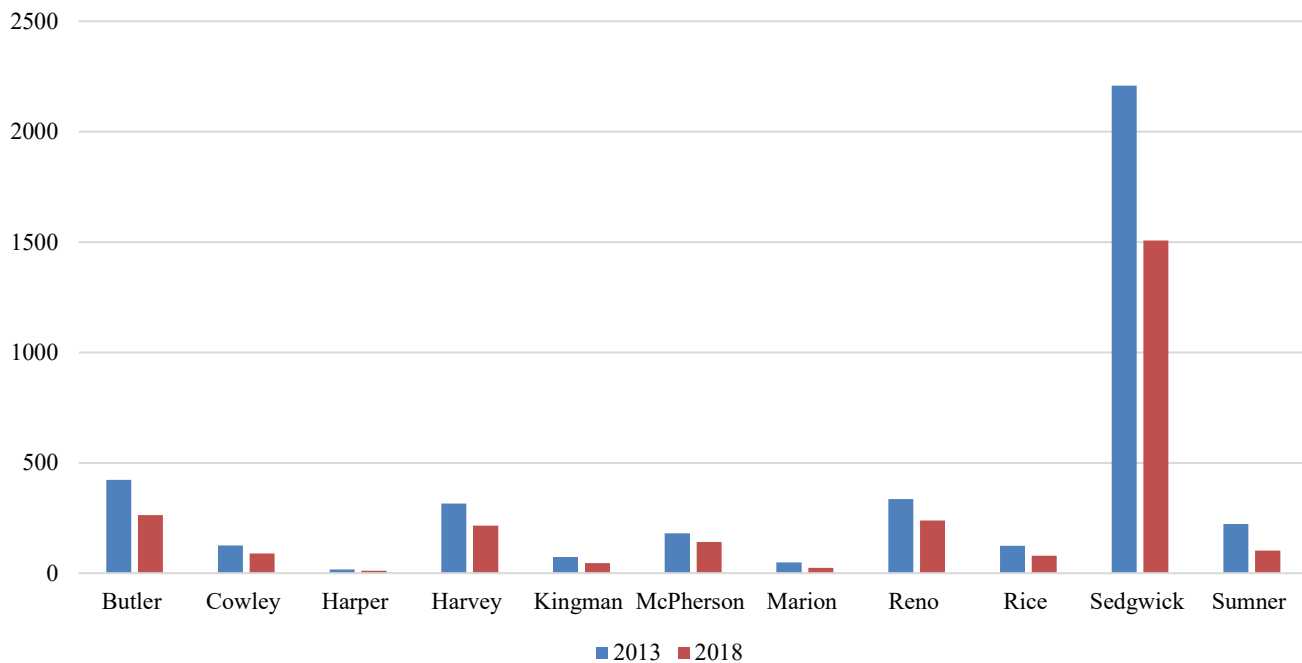
The following graphs summarize data from the above table for Kansas Region G in comparison to 2013 data. Of note:

- The number of flood policies increased from 2013 to 2018
- The amount of flood insurance in-force increased from 2013 to 2018
- Flood insurance closed losses increased in Johnson County and only slightly increased in Leavenworth and Wyandotte Counties from 2013 to 2018

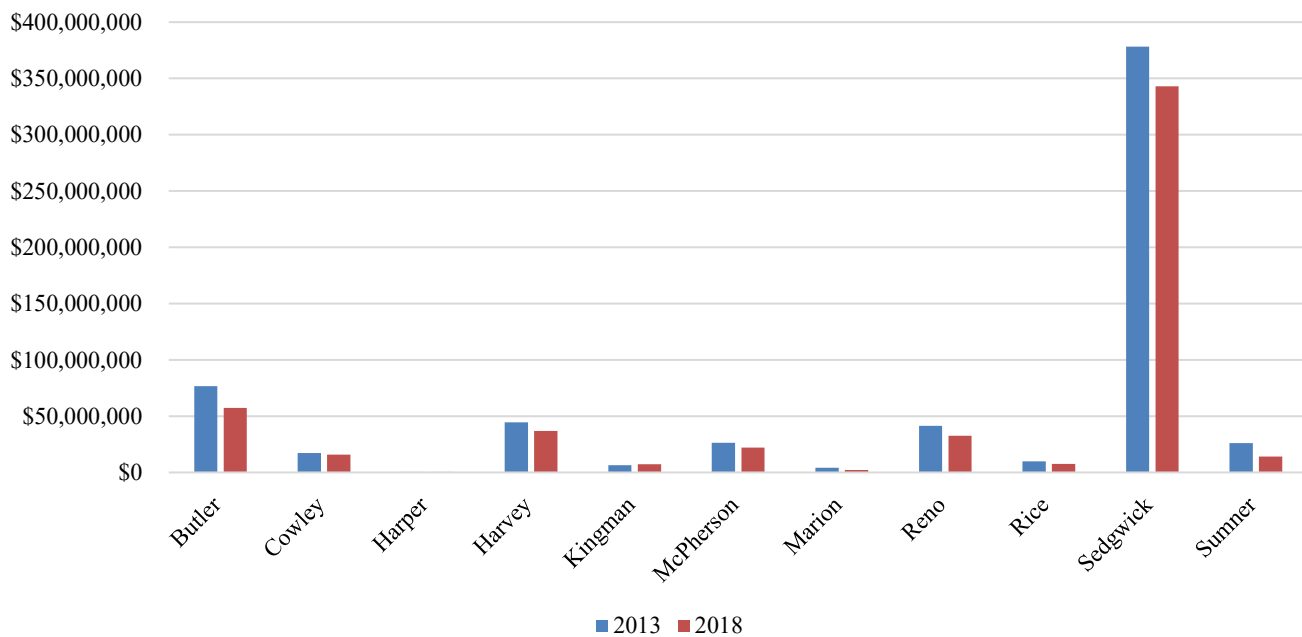


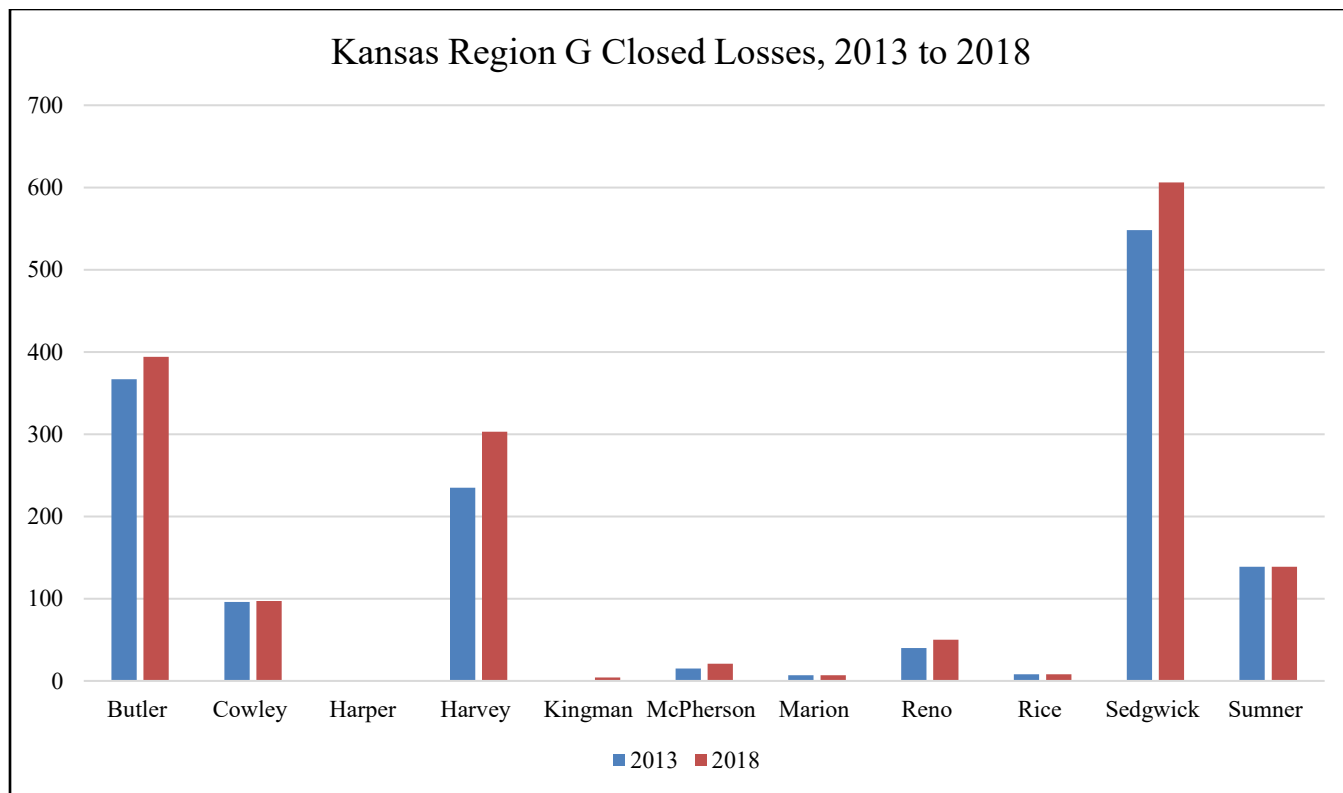


Kansas Region G Flood Policies in Force, 2013 to 2018



Kansas Region G Flood Insurance in Force, 2013 to 2018





4.13.7 – Repetitive Loss Properties

A high priority to Kansas Region G is 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 RL and SRL properties in Kansas Region G





Kansas Region G Repetitive Loss Properties, As of December 2018

County	Number of RL Properties	Number of RL Properties Mitigated	Number of RL Properties Insured	Number of Losses	Total Paid
Butler	43	24	11	132	\$3,236,186
Cowley	12	4	2	25	\$631,606
Harper	0	0	0	0	\$0
Harvey	13	7	2	30	\$386,492
Kingman	0	0	0	0	\$0
McPherson	2	0	0	4	\$29,241
Marion	0	0	0	0	\$0
Reno	5	0	3	12	\$202,341
Rice	1	0	1	2	\$36,366
Sedgwick	73	9	21	175	\$6,046,115
Sumner	17	4	7	49	\$927,835

Since the last plan update, no SRL properties have been mitigation although this remains a high priority in the State of Kansas. Kansas continues to reach out to the affected communities to help facilitate the mitigation of all SRL properties. The following table details SRL claims, with only those counties with SRL properties detailed.

Kansas Region G Severe Repetitive Loss Property Claims

Jurisdiction	Total Paid	Losses	SRL Status
Butler	\$96,243	4	Validated
Sedgwick (Wichita)	\$197,185	3	Validated

4.13.8 – Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Flood Consequence Analysis

Subject	Impacts of Flood
Health and Safety of the Public	Impact dependent on the level of flood waters. Individuals further away from the incident area are at a lower risk. Casualties are dependent on warning time.
Health and Safety of Responders	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Temporary relocation may be necessary if inundation affects government facilities.
Property, Facilities, and Infrastructure	Localized impact could be severe in the inundation area of the incident to facilities and infrastructure. The further away from the incident area the damage lessens.
Environment	Impact will be severe for impacted area. Impact will lessen with distance.
Economic Conditions	Impacts to the economy depend on the area flooded, depth of water, and the amount of time it takes for the water to recede.
Public Confidence in the Jurisdiction's Governance	Perception of whether the flood could have been prevented, warning time, and response and recovery time will greatly impact the public's confidence.





4.14 – Hailstorms

According to NOAA, hail is precipitation that is formed when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere causing them to freeze. The raindrops form into small frozen droplets and then continue to grow as they come into contact with super-cooled water which will freeze on contact with the frozen rain droplet. This frozen rain droplet can continue to grow and form hail.



4.14.1 – Location and Extent

Hailstorms occur over broad geographic regions. The entire planning area, including all participating jurisdictions, is at risk to hailstorms.

Based on information provided by the Tornado and Storm Research Organization, the following table describes typical damage impacts of the various sizes of hail.

Hailstorm Intensity Scale

Intensity Category	Diameter (mm)	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	5-9	0.2-0.4	Pea	No damage
Potentially Damaging	10-15	0.4-0.6	Mothball	Slight general damage to plants, crops
Significant	16-20	0.6-0.8	Marble, grape	Significant damage to fruit, crops, vegetation
Severe	21-30	0.8-1.2	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
Severe	31-40	1.2-1.6	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	41-50	1.6-2.0	Golf ball > Pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	51-60	2.0-2.4	Hen's egg	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	61-75	2.4-3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Destructive	76-90	3.0-3.5	Large orange > Soft ball	Severe damage to aircraft bodywork
Super Hailstorms	91-100	3.6-3.9	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	>100	4.0+	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

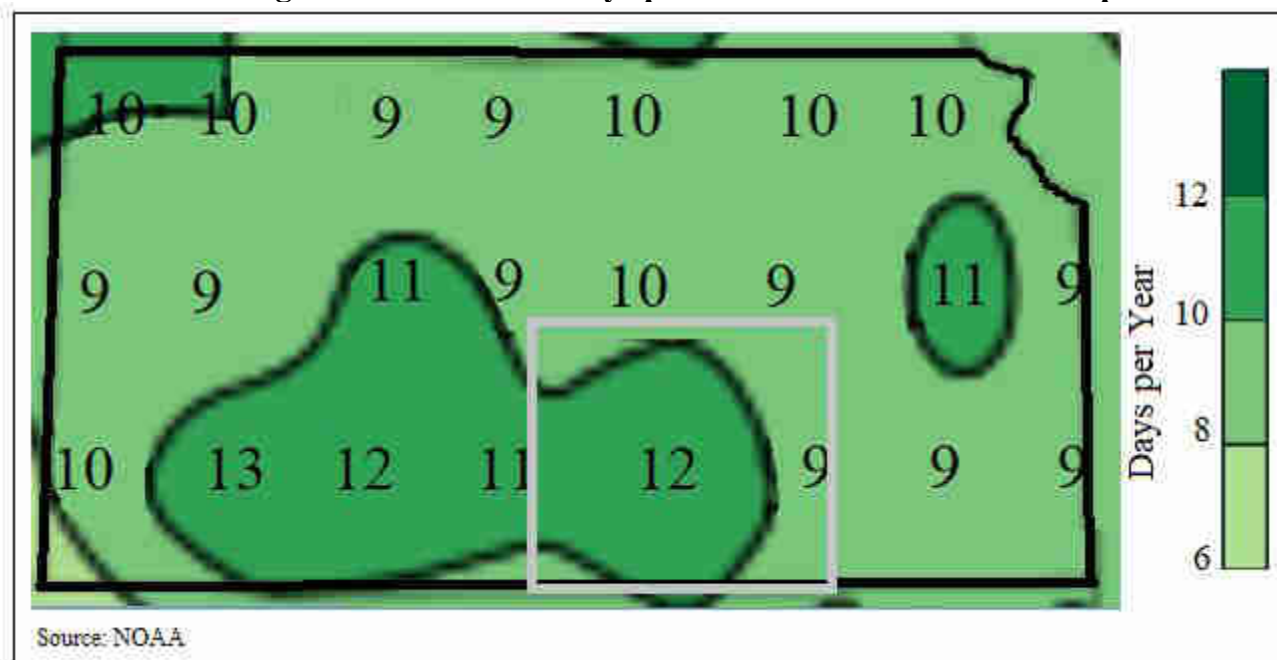
Source: Tornado and Storm Research Organization





The following map, generated by data compiled by NOAA, indicates the average number of severe hail event days for Kansas Region G (9).

Kansas Region G Severe Hail Days per Year from 2003 to 2012 Reports



4.14.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been 14 Presidential Disaster Declarations for Kansas Region G for severe storms (along with other associates hazard event), of which hail may be a component. The following 20-year information on past declared disasters is presented to provide a historical perspective on hail events that have impacted Kansas Region G. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2013.

Kansas Region G FEMA Severe Storm Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4287	10/20/2016 (09/02/2016 – 09/12/2016)	Severe Storms and Flooding	Cowley and Sumner	\$6,959,536
4230	07/20/2015 (05/04/2015 – 06/21/2015)	Severe Storms , Tornadoes, Straight-Line Winds, and Flooding	Butler, Cowley, Harper, McPherson, Rice, and Sumner	\$13,848,325
4150	10/22/2013 (07/22/2013 – 08/15/2013)	Severe Storms , Straight-line Winds, Tornadoes, and Flooding	Butler, Cowley Harper, Kingman, Reno, Rice, and Sumner.	\$1,102,861 (Estimate)
4063	05/24/2012 (4/14-4/15/2012)	Severe Storms , Tornadoes, Straight-line Winds and Flooding	Harper, Rice, Sedgwick, and Sumner	\$6,923,919





Kansas Region G FEMA Severe Storm Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4010	07/29/2011 (5/19-6/4/2011)	Severe Storms, Straight-Line Winds, Tornadoes and Flooding	Marion	\$8,259,620
1932	08/10/2010 (6/7-7/21/2010)	Severe Storms, Flooding and Tornadoes	Butler, Harvey, Marion, and McPherson	\$9,279,257
1860	09/30/2009 (7/8-7/14/2009)	Severe Storms and Flooding	Sedgwick	\$3,347,662
1849	06/25/2009 (4/25-5/16/2009)	Severe Storms, Flooding, Straight-Line Winds, and Tornadoes	Butler, Cowley, Harper, Harvey, Kingman, Marion, Reno, Rice, and Sumner	\$15,013,488
1808	10/31/2008	Severe Storms, Flooding, and Tornadoes	Butler, Cowley, Harper, Harvey, and Sumner	\$4,167,044
1776	07/09/2008	Severe Storms, Flooding, and Tornadoes	Butler, Cowley, Harper, Kingman, Reno, and Sumner	\$70,629,544
1711	7/2/2007 (6/26-30/2007)	Severe Storms and Flooding	Butler, Cowley and Harper	\$40,238,600
1699	5/6/2007 (5/4/2007)	Severe Storms, Tornadoes, and Flooding	Cowley, Harper, Harvey, Kingman, McPherson, Reno, Rice, and Sumner	\$117,565,269
1535	8/3/2004 (6/12-7/25/2004)	Severe Storms, Flooding, and Tornadoes	Butler and Marion	\$12,845,892
1273	5/4/1999 (5/3/1999)	Tornadoes and Severe Storms	Reno, Sedgwick, Sumner	\$9,121,870

Source: FEMA

-: Data unavailable

The following provides details of the two Presidential Disaster Declarations for Kansas Region G since the last plan update in 2013.

Kansas – Severe Storms and Flooding FEMA-4287-DR

Declared October 20, 2016

On October 10, 2016, Governor Sam Brownback requested a major disaster declaration due to severe storms and flooding during the period of September 2-12, 2016. The Governor requested a declaration for Public Assistance for 11 counties and Hazard Mitigation statewide. During the period of September 28 to October 7, 2016, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On October 20, 2016, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms and





flooding in Cheyenne, Cowley, Ellis, Graham, Greenwood, Kingman, Norton, Rooks, Russell, Sedgwick, and Sumner Counties. This declaration also made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

Kansas – Severe Storms, Tornadoes, Straight-Line Winds, and Flooding FEMA-4230-DR
Declared July 20, 2015

On July 1, 2015, Governor Sam Brownback requested a major disaster declaration due to severe storms, tornadoes, straight-line winds, and flooding during the period of May 4 to June 21, 2015. The Governor requested a declaration for Public Assistance, including direct federal assistance for 42 counties and Hazard Mitigation statewide. During the period of May 4 to June 27, 2015, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On July 20, 2015, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms, tornadoes, straight-line winds, and flooding in Atchison, Barton, Brown, Butler, Chase, Chautauqua, Cherokee, Cheyenne, Clay, Cloud, Coffey, Cowley, Doniphan, Edwards, Elk, Ellsworth, Franklin, Gray, Greenwood, Harper, Haskell, Hodgeman, Jackson, Jefferson, Jewell, Lyon, Marion, Marshall, McPherson, Meade, Miami, Morris, Nemaha, Neosho, Osage, Pottawatomie, Republic, Rice, Stevens, Sumner, Wabaunsee, and Washington Counties. Direct Federal assistance was also authorized. Finally, this declaration made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

In addition to the above reported events, the following table presents NOAA NCEI identified hailstorm events and the resulting damage totals in Kansas Region G from the period 2009 - 2018.

Kansas Region G NCEI Hailstorm Events, 2009 - 2018

County	Number of Days with Events	Property Damage	Crop Damage	Deaths	Injuries
Butler	40	\$4,130,000	\$0	0	0
Cowley	30	\$0	\$0	0	0
Harper	15	\$0	\$0	0	0
Harvey	15	\$0	\$0	0	0
Kingman	26	\$0	\$0	0	0
McPherson	31	\$705,000	\$0	0	0
Marion	16	\$0	\$0	0	0
Reno	37	\$5,000	\$0	0	0
Rice	22	\$10,000	\$0	0	0
Sedgwick	50	\$200	\$	0	0
Sumner	26	\$160,000	\$	0	0

Source: NOAA NCEI





The following provides both **local accounts** and NOAA NCEI descriptions of notable recorded events:

- **May 26, 2015: Butler County**

Baseball sized hail in El Dorado caused heavy damage to 50 cars. There was major damage to roofs and siding of countless homes and businesses. The very large hail caused major roof damage on the Butler County Community College campus where most of their vehicles were heavily damaged. Extensive roof damage, that included many broken sky lights, caused the closure of Walmart. Many traffic signals were also damaged and some cases, destroyed. Property damage was recorded at \$4,000,000.

Additional descriptions of smaller events can be found on the NOAA NCEI website:

- www.NCEI.noaa.gov/stormevents/ftp.jsp

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data, from 2015-2018, allows us to quantify the monetary and acreage impact of hail on the agricultural sector.

USDA Risk Management Agency Cause of Loss Indemnities, Hail

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Butler	9	2,166	\$82,484
Cowley	23	6,069	\$469,623
Harper	23	9,481	\$672,517
Harvey	10	1,902	\$137,015
Kingman	26	8,469	\$537,983
McPherson	7	1,444	\$134,474
Marion	22	5,329	\$357,947
Reno	20	5,666	\$372,420
Rice	19	4,830	\$318,059
Sedgwick	19	1,364	\$83,204
Sumner	26	22,694	\$1,870,210

Source: USDA Farm Service Agency

4.12.3 – Hazard Probability Analysis

The following table summarizes hailstorm probability data for **Butler County**.

Butler County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	60
Average Events per Year	7
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$4,130,000
Average Property Damage per Year	\$688,333





Butler County Hailstorm Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	8
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	2,166
Average Number of Acres Damaged per Year	541
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$82,484
Average Crop Damage per Year	\$20,621

Source: NCEI and USDA

Data from the NCEI indicates that Butler County can expect on a yearly basis, relevant to hail events:

- Seven events
- No deaths or injuries
- \$688,333 in property damages

According to the USDA Risk Management Agency, Butler County can expect on a yearly basis, relevant to hail occurrences:

- Two insurance claims
- 541 acres impacted
- \$20,621 in insurance claims

The following table summarizes hailstorm probability data for **Cowley County**.

Cowley County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	40
Average Events per Year	7
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	23
Average Number of Claims per Year	6
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	6,069
Average Number of Acres Damaged per Year	1,517
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$469,623
Average Crop Damage per Year	\$117,406

Source: NCEI and USDA

Data from the NCEI indicates that Cowley County can expect on a yearly basis, relevant to hail events:

- Seven events
- No deaths or injuries
- \$0 in property damages





According to the USDA Risk Management Agency, Cowley County can expect on a yearly basis, relevant to hail occurrences:

- Six insurance claims
- 1,517 acres impacted
- \$117,406 in insurance claims

The following table summarizes hailstorm probability data for **Harper County**.

Harper County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	15
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	23
Average Number of Claims per Year	6
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	9,481
Average Number of Acres Damaged per Year	2,370
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$672,517
Average Crop Damage per Year	\$168,129

Source: NCEI and USDA

Data from the NCEI indicates that Harper County can expect on a yearly basis, relevant to hail events:

- Three events
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Harper County can expect on a yearly basis, relevant to hail occurrences:

- Six insurance claims
- 2,370 acres impacted
- \$168,129 in insurance claims

The following table summarizes hailstorm probability data for **Harvey County**.

Harvey County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	15
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0





Harvey County Hailstorm Probability Summary

Data	Recorded Impact
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	10
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	31,902
Average Number of Acres Damaged per Year	476
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$137,015
Average Crop Damage per Year	\$34,254

Source: NCEI and USDA

Data from the NCEI indicates that Harvey County can expect on a yearly basis, relevant to hail events:

- Three events
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Harvey County can expect on a yearly basis, relevant to hail occurrences:

- Three insurance claims
- 476 acres impacted
- \$34,254 in insurance claims

The following table summarizes hailstorm probability data for **Kingman County**.

Kingman County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	26
Average Events per Year	4
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	26
Average Number of Claims per Year	7
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	8,469
Average Number of Acres Damaged per Year	2,117
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$537,983
Average Crop Damage per Year	\$134,496

Source: NCEI and USDA

Data from the NCEI indicates that Kingman County can expect on a yearly basis, relevant to hail events:

- Four events
- No deaths or injuries





- \$0 in property damages

According to the USDA Risk Management Agency, Kingman County can expect on a yearly basis, relevant to hail occurrences:

- Seven insurance claims
- 2,117 acres impacted
- \$134,496 in insurance claims

The following table summarizes hailstorm probability data for **McPherson County**.

McPherson County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	31
Average Events per Year	5
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$705,000
Average Property Damage per Year	\$117,500
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	7
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	1,444
Average Number of Acres Damaged per Year	361
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$134,474
Average Crop Damage per Year	\$33,618

Source: NCEI and USDA

Data from the NCEI indicates that McPherson County can expect on a yearly basis, relevant to hail events:

- Five events
- No deaths or injuries
- \$117,500 in property damages

According to the USDA Risk Management Agency, McPherson County can expect on a yearly basis, relevant to hail occurrences:

- Two insurance claims
- 361 acres impacted
- \$33,618 in insurance claims

The following table summarizes hailstorm probability data for **Marion County**.

Marion County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	16
Average Events per Year	3





Marion County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	22
Average Number of Claims per Year	6
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	5,329
Average Number of Acres Damaged per Year	1,332
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$357,947
Average Crop Damage per Year	\$89,487

Source: NCEI and USDA

Data from the NCEI indicates that Marion County can expect on a yearly basis, relevant to hail events:

- 16 events
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Marion County can expect on a yearly basis, relevant to hail occurrences:

- Six insurance claims
- 1,332 acres impacted
- \$89,487 in insurance claims

The following table summarizes hailstorm probability data for **Reno County**.

Reno County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	37
Average Events per Year	6
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$5,000
Average Property Damage per Year	\$833
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	20
Average Number of Claims per Year	5
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	5,666
Average Number of Acres Damaged per Year	1,416
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$374,420
Average Crop Damage per Year	\$93,105

Source: NCEI and USDA

Data from the NCEI indicates that Reno County can expect on a yearly basis, relevant to hail events:





- Six events
- No deaths or injuries
- \$833 in property damages

According to the USDA Risk Management Agency, Reno County can expect on a yearly basis, relevant to hail occurrences:

- Five insurance claims
- 1,416 acres impacted
- \$93,105 in insurance claims

The following table summarizes hailstorm probability data for **Rice County**.

Rice County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	22
Average Events per Year	4
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$10,000
Average Property Damage per Year	\$1,667
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	19
Average Number of Claims per Year	5
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	4,830
Average Number of Acres Damaged per Year	1,208
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$318,059
Average Crop Damage per Year	\$79,515

Source: NCEI and USDA

Data from the NCEI indicates that Rice County can expect on a yearly basis, relevant to hail events:

- Five events
- No deaths or injuries
- \$1,667 in property damages

According to the USDA Risk Management Agency, Rice County can expect on a yearly basis, relevant to hail occurrences:

- Five insurance claims
- 1,208 acres impacted
- \$79,515 in insurance claims

The following table summarizes hailstorm probability data for **Sedgwick County**.





Sedgwick County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	50
Average Events per Year	8
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$200
Average Property Damage per Year	\$33
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	19
Average Number of Claims per Year	5
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	1,364
Average Number of Acres Damaged per Year	341
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$83,204
Average Crop Damage per Year	\$20,801

Source: NCEI and USDA

Data from the NCEI indicates that Sedgwick County can expect on a yearly basis, relevant to hail events:

- Eight events
- No deaths or injuries
- \$33 in property damages

According to the USDA Risk Management Agency, Sedgwick County can expect on a yearly basis, relevant to hail occurrences:

- Five insurance claims
- 341 acres impacted
- \$20,801 in insurance claims

The following table summarizes hailstorm probability data for **Sumner County**.

Sumner County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	26
Average Events per Year	4
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Property Damage	0
Total Reported NCEI Property Damage (2009-2018)	\$160,000
Average Property Damage per Year	\$26,667
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	26
Average Number of Claims per Year	7
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	22,694
Average Number of Acres Damaged per Year	5,673
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$1,870,210
Average Crop Damage per Year	\$467,552

Source: NCEI and USDA





Data from the NCEI indicates that Sumner County can expect on a yearly basis, relevant to hail events:

- Four events
- No deaths or injuries
- \$26,667 in property damages

According to the USDA Risk Management Agency, Sumner County can expect on a yearly basis, relevant to hail occurrences:

- Seven insurance claims
- 5,673 acres impacted
- \$467,552 in insurance claims

In addition, Kansas Region G has had 14 Presidentially Declared Disasters relating to severe storms (of which hail is a potential component) in the last 20 years. This represents an average one declared severe storm (hailstorm) related disaster per year.

4.14.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to hailstorm events. In general, counties with a higher or increasing structural inventory, or having a high structural valuation are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential hailstorm event. Additionally, population vulnerabilities to hail events are expected to be minimal. It is worth highlighting the majority of Kansas Region G counties may have increased vulnerability to hailstorm events due to a projected increase in the number of structures.

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region G county incurring damage over the period 2009 to 2018 from hailstorm events. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.

Kansas Region G Structural Vulnerability Data for Hailstorms, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Butler	\$6,664,946,000	\$0	0%
Cowley	\$3,626,310,000	\$0	0%
Harper	\$779,563,000	\$0	0%
Harvey	\$3,863,763,000	\$0	0%
Kingman	\$1,041,969,000	\$0	0%
McPherson	\$3,766,723,000	\$0	0%
Marion	\$1,538,178,000	\$0	0%
Reno	\$7,100,181,000	\$0	0%
Rice	\$1,198,508,000	\$0	0%
Sedgwick	\$56,135,645,000	\$0	0%





Kansas Region G Structural Vulnerability Data for Hailstorms, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Sumner	\$2,800,707,000	\$0	0%

Source: NCEI and HAZUS

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of hailstorm conditions on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to hailstorm events.

Hailstorm Acres Impacted and Crop Insurance Paid per County from 2015-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Butler	768,149	541	0.07%	\$282,338,000	\$20,621	0.01%
Cowley	574,614	1,517	0.26%	\$108,976,000	\$117,406	0.11%
Harper	506,006	2,370	0.47%	\$109,644,000	\$168,129	0.15%
Harvey	339,584	476	0.14%	\$161,716,000	\$34,254	0.02%
Kingman	542,010	2,117	0.39%	\$103,188,000	\$134,496	0.13%
McPherson	571,577	361	0.06%	\$208,482,000	\$33,618	0.02%
Marion	596,296	1,332	0.22%	\$151,478,000	\$89,487	0.06%
Reno	789,525	1,416	0.18%	\$267,318,000	\$93,105	0.03%
Rice	457,603	1,208	0.26%	\$258,181,000	\$79,515	0.03%
Sedgwick	486,723	341	0.07%	\$148,484,000	\$20,801	0.01%
Sumner	719,611	5,673	0.79%	\$168,713,000	\$467,552	0.28%

Source: USDA

4.14.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Hailstorm Consequence Analysis

Subject	Impacts of Hailstorm
Health and Safety of the Public	Severity and location dependent. Impacts on persons in the areas of hail are expected to be severe if caught without proper shelter.
Health and Safety of Responders	Impacts will be predicated on the severity of the event. Damaged infrastructure will likely result in hazards such as downed utility lines, main breakages and debris on roadways. .
Continuity of Operations	Temporary relocation may be necessary if government facilities experience damage. Services may be limited to essential tasks if utilities are impacted.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location and structural capacity of the facility. Loss of structural integrity of buildings and infrastructure could occur. Utility lines, roads, residential and business properties will be affected.





Hailstorm Consequence Analysis

Subject	Impacts of Hailstorm
Environment	Impact could be severe for the immediate impacted area, depending on the size of the event. Impact will lessen as distance increases from the immediate incident area
Economic Conditions	Impacts to the economy will be dependent severity of the event and the impact on structures and infrastructure. Impacts could be severe if roads/utilities are affected.
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. Warning systems in place and the timeliness of those warnings could be questioned.





The following table details the total amount of subsurface void space as calculated using data from the KDHE map.

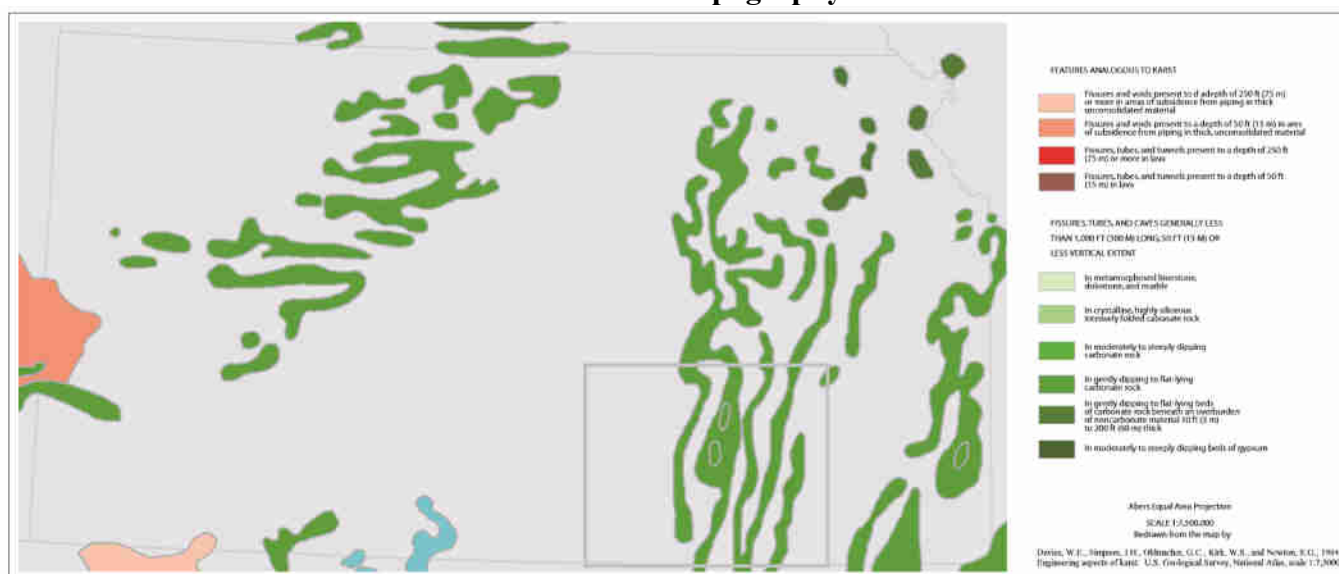
Kansas Region G Sub-Surface Void Space

County	Total Sub-Surface Void Space
Butler	0
Cowley	5
Harper	62
Harvey	0
Kingman	190
McPherson	901
Marion	0
Reno	2,889
Rice	1,141
Sedgwick	333
Sumner	8

Source: KDHE

Of additional concern to Kansas Region G is Karst topography. The following map from the United States Geologic Survey (USGS) indicates areas of Karst topography in the region. The green areas shown in the map show fissures, tubes, and caves generally less than 1,000 feet long with 50 feet or less vertical extent in gently dipping to flat-lying carbonate rock. Brown areas have similar features in gently dipping to flat lying gypsum beds. Light pink colored areas are features analogous to karst with fissures and voids present to a depth of 250 feet or more in areas of subsidence from piping in thick unconsolidated material. Darker pink areas contain fissures and voids (analogous to karst) to a depth of 50 feet. There are limited documented problems associated with natural limestone subsidence and sinkholes in Kansas Region G.

USGS Karst Topography





4.15.2 – Previous Occurrences

There have been no reported land subsidence events in Kansas Region G during the ten-year period from 2009 to 2018.

4.15.3 – Hazard Probability Analysis

Land subsidence events with the potential to affect Kansas Region G are incredibly difficult to quantify and forecast. Compounding the difficulty, land subsidence events occur on their own or occur as a secondary hazard with incidents of heavy rain, melting snow, and earthquakes as a primary cause. Hence, their future occurrences are highly dependent on the likelihood of the mentioned hazards.

Based on limited available data, indicating that there have been no reported events in the past ten years, and bearing in mind that many events may be unreported as they have no impact on human activities, the probability of a reported land subsidence occurrence in any given year is very low.

4.15.4 Vulnerability Analysis

In general, counties with a higher or increasing population, high, or increasing, or having a high structural valuation are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential land subsidence event. Additionally, population vulnerabilities to land subsidence events are expected to be minimal.

Vulnerability to land subsidence in Kansas Region G was analyzed using the KDHE “Subsurface Void Space and Sinkhole/Subsidence Area Inventory for the State of Kansas” report. All documented acres of subsurface void space were classified according to these risk categories for each of the following causes of void space:

- Lead and Zinc Mines
- Coal Mines
- Limestone Mines
- Gypsum Mines
- Salt Solution Mining
- Rock Salt Mines
- Hydrocarbon Storage Caverns

Based on these classifications, a risk category was assigned to each of the subsurface void acres:

- Category I: High Risk
- Category II: Medium Risk
- Category III: Low Risk

The following table shows the classification of the void space in each of Kansas Region G counties. Please note that not all classifications with identified acreage are shown.





Kansas Region G Sub-Surface Void Space Risk Classification

County	Coal Category II	Salt Solution Category I	Salt Solution Category II	Salt Solution Category III	Rock Salt Category III	Hydrocarbon Storage Category III	Total Sub-Surface Void Space
Butler	0	0	0	0	0	0	0
Cowley	5	0	0	0	0	0	5
Harper	0	0	12	0	50	0	62
Harvey	0	0	0	0	0	0	0
Kingman	0	0	12	0	150	28	190
Marion	0	0	0	0	0	0	0
McPherson	0	0	0	0	0	901	901
Reno	0	200	660	400	925	704	2,889
Rice	0	30	149	136	750	76	1,141
Sedgwick	0	136	34	163	0	0	333
Sumner	0	0	8	0	0	0	8

Source: KDHE, "Subsurface Void Space and Sinkhole/Subsidence Area Inventory for the State of Kansas" 2006.

Based on this data, the area for each county underlain by sub-surface void acreage was determined. In general, the higher percentage of acreage underlain by void area the higher the vulnerability.

Kansas Region G Percentage of Land Underlain by Sub-Surface Void Space

County	Total County Acreage	Sub-Surface Void Space Acreage	Percentage of County Acreage Underlain by Void Space
Butler	733,440	0	0.0%
Cowley	724,480	5	0.0%
Harper	513,920	62	0.0%
Harvey	346,240	0	0.0%
Kingman	554,880	190	0.0%
Marion	576,640	901	0.002%
McPherson	610,560	0	0.0%
Reno	814,080	2,889	0.004%
Rice	465,920	1,141	0.002%
Sedgwick	645,760	333	0.001%
Sumner	758,400	8	0.0%

Source: KDHE

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region G county incurring damage over the period 2009 to 2018 from land subsidence events. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.





Kansas Region G Structural Vulnerability Data for Land Subsidence, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Butler	\$6,664,946,000	\$0	0%
Cowley	\$3,626,310,000	\$0	0%
Harper	\$779,563,000	\$0	0%
Harvey	\$3,863,763,000	\$0	0%
Kingman	\$1,041,969,000	\$0	0%
McPherson	\$3,766,723,000	\$0	0%
Marion	\$1,538,178,000	\$0	0%
Reno	\$7,100,181,000	\$0	0%
Rice	\$1,198,508,000	\$0	0%
Sedgwick	\$56,135,645,000	\$0	0%
Sumner	\$2,800,707,000	\$0	0%

Source: NCEI and HAZUS

4.15.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Land Subsidence Consequence Analysis

Subject	Impacts of Land Subsidence
Health and Safety of the Public	Local impact expected to be moderate to severe for the incident area, depending on the scale of the area.
Health and Safety of Responders	Impact to responders would be minimal.
Continuity of Operations	Minimal expectation of execution of the COOP, unless a facility is impacted.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the incident area has the potential to do severe damage.
Environment	Impact to the area would be minimal.
Economic Conditions	Impacts to the economy will depend on the severity of the damage.
Public Confidence in the Jurisdiction's Governance	Local development policies will be questioned





4.16 – Landslides

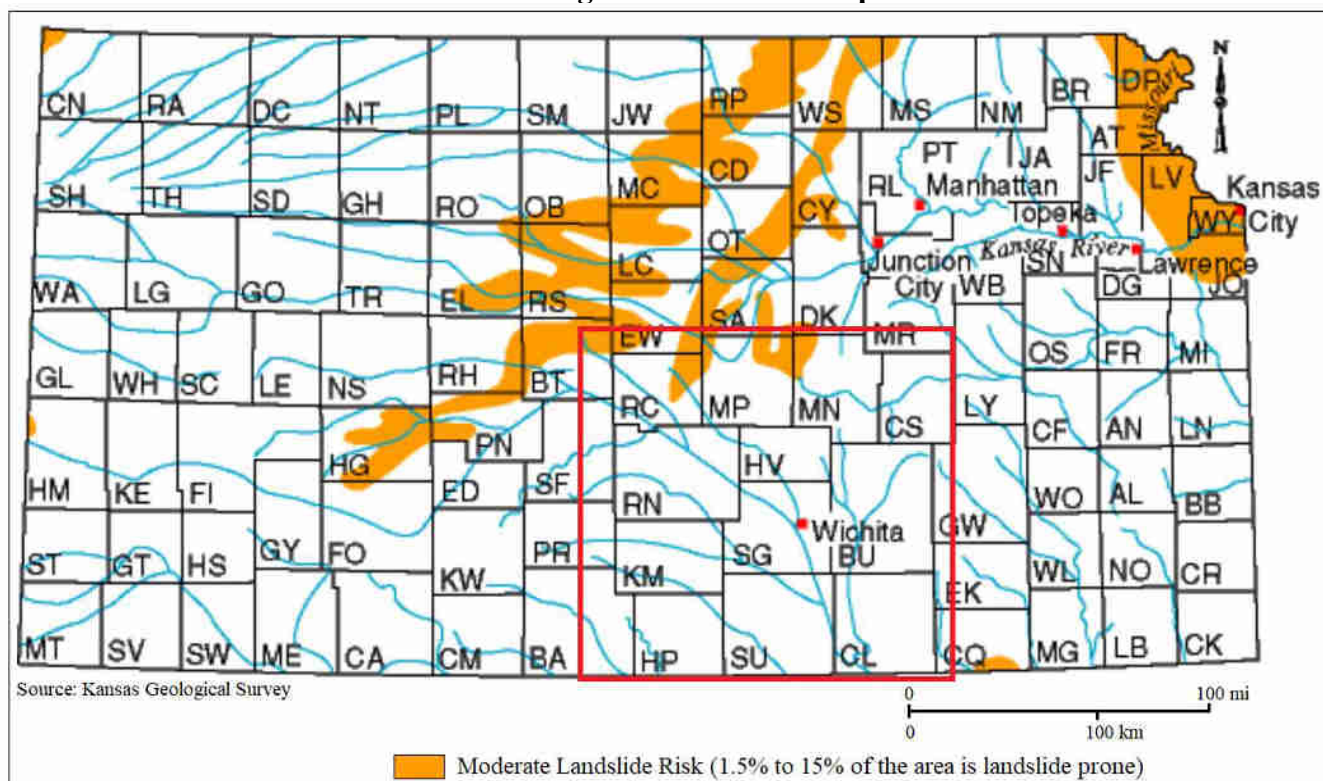
Landslides are the downward and outward movement of slopes. Landslides include a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on and over steepened slopes is the primary reason for a landslide, landslides are often prompted by the occurrence of other disasters. Other contributing factors include erosion, steep slopes, rain and snow, and earthquakes.



4.16.1 – Location and Extent

Landslides are classified based mostly on their character of movement and degree of internal disruption. These landslide classes are rock fall, flow, slide, and creep. Although these are clear divisions, in the real world a landslide may have components of more than one type. Areas prone to landslides can cover broad geographic regions, but occurrences are generally localized. The entire planning area, including all participating jurisdictions, is potentially at risk to landslides. However, landslides require an earth or rock covered slope, and so flatter areas have a much-decreased risk of occurrence. The following map, produced by the Kansas Geological Survey (KGS), shows areas of the region with a moderate susceptibility of landslides, equating to 1.5% to 15% of the area being landslide prone.

KGS Regional Landslide Map





4.16.2 – Previous Occurrences

At present there is no centralized and complete database containing historical records for landslides in Kansas. For Kansas Region G there have been no reported or recorded landslides impacting either participating jurisdictions or the region in the past 10 years.

4.16.3 – Hazard Probability Analysis

Landslides with the potential to affect Kansas Region G are incredibly difficult to quantify and forecast. Compounding the difficulty, landslides occur on their own or occur as a secondary hazard with incidents of heavy rain, melting snow, earthquakes, and land subsidence are their primary cause. Hence, their future occurrences are highly dependent on the likelihood of the mentioned hazards.

As indicated in the map above, small areas of Kansas Region G (in Rice, McPherson and Marion counties) have a moderate susceptibility to landslides. However, the limited available past occurrence data indicate that there is a very low rate of occurrence. Based on limited available data, and bearing in mind that many landslides may be unreported as they have no impact on human activities, it is not likely that a major landslide will impact the region based on zero reported occurrences in 10 years.

4.16.4 Vulnerability Analysis

Based on landslide mapping by the KGS, the area for each county with a moderate landslide risk was estimated. In general, the higher percentage of acreage in a moderate landslide risk area the higher the vulnerability. However, landslides require an earth or rock covered slope, and so flatter areas have a much-decreased risk of occurrence.

Kansas Region G Percentage of Land in Moderate Landslide Risk Area

County	Total County Acreage	Estimated Acreage with Moderate Landslide Potential	Percentage of County Acreage Identified in Potential Slide Area
Butler	733,440	0	0.0%
Cowley	724,480	0	0.0%
Harper	513,920	0	0.0%
Harvey	346,240	0	0.0%
Kingman	554,880	0	0.0%
Marion	576,640	46,131	8.0%
McPherson	610,560	91,584	15.0%
Reno	814,080	0	0.0%
Rice	465,920	68,538	15.0%
Sedgwick	645,760	0	0.0%
Sumner	758,400	0	0.0%

Source: ADEM and HAZUS

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region G county incurring damage over the period 2009





to 2018 from landslide events. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.

Kansas Region G Structural Vulnerability Data for Landslides, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Butler	\$6,664,946,000	\$0	0%
Cowley	\$3,626,310,000	\$0	0%
Harper	\$779,563,000	\$0	0%
Harvey	\$3,863,763,000	\$0	0%
Kingman	\$1,041,969,000	\$0	0%
McPherson	\$3,766,723,000	\$0	0%
Marion	\$1,538,178,000	\$0	0%
Reno	\$7,100,181,000	\$0	0%
Rice	\$1,198,508,000	\$0	0%
Sedgwick	\$56,135,645,000	\$0	0%
Sumner	\$2,800,707,000	\$0	0%

Source: NCEI and HAZUS

Population vulnerabilities to landslide events are expected to be minimal.

4.16.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Landslide Consequence Analysis

Subject	Impacts of Landslide
Health and Safety of the Public	Severity and location dependent. Impacts on persons in the path of the slide are expected to be severe.
Health and Safety of Responders	Impacts are expected to be minimal.
Continuity of Operations	Minimal expectation of execution of the COOP, unless a facility is impacted.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location of the facility in relation to the slide. Loss of structural integrity of buildings and infrastructure could occur.
Environment	Impact to the area would be minimal other than the immediate area.
Economic Conditions	Impacts to the economy will be dependent severity of landslide and the impact on structures and infrastructure. Impacts could be severe if roads/utilities are affected. Otherwise impact would be non-existent to minimal.
Public Confidence in the Jurisdiction's Governance	Confidence could be an issue if local development policies are questioned.





4.17 – Lightning

Lightning is a discharge of atmospheric electricity that is triggered by a buildup of differing charges within a cloud. According to the NWS, lightning is one of the most underrated severe weather hazards and is the second deadliest weather killer in the United States.

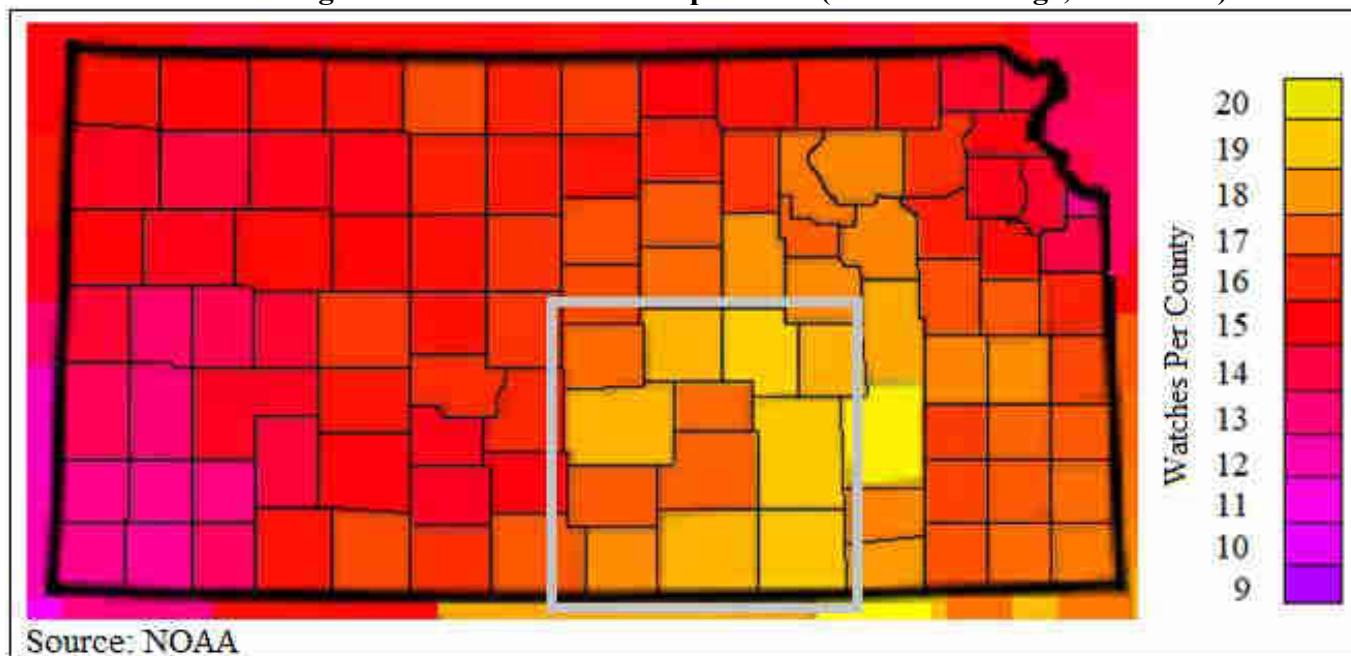


4.17.1 – Location and Extent

Lightning occurs over broad geographic regions. The entire Kansas Region G planning area, including all participating jurisdictions, is at risk to lightning.

Thunderstorms are often the generator of lightning. The following map, generated by NOAA, indicates the average number severe thunderstorm watches per year for Kansas Region G.

Annual Average Thunderstorm Watches per Year (20-Year Average, 1993-2012)

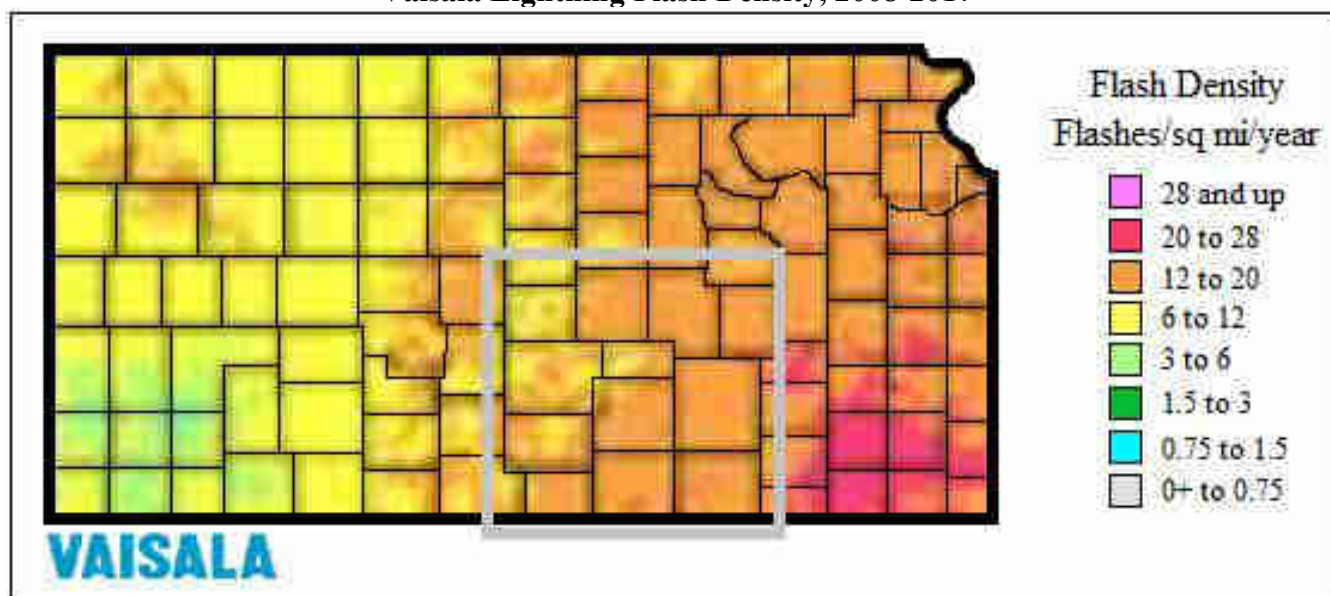


The following map, generated by Vaisala, indicates the average number of lightning flashes per square mile per year for Kansas Region G. In general, the more recorded flashes the greater the potential for lightning strikes.





Vaisala Lightning Flash Density, 2008-2017



4.17.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been 14 Presidential Disaster Declarations for Kansas Region G for severe storms (along with other associates hazard event), of which lightning may be a component. The following 20-year information on past declared disasters is presented to provide a historical perspective on severe storm (lightning) events that have impacted Kansas Region G. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2013.

Kansas Region G FEMA Lighting Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4287	10/20/2016 (09/02/2016 – 09/12/2016)	Severe Storms and Flooding	Cowley and Sumner	\$6,959,536
4230	07/20/2015 (05/04/2015 – 06/21/2015)	Severe Storms , Tornadoes, Straight-Line Winds, and Flooding	Butler, Cowley, Harper, McPherson, Rice, and Sumner	\$13,848,325
4150	10/22/2013 (07/22/2013 – 08/15/2013)	Severe Storms , Straight-line Winds, Tornadoes, and Flooding	Butler, Cowley Harper, Kingman, Reno, Rice, and Sumner.	\$1,102,861 (Estimate)
4063	05/24/2012 (4/14-4/15/2012)	Severe Storms , Tornadoes, Straight-line Winds and Flooding	Harper, Rice, Sedgwick, and Sumner	\$6,923,919
4010	07/29/2011 (5/19-6/4/2011)	Severe Storms , Straight-Line Winds, Tornadoes and Flooding	Marion	\$8,259,620
1932	08/10/2010 (6/7-7/21/2010)	Severe Storms , Flooding and Tornadoes	Butler, Harvey, Marion, and McPherson	\$9,279,257





Kansas Region G FEMA Lighting Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1860	09/30/2009 (7/8-7/14/2009)	Severe Storms and Flooding	Sedgwick	\$3,347,662
1849	06/25/2009 (4/25-5/16/2009)	Severe Storms, Flooding, Straight-Line Winds, and TORNADOS	Butler, Cowley, Harper, Harvey, Kingman, Marion, Reno, Rice, and Sumner	\$15,013,488
1808	10/31/2008	Severe Storms, Flooding, and TORNADOS	Butler, Cowley, Harper, Harvey, and Sumner	\$4,167,044
1776	07/09/2008	Severe Storms, Flooding, and TORNADOS	Butler, Cowley, Harper, Kingman, Reno, and Sumner	\$70,629,544
1711	7/2/2007 (6/26-30/2007)	Severe Storms and Flooding	Butler, Cowley and Harper	\$40,238,600
1699	5/6/2007 (5/4/2007)	Severe Storms, TORNADOS, and Flooding	Cowley, Harper, Harvey, Kingman, McPherson, Reno, Rice, and Sumner	\$117,565,269
1535	8/3/2004 (6/12-7/25/2004)	Severe Storms, Flooding, and TORNADOS	Butler and Marion	\$12,845,892
1273	5/4/1999 (5/3/1999)	TORNADOS and Severe Storms	Reno, Sedgwick, Sumner	\$9,121,870

Source: FEMA

-: Data unavailable

The following provides details of the single Presidential Disaster Declarations for Kansas Region G since the last plan update in 2013.

Kansas – Severe Storms and Flooding FEMA-4287-DR

Declared October 20, 2016

On October 10, 2016, Governor Sam Brownback requested a major disaster declaration due to severe storms and flooding during the period of September 2-12, 2016. The Governor requested a declaration for Public Assistance for 11 counties and Hazard Mitigation statewide. During the period of September 28 to October 7, 2016, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On October 20, 2016, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms and flooding in Cheyenne, Cowley, Ellis, Graham, Greenwood, Kingman, Norton, Rooks, Russell, Sedgwick, and Sumner Counties. This declaration also made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.





Kansas – Severe Storms, Tornadoes, Straight-Line Winds, and Flooding FEMA-4230-DR
 Declared July 20, 2015

On July 1, 2015, Governor Sam Brownback requested a major disaster declaration due to severe storms, tornadoes, straight-line winds, and flooding during the period of May 4 to June 21, 2015. The Governor requested a declaration for Public Assistance, including direct federal assistance for 42 counties and Hazard Mitigation statewide. During the period of May 4 to June 27, 2015, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On July 20, 2015, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms, tornadoes, straight-line winds, and flooding in Atchison, Barton, Brown, Butler, Chase, Chautauqua, Cherokee, Cheyenne, Clay, Cloud, Coffey, Cowley, Doniphan, Edwards, Elk, Ellsworth, Franklin, Gray, Greenwood, Harper, Haskell, Hodgeman, Jackson, Jefferson, Jewell, Lyon, Marion, Marshall, McPherson, Meade, Miami, Morris, Nemaha, Neosho, Osage, Pottawatomie, Republic, Rice, Stevens, Sumner, Wabaunsee, and Washington Counties. Direct Federal assistance was also authorized. Finally, this declaration made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

In addition to the above reported events, the following table presents NOAA NCEI identified lightning events and the resulting damage totals in Kansas Region G from the period 2009 - 2018.

Kansas Region G NCEI Lightning Events, 2009 - 2018

County	Number of Events	Property Damage	Crop Damage	Deaths	Injuries
Butler	0	\$0	\$0	0	0
Cowley	0	\$0	\$0	0	0
Harper	0	\$0	\$0	0	0
Harvey	0	\$0	\$0	0	0
Kingman	0	\$0	\$0	0	0
Marion	0	\$0	\$0	0	0
McPherson	0	\$0	\$0	0	0
Reno	0	\$0	\$0	0	0
Rice	0	\$0	\$0	0	0
Sedgwick	0	\$0	\$0	0	0
Sumner	0	\$0	\$0	0	0

Source: NOAA NCEI

Additionally, there following local events were reported.





- **July 28, 2016:** Lightning struck the West Holiday Motel in West Wichita, setting fire to part of the roof and 3 rooms.
- **July 6, 2015:** Lightning struck a house causing a structure fire in SW Wichita.
- **June 5, 2014:** A lightning strike hit an oil well in Marion County, KS. The well caught on fire.
- **June 25, 2013:** Wheat stubble caught fire ½ mile east of Boundary Road in Pretty Prairie, KS.

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data, from 2009-2018, allows us to quantify the monetary and acreage impact of lightning on the agricultural sector.

USDA Risk Management Agency Cause of Loss Indemnities, Lightning, 2015-2018

County	USDA Crop Loss	Acres Impacted	Number of Claims
Butler	\$0	0	0
Cowley	\$0	0	0
Harper	\$0	0	0
Harvey	\$0	0	0
Kingman	\$0	0	0
Marion	\$0	0	0
McPherson	\$0	0	0
Reno	\$0	0	0
Rice	\$0	0	0
Sedgwick	\$0	0	0
Sumner	\$0	0	0

Source: USDA

4.17.3 – Hazard Probability Analysis

Data from the NCEI indicates that Region G counties can expect on a yearly basis, relevant to lightning events:

- No events
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Region G counties can expect on a yearly basis, relevant to lightning occurrences:

- No claims
- No impacted acres
- \$0 in damages

In addition, Kansas Region G has had 14 Presidentially Declared Disasters relating to severe storms (of which lightning is a potential component) in the last 20 years. This represents an average of less than one declared severe storm (lightning) related disaster per year.





4.17.4 – Vulnerability Analysis

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region G county incurring damage over the period 2009 to 2018 from lightning events. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.

Kansas Region G Structural Vulnerability Data for Lightning, 2009 -2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Butler	\$6,664,946,000	\$0	0%
Cowley	\$3,626,310,000	\$0	0%
Harper	\$779,563,000	\$0	0%
Harvey	\$3,863,763,000	\$0	0%
Kingman	\$1,041,969,000	\$0	0%
McPherson	\$3,766,723,000	\$0	0%
Marion	\$1,538,178,000	\$0	0%
Reno	\$7,100,181,000	\$0	0%
Rice	\$1,198,508,000	\$0	0%
Sedgwick	\$56,135,645,000	\$0	0%
Sumner	\$2,800,707,000	\$0	0%

Source: NCEI and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential lightning event. The following table indicates the total county population and registered growth over the period 2000 to 2017.

Kansas Region G Population Vulnerability Data for Lightning

County	2017 Population	Percent Population Change 2000 to 2017
Butler	66,878	12.4%
Cowley	35,361	-2.6%
Harper	5,590	-14.5%
Harvey	34,544	5.1%
Kingman	7,360	-15.1%
McPherson	28,708	-2.9%
Marion	11,986	-10.3%
Reno	62,510	-3.5%
Rice	9,660	-10.2%
Sedgwick	513,687	13.4%
Sumner	23,159	-10.7%

Source: US Census Bureau

In general counties with a high population and/or a growing population are at increased risk. As such, it is worth highlighting the majority of Kansas Region G counties may have decreased vulnerability to lightning events due to decreasing populations.





In addition, lightning may exacerbate agricultural and economic losses. The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data (2015 – 2018) allows us to quantify the monetary impact of lightning strikes on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to lightning events.

Lightning Acres Impacted and Crop Insurance Paid per County from 2015-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Butler	768,149	0	0.0%	\$282,338,000	\$0	0.0%
Cowley	574,614	0	0.0%	\$108,976,000	\$0	0.0%
Harper	506,006	0	0.0%	\$109,644,000	\$0	0.0%
Harvey	339,584	0	0.0%	\$161,716,000	\$0	0.0%
Kingman	542,010	0	0.0%	\$103,188,000	\$0	0.0%
McPherson	571,577	0	0.0%	\$208,482,000	\$0	0.0%
Marion	596,296	0	0.0%	\$151,478,000	\$0	0.0%
Reno	789,525	0	0.0%	\$267,318,000	\$0	0.0%
Rice	457,603	0	0.0%	\$258,181,000	\$0	0.0%
Sedgwick	486,723	0	0.0%	\$148,484,000	\$0	0.0%
Sumner	719,611	0	0.0%	\$168,713,000	\$0	0.0%

Source: USDA

4.17.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Lightning Consequence Analysis

Subject	Impacts of Lightning
Health and Safety of the Public	Severity and location dependent. Impacts on persons in the areas of lightning are expected to be severe if caught without proper shelter.
Health and Safety of Responders	Impacts will be predicated on the severity of the event. Damaged infrastructure will likely result in hazards such as downed utility lines, main breakages and debris on roadways.
Continuity of Operations	Temporary relocation may be necessary if government facilities experience damage. Services may be limited to essential tasks if utilities are impacted.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location and structural capacity of the facility. Loss of utility infrastructure could occur. Utility lines, residential and business properties will be affected.
Environment	Impact could be severe for the immediate impacted area, depending on the size of the event. Impact will lessen as distance increases from the immediate incident area
Economic Conditions	Impacts to the economy will be dependent severity of the event and the impact on structures and infrastructure. Impacts could be severe if utilities are affected.





Lightning Consequence Analysis

Subject	Impacts of Lightning
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. Warning systems in place and the timeliness of those warnings could be questioned.





4.18 – Soil Erosion and Dust

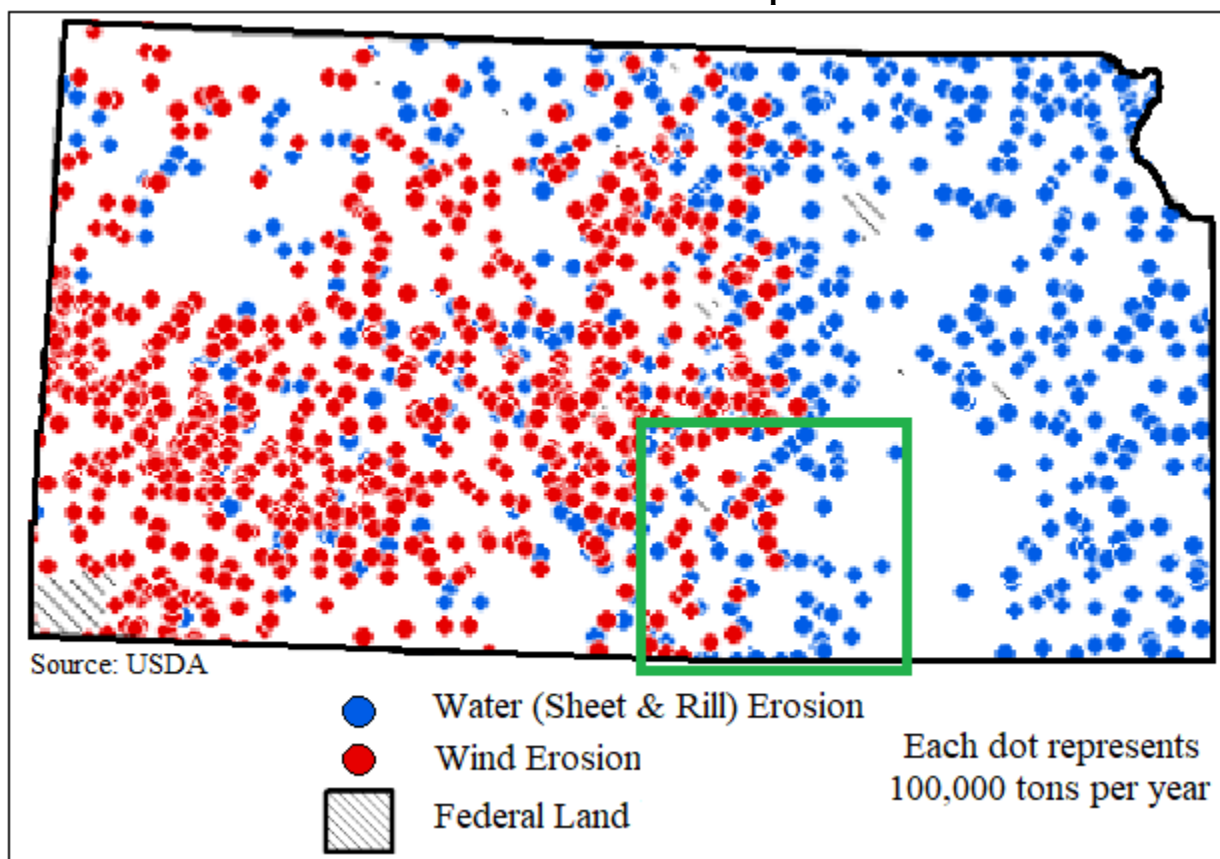
Soil erosion, in general, is a process that removes topsoil through the application of water, wind, or farming activities. Soil erosion can be a slow, unobserved process or can happen quickly due to extreme environmental factors. The United States is losing soil 10 times faster than the natural replenishment rate, and related production losses cost the country about \$44,000,000,000 each year. On average, wind erosion is responsible for about 40% of this loss and can increase markedly in drought years.



4.18.1 – Location and Extent

Soil erosion and dust occurs over broad geographic regions. The entire Kansas Region G planning area, including all participating jurisdictions, is at risk to soil erosion and dust.

Wind and Water Erosion on Cropland 2012

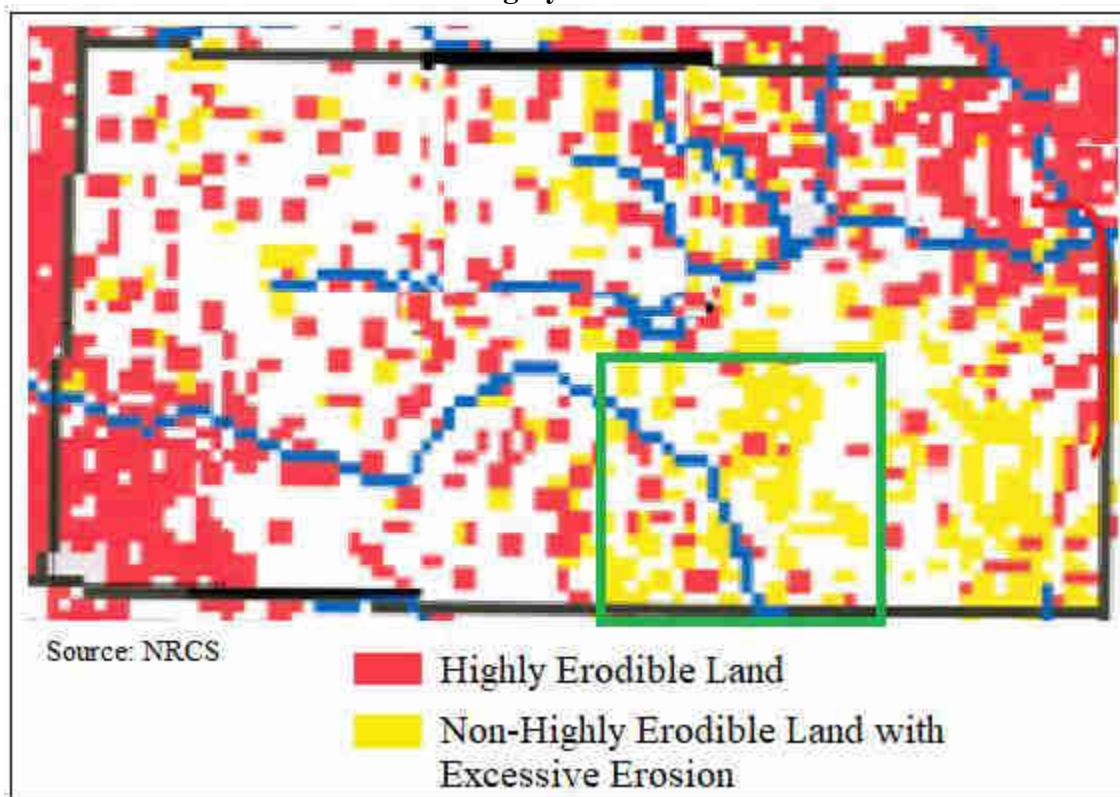


The following figure, from the Natural Resources Conservation Service (NRCS) shows areas of excessive erosion of farmland in Kansas. Each red dot represents 5,000 acres of highly erodible land, and each yellow dot represents 5,000 acres of non-highly erodible land with excessive erosion above the tolerable soil erosion rate.





NRCS Highly Erodible Land



4.18.2 – Previous Occurrences

At present there is no centralized and complete database containing historical records for soil erosion in Kansas. For Kansas Region G there have been no reported or recorded soil erosion or dust events impacting either participating jurisdictions or the region in the past 10 years.

Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of soil erosion and dust on the Region’s agricultural base. Crop loss data for the years 2015- 2018, for the region, indicates no related claims

4.18.3 – Hazard Probability Analysis

Predicting future erosion amounts is problematic as much relies on farm management practices, available moisture and crop type. Due to the on-going nature of this hazard, and the small agricultural base for the region, it is expected that future events causing minimally measurable impact to the regions crops and farmers will continue occur. Again, the rate of occurrence and potential future occurrence will be predicated on farm management practices and drought and water conditions.

4.18.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to soil erosion and dust events. Additionally, as this hazard disproportionately impacts the agricultural sector,





only data on that sector was reviewed for potential vulnerability. The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of soil erosion and dust conditions on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to soil erosion and dust events.

Soil Erosion and Dust Acres Impacted and Crop Insurance Paid per County from 2015-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Butler	768,149	0	0.0%	\$282,338,000	\$0	0.0%
Cowley	574,614	0	0.0%	\$108,976,000	\$0	0.0%
Harper	506,006	0	0.0%	\$109,644,000	\$0	0.0%
Harvey	339,584	0	0.0%	\$161,716,000	\$0	0.0%
Kingman	542,010	0	0.0%	\$103,188,000	\$0	0.0%
McPherson	571,577	0	0.0%	\$208,482,000	\$0	0.0%
Marion	596,296	0	0.0%	\$151,478,000	\$0	0.0%
Reno	789,525	0	0.0%	\$267,318,000	\$0	0.0%
Rice	457,603	0	0.0%	\$258,181,000	\$0	0.0%
Sedgwick	486,723	0	0.0%	\$148,484,000	\$0	0.0%
Sumner	719,611	0	0.0%	\$168,713,000	\$0	0.0%

Source: USDA

4.18.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Soil Erosion and Dust Consequence Analysis

Subject	Impacts of Soil Erosion and Dust
Health and Safety of the Public	Impact tends to be agricultural; however, dust can be a danger to susceptible individuals in the form of air pollutants.
Health and Safety of Responders	With proper preparedness and protection, impact to the responders is expected to be minimal.
Continuity of Operations	Minimal expectation for utilization of the COOP.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be severe, depending on the site of the soil erosion. This could adversely affect utility poles/lines, and facilities. Dust can also adversely affect machinery, air conditioners, etc.
Environment	The impact to the environment could be severe. Soil erosion and dust can severely affect farming, ranching, wildlife and plants due to production losses and habitat changes.
Economic Conditions	Impacts to the economy will be dependent on how extreme the soil erosion and dust are. Potentially it could severely affect crop yield and productivity. Seedling survival and growth is stressed by erosion and dust, as is the top soil which agriculture is dependent on.
Public Confidence in the Jurisdiction's Governance	Planning, response, and recovery may be questioned if not timely and effective.





4.19 – Tornado

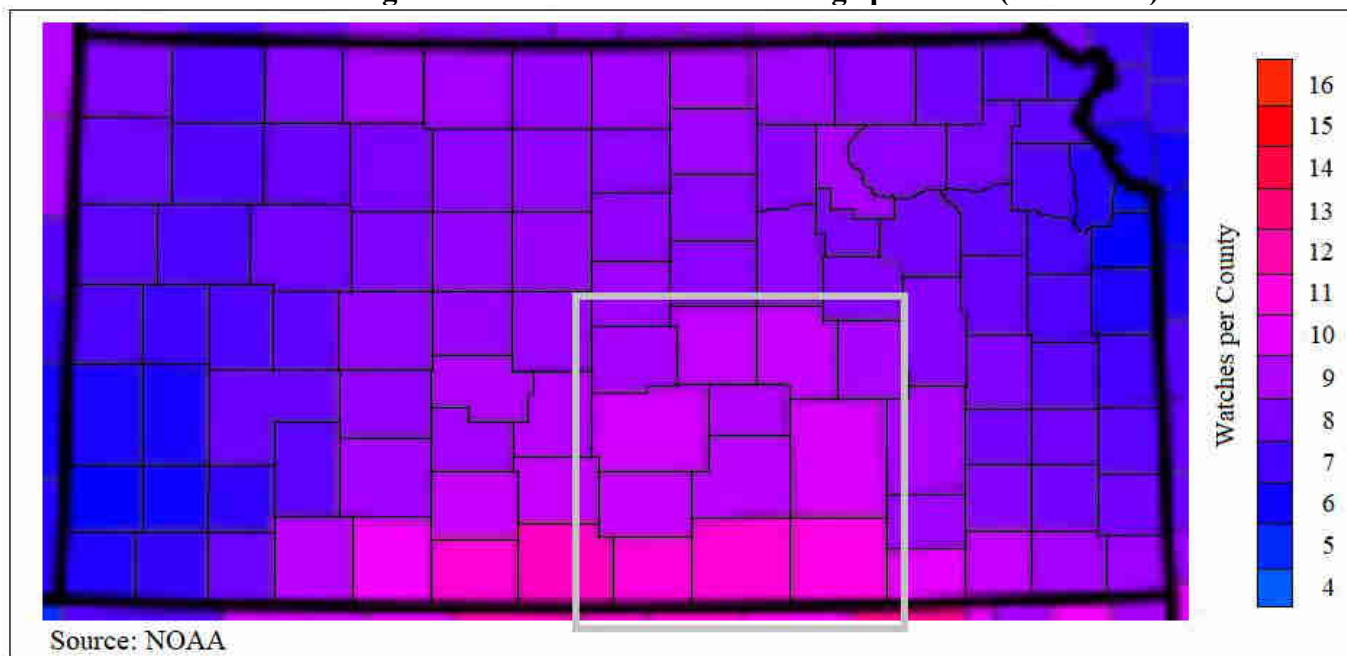
A tornado is a violently rotating column of air in contact with the ground. Often referred to as a twister or a cyclone, they can strike anywhere and with little warning. Tornadoes come in many shapes and sizes but are typically in the form of a visible condensation funnel, whose narrow end touches the earth and is often encircled by a cloud of debris and dust.



4.19.1 – Location and Extent

Tornadoes can strike anywhere in Kansas Region G, placing the entire planning area at risk. The following map, generated by NOAA, shows the average annual tornado watches per year for Kansas Region G.

Annual Average Tornado Watches Year Average per Year (1933-2012)

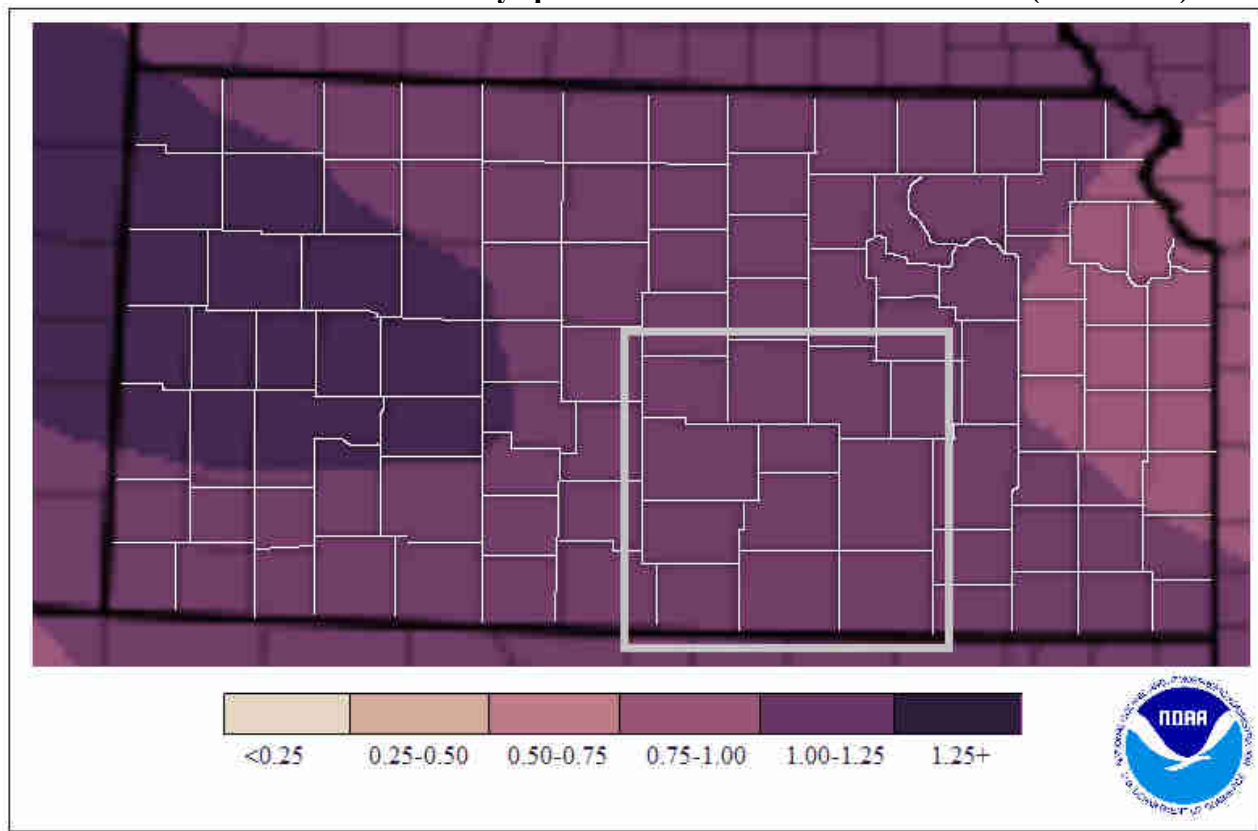


Additionally, NOAA generated the following map indicating the mean number of tornado days per year, using data compiled from the years 1986 to 2015.





Mean Number of Tornado Days per Year Within 25 Miles of a Point (1986-2015)



Many tornados only exist for a few seconds in the form of a touchdown. The most extreme tornados can attain wind speeds of more than 200 miles per hour, stretch more than two miles across, and travel dozens of miles.

A tornado may arrive with a squall line or cold front and touch down quickly. Smaller tornados 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 Scale to categorize tornados. The scale correlates wind speed values per F level and provides a rubric for estimating damage.

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 tornados 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.





Enhanced Fujita Scale

Scale	Wind Speed (mph)	Relative Frequency	Potential Damage
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

4.19.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been 11 Presidential Disaster Declarations for Kansas Region G for tornados (along with other associates hazard event), of which hail may be a component. The following 20-year information on past declared disasters is presented to provide a historical perspective on tornado events that have impacted Kansas Region G. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2013.

Kansas Region G FEMA Tornado Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4230	07/20/2015 (05/04/2015 – 06/21/2015)	Severe Storms, Tornados , Straight-Line Winds, and Flooding	Butler, Cowley, Harper, McPherson, Rice, and Sumner	\$13,848,325
4150	10/22/2013 (07/22/2013 – 08/15/2013)	Severe Storms, Straight-line Winds, Tornados , and Flooding	Butler, Cowley Harper, Kingman, Reno, Rice, and Sumner.	\$1,102,861 (Estimate)
4063	05/24/2012 (4/14-4/15/2012)	Severe Storms, Tornados , Straight-Line Winds and Flooding	Harper, Rice, Sedgwick, and Sumner	\$6,923,919
4010	07/29/2011 (5/19-6/4/2011)	Severe Storms, Straight-Line Winds, Tornados and Flooding	Marion	\$8,259,620
1932	08/10/2010 (6/7-7/21/2010)	Severe Storms, Flooding and Tornados	Butler, Harvey, Marion, and McPherson	\$9,279,257
1849	06/25/2009 (4/25-5/16/2009)	Severe Storms, Flooding, Straight-Line Winds, and Tornados	Butler, Cowley, Harper, Harvey, Kingman, Marion, Reno, Rice, and Sumner	\$15,013,488





Kansas Region G FEMA Tornado Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1808	10/31/2008	Severe Storms, Flooding, and Tornados	Butler, Cowley, Harper, Harvey, and Sumner	\$4,167,044
1776	07/09/2008	Severe Storms, Flooding, and Tornados	Butler, Cowley, Harper, Kingman, Reno, and Sumner	\$70,629,544
1699	5/6/2007 (5/4/2007)	Severe Storms, Tornados , and Flooding	Cowley, Harper, Harvey, Kingman, McPherson, Reno, Rice, and Sumner	\$117,565,269
1535	8/3/2004 (6/12-7/25/2004)	Severe Storms, Flooding, and Tornados	Butler and Marion	\$12,845,892
1273	5/4/1999 (5/3/1999)	Tornados and Severe Storms	Reno, Sedgwick, Sumner	\$9,121,870

Source: FEMA

-: Data unavailable

The following provides details of the single Presidential Disaster Declarations for Kansas Region G since the last plan update in 2013.

Kansas – Severe Storms, Tornados, Straight-Line Winds, and Flooding FEMA-4230-DR Declared July 20, 2015

On July 1, 2015, Governor Sam Brownback requested a major disaster declaration due to severe storms, tornadoes, straight-line winds, and flooding during the period of May 4 to June 21, 2015. The Governor requested a declaration for Public Assistance, including direct federal assistance for 42 counties and Hazard Mitigation statewide. During the period of May 4 to June 27, 2015, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On July 20, 2015, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms, tornadoes, straight-line winds, and flooding in Atchison, Barton, Brown, Butler, Chase, Chautauqua, Cherokee, Cheyenne, Clay, Cloud, Coffey, Cowley, Doniphan, Edwards, Elk, Ellsworth, Franklin, Gray, Greenwood, Harper, Haskell, Hodgeman, Jackson, Jefferson, Jewell, Lyon, Marion, Marshall, McPherson, Meade, Miami, Morris, Nemaha, Neosho, Osage, Pottawatomie, Republic, Rice, Stevens, Sumner, Wabaunsee, and Washington Counties. Direct Federal assistance was also authorized. Finally, this declaration made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

In addition to the above reported events, the following table presents NOAA NCEI identified lightning events and the resulting damage totals in Kansas Region G from the period 2009 - 2018.





Kansas Region G NCEI Tornado Events, 2009 - 2018

County	Number of Days with Event	Property Damage	Crop Damage	Deaths	Injuries	Highest Rated Tornado
Butler	11	\$38,000	\$0	0	0	EF1
Cowley	14	\$420,000	\$0	0	0	EF2
Harper	5	\$30,000	\$0	0	0	EF3
Harvey	3	\$0	\$0	0	0	EF2
Kingman	10	\$125,000	\$0	0	0	EF3
McPherson	7	\$290,000	\$0	0	0	EF1
Marion	4	\$100,000	\$0	0	0	EF1
Reno	9	\$280,000	\$0	0	0	EF3
Rice	5	\$30,000	\$0	0	0	EF2
Sedgwick	9	\$500,735,000	\$0	0	41	EF3
Sumner	9	\$125,000	\$0	0	0	EF3

Source: NOAA NCEI

The following provides both **local accounts** and NOAA NCEI descriptions of notable recorded events:

- June 15, 2009: Silverdale**
Tornado moving east near Maple City caused damage to a homestead. The house and barn sustained damage to the roof. All the windows were blown out of the cars, and a horse trailer was overturned. Property damage was recorded at \$150,000.
- June 20, 2009: McPherson**
Three barns were completely destroyed, a silo was blown into a cornfield, a center-pivot irrigation system was destroyed, and 26 power poles were downed. Additionally, an SUV was thrown into a wheat field. The McPherson Sentinel contributed to this report. Property damage was recorded at \$200,000.
- May 10, 2010: Arkansas City**
The tornado caused damage to a storage shed and peeled back several roofs. One roof that was peeled back was to a bait shop, one wall was also partially collapsed. Property damage was recorded at \$200,000.
- May 10, 2010: Norwich**
The tornado touched down and caused some damage to a barn and some trees limbs were partially torn off. As the tornado continued to move to the northeast more significant damage occurred. A house was damaged with the roof being torn off of a house with 2 exterior walls being blown out (EF2 damage). Two garages were also destroyed, and a riding lawnmower was removed from the garage and moved 100 yards downstream. Three people took shelter from the tornado in the basement and were unharmed. Property damage was recorded at \$125,000.
- May 10, 2010: South Haven**
Two semi-tractor trailers were blown off of the Kansas Turnpike right at the state line as the tornado crossed the interstate. The overturned semi's temporarily closed Interstate 35 for a short





time as they blocked traffic in both directions. The tornado also caused significant tree damage as it moved northeast into rural Sumner County, Kansas. Property damage was recorded at \$125,000.

- **April 14, 2012: Haysville**

Significant damage to homes, many of them had a number missing outer walls. Seven homes were missing two to four walls, one home was completely destroyed. The trees associated with house completely stripped to nothing, this was also the case at many other locations along the path.

A mobile home park to south had seventy five percent of the homes uninhabitable. Approximately twenty five percent were reduced to rubble. Significant damage was also noted at McConnell AFB. Many of the hangars sustained damage. One hangar in particular that was owned by Spirit Aerosystems sustained a considerable amount of damage. Several apartments and businesses also had damage like roofs being torn off and windows blown out. Property damage was recorded at \$500,000,000.

- **May 6, 2015: Mount Hope**

Tornado touched down in an open field and quickly grew in strength as it moved slightly east of north. The tornado damaged 3 center pivot irrigation systems and caused damage at a farmstead by demolishing a single car detached garage and ripped off a carport that was attached to a barn. As the tornado moved on to the north, it encountered another farmstead. One house was directly in the path of the tornado and was completely leveled with nothing left standing (DI2 DOD9). The home was built in the late 1800's and was not secured to the foundation. Another home just to the northwest of the main home sustained significant damage to the southeast corner by taking down two small sections of the home. Another barn on the property was a complete loss and the trees experienced significant limb loss and some debarkation. One minor injury was reported. The person affected refused treatment. The tornado was 125 yards wide. This tornado moved into Harvey County. Property damage was recorded at \$600,000.

- **July 13, 2015: Nickerson**

A strong tornado moved southwest towards the town of Nickerson. One home was completely destroyed as it was blown off of its foundation. There were no anchor bolts present in the foundation (DI2 DOD9). The second more significant damage sight was where many trees were completely uprooted. Those that were not uprooted only had the main trunk left and it was completely debarked. The home took a glancing blow and only had minor damage. The family took shelter in an above ground shelter in their garage. The damage path for this portion of the tornado that moved out of Rice County was 350 yards wide. Property damage was recorded at \$250,000.

Descriptions of smaller events can be found on the NOAA NCEI website:

- **www.NCEI.noaa.gov/stormevents/ftp.jsp**

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data, from 2009-2018, allows us to quantify the monetary and acreage impact of tornados on the agricultural sector.





USDA Risk Management Agency Cause of Loss Indemnities, Tornado, 2015-2018

County	USDA Crop Loss	Acres Impacted	Number of Claims
Butler	\$0	0	0
Cowley	\$0	0	0
Harper	\$0	0	0
Harvey	\$0	0	0
Kingman	\$0	0	0
Marion	\$0	0	0
McPherson	\$4,866	27	1
Reno	\$0	0	0
Rice	\$0	0	0
Sedgwick	\$0	0	0
Sumner	\$0	0	0

Source: USDA

4.19.3 – Hazard Probability Analysis

The following table summarizes tornado probability data for **Butler County**.

Butler County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	11
Average Events per Year	1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$38,000
Average Property Damage per Year	\$3,800
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Butler County can expect on a yearly basis, relevant to tornado events:

- One event
- No deaths or injuries
- \$3,800 in property damages

According to the USDA Risk Management Agency, Butler County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims





The following table summarizes tornado probability data for **Cowley County**.

Cowley County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	14
Average Events per Year	1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$420,000
Average Property Damage per Year	\$42,000
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Cowley County can expect on a yearly basis, relevant to tornado events:

- Seven events
- No deaths or injuries
- \$42,000 in property damages

According to the USDA Risk Management Agency, Cowley County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes Tornado probability data for **Harper County**.

Harper County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	5
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$30,000
Average Property Damage per Year	\$3,000
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0





Harper County Tornado Probability Summary

Data	Recorded Impact
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Harper County can expect on a yearly basis, relevant to tornado events:

- <1 event
- No deaths or injuries
- \$3,000 in property damages

According to the USDA Risk Management Agency, Harper County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes tornado probability data for **Harvey County**.

Harvey County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	3
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Harvey County can expect on a yearly basis, relevant to tornado events:

- <1 event
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Harvey County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims





- No acres impacted
- \$0 in insurance claims

The following table summarizes tornado probability data for **Kingman County**.

Kingman County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	10
Average Events per Year	1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$125,000
Average Property Damage per Year	\$12,500
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Kingman County can expect on a yearly basis, relevant to tornado events:

- One event
- No deaths or injuries
- \$12,500 in property damages

According to the USDA Risk Management Agency, Kingman County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes tornado probability data for **McPherson County**.

McPherson County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	7
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$290,000





Average Property Damage per Year	\$29,000
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that McPherson County can expect on a yearly basis, relevant to tornado events:

- <1 event
- No deaths or injuries
- \$29,000 in property damages

According to the USDA Risk Management Agency, McPherson County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes Tornado probability data for **Marion County**.

Marion County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	4
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$100,000
Average Property Damage per Year	\$10,000
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Marion County can expect on a yearly basis, relevant to tornado events:

- <1 event
- No deaths or injuries
- \$10,000 in property damages





According to the USDA Risk Management Agency, Marion County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes tornado probability data for **Reno County**.

Reno County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	9
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$2807000
Average Property Damage per Year	\$28,000
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	1
Average Number of Claims per Year	<1
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	27
Average Number of Acres Damaged per Year	7
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$4,866
Average Crop Damage per Year	\$1,217

Source: NCEI and USDA

Data from the NCEI indicates that Reno County can expect on a yearly basis, relevant to tornado events:

- <1 event
- No deaths or injuries
- \$28,000 in property damages

According to the USDA Risk Management Agency, Reno County can expect on a yearly basis, relevant to tornado occurrences:

- <1 insurance claim
- Seven acres impacted
- \$1,217 in insurance claims

The following table summarizes tornado probability data for **Rice County**.

Rice County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	5
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$30,000





Average Property Damage per Year	\$3,000
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Rice County can expect on a yearly basis, relevant to tornado events:

- <1 event
- No deaths or injuries
- \$3,000 in property damages

According to the USDA Risk Management Agency, Rice County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes tornado probability data for **Sedgwick County**.

Sedgwick County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	9
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	41 (injuries)
Average Number of Days with a Death or Injury	4
Total Reported NCEI Property Damage (2009-2018)	\$500,735,000
Average Property Damage per Year	\$50,073,500
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Sedgwick County can expect on a yearly basis, relevant to tornado events:

- <1 event
- No deaths
- Four injuries
- \$50,073,500 in property damages





According to the USDA Risk Management Agency, Sedgwick County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes tornado probability data for **Sumner County**.

Sumner County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	9
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$125,000
Average Property Damage per Year	\$12,500
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Sumner County can expect on a yearly basis, relevant to tornado events:

- <1 event
- No deaths or injuries
- \$12,500 in property damages

According to the USDA Risk Management Agency, Sumner County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

Based on the number of NCEI reported events we derive the following probability for event occurrence in Kansas Region G:

- **Tornado Probability:** Approximately nine impactful events per year

However, if events are normalized for tornados rated above an EF2, we derive the following probability for event occurrence:





- **Probability of an EF2 or greater tornado:** Approximately one impactful event per year

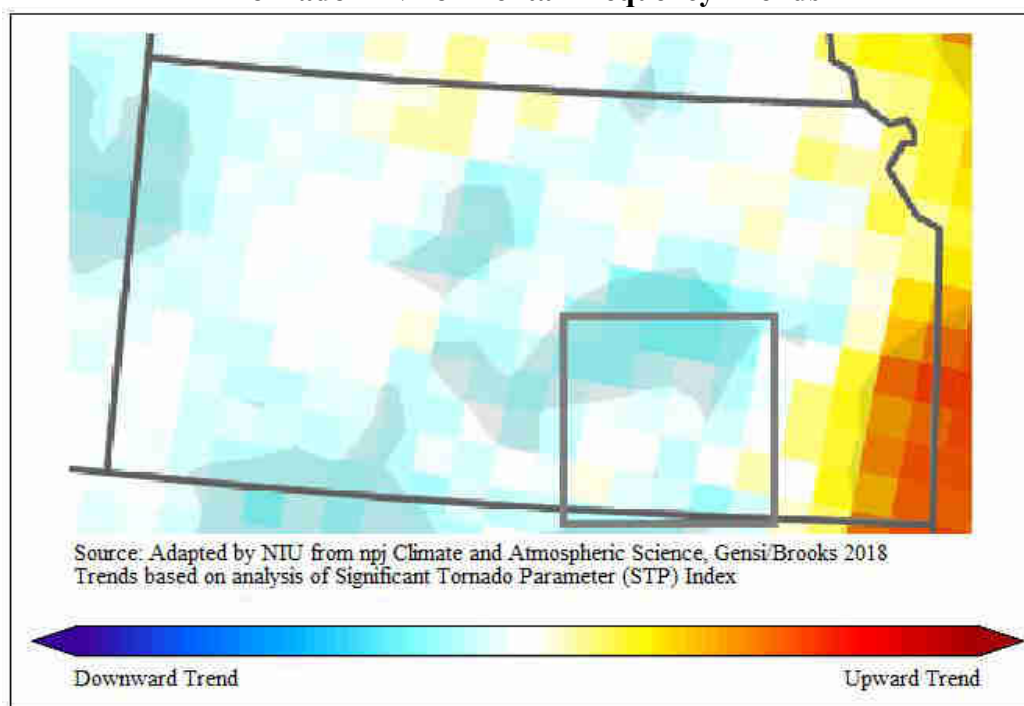
According to the USDA Risk Management Agency, Wyandotte County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

In addition, Kansas Region G has had 11 Presidentially Declared Disasters relating to tornados (and other concurrent events such as flooding) in the last 20 years. This represents an average one declared tornado related disaster per year.

Research conducted by the National Severe Storms Lab looked at Significant Tornado Parameter (STP) to help determine future tornado probability. STP is 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 STP data, indicates that Kansas Region G may see a decreasing future number of tornados.

Tornado Environmental Frequency Trends



4.19.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to tornado events. In general, counties with a higher or increasing population, high, or increasing, or having a high structural valuation are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables





involved in a potential tornado event. It is worth highlighting the majority of Kansas Region G counties may have increased vulnerability to tornado events due to a projected increase in the number of structures.

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region G county incurring damage over the period 2009 to 2018 from tornado events. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.

Kansas Region G Structural Vulnerability Data for Tornadoes, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Butler	\$6,664,946,000	\$38,000	0.00%
Cowley	\$3,626,310,000	\$420,000	0.01%
Harper	\$779,563,000	\$30,000	0.00%
Harvey	\$3,863,763,000	\$0	0.00%
Kingman	\$1,041,969,000	\$125,000	0.01%
McPherson	\$3,766,723,000	\$290,000	0.01%
Marion	\$1,538,178,000	\$100,000	0.01%
Reno	\$7,100,181,000	\$280,000	0.00%
Rice	\$1,198,508,000	\$30,000	0.00%
Sedgwick	\$56,135,645,000	\$500,735,000	0.89%
Sumner	\$2,800,707,000	\$125,000	0.00%

Source: NCEI and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential tornado event. The following table indicates the total county population and registered growth over the period 2000 to 2017.

Kansas Region G Population Vulnerability Data for Tornadoes

County	2017 Population	Percent Population Change 2000 to 2017
Butler	66,878	12.4%
Cowley	35,361	-2.6%
Harper	5,590	-14.5%
Harvey	34,544	5.1%
Kingman	7,360	-15.1%
McPherson	28,708	-2.9%
Marion	11,986	-10.3%
Reno	62,510	-3.5%
Rice	9,660	-10.2%
Sedgwick	513,687	13.4%
Sumner	23,159	-10.7%

Source: US Census Bureau





In general counties with a high population and/or a growing population are at increased risk. As such, it is worth highlighting the majority of Kansas Region G counties may have decreased vulnerability to tornado events due to decreasing populations.

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of tornados on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to tornado events.

Tornado Acres Impacted and Crop Insurance Paid per County from 2015-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Butler	768,149	0	0.0%	\$282,338,000	\$0	0.0%
Cowley	574,614	0	0.0%	\$108,976,000	\$0	0.0%
Harper	506,006	0	0.0%	\$109,644,000	\$0	0.0%
Harvey	339,584	0	0.0%	\$161,716,000	\$0	0.0%
Kingman	542,010	0	0.0%	\$103,188,000	\$0	0.0%
McPherson	571,577	0	0.0%	\$208,482,000	\$0	0.0%
Marion	596,296	0	0.0%	\$151,478,000	\$0	0.0%
Reno	789,525	27	0.0003%	\$267,318,000	\$1,212	0.0%
Rice	457,603	0	0.0%	\$258,181,000	\$0	0.0%
Sedgwick	486,723	0	0.0%	\$148,484,000	\$0	0.0%
Sumner	719,611	0	0.0%	\$168,713,000	\$0	0.0%

Source: USDA

Between 2001 and 2010 51% of those killed by tornados were living in mobile homes, according to the NOAA. A 2012 “Kansas Severe Weather Awareness Week” report indicates that people living in mobile homes are killed by tornados at a rate 20 times higher than people living in permanent homes. Additionally, a new study from Michigan State University reported that the two biggest factors related to tornado fatalities were housing quality (measured by mobile homes as a proportion of housing units) and income level. When a tornado 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 participating jurisdictions may have increased vulnerability to tornado events due to having greater than 20% of housing stock as mobile homes:

- **Leon** (Butler County)
- **Towanda** (Butler County)
- **Geuda Springs** (Cowley County)
- **Spivey** (Kingman County)
- **Plevna** (Reno County)





4.19.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Tornado Consequence Analysis

Subject	Impacts of Tornado
Health and Safety of the Public	Impact of the immediate area could be severe depending on whether individuals were able to seek shelter and get out of the trajectory of the tornado. Casualties are dependent on warning systems and warning times.
Health and Safety of Responders	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Temporary to permanent relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Localized impact could be severe in the trajectory path. Roads, buildings, and communications could be adversely affected. Damage could be severe.
Environment	Impact will be severe for the immediate impacted area. Impact will lessen as distance increases from the immediate incident area.
Economic Conditions	Impacts to the economy will greatly depend on the trajectory of the tornado. If a jurisdiction takes a direct hit then the economic conditions will be severe. With an indirect hit the impact could be low to severe.
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. Warning systems and warning time will also be questioned.





4.20 – Wildfire

The NWS defines a wildfire as any free burning uncontrollable 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.



4.20.1 – Location and Extent

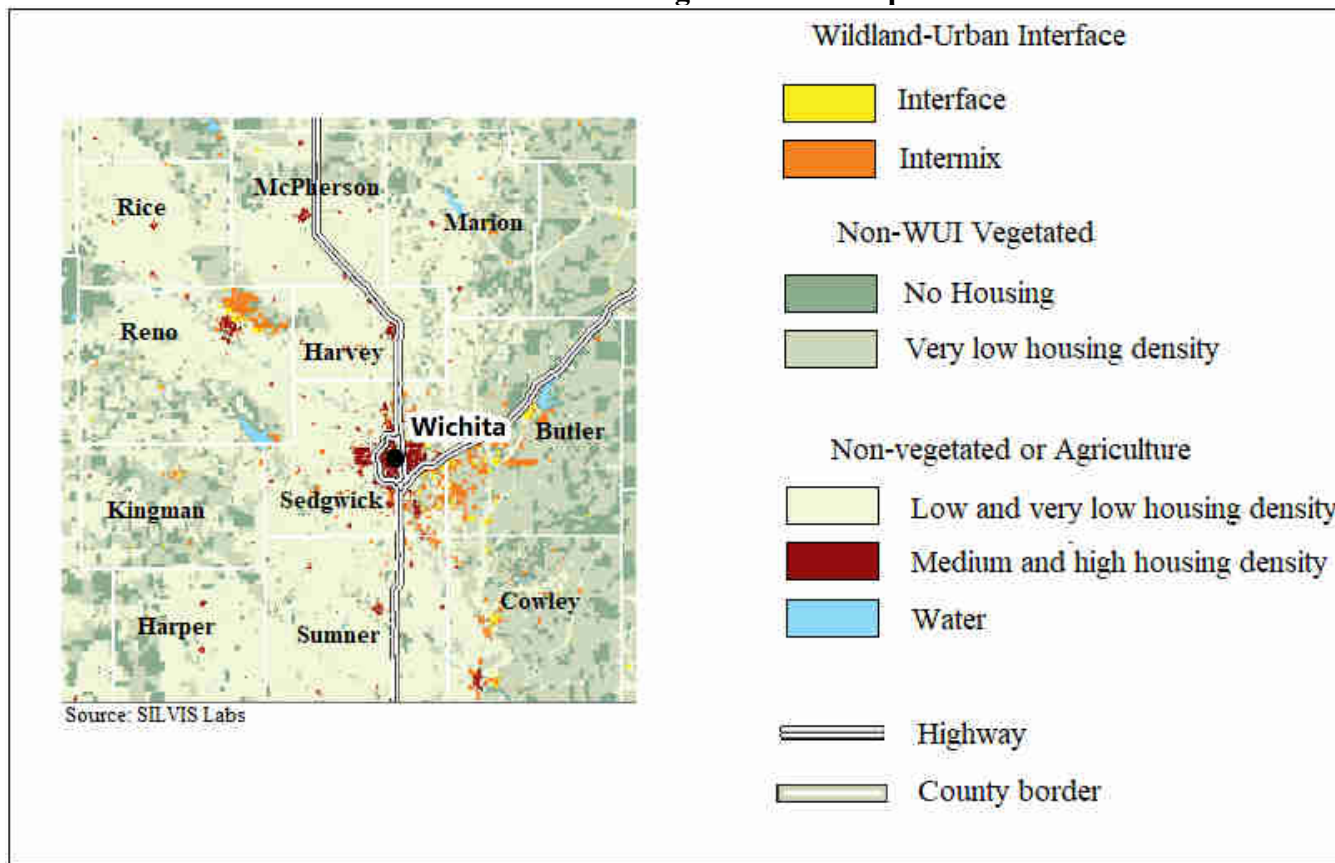
Wildfires in Kansas Region G typically originate in pasture or prairie areas following the ignition of dry grasses (by natural or human sources). According to the 2011 Kansas Forest Action Plan, with the exception of Eastern Redcedar, most forest types in Kansas do not pose significant fire management issues. However, grasslands, which make up a majority of the open areas in Kansas Region G, do pose fire management issues due to the expansion of the Wildland Urban Interface (WUI) in recent decades.

The WUI creates an environment in which fire can move readily between structural and vegetation fuels. Two types of WUI are mapped: intermixed and interface. Intermix WUI are areas where housing and vegetation intermingle; interface WUI are areas with housing in the vicinity of dense, contiguous wildland vegetation. The following maps detail WUI areas and information for Kansas Region G.



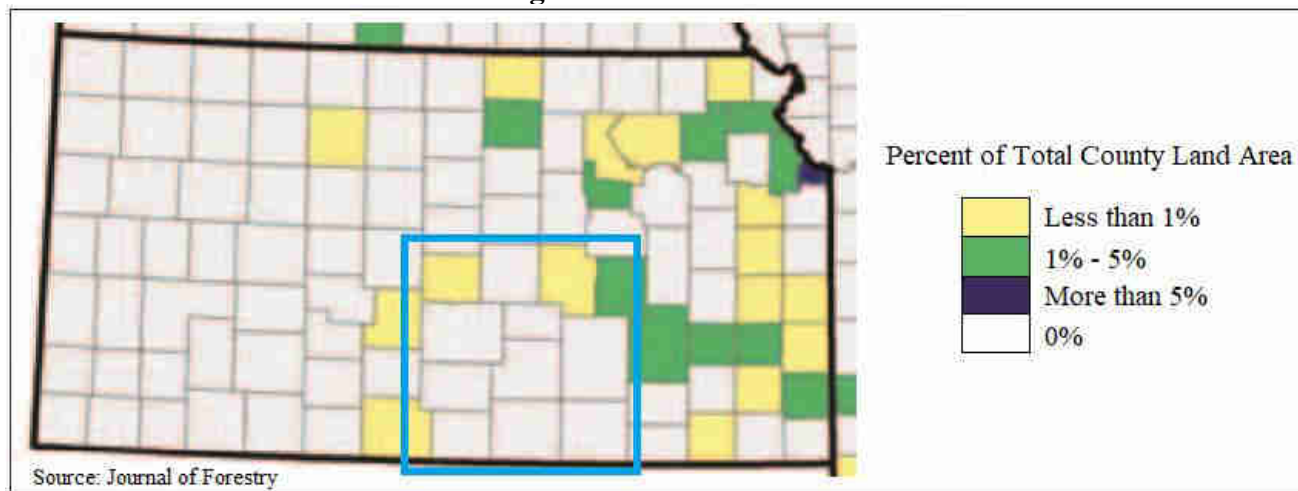


SILVIS Labs Regional WUI Map



The Eastern Redcedar is of concern to Kansas Region G. This invasive evergreen species can take over fence rows and un-planted fields, adding to wildfire fuel and risk. The following map, from the Journal of Forestry, indicates the percent of the total regional acreage impacted by Eastern Redcedar.

Percent of Total Regional Land Area of Eastern Redcedar





4.20.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been no Presidential Disaster Declarations for Kansas Region G for wildfires. In the 20-year period from 1999 to present, there has been one Fire Management Assistance Declaration for Kansas Region G for wildfires. The following 20-year information on past declared disasters is presented to provide a historical perspective on wildfire events that have impacted Kansas Region G.

Kansas Highland Hills Fire (FM-5170)

Incident Period: March 04, 2017 - March 15, 2017

Fire Management Assistance Declaration declared on March 05, 2017

FEMA Approved Public Assistance \$1,873,908

The Office of the State of Kansas Fire Marshall’s Office (KSFM) was contacted concerning the size and origin of reported wildfires for the region. The following table lists all recorded wildfires, by county, for the period 2009-2018.

Kansas Region G State Fire Marshall Recorded Wildfire Events, 2009-2018

County	Number of Reported Fires	Deaths	Injuries	Buildings Burned	Burned Acres
Butler	398	0	5	6	29,585
Cowley	284	0	2	5	20,351
Harper	14	0	0	0	4,735
Harvey	68	0	0	0	2,609
Kingman	62	1	6	0	3,393
McPherson	78	0	0	0	6,339
Marion	118	0	1	0	6,057
Reno	111	0	3	24	24,543
Rice	15	0	0	0	905
Sedgwick	122	0	5	3	4,086
Sumner	135	0	0	1	5,939

Source: KSFM

Additionally, a search of the NOAA NCEI database indicated no reported wildfires for the period 2009-2018.

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data, from 2015-2018, allows us to quantify the monetary and acreage impact of wildfires on the agricultural sector.

USDA Risk Management Agency Cause of Loss Indemnities, Wildfires, 2015-2018

County	USDA Crop Loss	Acres Impacted	Number of Claims
Butler	\$0	0	0
Cowley	\$0	0	0
Harper	\$4,079	71	2
Harvey	\$0	0	0
Kingman	\$0	0	0





USDA Risk Management Agency Cause of Loss Indemnities, Wildfires, 2015-2018

County	USDA Crop Loss	Acres Impacted	Number of Claims
Marion	\$0	0	0
McPherson	\$0	0	0
Reno	\$0	0	0
Rice	\$1,445	19	2
Sedgwick	\$0	0	0
Sumner	\$1,966	36	5

Source: USDA

Additionally, the following local events were reported:

Highlands (Reno County): March 5-7, 2017: A wildfire caused the total evacuation of the town and approximately \$1,000,000 in damages. No deaths or injuries were reported.

4.20.3 – Hazard Probability Analysis

The following table summarizes wildfire probability data for **Butler County**.

Butler County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	398
Average Events per Year	63
Number Deaths or Injuries (2009-2018)	5
Average Number of Yearly Deaths and Injuries (2009-2018)	1
Total Reported Burned Buildings (2009-2018)	6
Average Burned Buildings per Year	1
Total Reported Burned Acres (2009-2018)	29,585
Average Burned Acres per Year	4,931
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Butler County can expect on a yearly basis, relevant to wildfire events:

- 63 events
- One death or injury
- One building burned
- 4,931 acres burned

According to the USDA Risk Management Agency, Butler County can expect on a yearly basis, relevant to wildfire occurrences:





- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Cowley County**.

Cowley County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	284
Average Events per Year	47
Number Deaths or Injuries (2009-2018)	2
Average Number of Yearly Deaths and Injuries (2009-2018)	<1
Total Reported Burned Buildings (2009-2018)	5
Average Burned Buildings per Year	<1
Total Reported Burned Acres (2009-2018)	20,351
Average Burned Acres per Year	3,392
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Cowley County can expect on a yearly basis, relevant to wildfire events:

- 47 events
- <1 death or injury
- <1 building burned
- 3,392 acres burned

According to the USDA Risk Management Agency, Cowley County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Harper County**.

Harper County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	14
Average Events per Year	2
Number Deaths or Injuries (2009-2018)	0
Average Number of Yearly Deaths and Injuries (2009-2018)	0





Harper County Wildfire Probability Summary

Data	Recorded Impact
Total Reported Burned Buildings (2009-2018)	0
Average Burned Buildings per Year	0
Total Reported Burned Acres (2009-2018)	4,735
Average Burned Acres per Year	789
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	2
Average Number of Claims per Year	<1
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	71
Average Number of Acres Damaged per Year	18
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$4,079
Average Crop Damage per Year	\$1,020

Source: KSFM and NOAA

Data from the KSFM indicates that Harper County can expect on a yearly basis, relevant to wildfire events:

- Two events
- No deaths or injuries
- No buildings burned
- 789 acres burned

According to the USDA Risk Management Agency, Harper County can expect on a yearly basis, relevant to wildfire occurrences:

- <1 insurance claim
- 18 acres impacted
- \$1,020 in insurance claims

The following table summarizes wildfire probability data for **Harvey County**.

Harvey County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	68
Average Events per Year	11
Number Deaths or Injuries (2009-2018)	0
Average Number of Yearly Deaths and Injuries (2009-2018)	0
Total Reported Burned Buildings (2009-2018)	0
Average Burned Buildings per Year	0
Total Reported Burned Acres (2009-2018)	2,609
Average Burned Acres per Year	435
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA





Data from the KSFM indicates that Harvey County can expect on a yearly basis, relevant to wildfire events:

- 11 events
- No deaths or injuries
- No buildings burned
- 435 acres burned

According to the USDA Risk Management Agency, Harvey County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Kingman County**.

Kingman County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	62
Average Events per Year	10
Number Deaths or Injuries (2009-2018)	7
Average Number of Yearly Deaths and Injuries (2009-2018)	1
Total Reported Burned Buildings (2009-2018)	0
Average Burned Buildings per Year	0
Total Reported Burned Acres (2009-2018)	3,393
Average Burned Acres per Year	566
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Kingman County can expect on a yearly basis, relevant to wildfire events:

- Ten events
- One death or injury
- No buildings burned
- 566 acres burned

According to the USDA Risk Management Agency, Kingman County can expect on a yearly basis, relevant to wildfire occurrences:





- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **McPherson County**.

McPherson County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	78
Average Events per Year	13
Number Deaths or Injuries (2009-2018)	0
Average Number of Yearly Deaths and Injuries (2009-2018)	0
Total Reported Burned Buildings (2009-2018)	0
Average Burned Buildings per Year	0
Total Reported Burned Acres (2009-2018)	6,339
Average Burned Acres per Year	1,057
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that McPherson County can expect on a yearly basis, relevant to wildfire events:

- 13 events
- No deaths or injuries
- No buildings burned
- 1,057 acres burned

According to the USDA Risk Management Agency, McPherson County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Marion County**.

Marion County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	119
Average Events per Year	20
Number Deaths or Injuries (2009-2018)	1
Average Number of Yearly Deaths and Injuries (2009-2018)	<1





Marion County Wildfire Probability Summary

Data	Recorded Impact
Total Reported Burned Buildings (2009-2018)	0
Average Burned Buildings per Year	0
Total Reported Burned Acres (2009-2018)	6,057
Average Burned Acres per Year	110
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Marion County can expect on a yearly basis, relevant to wildfire events:

- 20 events
- <1 death or injury
- No buildings burned
- 110 acres burned

According to the USDA Risk Management Agency, Marion County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Reno County**.

Reno County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	112
Average Events per Year	19
Number Deaths or Injuries (2009-2018)	3
Average Number of Yearly Deaths and Injuries (2009-2018)	<1
Total Reported Burned Buildings (2009-2018)	24
Average Burned Buildings per Year	4
Total Reported Burned Acres (2009-2018)	24,543
Average Burned Acres per Year	4,091
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0





Reno County Wildfire Probability Summary

Data	Recorded Impact
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Reno County can expect on a yearly basis, relevant to wildfire events:

- 19 events
- <1 death or injury
- Four buildings burned
- 4,091 acres burned

According to the USDA Risk Management Agency, Reno County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Rice County**.

Rice County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	15
Average Events per Year	3
Number Deaths or Injuries (2009-2018)	0
Average Number of Yearly Deaths and Injuries (2009-2018)	0
Total Reported Burned Buildings (2009-2018)	0
Average Burned Buildings per Year	0
Total Reported Burned Acres (2009-2018)	950
Average Burned Acres per Year	78
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	2
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	19
Average Number of Acres Damaged per Year	5
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$1,445
Average Crop Damage per Year	\$361

Source: KSFM and NOAA

Data from the KSFM indicates that Rice County can expect on a yearly basis, relevant to wildfire events:

- Three events
- No deaths or injuries
- No buildings burned
- 158 acres burned





According to the USDA Risk Management Agency, Rice County can expect on a yearly basis, relevant to wildfire occurrences:

- <1 insurance claim
- Five acres impacted
- \$361 in insurance claims

The following table summarizes wildfire probability data for **Sedgwick County**.

Sedgwick County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	123
Average Events per Year	21
Number Deaths or Injuries (2009-2018)	5
Average Number of Yearly Deaths and Injuries (2009-2018)	1
Total Reported Burned Buildings (2009-2018)	3
Average Burned Buildings per Year	<1
Total Reported Burned Acres (2009-2018)	4,086
Average Burned Acres per Year	78
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Sedgwick County can expect on a yearly basis, relevant to wildfire events:

- 21 events
- One death or injury
- <1 buildings burned
- 681 acres burned

According to the USDA Risk Management Agency, Sedgwick County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Sumner County**.





Sumner County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	136
Average Events per Year	23
Number Deaths or Injuries (2009-2018)	0
Average Number of Yearly Deaths and Injuries (2009-2018)	0
Total Reported Burned Buildings (2009-2018)	1
Average Burned Buildings per Year	<1
Total Reported Burned Acres (2009-2018)	5,939
Average Burned Acres per Year	990
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	5
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	36
Average Number of Acres Damaged per Year	9
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$1,966
Average Crop Damage per Year	\$492

Source: KSFM and NOAA

Data from the KSFM indicates that Sumner County can expect on a yearly basis, relevant to wildfire events:

- 23 events
- No deaths or injuries
- <1 building burned
- 990 acres burned

According to the USDA Risk Management Agency, Sumner County can expect on a yearly basis, relevant to wildfire occurrences:

- <1 insurance claim
- Nine acres impacted
- \$492 in insurance claims

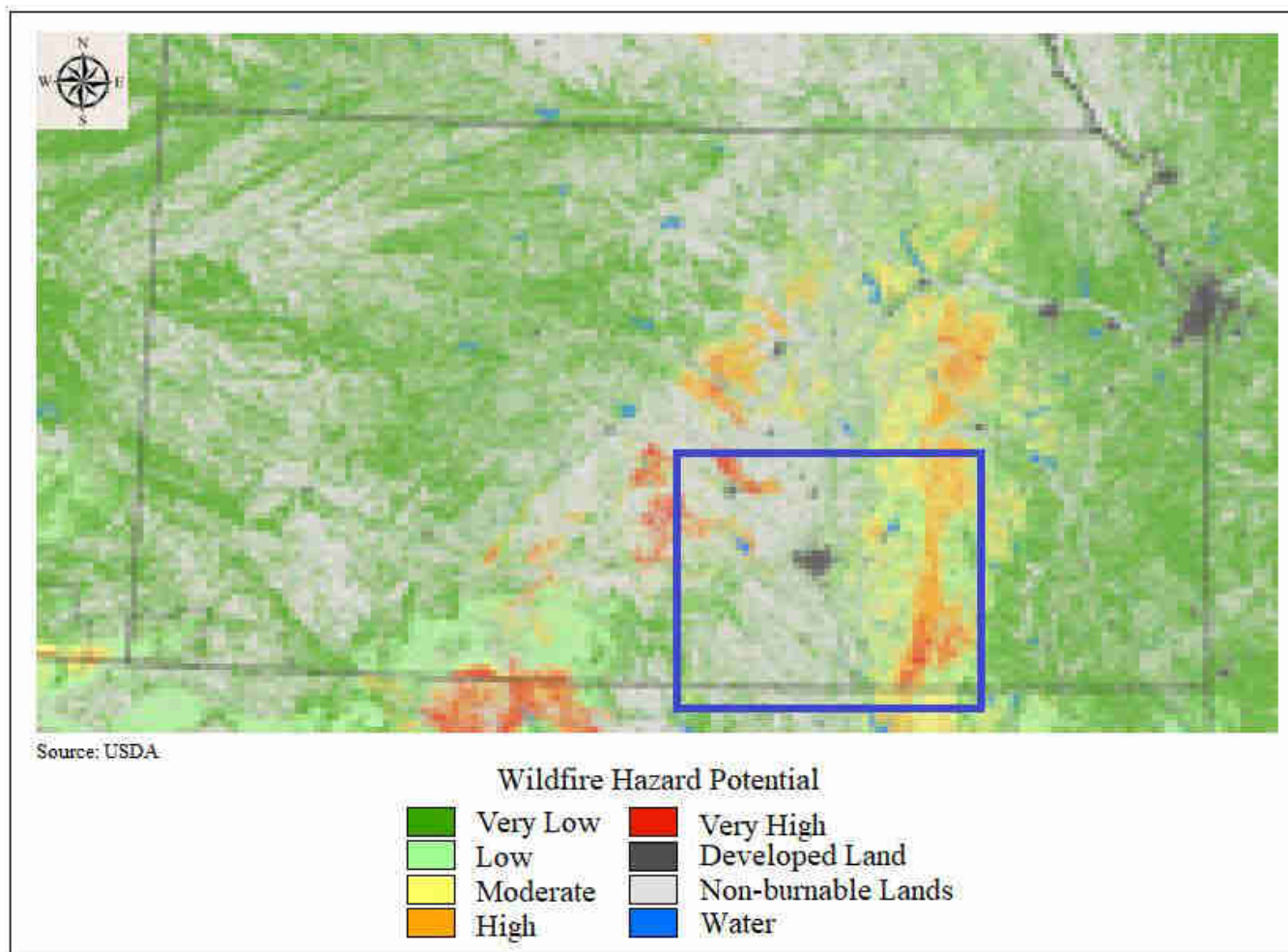
Mapping created by the USDA in 2018 indicates the Wildfire Hazard Potential for the United States. In general, the map indicates that Kansas Region G is the low and very low class.

Mapping created by the USDA in 2018 indicates the Wildfire Hazard Potential for the United States. In general, the map indicates that Kansas Region G is the low and moderate potential class.





USDA Wildfire Potential Map



4.20.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to wildfire events. In general, counties with a higher or increasing population, high, or increasing, or having a high structural valuation are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential wildfire event. It is worth highlighting the majority of Kansas Region G counties may have increased vulnerability to wildfire events due to a projected increase in the number of structures.

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region G county incurring damage over the period 2009 to 2018 from wildfire events. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.

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Kansas Region G Structural Vulnerability Data for Wildfires, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Butler	\$6,664,946,000	\$0	0.0%
Cowley	\$3,626,310,000	\$0	0.0%
Harper	\$779,563,000	\$0	0.0%
Harvey	\$3,863,763,000	\$0	0.0%
Kingman	\$1,041,969,000	\$0	0.0%
McPherson	\$3,766,723,000	\$0	0.0%
Marion	\$1,538,178,000	\$0	0.0%
Reno	\$7,100,181,000	\$0	0.0%
Rice	\$1,198,508,000	\$0	0.0%
Sedgwick	\$56,135,645,000	\$0	0.0%
Sumner	\$2,800,707,000	\$0	0.0%

Source: NCEI and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential tornado event. The following table indicates the total county population and registered growth over the period 2000 to 2017.

Kansas Region G Population Vulnerability Data for Wildfires

County	2017 Population	Percent Population Change 2000 to 2017
Butler	66,878	12.4%
Cowley	35,361	-2.6%
Harper	5,590	-14.5%
Harvey	34,544	5.1%
Kingman	7,360	-15.1%
McPherson	28,708	-2.9%
Marion	11,986	-10.3%
Reno	62,510	-3.5%
Rice	9,660	-10.2%
Sedgwick	513,687	13.4%
Sumner	23,159	-10.7%

Source: US Census Bureau

In general counties with a high population and/or a growing population are at increased risk. As such, it is worth highlighting the majority of Kansas Region G counties may have decreased vulnerability to wildfire events due to decreasing populations.

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of wildfires on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to wildfire events.





Wildfire Acres Impacted and Crop Insurance Paid per County from 2015-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Butler	768,149	0	0.0%	\$282,338,000	\$0	0.0%
Cowley	574,614	0	0.0%	\$108,976,000	\$0	0.0%
Harper	506,006	18	0.0%	\$109,644,000	\$1,020	0.0%
Harvey	339,584	0	0.0%	\$161,716,000	\$0	0.0%
Kingman	542,010	0	0.0%	\$103,188,000	\$0	0.0%
McPherson	571,577	0	0.0%	\$208,482,000	\$0	0.0%
Marion	596,296	0	0.0%	\$151,478,000	\$0	0.0%
Reno	789,525	0	0.0%	\$267,318,000	\$0	0.0%
Rice	457,603	5	0.0%	\$258,181,000	\$361	0.0%
Sedgwick	486,723	0	0.0%	\$148,484,000	\$0	0.0%
Sumner	719,611	9	0.0%	\$168,713,000	\$494	0.0%

Source: USDA

Potentially lessening future vulnerability to wildfires are Community Wildfire Protection Plans (CWPPs). A CWPP is the most effective way to take advantage of various Federal programs to include the Healthy Forests Restoration Act. By having a CWPP, communities are given priority for funding of Healthy Forests Restoration Act hazardous fuels reduction projects. The three main components of a CWPP are:

- Collaboration between all affected or potentially affected jurisdictions,
- Assessment of the wildfire hazards in an area that leads to recommendation for prioritized fuel reduction, and
- A section on recommendations towards reducing structural ignitability.

Currently the following Kansas Region G counties have approved CWPPs.

- Harvey County
- Kingman County
- Reno County

Additionally, Butler, Cowley, Harper, Sedgwick and Sumner counties are in progress,

4.20.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Wildfire Consequence Analysis

Subject	Impacts of Wildfire
Health and Safety of the Public	Impact could be severe for people living and working in the immediate area. Surrounding communities may also be impacted by evacuees.
Health and Safety of Responders	Impact to responders could be severe depending on the size and scope of the fire, especially for firefighters. Impact will be low to moderate for support responders with the main threat as smoke inhalation.





Wildfire Consequence Analysis

Subject	Impacts of Wildfire
Continuity of Operations	Temporary relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Delivery of services could be affected if there is any disruption to the roads and/or utilities due to damages sustained.
Environment	Impact will be severe for the immediate area with regards to trees, bushes, animals, and crops. Impact will lessen as distance increases.
Economic Conditions	Impacts to the economy could be moderate in the immediate area.
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. Evacuation orders and shelter availability could be called in to question.





4.21 – Windstorm

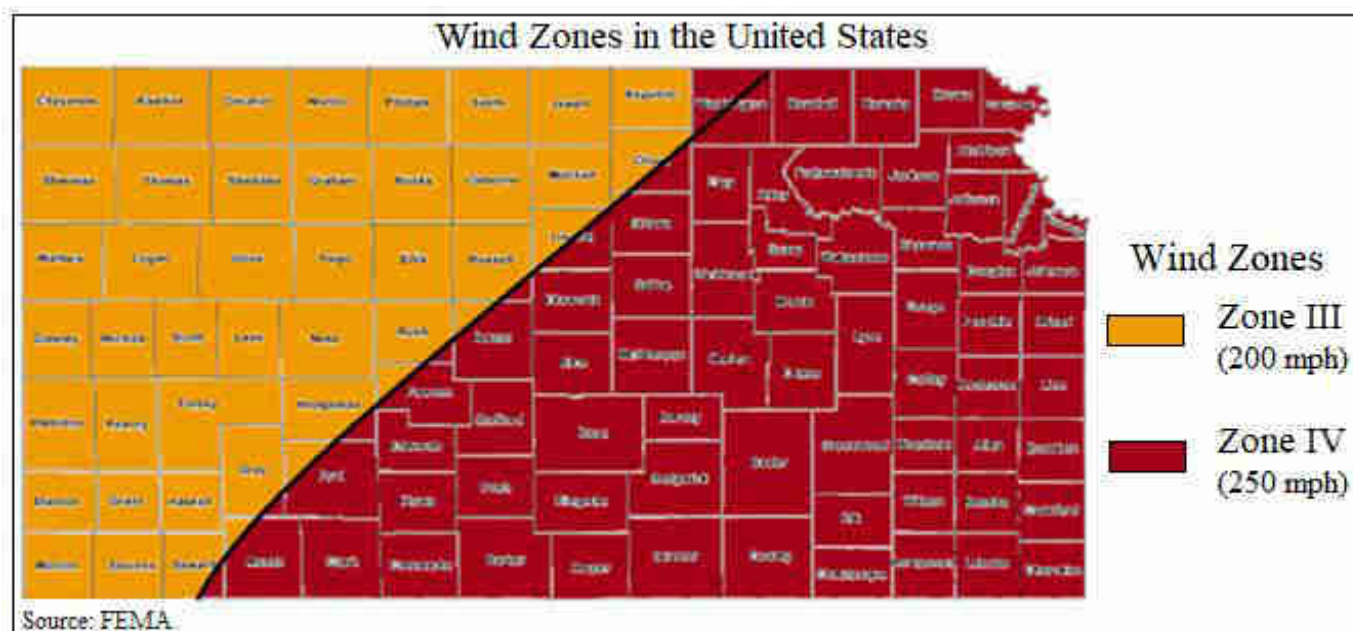
Straight-line winds are generally any thunderstorm wind that is not associated with rotation. It is these winds, which can exceed 100 mph that represent the most common type of severe weather and are responsible for most wind damage related to thunderstorms. Since thunderstorms do not have narrow tracks like tornados, the associated wind damage can be extensive and affect entire counties or regions. Objects like trees, barns, outbuildings, high-profile vehicles, and power lines/poles can be toppled or destroyed, and roofs, windows, and homes can be damaged as wind speeds increase.



4.21.1 – Location and Extent

High winds occur over broad geographic regions. The entire Kansas Region G planning area, including all participating jurisdictions, is at risk to high wind events.

The following figure shows the wind zones of the United States based on maximum wind speeds. Kansas Region G is located within wind zone IV, the highest inland category.



Severe thunderstorms strike Kansas Region G regularly, with accompanying high wind that can cause injury, death, and property damage. The widespread and frequent nature of thunderstorms makes high wind a relatively common occurrence. The NWS classifies thunderstorms, often the generator of high winds, using the following categories.

- **Marginal:** Isolated severe thunderstorms, limited in duration and/or coverage and/or intensity
- **Slight:** Scattered severe storms possible, Short-lived and/or not widespread, isolated intense storms possible

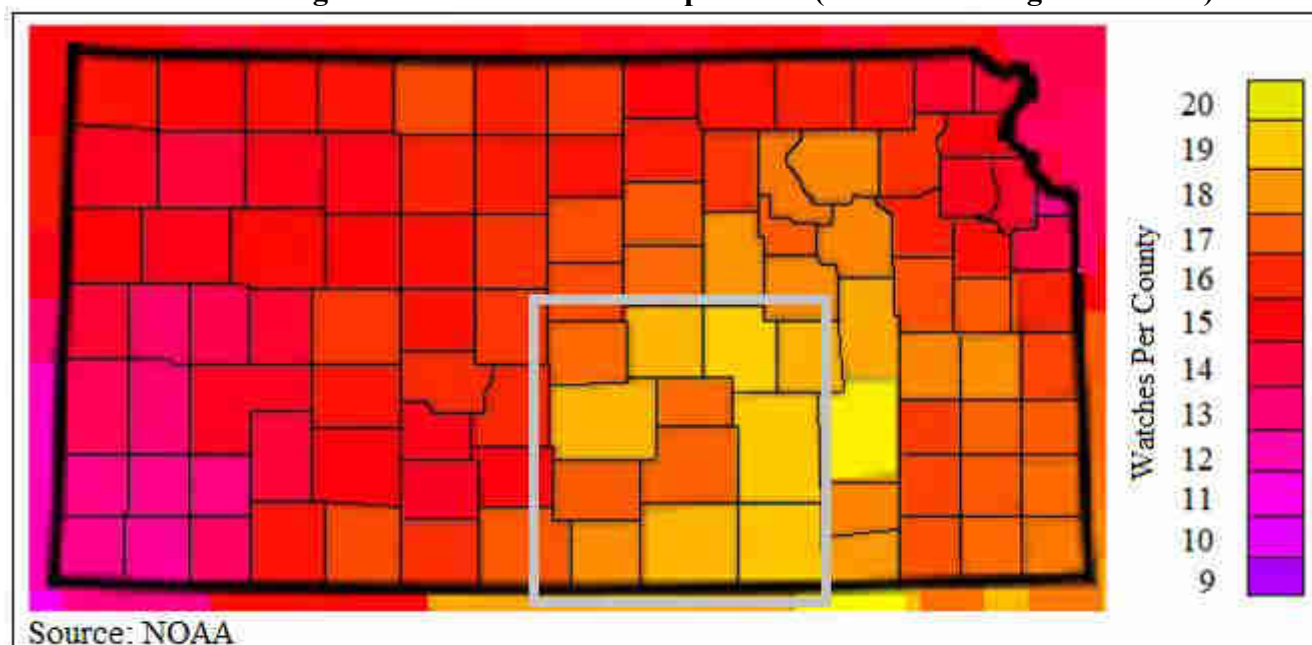




- **Enhanced:** Numerous severe storms possible, more persistent and/or widespread, a few intense
- **Moderate:** Widespread severe storms likely, long-lived, widespread and intense
- **High:** Widespread severe storms expected, long-lived, very widespread and particularly intense

The following map, generated by NOAA, indicates the average number severe thunderstorm watches per year for Kansas Region G.

Annual Average Thunderstorm Watches per Year (20-Year Average 1993-2012)



To measure wind speed and its correlating potential for damage, experts use the Beaufort scale as shown below.

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





4.21.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been five Presidential Disaster Declarations for Kansas Region G for Straight-Line Winds (along with other associated hazard event). The following 20-year information on past declared disasters is presented to provide a historical perspective on high wind events that have impacted Kansas Region G. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2013.

Kansas Region G FEMA Straight-Line Winds Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4230	07/20/2015 (05/04/2015 – 06/21/2015)	Severe Storms, Tornados, Straight-Line Winds , and Flooding	Butler, Cowley, Harper, McPherson, Rice, and Sumner	\$13,848,325
4150	10/22/2013 (07/22/2013 – 08/15/2013)	Severe Storms, Straight-Line Winds , Tornados, and Flooding	Butler, Cowley Harper, Kingman, Reno, Rice, and Sumner.	\$1,102,861 (Estimate)
4063	05/24/2012 (4/14-4/15/2012)	Severe Storms, Tornadoes, Straight-Line Winds and Flooding	Harper, Rice, Sedgwick, and Sumner	\$6,923,919
4010	07/29/2011 (5/19-6/4/2011)	Severe Storms, Straight-Line Winds , Tornados and Flooding	Marion	\$8,259,620
1849	06/25/2009 (4/25-5/16/2009)	Severe Storms, Flooding, Straight-Line Winds , and Tornados	Butler, Cowley, Harper, Harvey, Kingman, Marion, Reno, Rice, and Sumner	\$15,013,488

Source: FEMA

-: Data unavailable

The following provides details of the two Presidential Disaster Declaration for Kansas Region G related to severe storms (and potentially lightning) since the last plan update in 2013.

Kansas – Severe Storms, Straight-line Winds, and Flooding FEMA-4230-DR

Declared November 7, 2017

On August 31, 2017, Governor Sam Brownback requested a major disaster declaration due to severe storms, straight-line winds, and flooding during the period of July 22-27, 2017. The Governor requested a declaration for Public Assistance for two counties and Hazard Mitigation statewide. During the period of August 18-24, 2017, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On November 7, 2017, President Trump declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for





emergency work and the repair or replacement of facilities damaged by the severe storms, straight-line winds, and flooding in Johnson and Wyandotte Counties. This declaration also made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

In addition to the above reported events, the following table presents NOAA NCEI identified high wind events (High Wind and Thunderstorm Wind) and the resulting damage totals in Kansas Region G from the period 2009 - 2018.

Kansas Region G NCEI High Wind Events, 2009 - 2018

County	Number of Days with Events	Property Damage	Crop Damage	Highest Recorded Wind Speed	Deaths	Injuries
Butler	87	\$31,412,000	\$2,000	70 Knots	0	5
Cowley	64	\$2,066,000	\$0	78 Knots	0	2
Harper	26	\$126,750	\$0	70 Knots	0	0
Harvey	38	\$786,500	\$13,750	87 Knots	0	0
Kingman	52	\$523,500	\$0	87 Knots	0	1
McPherson	53	\$2,936,000	\$25,000	78 Knots	0	1
Marion	31	\$747,650	\$10,000	70 Knots	0	11
Reno	72	\$2,280,000	\$750	87 Knots	0	5
Rice	34	\$256,200	\$0	76 Knots	0	0
Sedgwick	90	\$3,317,000	\$10,500	78 Knots	0	5
Sumner	51	\$1,280,000	\$0	87 Knots	0	0

Source: NOAA NCEI

The following provides both **local accounts** and NOAA NCEI descriptions of notable recorded events:

- June 15, 2017: Hutchinson (Reno County)**
High winds caused a large tree to fall on a car and injure the occupants. Four injuries were recorded.
- July 28, 2016: Eastborough (Sedgwick County)**
Downed trees, power lines, and power poles caused power outages to around 50 residences. Semi-trailers were overturned, and a motel a couple mile northwest of Eisenhower Airport caught fire after a lightning strike. Property damage was recorded at \$500,000.
- July 28, 2016: Mount Hope (Sedgwick County)**
Multiple limbs around 1-foot diameter were downed. Downed power lines and power poles caused power outages to perhaps 50 residences. Property damage was recorded at \$250,000.
- April 2-3, 2015: Newton (Harvey County)**
A windstorm damaged buildings and did significant tree damage.





- **May 5, 2015: Galva (McPherson County)**
Winds were estimated to be between 65 and 75 mph causing damage to numerous houses and downing trees across town. Tree limbs eight inches in diameter were knocked down. An RV storage unit had its roof taken off from the damaging winds. The roof of the school had damage as well. Numerous power poles were snapped along with windblown roof and siding damage to several homes. Property damage was recorded at \$1,000,000.
- **July 22, 2013: Argonia (Sumner County)**
Sumner County Emergency Management reported that the roofs were torn off both the Argonia High School and the elementary school. There was also extensive damage to trees, power lines and power poles. Property damage was recorded at \$900,000.
- **July 27, 2013: Wichita (Sedgwick County)**
Widespread 70-90 mph winds occurred, no doubt causing tremendous damage to trees, many of which were quite large. A few trees were around 20-feet tall with two to three-foot diameter trunks. Several trees fell onto houses that, in a few cases, caused roof damage. Damage to power lines and power poles was certainly widespread and resulted in numerous power outages. Around 25,000 residences lost power in the Wichita Metro area alone. Many houses sustained roof damage, especially in Maize and Northwest Wichita. Several baggage carts were flipped over at Mid-Continent Airport. A small Federal Express aircraft was turned a complete 180 degrees and sustained wing damage. In addition, 3 overhead garage doors were blown in. Property damage was recorded at \$250,000.
- **June 20, 2011: Valley Center (Sedgwick County)**
Property damage was recorded at \$125,000.
- **May 12, 2010: El Dorado (Butler County)**
Three semi-tractor trailer trucks were overturned along the Kansas Turnpike directly underneath the K-254 overpass, when high tension powerlines fell onto the road. The semis became tangled in the wires and overturned or were pushed off the road. Two injuries occurred as one of the semi's broke open when it hit the bridge pillar, spilling the moving vans contents into the rain. Property damage was recorded at \$250,000.
- **June 13, 2010: Lindsborg (McPherson County)**
Sixty-five to seventy mph winds tore part of the roof off the Smoky Valley High School gymnasium. With the roof open, a heavy deluge of rainfall damaged the gym floor beyond repair. A basketball practice was ongoing when the ceiling was torn off, but no one was hurt. Numerous trees were also knocked down across town with some minor structural damage reported to some homes. Property damage was recorded at \$400,000.
- **August 13, 2010: Marion Reservoir (Marion County)**
Extensive damage occurred at the Cottonwood Point campground at Marion Lake. Three recreational vehicles were flipped over trapping a family of five and injuring 10 people overall. Most of the injuries were cuts and bruises, but one person had to be extricated from a camper and flown to a nearby hospital. Five people that were taken to the hospital were treated and released.





Trees were also knocked down with a carport destroyed. Property damage was recorded at \$40,000.

- **May 8, 2009: Benton, EL Dorado, Rosalia and Towanda (Butler County)**

A large swath of damaging winds moved across the area from Benton to Rosalia including the city of El Dorado with winds measured at 80 mph at the Jefferson elementary school in El Dorado. Numerous large trees were knocked down in Benton, with a mobile home trailer rolled over east of town. Winds destroyed the historic stone silo bearing the name of the town of Towanda. The damaging winds estimated at 70 to 80 mph moved into El Dorado damaging roofs to numerous businesses in downtown and knocking down numerous large trees. Two or three schools in El Dorado had their roofs partially peeled off. The refinery in El Dorado had some large storage tanks dented. The damaging winds continued to move east downing almost every one of the large transmission lines along US 54 highway from El Dorado to Rosalia. Property damage was recorded at \$30,000,000.

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data, from 2015-2018, allows us to quantify the monetary and acreage impact of high winds on the agricultural sector.

USDA Risk Management Agency Cause of Loss Indemnities, High Winds, 2015-2018

County	USDA Crop Loss	Acres Impacted	Number of Claims
Butler	\$146,244	857	7
Cowley	\$27,682	489	7
Harper	\$6,261	125	4
Harvey	\$118,073	1,105	7
Kingman	\$41,984	542	7
McPherson	\$28,027	345	5
Marion	\$3,377	282	7
Reno	\$44,568	781	16
Rice	\$63,008	1,543	12
Sedgwick	\$408,909	823	13
Sumner	\$44,032	703	7

Source: USDA

4.21.3 – Hazard Probability Analysis

The following table summarizes high wind probability data for **Butler County**.

Butler County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	87
Average Events per Year	9
Number of Days with Event and Death or Injury (2009-2018)	5
Average Number of Days with Death or Injury	<1
Total Reported NCEI Property Damage (2009-2018)	\$31,412,000





Average Property Damage per Year	\$3,412,000
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	7
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	857
Average Number of Acres Damaged per Year	214
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$146,244
Average Crop Damage per Year	\$36,561

Source: NCEI and USDA

Data from the NCEI indicates that Butler County can expect on a yearly basis, relevant to high wind events:

- One event
- No deaths
- <1 injury
- \$3,412,000 in property damages

According to the USDA Risk Management Agency, Butler County can expect on a yearly basis, relevant to high wind occurrences:

- Two insurance claims
- 214 acres impacted
- \$36,561 in insurance claims

The following table summarizes high wind probability data for **Cowley County**.

Cowley County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	64
Average Events per Year	6
Number of Days with Event and Death or Injury (2009-2018)	2
Average Number of Days with Death or Injury	<1
Total Reported NCEI Property Damage (2009-2018)	\$2,066,000
Average Property Damage per Year	\$206,600
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	7
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	489
Average Number of Acres Damaged per Year	122
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$27,682
Average Crop Damage per Year	\$6,920

Source: NCEI and USDA

Data from the NCEI indicates that Cowley County can expect on a yearly basis, relevant to high wind events:

- Six events





- <1 death or injury
- \$206,600 in property damages

According to the USDA Risk Management Agency, Cowley County can expect on a yearly basis, relevant to high wind occurrences:

- Two insurance claims
- 122 acres impacted
- \$6,920 in insurance claims

The following table summarizes High wind probability data for **Harper County**.

Harper County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	26
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$126,750
Average Property Damage per Year	\$12,675
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	4
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	125
Average Number of Acres Damaged per Year	31
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$6,261
Average Crop Damage per Year	\$1,565

Source: NCEI and USDA

Data from the NCEI indicates that Harper County can expect on a yearly basis, relevant to high wind events:

- Three events
- No deaths or injuries
- \$12,675 in property damages

According to the USDA Risk Management Agency, Harper County can expect on a yearly basis, relevant to high wind occurrences:

- One insurance claim
- 31 acres impacted
- \$1,565 in insurance claims

The following table summarizes high wind probability data for **Harvey County**.





Harvey County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	38
Average Events per Year	4
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$786,500
Average Property Damage per Year	\$78,650
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	7
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	1,105
Average Number of Acres Damaged per Year	276
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$118,073
Average Crop Damage per Year	\$29,518

Source: NCEI and USDA

Data from the NCEI indicates that Harvey County can expect on a yearly basis, relevant to high wind events:

- Four events
- No deaths or injuries
- \$78,650 in property damages

According to the USDA Risk Management Agency, Harvey County can expect on a yearly basis, relevant to high wind occurrences:

- Two insurance claims
- 276 acres impacted
- \$29,518 in insurance claims

The following table summarizes high wind probability data for **Kingman County**.

Kingman County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	52
Average Events per Year	5
Number of Days with Event and Death or Injury (2009-2018)	1
Average Number of Days with Death or Injury	<1
Total Reported NCEI Property Damage (2009-2018)	\$523,500
Average Property Damage per Year	\$52,350
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	7
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	542
Average Number of Acres Damaged per Year	136
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$41,984
Average Crop Damage per Year	\$10,496

Source: NCEI and USDA





Data from the NCEI indicates that Kingman County can expect on a yearly basis, relevant to high wind events:

- Five events
- <1 death or injury
- \$52,350 in property damages

According to the USDA Risk Management Agency, Kingman County can expect on a yearly basis, relevant to high wind occurrences:

- Two insurance claims
- 136 acres impacted
- \$10,496 in insurance claims

The following table summarizes high wind probability data for **McPherson County**.

McPherson County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	53
Average Events per Year	5
Number of Days with Event and Death or Injury (2009-2018)	1
Average Number of Days with Death or Injury	<1
Total Reported NCEI Property Damage (2009-2018)	\$2,936,000
Average Property Damage per Year	\$293,600
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	5
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	345
Average Number of Acres Damaged per Year	86
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$28,027
Average Crop Damage per Year	\$7,007

Source: NCEI and USDA

Data from the NCEI indicates that McPherson County can expect on a yearly basis, relevant to high wind events:

- Five events
- <1 death or injury
- \$293,600 in property damages

According to the USDA Risk Management Agency, McPherson County can expect on a yearly basis, relevant to high wind occurrences:

- One insurance claim
- 86 acres impacted
- \$7,007 in insurance claims





The following table summarizes High wind probability data for **Marion County**.

Marion County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	31
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	11
Average Number of Days with Death or Injury	1
Total Reported NCEI Property Damage (2009-2018)	\$747,650
Average Property Damage per Year	\$74,765
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	7
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	282
Average Number of Acres Damaged per Year	70
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$3,377
Average Crop Damage per Year	\$844

Source: NCEI and USDA

Data from the NCEI indicates that Marion County can expect on a yearly basis, relevant to high wind events:

- Three events
- One death or injury
- \$74,765 in property damages

According to the USDA Risk Management Agency, Marion County can expect on a yearly basis, relevant to high wind occurrences:

- Two insurance claims
- 70 acres impacted
- \$844 in insurance claims

The following table summarizes high wind probability data for **Reno County**.

Reno County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	72
Average Events per Year	7
Number of Days with Event and Death or Injury (2009-2018)	5
Average Number of Days with Death or Injury	<1
Total Reported NCEI Property Damage (2009-2018)	\$2,280,000
Average Property Damage per Year	\$228,000
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	16
Average Number of Claims per Year	4
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	781
Average Number of Acres Damaged per Year	195





Reno County High Wind Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$44,568
Average Crop Damage per Year	\$11,142

Source: NCEI and USDA

Data from the NCEI indicates that Reno County can expect on a yearly basis, relevant to high wind events:

- Seven events
- <1 death or injury
- \$228,000 in property damages

According to the USDA Risk Management Agency, Reno County can expect on a yearly basis, relevant to high wind occurrences:

- Four insurance claims
- 195 acres impacted
- \$11,142 in insurance claims

The following table summarizes high wind probability data for **Rice County**.

Rice County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	34
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$256,200
Average Property Damage per Year	\$25,620
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	12
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	1,543
Average Number of Acres Damaged per Year	386
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$63,008
Average Crop Damage per Year	\$15,752

Source: NCEI and USDA

Data from the NCEI indicates that Rice County can expect on a yearly basis, relevant to high wind events:

- Three events
- No deaths or injuries
- \$25,620 in property damages

According to the USDA Risk Management Agency, Rice County can expect on a yearly basis, relevant to high wind occurrences:

- Three insurance claims





- 386 acres impacted
- \$15,752 in insurance claims

The following table summarizes high wind probability data for **Sedgwick County**.

Sedgwick County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	90
Average Events per Year	9
Number of Days with Event and Death or Injury (2009-2018)	5
Average Number of Days with Death or Injury	<1
Total Reported NCEI Property Damage (2009-2018)	\$3,317,000
Average Property Damage per Year	\$331,700
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	13
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	823
Average Number of Acres Damaged per Year	206
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$408,909
Average Crop Damage per Year	\$102,227

Source: NCEI and USDA

Data from the NCEI indicates that Sedgwick County can expect on a yearly basis, relevant to high wind events:

- Nine events
- <1 death or injury
- \$331,700 in property damages

According to the USDA Risk Management Agency, Sedgwick County can expect on a yearly basis, relevant to high wind occurrences:

- Three insurance claims
- 206 acres impacted
- \$102,227 in insurance claims

The following table summarizes high wind probability data for **Sumner County**.

Sumner County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	51
Average Events per Year	5
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$1,280,000
Average Property Damage per Year	\$128,000
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	7
Average Number of Claims per Year	2





Sumner County High Wind Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	703
Average Number of Acres Damaged per Year	176
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$44,032
Average Crop Damage per Year	\$11,008

Source: NCEI and USDA

Data from the NCEI indicates that Sumner County can expect on a yearly basis, relevant to high wind events:

- Five events
- No deaths or injuries
- \$128,000 in property damages

According to the USDA Risk Management Agency, Sumner County can expect on a yearly basis, relevant to high wind occurrences:

- Two insurance claims
- 176 acres impacted
- \$11,008 in insurance claims

In addition, Kansas Region G has had five Presidentially Declared Disaster relating to straight-line winds (and other concurrent events) in the last 20 years. This represents an average of less than one declared straight-line wind related disaster per year.

4.21.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to high wind events. In general, counties with a higher or increasing population, and/or a high or increasing structural valuation are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential high wind event. It is worth highlighting the majority of Kansas Region G counties may have increased vulnerability to high wind events due to a projected increase in the number of structures.

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region G county incurring damage over the period 2009 to 2018 from high wind events. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.

Kansas Region G Structural Vulnerability Data for High Winds, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Butler	\$6,664,946,000	\$31,412,000	0.5%
Cowley	\$3,626,310,000	\$2,066,000	0.1%





Kansas Region G Structural Vulnerability Data for High Winds, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Harper	\$779,563,000	\$126,750	0.0%
Harvey	\$3,863,763,000	\$786,500	0.0%
Kingman	\$1,041,969,000	\$523,500	0.1%
McPherson	\$3,766,723,000	\$2,936,000	0.1%
Marion	\$1,538,178,000	\$747,650	0.0%
Reno	\$7,100,181,000	\$2,280,000	0.0%
Rice	\$1,198,508,000	\$256,200	0.0%
Sedgwick	\$56,135,645,000	\$3,317,000	0.0%
Sumner	\$2,800,707,000	\$1,280,000	0.0%

Source: NCEI and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential high wind event. The following table indicates the total county population and registered growth over the period 2000 to 2017.

Kansas Region G Population Vulnerability Data for High Winds

County	2017 Population	Percent Population Change 2000 to 2017
Butler	66,878	12.4%
Cowley	35,361	-2.6%
Harper	5,590	-14.5%
Harvey	34,544	5.1%
Kingman	7,360	-15.1%
McPherson	28,708	-2.9%
Marion	11,986	-10.3%
Reno	62,510	-3.5%
Rice	9,660	-10.2%
Sedgwick	513,687	13.4%
Sumner	23,159	-10.7%

Source: US Census Bureau

In general counties with a high population and/or a growing population are at increased risk. As such, it is worth highlighting the majority of Kansas Region G counties may have decreased vulnerability to high wind events due to decreasing populations.

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of high wind on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to high wind events.





High Wind Acres Impacted and Crop Insurance Paid per County from 2015-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Butler	768,149	214	0.03%	\$282,338,000	\$36,561	0.01%
Cowley	574,614	122	0.02%	\$108,976,000	\$6,920	0.01%
Harper	506,006	31	0.01%	\$109,644,000	\$1,565	0.00%
Harvey	339,584	276	0.08%	\$161,716,000	\$29,518	0.02%
Kingman	542,010	136	0.03%	\$103,188,000	\$10,496	0.01%
McPherson	571,577	86	0.02%	\$208,482,000	\$7,007	0.00%
Marion	596,296	70	0.01%	\$151,478,000	\$844	0.00%
Reno	789,525	195	0.02%	\$267,318,000	\$11,142	0.00%
Rice	457,603	386	0.08%	\$258,181,000	\$15,752	0.01%
Sedgwick	486,723	206	0.04%	\$148,484,000	\$102,227	0.07%
Sumner	719,611	176	0.02%	\$168,713,000	\$11,008	0.01%

Source: USDA

As with tornados, the following participating jurisdictions may have increased vulnerability to windstorm events due to having greater than 20% of housing stock as mobile homes:

- **Leon** (Butler County)
- **Towanda** (Butler County)
- **Geuda Springs** (Cowley County)
- **Spivey** (Kingman County)
- **Plevna** (Reno County)

4.21.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

High Wind Consequence Analysis

Subject	Impacts of High Winds
Health and Safety of the Public	Impact of the immediate area could be severe depending on whether individuals were able to seek shelter. Casualties are dependent on warning systems and warning times.
Health and Safety of Responders	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Temporary to permanent relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Localized impact could be severe in the wind path. Roads, buildings, and communications could be adversely affected. Damage could be severe.
Environment	Impact will be severe for the immediate impacted area. Impact will lessen as distance increases from the immediate incident area.
Economic Conditions	Impacts to the economy will greatly depend on the wind severity. Potential economic impact conditions could be minor to severe.
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. Warning systems and warning time will also be questioned.





4.22 – Winter Storms

Winter weather in Kansas Region G usually come in the form of light to heavy snow or freezing rain. A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. Heavy accumulations of ice, often the result of freezing rain, can bring down trees, utility poles, and communications towers and disrupt communications and power for days.



4.22.1 – Location and Extent

All of Kansas Region G is susceptible to severe winter storms. For winter weather, the NWS describes the different types of events as follows:

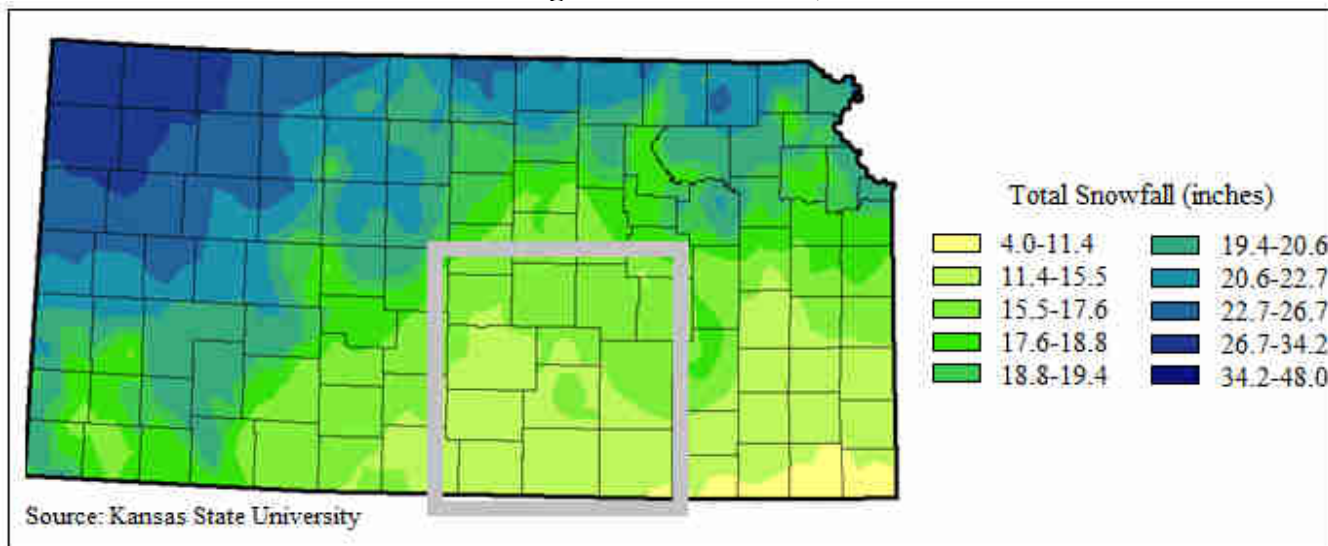
- **Blizzard:** Winds of 35 mph or more with snow and blowing snow reducing visibility to less than 1/4 mile for at least three hours.
- **Blowing Snow:** Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- **Snow Squalls:** Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
- **Snow Showers:** Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Freezing Rain:** Rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces forming a coating or glaze of ice. Most freezing-rain events are short lived and occur near sunrise between the months of December and March.
- **Sleet:** Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects.

The following map, generated Kansa State University, using the latest available data, indicates the average annual snowfall for Kansas Region G for a given year.



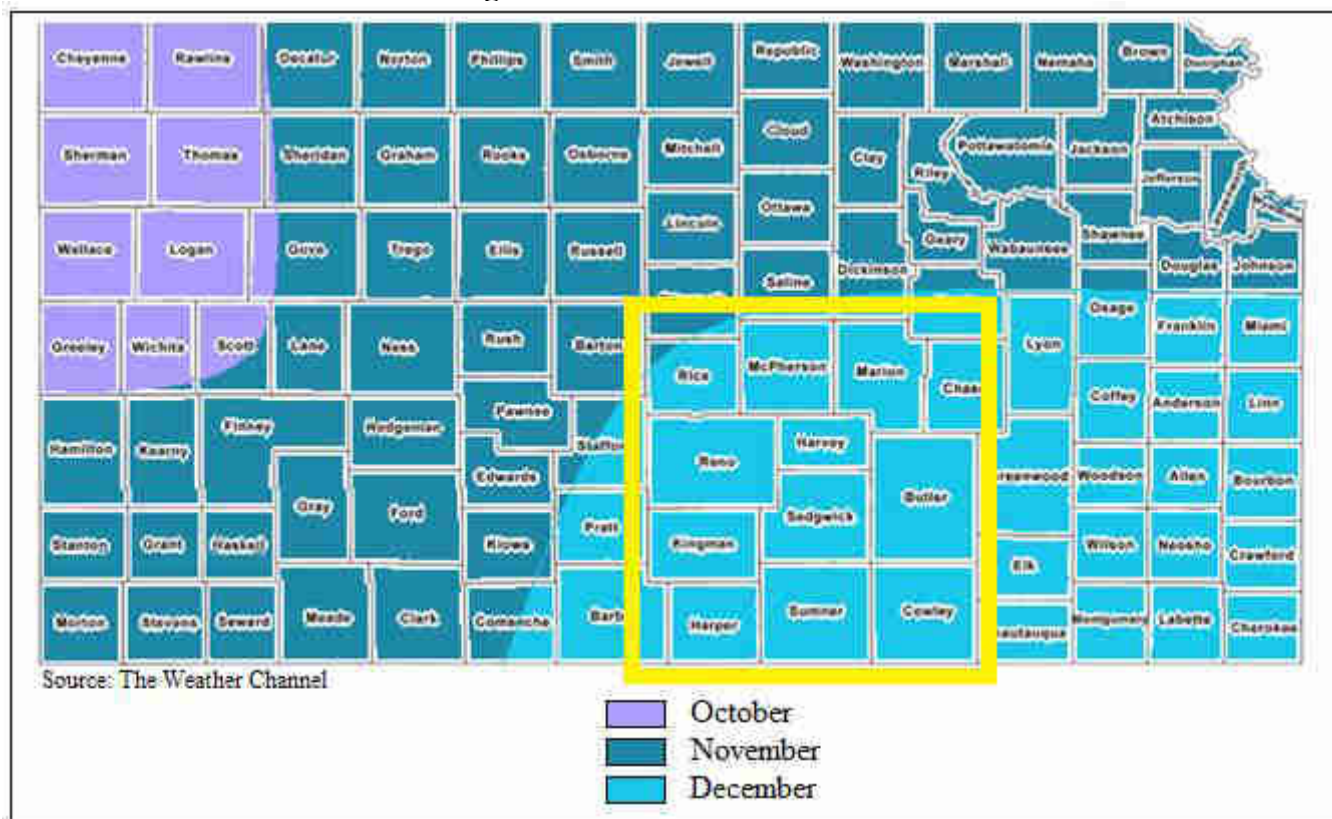


Average Annual Snowfall, 1981-2010



Additionally, as indicated by the map below, Kansas Region G can expect to receive the first measurable snow in December of each year.

Average Date of First Measurable Snow





4.22.2 – Previous Occurrences

Since 2002, there have been six Presidential Disaster Declarations for Kansas Region G for severe winter storms. The following information is presented to provide a historical perspective on severe winter storm events that have impacted Kansas Region G. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2013.

Kansas Region G FEMA Severe Winter Storms Disaster and Emergency Declarations, 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4112	04/26/2013 (02/20-02/23/2013)	Snowstorm	Harper, Harvey, Kingman, Marion, McPherson, Ness, and Rice	\$1,102,861
1885	03/09/2010 (12/9/2009-1/8/2010)	Severe Winter Storms and Snowstorm	Butler and Cowley	\$19,100,658
1848	06/24/2009 (3/26-29/2009)	Severe Winter Storm and Record and Near Record Snow	Butler, Cowley, Harvey, Marion, and Sumner,	\$20,174,657
1741	02/01/2008	Severe Winter Storms	Butler, Harvey, Kingman, Marion, McPherson, Reno, Rice, and Sedgwick,	\$359,557,345
1579	2/8/2005 (1/4-6/2005)	Severe Winter Storm, Heavy Rains, and Flooding	Butler, Cowley, Harper, Harvey, Kingman, Marion, McPherson, Reno, Rice, Sedgwick, and Sumner	\$106,873,672
1402	2/6/2002 (1/29-2/15/2002)	Ice Storm	Butler, Cowley, Kingman, Sedgwick, and Sumner	\$60,185,754

Source: FEMA

The following presents NOAA NCEI data concerning winter storm events in Kansas Region G. It is worth noting that the NCEI data is regional, and sometimes state wide. As such reported damage is not specific to a regional county nor to any of the participating jurisdictions.

Kansas Region G NCEI Winter Storm Events, 2009 - 2018

Event Type	Number of Days with Events	Property Damage	Crop Damage	Deaths	Injuries
Blizzards	2	\$2,620,000	\$0	0	0
Ice Storm	4	\$5,600,000	\$0	0	0
Winter Storms	20	\$12,829,000	\$0	0	0

Source: NOAA NCEI

The following provides both **local accounts** and NOAA NCEI descriptions of notable recorded events:

- **January 11, 2018: McPherson County**

A mixture of freezing rain, sleet and snow spread across McPherson County, Kansas early in the morning of January 11th, 2018. This made travel dangerous as numerous accidents and slide-offs





occurred. The greatest snow accumulations, 2 to 3 inches, were reported across Western and Northern McPherson County. Property damage was recorded at \$100,000.

- **November 29, 2015: Regional**

Over 1/2 inch of ice was reported. Law enforcement and public reported widespread tree and power line damage that caused equally widespread power outages across the county. This damage was major and caused numerous power outages. Downed power lines severed power to 80 homes 5 miles northeast of Haven as well as 1 mile east of Hutchinson where 110 more homes lost power when limbs of various sizes fell onto power lines. Within Hutchinson City limits, many tree limbs of various sized fell onto power lines that severed power to around 450 homes while 40 more homes lost power 5 miles west of Hutchinson. One of the downed limbs was 8 inches in diameter. Late in the morning of the 29th, the Reno County Emergency Manager reported that a frozen valve caused a brief propane gas leak in Hutchinson. Property damage was recorded at \$5,000,000.

- **December 26, 2015: Butler County**

Late in the event, the light freezing rain and sleet changed to light snow with 2-4-inch accumulations resulting. There were reports of vehicles that slid off the turnpike across the county.

- **March 27, 2009: Regional**

A late season winter storm of record-breaking proportions struck central, south-central and southeast Kansas March 27-28, 2009. Heavy snow with blizzard conditions affected much of central and south-central Kansas, with accumulations exceeding 18 inches for some locations. Numerous buildings with mainly flat-topped roofs received various degrees of roof damage, some of which was rather extensive due to the weight of the heavy, wet snow. Many travelers became stranded due to the deep snow and blizzard conditions, some of which needed rescue by the National Guard. Meanwhile, sleet and freezing rain was the main culprit farther east across portions of south-central, east-central and southeast Kansas. Sleet accumulations up to 4 inches and ice accumulations up to three-quarters of an inch downed numerous trees, tree limbs, power poles and power lines, causing tens of thousands of power outages. The snow packed and icy roads aided in an uncountable number of auto accidents areawide. Two fatalities were attributed to the winter storm, with several injuries, most of which were due to auto accidents. Property damage was recorded at \$10,000,000.

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data, from 2015-2018, allows us to quantify the monetary and acreage impact of winter storms on the agricultural sector.

USDA Risk Management Agency Cause of Loss Indemnities, Winter Storms, 2015-2018

County	USDA Crop Loss	Acres Impacted	Number of Claims
Butler	\$87,230	1,513	12
Cowley	\$472,798	8,596	18
Harper	\$989,562	14,456	47
Harvey	\$317,924	7,079	17
Kingman	\$457,063	5,785	33
Marion	\$1,025,414	19,797	42





USDA Risk Management Agency Cause of Loss Indemnities, Winter Storms, 2015-2018

County	USDA Crop Loss	Acres Impacted	Number of Claims
McPherson	\$354,998	5,215	25
Reno	\$859,480	17,636	66
Rice	\$987,159	16,071	43
Sedgwick	\$114,076	1,508	17
Sumner	\$2,774,144	38,939	48

Source: USDA

4.22.3 – Hazard Probability Analysis

For probability purposes, each component of severe winter storms was examined and combined. The following table summarizes winter storm event data for **Kansas Region G**.

Kansas Region G Winter Storm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	26
Average Event Days per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Yearly Deaths and Injuries (2009-2018)	0
Total Reported NCEI Property Damage (2009-2018)	\$21,049,000
Average Property Damage per Year	\$2,104,900

Source: NCEI

Data from the NCEI indicates that Kansas Region G can expect on a yearly basis, relevant to winter storm events:

- Three events
- No deaths or injuries
- \$2,104,900 in property damages

The following table summarizes USDA Risk Management Agency winter storm event data for **Butler County**.

Butler County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	12
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	1,513
Average Number of Acres Damaged per Year	378
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$87,230
Average Crop Damage per Year	\$21,807

Source: USDA

According to the USDA Risk Management Agency, Butler County can expect on a yearly basis, relevant to winter storm occurrences:





- Three insurance claims
- 378 acres impacted
- \$21,807 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Cowley County**.

Cowley County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	18
Average Number of Claims per Year	5
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	8,596
Average Number of Acres Damaged per Year	2,149
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$472,798
Average Crop Damage per Year	\$118,200

Source: USDA

According to the USDA Risk Management Agency, Cowley County can expect on a yearly basis, relevant to winter storm occurrences:

- Five insurance claims
- 2,149 acres impacted
- \$118,200 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Harper County**.

Harper County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	47
Average Number of Claims per Year	12
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	14,456
Average Number of Acres Damaged per Year	3,614
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$989,562
Average Crop Damage per Year	\$247,391

Source: USDA

According to the USDA Risk Management Agency, Harper County can expect on a yearly basis, relevant to winter storm occurrences:

- Twelve insurance claims
- 3,614 acres impacted
- \$247,391 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Harvey County**.





Harvey County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	17
Average Number of Claims per Year	4
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	7,079
Average Number of Acres Damaged per Year	1,770
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$317,924
Average Crop Damage per Year	\$79,481

Source: USDA

According to the USDA Risk Management Agency, Harvey County can expect on a yearly basis, relevant to winter storm occurrences:

- Four insurance claims
- 1,770 acres impacted
- \$79,481 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Kingman County**.

Kingman County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	33
Average Number of Claims per Year	8
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	5,785
Average Number of Acres Damaged per Year	1,446
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$457,063
Average Crop Damage per Year	\$114,266

Source: USDA

According to the USDA Risk Management Agency, Kingman County can expect on a yearly basis, relevant to winter storm occurrences:

- Eight insurance claims
- 1,446 acres impacted
- \$114,266 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **McPherson County**.

McPherson County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	42
Average Number of Claims per Year	11
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	19,797
Average Number of Acres Damaged per Year	4,949
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$1,025,414





McPherson County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
Average Crop Damage per Year	\$256,354

Source: USDA

According to the USDA Risk Management Agency, McPherson County can expect on a yearly basis, relevant to winter storm occurrences:

- 11 insurance claims
- 4,949 acres impacted
- \$256,354 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Marion County**.

Marion County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	25
Average Number of Claims per Year	6
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	5,215
Average Number of Acres Damaged per Year	1,304
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$354,998
Average Crop Damage per Year	\$88,750

Source: USDA

According to the USDA Risk Management Agency, Marion County can expect on a yearly basis, relevant to winter storm occurrences:

- Six insurance claims
- 1,304 acres impacted
- \$88,750 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Reno County**.

Reno County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	66
Average Number of Claims per Year	17
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	17,636
Average Number of Acres Damaged per Year	4,409
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$859,480
Average Crop Damage per Year	\$214,870

Source: USDA

According to the USDA Risk Management Agency, Reno County can expect on a yearly basis, relevant to winter storm occurrences:





- 17 insurance claims
- 4,409 acres impacted
- \$214,870 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Rice County**.

Rice County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	43
Average Number of Claims per Year	11
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	16,071
Average Number of Acres Damaged per Year	4,018
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$987,159
Average Crop Damage per Year	\$246,790

Source: USDA

According to the USDA Risk Management Agency, Rice County can expect on a yearly basis, relevant to winter storm occurrences:

- 11 insurance claims
- 4,018 acres impacted
- \$245,790 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Sedgwick County**.

Sedgwick County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	17
Average Number of Claims per Year	4
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	1,508
Average Number of Acres Damaged per Year	377
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$114,076
Average Crop Damage per Year	\$28,519

Source: USDA

According to the USDA Risk Management Agency, Sedgwick County can expect on a yearly basis, relevant to winter storm occurrences:

- Four insurance claims
- 377 acres impacted
- \$28,519 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Sumner County**.





Sumner County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2015-2018)	48
Average Number of Claims per Year	12
USDA Farm Service Agency Number of Acres Damaged (2015-2018)	38,939
Average Number of Acres Damaged per Year	9,735
USDA Farm Service Agency Crop Damage Claims Amount (2015-2018)	\$2,774,144
Average Crop Damage per Year	\$693,536

Source: USDA

According to the USDA Risk Management Agency, Sumner County can expect on a yearly basis, relevant to winter storm occurrences:

- 12 insurance claims
- 9,735 acres impacted
- \$693,536 in insurance claims

In addition, Kansas Region G has had six Presidentially Declared Disasters relating to winter storms (and other concurrent events) in the last 20 years. This represents an average of less than one declared winter storm related disaster per year.

4.22.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to winter storm events. In general, counties with a higher or increasing population, and/or a high or increasing structural valuation are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential high wind event. It is worth highlighting the majority of Kansas Region G counties may have increased vulnerability to winter storm events due to a projected increase in the number of structures.

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region G county (in total, due to the regional nature of both storms and NCEI reporting) incurring damage over the period 2009 to 2018 from winter storm events. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.

Kansas Region G Structural Vulnerability Data for Winter Storms, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Regional Counties	\$88,516,493,000	\$21,049,000	0.02%

Source: NCEI and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential winter storm event. The following table indicates the total county population and registered growth over the period 2000 to 2017.





Kansas Region G Population Vulnerability Data for Winter Storms

County	2017 Population	Percent Population Change 2000 to 2017
Butler	66,878	12.4%
Cowley	35,361	-2.6%
Harper	5,590	-14.5%
Harvey	34,544	5.1%
Kingman	7,360	-15.1%
McPherson	28,708	-2.9%
Marion	11,986	-10.3%
Reno	62,510	-3.5%
Rice	9,660	-10.2%
Sedgwick	513,687	13.4%
Sumner	23,159	-10.7%

Source: US Census Bureau

In general counties with a high population and/or a growing population are at increased risk. As such, it is worth highlighting the majority of Kansas Region G counties may have decreased vulnerability to winter storm events due to decreasing populations.

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region G County. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of winter storms on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to winter storm events.

Winter Storm Acres Impacted and Crop Insurance Paid per County from 2015-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Butler	768,149	378	0.05%	\$282,338,000	\$21,807	0.01%
Cowley	574,614	2,149	0.37%	\$108,976,000	\$118,200	0.11%
Harper	506,006	3,614	0.71%	\$109,644,000	\$247,391	0.23%
Harvey	339,584	1,770	0.52%	\$161,716,000	\$79,481	0.05%
Kingman	542,010	1,446	0.27%	\$103,188,000	\$114,266	0.11%
McPherson	571,577	4,949	0.87%	\$208,482,000	\$256,354	0.12%
Marion	596,296	1,304	0.22%	\$151,478,000	\$88,750	0.06%
Reno	789,525	4,409	0.56%	\$267,318,000	\$214,870	0.08%
Rice	457,603	4,018	0.88%	\$258,181,000	\$246,790	0.10%
Sedgwick	486,723	377	0.08%	\$148,484,000	\$28,519	0.02%
Sumner	719,611	9,735	1.35%	\$168,713,000	\$693,536	0.41%

Source: USDA

4.22.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.





Winter Storm Consequence Analysis

Subject	Impacts of Winter Storm
Health and Safety of the Public	Severity and location dependent. Impacts on persons in the areas of snow and ice are expected to be severe if caught without proper shelter.
Health and Safety of Responders	Impacts will be predicated on the severity of the event. Damaged infrastructure will likely result in hazards such as downed utility lines, main breakages and debris on roadways. .
Continuity of Operations	Temporary relocation may be necessary if government facilities experience damage. Services may be limited to essential tasks if utilities are impacted.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location and structural capacity of the facility. Loss of structural integrity of buildings and infrastructure could occur. Utility lines, roads, residential and business properties will be affected.
Environment	Impact could be severe for the immediate impacted area, depending on the size of the event. Impact will lessen as distance increases from the immediate incident area
Economic Conditions	Impacts to the economy will be dependent severity of the event and the impact on structures and infrastructure. Impacts could be severe if roads/utilities are affected.
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. The timeliness warnings could be questioned.





4.23 – Civil Disorder

Civil disorder is a term that generally refers to a public disturbance by three or more people involving acts of violence that cause immediate danger, damage, or injury to others or their property. However, it is important to remember that gatherings in protest are recognized rights of any person or group, and this right is protected under the United States Constitution.

4.23.1 – Location and Extent

Historically civil disorder has been most commonly associated with urban areas and college campuses. And while the entire planning area may be affected by civil disorder, with its generally small population and low population density, the magnitude of such an event would likely be limited to the major cities within the region.

In general, civil unrest usually accompanies, or is started by, a gathering of people for an event. And while most events occur with no violence, violence can occur with little warning or cause. Unfortunately, large crowds can be subject to control by skillful troublemakers who are often able to incite behavior from members of the crowd that they usually would not consider. . In general, when a crowd begins to exhibit signs of disorder, it can be categorized in three categories:

- **Public disorder:** Public disorder is a basic breach of civic order. Individuals or small groups assembling have a tendency to disrupt the normal flow of things around them.
- **Public disturbance:** Public disturbance is designed to cause turmoil on top of the disruption. Individuals and groups assembling into a crowd begin chanting, yelling, singing, and voicing individual or collective opinions.
- **Riot:** A riot is a disturbance that turns violent. Assembled crowds become a mob that violently expresses itself by destroying property, assaulting others, and creating an extremely volatile environment.

While civil disorder is not an everyday occurrence in the planning area, when they do occur they are extremely disruptive and difficult to control. Should a civil disorder event occur in the planning area the result could be measured in loss of life, economic upheaval, and destruction of property.

4.23.2 – Previous Occurrences

There have been no documented cases of civil unrest or disorder in Kansas Region G during the past five years.

4.23.3 – Hazard Probability Analysis

By nature, acts of civil disorder are difficult to foresee. However, the probability of a major civil disorder event in Kansas Region G is considered very low due the lack of any recent documented historical events. Again, it is worth noting that no previous occurrences in no way guarantees no future occurrences.





4.23.4 Vulnerability Analysis

Due to the unknown location and nature of civil disorder, all participating jurisdictions with Kansas Region G are vulnerable. Additionally, and again related to the capricious nature of civil disorder, all buildings and citizens are vulnerable.

Economic impacts and human injury or death are the primary concern with civil disorder. Increases in population or the hosting of major political, economic or social events could increase the likelihood and severity of a civil disturbance.

In general, it is difficult to quantify potential losses of Civil Disorder due to the many variables and human elements and lack of historical precedence. Therefore, for the purposes of this plan, a **hypothetical scenario** is included for illustrative purposes only.

Event: City organizers set up a two-block long fan zone near the local community sports field for an important sporting event. The population density in the fan zone is 6,000 people, with at least five persons per 25 square feet.

Riot: The riot began to take shape as the game came to a close, with some spectators throwing bottles and other objects. Small fires were started and soon some rioters overturned a vehicle and set it alight. Fist fights broke out and in a nearby parking lot and two police cars were also set on fire. Riot police eventually managed to disperse the rioters and all fires were extinguished.

Results: The following table presents potential event results:

Hypothetical Riot Outcomes

Category	Result
Total Traumatic Injuries	250 persons
Total Urgent Care Injuries	1,000 persons
Injuries not Requiring Hospitalization	2,500 persons
Damage to Vehicles	Glass replacement cost for approximately 200 vehicles: \$ 8,000 Repair / repainting cost for approximately 200 vehicles: \$800,000
Damage to Buildings	Window replacement cost for approximately 50 buildings: \$80,000

Source: Kansas State Hazard Mitigation Plan

4.23.5 – Impact and Consequence Analysis

As per EMAP standards, the following table provides the consequence analysis for drought conditions.

Civil Disorder Consequence Analysis

Subject	Potential Impacts
Health and Safety of the Public	Impact could be severe for persons in the incident area.
Health and Safety of Responders	Impact to responders could be severe if not trained and properly equipped. Responders that are properly trained and equipped will have a low to moderate impact.





Civil Disorder Consequence Analysis

Subject	Potential Impacts
Continuity of Operations	Depending on damage to facilities/personnel in the incident area, re-location may be necessary and lines of succession execution (minimal to severe).
Property, Facilities, and Infrastructure	Impact within the incident area could be severe, depending on the extent of the event. (minimal to severe)
Environment	Localized impact within the incident area could be severe depending on the type of human caused incident.
Economic Conditions	Economic conditions could be adversely affected and dependent upon time and length of clean up and investigation (minimal to severe).
Public Confidence in the Jurisdiction's Governance	Impact will be dependent on whether or not the incident could have been avoided by government or non-government entities, clean-up and investigation times, and outcomes. (minimal to severe)





4.24 – Hazardous Materials

Hazardous materials (HazMat) 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.

4.24.1 – Location and Extent

In Kansas Region G, HazMat incidents are generally classified as:

- **Fixed Facility Incidents:** Commercial Facilities and Superfund Sites
- **Transportation Incidents:** Highway, Railway, Pipeline, Air, and Water

Fixed Facilities

When facilities have hazardous materials in quantities at or above the threshold planning quantity, they must submit Tier II information to appropriate federal and state agencies to facilitate emergency planning in accordance with the Community Right to Know Act. The forms are known as Tier II reports and the facilities included are referred to as Tier II facilities. According to data provided by KDEM, there are 3,424 Tier II Facilities housing hazardous chemicals in Kansas Region G. The following table details the number of Tier II facilities by county.

Kansas Region G Tier II Facilities by County

County	Tier II Facilities
Butler	351
Cowley	187
Harper	598
Harvey	72
Kingman	495
McPherson	255
Marion	155



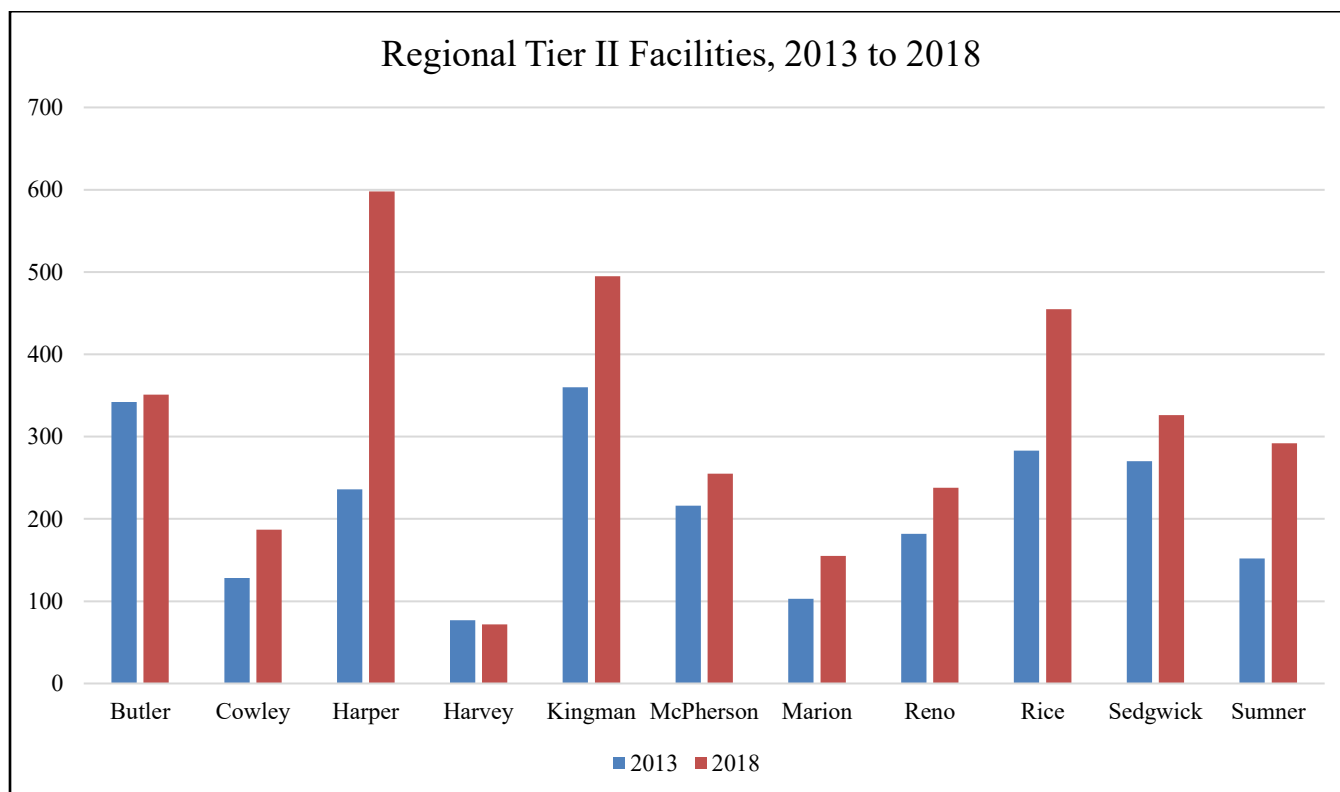


Kansas Region G Tier II Facilities by County

County	Tier II Facilities
Reno	238
Rice	455
Sedgwick	326
Sumner	292

Source: KDEM

As illustrated in the following graph, the number of Tier II facilities has increased for the region, primarily to due to an extensive outreach effort by KDHE to facilities that house hazardous chemicals



The National Priorities List (NPL) is a published list of hazardous waste sites in the country that are eligible for extensive, long-term cleanup under the Superfund program. A Superfund site is an uncontrolled or abandoned location where hazardous waste is located which may affect local ecosystems and/or people. The EPA has indicated that the following Superfund sites are located with Kansas Region G.

Kansas Region G NPL Facilities

Facility Name	Location	County
Pester Refinery Company site	Near El Dorado	Butler
Strother Field Industrial Park	Near Winfield & Arkansas City	Cowley
Obee Road (Hutchinson City Dump)	Obeeville	Reno
57th & North Broadway Street site	Wichita Heights	Sedgwick

Source: EPA





Transportation

The following table, from Kansas Department of Transportation (KDOT), presents total roadway mileage by county.

Kansas Region G Total Roadway Mileage by County

County	Interstates (Miles)
Butler	2,565
Cowley	1,874
Harper	1,422
Harvey	1,297
Kingman	1,487
McPherson	1,889
Marion	1,880
Reno	2,802
Rice	1,429
Sedgwick	4,441
Sumner	2,423

Source: KDOT

Kansas Region G is served by numerous railroad companies. Railroads are generally defined by three classes, predicated on revenue and size, with Class I (Freight) being the largest. Class I railroads are of the greatest concern due to the type of freight carried, with categories including There are three Class I railroads in Kansas Region G providing service with long-haul deliveries to national market areas and intermodal rail/truck service providers:

- Burlington Northern and Santa Fe Railway
- Kansas City Southern Railway
- Union Pacific Railroad

The following table, with information from KDOT, provides the total railroad track mileage of for each county within Kansas Region G.

Kansas Region G Total Class I Railroad Mileage by County

County	Interstates (Miles)
Butler	91
Cowley	89
Harper	41
Harvey	58
Kingman	90
McPherson	62
Marion	86
Reno	115
Rice	72
Sedgwick	133
Sumner	123

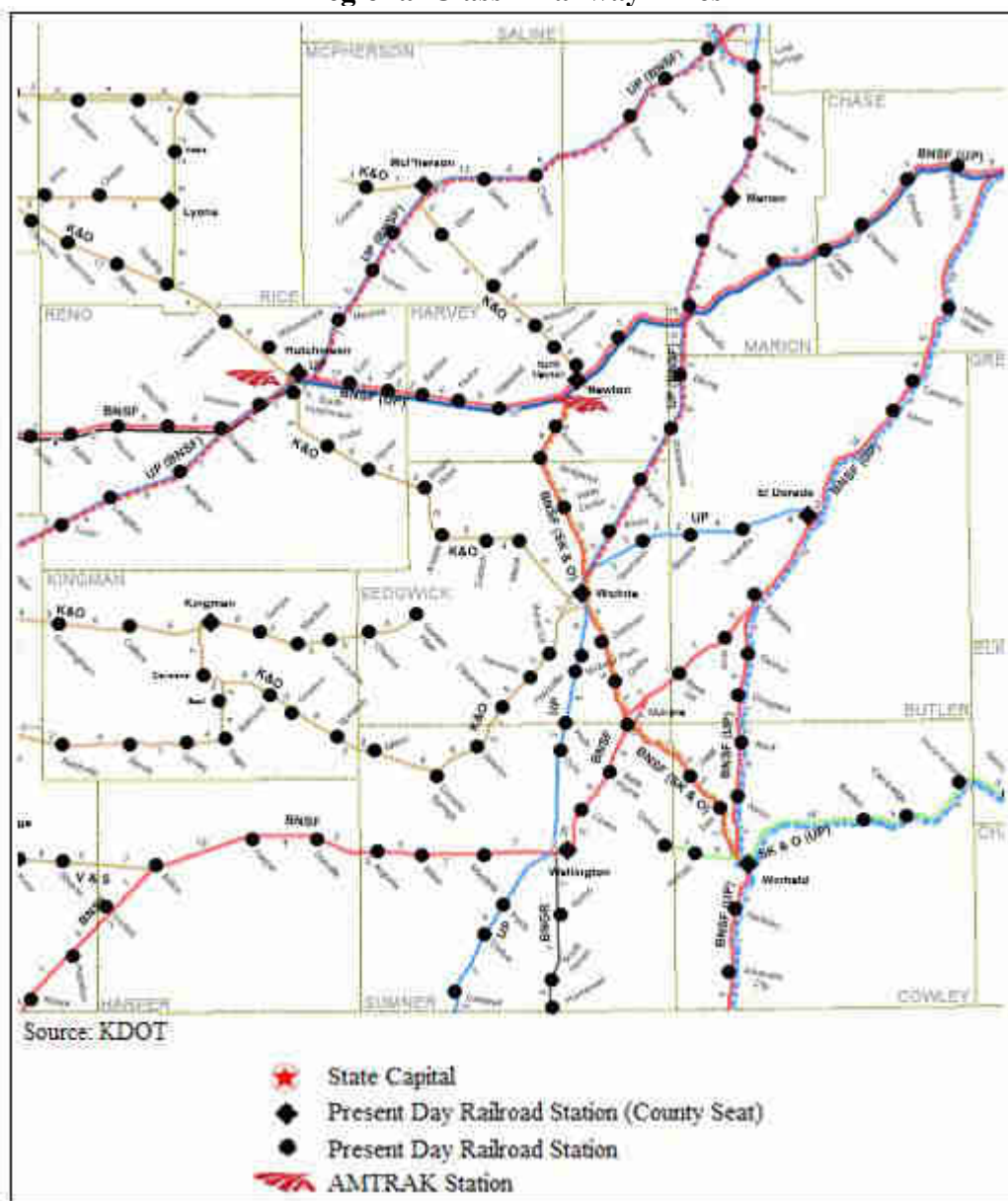
Source: KDOT





The following map, from KDOT, shows Class I track locations in Kansas Region G.

Regional Class I Railway Lines



Pipelines

The following data, provided by KDEM and the United States Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA), indicates the total number of gas and liquid pipeline mileage per county.





PHMSA Pipeline Mileage by County

County	Gas (miles)	Liquid (miles)
Butler	217	690
Cowley	168	377
Harper	58	222
Harvey	206	297
Kingman	212	320
McPherson	188	85
Marion	257	759
Reno	464	788
Rice	354	343
Sedgwick	303	384
Sumner	120	173

Source: KDEM and PHMSA

4.24.2 – Previous Occurrences

The following table, with data from KDEM, lists the number of hazardous materials incidents, injuries, fatalities and people evacuated from the public and facilities for each Kansas Region G county over the three-year period 2013-2015 (due to system changes, the most current data available).

Kansas Region G HazMat KDEM Reported Incidents, 2016-2018

Jurisdiction	Fixed Facilities	Motor Carriers	Pipelines	Rail	Totals
Butler	119	21	33	1	174
Cowley	1	2	4	1	8
Harper	1	1	1	0	3
Harvey	0	8	3	3	14
Kingman	1	2	9	0	12
McPherson	60	14	34	3	111
Marion	2	17	0	2	21
Reno	18	11	8	4	41
Rice	19	9	9	0	37
Sedgwick	28	28	3	1	60
Sumner	2	1	0	2	5

Source: KDEM

Hazardous Materials Regulations (49 CFR Parts 171-180) require certain types of HazMat incidents be reported, with data tracked by PHMSA’s Office of Hazardous Materials Safety (OHMS) by transportation category type (Air, Highway, Rail and Water). The OHMS Incident Report Database from 2010 to 2018 indicated 2,153 reported incidents within Kansas Region G for the period 2000 through 2018. The following charts detail the number of events per year per transportation category.





Kansas Region G OHMS HazMat Incidents, 2000-2018

Jurisdiction	Highway	Air	Rail	Damages	Injuries	Deaths
Butler County						
Andover	1	0	0	\$0	0	0
Augusta	1	0	0	\$0	0	0
El Dorado	3	0	0	\$281,500	2	0
Rose Hill	1	0	0	\$165,000	1	1
Cowley County						
Arkansas City	0	0	1	\$0	0	0
Harper County						
Anthony	1	0	0	\$0	0	0
Harvey County						
Burrton	1	0	0	\$0	0	0
Hesston	2	0	0	\$4,500	0	0
Newton	1	0	4	\$24,488	0	0
Kingman County						
Kingman	1	0	0	\$0	0	0
McPherson County						
Inman	1	0	0	\$59,600	0	0
McPherson	3	0	1	\$288,197	0	1
Marion County						
-	-	-	0	-	-	-
Reno County						
Hutchinson	3	0	1	\$1,056	0	0
Rice County						
-	-	-	0	-	-	-
Sedgwick County						
Bel Aire	16	0	0	\$0	0	0
Clearwater	1	0	0	\$16,250	0	0
Derby	2	0	0	\$9,000	0	0
Haysville	1	0	0	\$3,500	0	0
Mulvane	1	0	0	\$0	0	0
Park City	1	0	0	\$0	0	0
Wichita	374	22	4	\$428,600	1	0
Sumner County						
Belle Plaine	1	0	0	\$226,803	0	0
Wellington	2	0	1	\$71,545	0	1

Source: PHMSA OHMS

Data from PHMSA provides significant incident reports for the pipeline systems in Kansas Region G. Data from the period 2013 to 2017 indicate that there were ten pipeline incidents that no fatalities, no injuries and \$2,209,467 in damages. The following table details reported pipeline incident details for each county with a reported event.





Kansas Region G PHMSA Reported Pipeline Incidents by County, 2013 to 2017

County	Number of Incidents	Fatalities	Injuries	Total Damage	Gross Barrels Spilled
Butler	7	0	0	\$2,886,312	1,900
Cowley	4	0	0	\$443,958	5
Harper	4	0	0	\$569,007	68
Harvey	2	0	1	\$477,236	0
Kingman	7	0	0	\$1,037,925	303
McPherson	10	0	0	\$245,120	293
Marion	0	0	0	\$0	0
Reno	1	0	0	\$122,175	2
Rice	5	0	0	\$50,590	263
Sedgwick	4	0	0	\$153,318	7
Sumner	2	0	0	\$35,270	40

Source: PHMSA

The following are locally reported HazMat incidents.

- **August 2, 2011:** Multiple explosions occurred at Global Propane Energy in Rose Hill, Butler County. The blast injured 3 workers, one of which later died of his injuries and destroyed 4 houses and a commercial building. The explosion started when a worker was filling a propane cylinder and a coupling broke.

4.2.4.3 – Hazard Probability Analysis

HazMat incidents are not predictable. However, probabilities can be estimated using past occurrence data as a guide.

The following tables summarize occurrence data and probability for all related HazMat events for **Butler County** using data from KDEM and PHMSA.

Butler County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2016-2018)	174
Average Events per Year	58
Number of Reported Deaths (2000-2018)	0
Average Deaths per Year	0
Number of Reported Injuries (2000-2018)	3
Average Injuries per Year	<1

Source: KDEM and PHMSA

Data indicates that Butler County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- 58 events
- No deaths
- <1 injury





The following tables summarize occurrence data and probability for all related HazMat events for **Cowley County** using data from KDEM and PHMSA.

Cowley County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2016-2018)	8
Average Events per Year	3
Number of Reported Deaths (2000-2018)	0
Average Deaths per Year	0
Number of Reported Injuries (2000-2018)	0
Average Injuries per Year	0

Source: KDEM and PHMSA

Data indicates that Cowley County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- Three events
- No deaths
- No injuries

While NPL (Superfund) sites have been identified by the EPA as requiring cleanup, in general, the probability of an incident endangering the public from these sites is low due to active identification and remediation measures.

The following tables summarize occurrence data and probability for all related HazMat events for **Harper County** using data from KDEM and PHMSA.

Harper County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2016-2018)	8
Average Events per Year	3
Number of Reported Deaths (2000-2018)	0
Average Deaths per Year	0
Number of Reported Injuries (2000-2018)	0
Average Injuries per Year	0

Source: KDEM and PHMSA

Data indicates that Harper County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- Three events
- No deaths
- No injuries

The following tables summarize occurrence data and probability for all related HazMat events for **Harevy County** using data from KDEM and PHMSA.





Harvey County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2016-2018)	14
Average Events per Year	5
Number of Reported Deaths (2000-2018)	0
Average Deaths per Year	0
Number of Reported Injuries (2000-2018)	1
Average Injuries per Year	<1

Source: KDEM and PHMSA

Data indicates that Harvey County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- Five events
- No deaths
- <1 injury

The following tables summarize occurrence data and probability for all related HazMat events for **Kingman County** using data from KDEM and PHMSA.

Kingman County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2016-2018)	12
Average Events per Year	4
Number of Reported Deaths (2000-2018)	0
Average Deaths per Year	0
Number of Reported Injuries (2000-2018)	0
Average Injuries per Year	0

Source: KDEM and PHMSA

Data indicates that Kingman County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- Four events
- No deaths
- No injuries

The following tables summarize occurrence data and probability for all related HazMat events for **McPherson County** using data from KDEM and PHMSA.

McPherson County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2016-2018)	111
Average Events per Year	37
Number of Reported Deaths (2000-2018)	0
Average Deaths per Year	0
Number of Reported Injuries (2000-2018)	0





McPherson County HazMat Incident Probability Summary

Data	Recorded Impact
Average Injuries per Year	0

Source: KDEM and PHMSA

Data indicates that McPherson County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- 37 events
- No deaths
- No injuries

The following tables summarize occurrence data and probability for all related HazMat events for **Marion County** using data from KDEM and PHMSA.

Marion County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2016-2018)	21
Average Events per Year	7
Number of Reported Deaths (2000-2018)	0
Average Deaths per Year	0
Number of Reported Injuries (2000-2018)	0
Average Injuries per Year	0

Source: KDEM and PHMSA

Data indicates that Marion County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- 21 events
- No deaths
- No injuries

The following tables summarize occurrence data and probability for all related HazMat events for **Reno County** using data from KDEM and PHMSA.

Reno County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2016-2018)	41
Average Events per Year	14
Number of Reported Deaths (2000-2018)	0
Average Deaths per Year	0
Number of Reported Injuries (2000-2018)	0
Average Injuries per Year	0

Source: KDEM and PHMSA

Data indicates that Reno County can expect on a yearly basis, relevant to fixed facility related HazMat events:





- 14 events
- No deaths
- No injuries

The following tables summarize occurrence data and probability for all related HazMat events for **Rice County** using data from KDEM and PHMSA.

Rice County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2016-2018)	37
Average Events per Year	12
Number of Reported Deaths (2000-2018)	0
Average Deaths per Year	0
Number of Reported Injuries (2000-2018)	0
Average Injuries per Year	0

Source: KDEM and PHMSA

Data indicates that Rice County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- 12 events
- No deaths
- No injuries

The following tables summarize occurrence data and probability for all related HazMat events for **Sedgwick County** using data from KDEM and PHMSA.

Sedgwick County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2016-2018)	60
Average Events per Year	20
Number of Reported Deaths (2000-2018)	0
Average Deaths per Year	0
Number of Reported Injuries (2000-2018)	1
Average Injuries per Year	<1

Source: KDEM and PHMSA

Data indicates that Sedgwick County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- 20 events
- No deaths
- <1 injury

The following tables summarize occurrence data and probability for all related HazMat events for **Sumner County** using data from KDEM and PHMSA.





Sumner County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2016-2018)	5
Average Events per Year	2
Number of Reported Deaths (2000-2018)	0
Average Deaths per Year	0
Number of Reported Injuries (2000-2018)	0
Average Injuries per Year	0

Source: KDEM and PHMSA

Data indicates that Sumner County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- Two events
- No deaths
- No injuries

While NPL (Superfund) sites have been identified by the EPA as requiring cleanup, in general, the probability of an incident endangering the public from these sites is low due to active identification and remediation measures.

4.24.4 – Vulnerability Analysis

Special populations are particularly vulnerable to the impacts of a hazardous materials incident because of the potential difficulties involved in the evacuation. The following table details the number of special population facilities in each Kansas Region G county located within ½ mile of a chemical facility. The locations of colleges, educational and correctional institution facilities is from the Kansas Data Access & Support Center, health facilities data is from HAZUS, aging facilities is from KDEM and child care facilities is from KDHE.

Kansas Region G Special Population Facilities Within 0.5 Miles of a Chemical Facility

County	Health Facilities	Colleges	Educational Facilities	Aging Facilities	Child Care	Correctional Institutions
Butler	1	1	29	3	61	2
Cowley	0	1	11	2	42	2
Harper	4	0	5	2	23	1
Harvey	1	1	10	4	38	1
Kingman	0	0	7	1	18	1
McPherson	2	2	17	8	53	2
Marion	1	0	8	3	39	1
Reno	2	0	20	7	58	2
Rice	1	0	13	2	28	1
Sedgwick	7	12	68	25	342	6
Sumner	1	0	16	11	55	1

Source: KDEM





Counties with a higher identified population are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential HazMat event. The following table indicates the total county population and registered growth over the period 2000 to 2017.

Kansas Region G Population Vulnerability Data for HazMat

County	2017 Population	Percent Population Change 2000 to 2017
Butler	66,878	12.4%
Cowley	35,361	-2.6%
Harper	5,590	-14.5%
Harvey	34,544	5.1%
Kingman	7,360	-15.1%
McPherson	28,708	-2.9%
Marion	11,986	-10.3%
Reno	62,510	-3.5%
Rice	9,660	-10.2%
Sedgwick	513,687	13.4%
Sumner	23,159	-10.7%

Source: US Census Bureau

In general counties with a high population and/or a growing population are at increased risk. As such, it is worth highlighting the majority of Kansas Region G counties may have decreased vulnerability to HazMat events due to decreasing populations.

4.24.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

HazMat Incident Consequence Analysis

Subject	Impacts of Hazardous Materials Incident
Health and Safety of Persons in the Area of the Incident	Impact in the immediate area could be severe and long lasting.
Responders	Impact to responders is expected to be moderate to severe, potentially even with required safety equipment.
Continuity of Operations	Long term relocation may be necessary if government facilities experience contamination or damage.
Property, Facilities, and Infrastructure	Localized impact could be severe in the incident area. Facilities may need to be abandoned and razed. Large areas may become inaccessible.
Environment	Impact could be severe for the immediate area. Impact will lessen with distance. The proximity of open bodies of water could compound the impact.
Economic Conditions	Local economy and finances may be adversely affected, depending on the nature, extent and duration of the event.
Public Confidence in Governance	Response and recovery will be in question if not timely and effective. Warning systems and the timeliness of those warnings could be questioned.





4.25 – Major Disease

For this plan, major disease is classified as infectious diseases caused by microscopic agents, including viruses, bacteria, parasites, and fungi or by their toxins, that may impact humans. They may be spread by direct contact with an infected person or animal, ingesting contaminated food or water, vectors such as mosquitoes or ticks, contact with contaminated surroundings such as animal droppings, infected droplets, or by aerosolization.

4.25.1 – Location and Extent

Human transmissible disease and infectious diseases are illnesses caused by microscopic agents, including viruses, bacteria, parasites, and fungi or by their toxins. They may be spread by direct contact with an infected person or animal, ingesting contaminated food or water, vectors such as mosquitoes or ticks, contact with contaminated surroundings such as animal droppings, infected droplets, or by aerosolization.

The entire planning area is susceptible to a transmissible disease outbreak. However, more densely populated areas may be more susceptible.

4.25.2 – Previous Occurrences

The KDHE was contacted concerning the epidemiological tracking of contagious and/or human transmissible diseases. Data was solicited concerning the following diseases of concern:

- Haemophilus Influenzae Invasive Disease
- Measles (Rubeola)
- Meningococcal Infections
- Mumps
- Pertussis
- Streptococcus pneumoniae, Invasive
- West Nile Virus
- Zika Virus

A review of available data indicates there have been no unusual or concerning spikes in these diseases. Additionally, no new novel pathogens of concern have been tracked or reported.

4.25.3 – Hazard Probability Analysis

Each year the Centers for Disease Control (CDC) produces a report detailing the legally reportable diseases in the United States. While over time this report can serve as a predictor of the likelihood of future disease, it is impossible to predict outbreaks. Data from the CDC report does not indicate any areas of concern for Kansas Region G. Based on the relatively limited/controlled outbreak history in Kansas Region G, the possibility of a large-scale major disease outbreak to be limited.





4.25.4 – Vulnerability Analysis

For purposes of this assessment, no facilities or agricultural commodities are considered vulnerable to the major disease hazard.

Due to the person to person transmission of many diseases of concern counties with a higher identified population are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential major disease event. The following table indicates the total county population and registered growth over the period 2000 to 2017.

Kansas Region G Population Vulnerability Data for Major Disease

County	2017 Population	Percent Population Change 2000 to 2017
Butler	66,878	12.4%
Cowley	35,361	-2.6%
Harper	5,590	-14.5%
Harvey	34,544	5.1%
Kingman	7,360	-15.1%
McPherson	28,708	-2.9%
Marion	11,986	-10.3%
Reno	62,510	-3.5%
Rice	9,660	-10.2%
Sedgwick	513,687	13.4%
Sumner	23,159	-10.7%

Source: US Census Bureau

Additionally, there is an increased likelihood of mortality for very young and very old populations due to transmissible disease. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential major disease event. The following table indicates the percentage of the total county population that may be considered especially vulnerable to a major disease.

Kansas Region G Vulnerable Population Vulnerability Data for Major Disease

County	Percentage of Population 5 and Under (2017)	Percentage of Population 65+ (2017)
Butler	6.1%	14.7%
Cowley	6.3%	17.8%
Harper	6.9%	22.1%
Harvey	6.3%	19.0%
Kingman	5.5%	21.9%
McPherson	5.9%	19.2%
Marion	4.9%	22.8%
Reno	5.5%	19.4%
Rice	6.4%	18.5%
Sedgwick	7.1%	14.0%
Sumner	6.2%	18.1%

Source: US Census Bureau





Of note for Kanas Region G and its participating jurisdictions concerning a major disease outbreak:

- Regionally, 6.1% of the total population is under the age of 5
- There is a high percentage of adults over the age of 65 in all participating counties, approximately 18.9% of the total population
- Regionally, 9.6% of persons under the age of 65 have an identified disability

4.25.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Major Disease Consequence Analysis

Subject	Impacts of Major Disease Outbreak
Health and Safety of Persons in the Area of the Incident	Impact over a widespread area could be severe depending on type of outbreak and whether it is a communicable disease. Casualties are dependent on warning systems, warning times and the availability of vaccines, antidotes, and medical svc.
Responders	Impact to responders could be severe, especially if they reside in the area and or their type of exposure during response. With proper precautions and safety nets in place the impact is lessened.
Continuity of Operations	Continuity of Operations will be greatly dependent on availability of healthy individuals. COOP is not expected to be exercised.
Property, Facilities, and Infrastructure	Access to facilities and infrastructure could be affected until decontamination is completed
Environment	Impact could be severe for the immediate impacted area depending on the source of the outbreak. Impact could have far-reaching implications if disease is transferable between humans and animals or to wildlife.
Economic Conditions	Impacts to the economy could be severe if the disease is communicable. Loss of tourism, revenue, and business as usual will greatly affect the local economy and the state as a whole.
Public Confidence in Governance	Response and recovery will be in question if not timely and effective. Availability of medical supplies, vaccines, and treatments will come into question.





4.26 – Radiological Incident

For purposes of this plan, a radiological incident is considered an accident involving a release of radioactive materials from a nuclear reactor. Radiological accidents could cause injury or death, contaminate property and valuable environmental resources, as well as disrupt the functioning of communities and their economies. Since 1980, each utility that owns a commercial nuclear power plant in the United States has been required to have both an onsite and offsite emergency response plan as a condition of obtaining and maintaining a license to operate that plant. Onsite emergency response plans are approved by the U.S. Nuclear Regulatory Commission (NRC).



4.26.1 – Location and Extent

The only active commercial nuclear reactor within the State of Kansas is the Wolf Creek Nuclear Power Plant (Wolf Creek) in Coffey County. The following information, from the NRC, pertains to Wolf Creek:

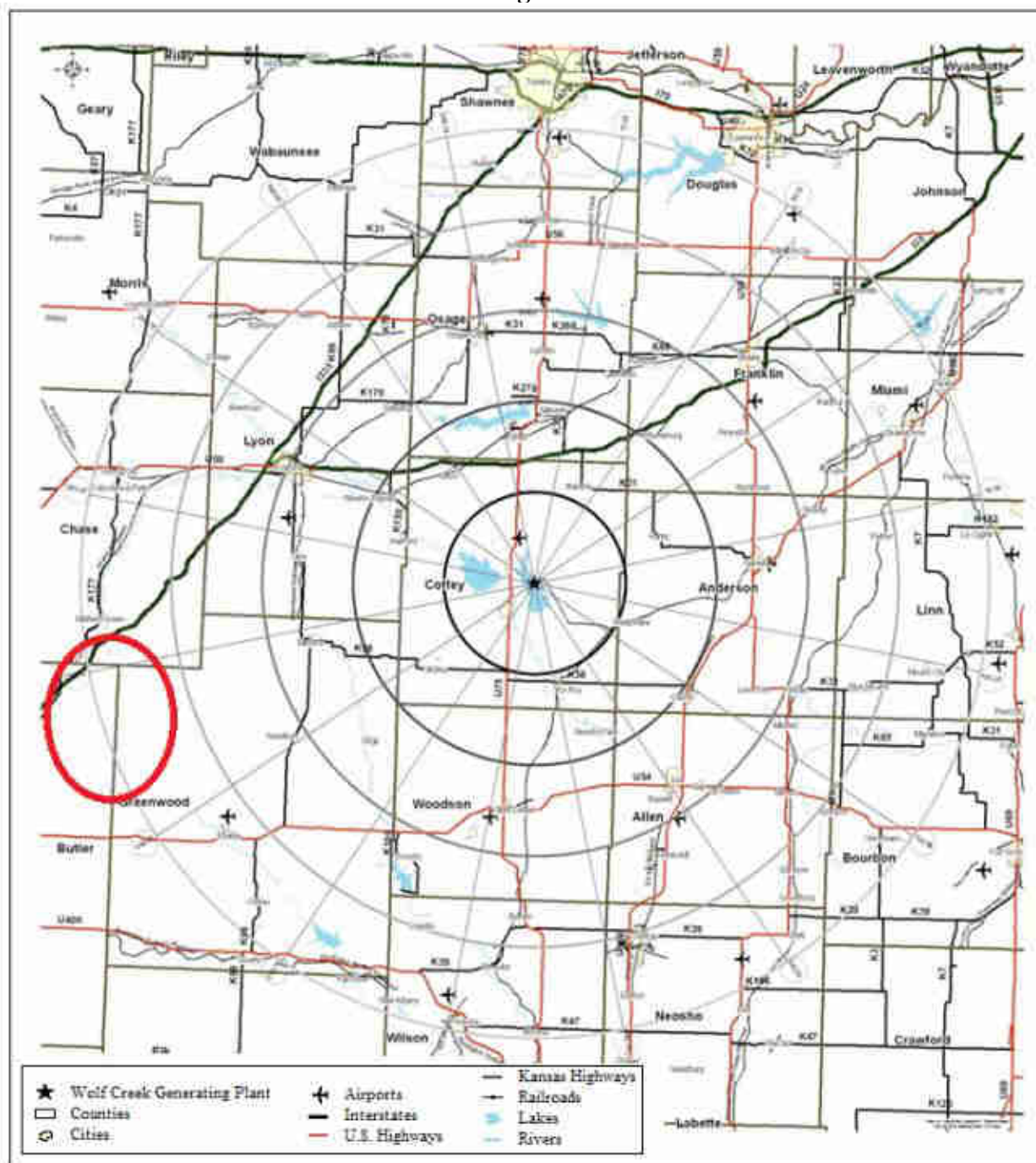
- **Location:** Burlington, KS (3.5 miles NE of Burlington, KS)
- **Operator:** Wolf Creek Nuclear Operating Corp.
- **Operating License:** Issued - 06/04/1985
- **Renewed License:** Issued - 11/20/2008
- **License Expires** - 03/11/2045
- **Reactor Type:** Pressurized Water Reactor
- **Licensed MWt:** 3,565
- **Reactor Vendor/Type:** Westinghouse Four-Loop
- **Containment Type:** Dry, Ambient Pressure

The following map, from KDEM, illustrates both the 10-mile 50-mile emergency planning zones (EPZs) for Wolf Creek.





Wolf Creek Generating Plant Exclusion Zones



Because Region G is not located in the 10-mile EPZ, and only a small portion of the southwest corner of Butler County is within the in the 50-mile EPZ a nuclear incident from Wolf Creek is not considered a hazard.





4.26.2 – Previous Occurrences

There have been no previous major radiological events recorded in Kansas Region G.

4.26.3 – Hazard Probability Analysis

Historically there have been no nuclear failure and/or release events in Kansas Region G, or at Wolf Creek. The firm regulations imposed by the NRC on Wolf Creek work to ensure its safe operation. The amount of radioactivity released by a nuclear power plant is monitored continuously to be sure it does not go above allowed levels. The same sophisticated monitoring equipment provides exact information about any accidental release. The risk to the public from radioactivity released from nuclear power plants is smaller than the amount, and associated risk, we receive naturally on a daily basis.

4.26.4 – Vulnerability Assessment

Assuming the vulnerability to both structures and populations is not possible due to the tremendous number of variables involved in a potential nuclear release event. However, due to the relative distance of Kansas Region G from Wolf Creek, and the strict oversight provided by the NRC, the potential vulnerability to Kansas Region G is considered to be very low.

4.26.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Radiological Incident Consequence Analysis

Subject	Impacts of Nuclear Incident
Health and Safety of Persons in the Area of the Incident	Impact in the immediate area could be severe and long lasting.
Responders	Impact to responders is expected to be severe, potentially even with required safety equipment.
Continuity of Operations	Long term relocation may be necessary if government facilities experience contamination.
Property, Facilities, and Infrastructure	Localized impact could be severe in the incident area. Facilities may need to be abandoned and razed. Large areas may become inaccessible.
Environment	Impact could be severe for the immediate area. Impact will lessen with distance.
Economic Conditions	Local economy and finances may be adversely affected, depending on the nature, extent and duration of the event.
Public Confidence in Governance	Response and recovery will be in question if not timely and effective. Warning systems and the timeliness of those warnings could be questioned.





4.27 – Terrorism

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."

4.27.1 – Location and Extent

Kansas is home to a wide variety of criminal extremist groups. The Southern Poverty Law Center reported that in 2018 there were three active hate groups in Kansas: one neo-Nazi group, the National Socialist Movement in Lansing, one racist skinhead group, the Midland Hammerskins in Wichita, and one anti-homosexual group, the Westboro Baptist Church in Topeka. Other groups, such as the Animal Liberation Front, Earth Liberation Front, and People for the Ethical Treatment of Animals may have sympathizers in the region. Although no major terrorist acts have been attributed to any of these latter groups, their involvement in violent acts is meant to disrupt governmental functions and cannot be discounted.

4.27.2 – Previous Occurrences

Kansas Region G has been fortunate to escape a major terrorist incident.

4.27.3 – Hazard Probability Analysis

By nature, acts of terrorism are difficult to foresee. However, the probability of a major terrorist event in Kansas Region G is considered very low due the lack of any documented historical events. Again, it is worth noting that no previous occurrences in no way guarantees no future occurrences.

4.27.4 – Vulnerability Analysis

For purposes of this assessment, data is not available to quantify vulnerability or estimated losses as a result of terrorism incidents that might impact state-owned facilities.

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 event venues have a greater risk.

In general, it is difficult to quantify potential losses of terrorism due to the many variables and human elements and lack of historical precedence. Therefore, for the purposes of this plan, the loss estimates will take into account three hypothetical scenarios. The estimated impact of each event was calculated using the Electronic Mass Casualty Assessment and Planning Scenarios developed by Johns Hopkins University.

Please note that the hypothetical scenarios are included for illustrative purposes only.





Scenario #1: Mustard Gas Release

Event: Mustard gas is released from a light aircraft onto the stadium during a home football game. The agent directly contaminates the stadium and the immediate surrounding area. This attack would cause harm to humans and could render portions of the stadium unusable for a short time period in order to allow for a costly clean-up. There might also be a fear by the public of long-term contamination of the stadium and subsequent boycott of games resulting in a loss of revenue and tourism dollars.

Event Assumptions: For this scenario the number of people in the stadium is 50,000 with an additional 5,000 persons remain outside the stadium in the adjacent parking areas. The agent used, mustard gas, is extremely toxic and may damage eyes, skin and respiratory tract with death sometimes resulting from secondary respiratory infections. Death rate from exposure estimated to be 3%. The estimated decontamination cost is \$12 person. For this scenario it is assumed that all persons with skin injuries will require decontamination.

Results: The following table presents the estimated human and economic impacts of the scenario.

Estimated Impact of Scenario #1, Mustard Gas Release

Impact	Post Exposure Onset Time	Effect
Severe Eye Injuries (1-2 hours)	1 -2 Hours	41,250 persons
Severe Airway Injuries (1-2 hours)	1 - 2 Hours	41,250 persons
Severe Skin Injuries (2 hours to days)	2 Hours to Days	49,500 persons
Deaths	Immediate to Days	1,100 persons
Cost of Decontamination	N/A	\$594,000

Source: Electronic Mass Casualty Assessment and Planning Scenarios by Johns Hopkins University

Scenario #2: Pneumonic Plague

Event: Four Canisters containing aerosolized pneumonic plague bacteria are opened in public bathrooms of heavily populated buildings (airports, stadiums, etc.). Each release location will directly infect 110 people; hence, the number of release locations dictates the initial infected population. The secondary infection rate is used to calculate the total infected population. This attack method would not cause damages to buildings or other infrastructure, only to human populations.

Event Assumptions: Each canister contains 650 milliliters of pneumonic plague bacteria. The type of infectious agent used is identified on Day 4. After identification, the fatality rate is 10% for new cases. Pneumonic plague has a 1-15 percent mortality rate in treated cases and a 40-60 percent mortality rate in untreated cases.

Results: The following table presents the estimated human impacts of the scenario.





Estimated Impact of Scenario #2, Pneumonic Plague Release

Impact	Effect
Initial Infected Population	440 persons
Secondary Infected Population	883 persons
Deaths (7% of Infected)	62

Source: Electronic Mass Casualty Assessment and Planning Scenarios by Johns Hopkins University

Scenario #3: Improvised Explosive Device

Event: An improvised explosive device utilizing an ammonium nitrate/fuel oil mixture is carried in a panel van to a parking area during a time when stadium patrons are leaving their cars and entering the stadium and detonated. 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 1 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 according to the Bureau of Alcohol, Tobacco, Firearms and Explosives Standards. The Falling Glass Hazard distance is estimated at 600 feet according to Bureau of Alcohol, Tobacco, Firearms and Explosives Explosive Standards. In this event, damage would occur to vehicles, and depending on the proximity of other structures, damages 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.

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

4.27.5 – Impact and Consequence Analysis

There is no consensus on estimates of potential fatalities and injuries for terrorism events. Injury and death tolls would be dependent on the type, size and weapon used. Areas with higher population densities would likely result in a greater number of casualties.

As per EMAP requirements, the following table provides the Consequence Analysis.





Terrorism Consequence Analysis

Subject	Impacts of Terrorism
Health and Safety of Persons in the Area of the Incident	Impact could be severe for persons in the incident area.
Responders	Impact to responders could be severe if not trained and properly equipped. Responders that are properly trained and equipped will have a low to moderate impact.
Continuity of Operations	Depending on damage to facilities/personnel in the incident area, relocation may be necessary and lines of succession execution.
Property, Facilities, and Infrastructure	Impact within the incident area could be severe for explosion, moderate to low for Hazmat.
Environment	Localized impact within the incident area could be severe depending on the type of incident.
Economic Conditions	Economic conditions could be adversely affected and dependent upon time and length of clean up and investigation.
Public Confidence in Governance	Impact dependent on if the incident could have been avoided by government entities, clean-up, investigation times and outcomes.





4.28 – Utility/Infrastructure Failure

Critical infrastructure involves several different types of facilities and systems including:

- Electric power
- Transportation routes
- Natural gas and oil pipelines
- Water and sewer systems, storage networks
- Internet/telecommunications systems



Failure of utilities or infrastructure components in south-southwest Kansas can seriously impact public health, functioning of communities and the region's economy. Disruptions to utilities can occur from many of the hazards detailed in this plan, but the most likely causes include:

- Floods
- Lightning
- Tornadoes and Windstorms
- Winter Storms

In addition to being impacted by another listed hazard, utilities and infrastructure can fail as a result of faulty equipment, lack of maintenance, degradation over time, or accidental damage.

4.28.1 – Location and Extent

All of Kansas Region G is at risk for utility and/or infrastructure failure. The following sections discuss the major utilities in further detail.

Electric Power

The most common hazards analyzed in this plan that may disrupt the power supply are flood, lightning, tornado, windstorm, and winter weather. In addition, extreme heat can disrupt power supply when air conditioning use spikes during heat waves resulting in brownouts or rolling blackouts.

In general, electricity in Kansas Region G 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.





Transportation Routes

Transportation routes can also be impacted by many of the hazards discussed in this plan. The primary hazards that impact transportation are flood, hazardous materials, and winter weather. Flood events can make roads and bridges impassible due to high water. Flood waters can also erode or scour road beds and bridge abutments. Highway and railroad accidents that involve hazardous materials can impact transportation routes through closures and/or evacuations. Winter weather frequently impacts transportation as roads become treacherous or impassible due to ice and snow. Other hazards that impact transportation routes include dam and levee failures if routes are in inundation areas, extreme temperatures that can cause damage to pavement, land subsidence that can damage roads/railroads, landslides that can cause debris and rock falls onto roadways, terrorism that can target routes, tornados that can directly damage infrastructure or deposit debris in routes, wildfires that can cause decreased visibility on transportation routes due to smoke, and windstorms that can cause vehicle accidents or overturning.

Pipelines Systems

Hazards that can impact natural gas and oil pipelines include earthquakes, expansive soils, land subsidence, landslide, and terrorism

Water and Sewer Systems

The primary hazards that can impact water supply systems include drought, floods, hazardous materials, and terrorism. Water district boundary maps are available for review at <https://krwa.net/ONLINE-RESOURCES/RWD-Maps>.

Internet and Telecommunications

Internet and telecommunications infrastructure can be impacted by floods, lightning, tornados, windstorms, and winter weather. Land line phone lines often utilize the same poles as electric lines, so when weather events such as windstorm or winter weather cause lines to break both electricity and telephone services may experience outages. With the increasing utilization of cellular phones, hazard events such as tornado that can damage cellular repeaters can cause outages. In addition, during any hazard event, internet and telecommunications systems can become overwhelmed due to the surge in call and usage volume. A map indicating telephone service providers in Kansas Region G is available at www.kcc.state.ks.us/maps/ks_telephone_certified_areas.pdf.

4.28.3 – Hazard Probability Analysis

Minor utility failures occur annually across the region, with larger failures usually tied to other disaster events such as tornados, winter storms and windstorms. As discussed throughout this plan, these concurrent events occur regularly. As such, it is expected that occasional, and largely concurrent utility failure events will occur.





4.28.4 – Vulnerability Assessment

Regionally, smaller utility suppliers generally have limited resources for mitigation. Thus, the large number of small utility service providers could mean greater vulnerability in the event of a major, widespread disaster, such as a major flood, severe winter storm or ice storm.

In recent years, regional electric power grid system failures in the western and east-central United States have demonstrated that similar failures could happen in Kansas Region G. This vulnerability is most appropriately addressed on a multi-state regional or national basis.

Since utility/infrastructure failure is generally a secondary or cascading impact of other hazards, it is not possible to quantify estimated potential losses specific to this hazard due to the variables associated with affected population, duration of outages, etc..

Although the limitless variables make it difficult to estimate future losses on a statewide basis, FEMA has developed standard loss of use estimates in conjunction with their Benefit-Cost Analysis methodologies to estimate the cost of lost utilities on a per-person, per-use basis.

FEMA Benefit-Cost Analysis

Loss of Electric Power	Cost of Complete Loss of Service
Total Economic Impact	\$126 per person per day
Loss of Potable Water Service	Cost of Complete Loss of Service
Total Economic Impact	\$93 per person per day
Loss of Wastewater Service	Cost of Complete Loss of Service
Total Economic Impact	\$41 per person per day
Loss of Road/Bridge Service	Cost of Complete Loss of Service
Vehicle Delay Detour Time	\$38.15 per vehicle per hour
Vehicle Delay Mileage	\$0.55 per mile (or current federal mileage rate)

Source: FEMA BCA Reference Guide, June 2009, Appendix C

4.28.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Utility/Infrastructure Failure Consequence Analysis

Subject	Impacts of Utility/Infrastructure Failure
Health and Safety of Persons in the Area of the Incident	Localized impact will be moderate to severe for persons with functional and access needs, and the elderly, depending on length of failure and time of year.
Responders	Impact to responders will be minimal if properly trained and equipped.
Continuity of Operations	Due to the nature of the hazard, the COOP plan is not expected to be activated, however, if the recovery time is excessive than temporary relocation may become necessary (minimal).
Property, Facilities, and Infrastructure	Impact is dependent on the nature of the incident, e.g., electric, water, sewage, gas, communication disruptions). (Minimal)
Environment	Impact, depending on the nature of the incident, should be minimal.





Utility/Infrastructure Failure Consequence Analysis

Subject	Impacts of Utility/Infrastructure Failure
Economic Conditions	Economic conditions could be adversely affected depending on damages suffered, extent of damages, etc. (minimal)
Public Confidence in Governance	Impact will be dependent on whether or not the government or non-government entities response, recovery, and planning were not timely and effective (minimal).





4.29 – Future Development

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

For hazards that affect the entire planning area, population and housing growth increase a jurisdiction's potential vulnerability, while decreases in population and housing tend to decrease potential vulnerability. It is difficult to quantify the exact change in vulnerability in either direction, but it can be depicted as generally directly proportional to the population and housing change itself. As such, and for the sake of having a comparison, this plan considers any jurisdiction with a positive growth rate to have increased vulnerability, while any with a decreasing growth rate have a decreased vulnerability.

For those counties experiencing population growth, the potential impacts of some hazards could increase the risk of death or injury to their populations. And while increasing populations will likely be a greater risk to natural disasters due to increased exposure, they will also increase the risk of manmade hazards. Additionally, and of concern, is increasing population density in urban areas potentially resulting in a sizeable increase in population exposure to specific hazards such as flooding, dam or levee failure, tornados, disease outbreak, terrorism and civil disorder.

Increased building stock results in increase exposure to both natural and man-made hazards. Of importance is the location and building and design specifications of these new structures. Solid zoning and construction ordinances will assist in ensuring these structures remain resilient to disaster and help protect the population from harm. Increasing building density in urban areas could potentially result in a sizeable increase in exposure to specific hazards such as flooding, dam or levee failure, and tornados.

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

Of specific future development note, and related to the hazards previously addressed:

- Continued agricultural gains within Kansas Region G will likely increase both the potential and impact of an **Agriculture Infestation** event.
- In many parts of the region the potential for development near **Dams and Levees** is not limited by any ordinance or regulation, except for building code requirements or the requirement for flood insurance near levee protected areas. Many of the most populated areas of Kansas Region G are experiencing rates of population and building growth, some of which is occurring vulnerable areas.
- In the sector most impacted by **Drought**, agriculture, Kansas Region G has seen increases in both the acreage farmed and the market value of products from farmed acreage. These increases will likely increase the potential impact of drought conditions on the region.
- While all of Kansas Region G has been identified as being susceptible to damage from **Earthquakes**, it is not in a high hazard area for a severe, catastrophic earthquake event. However, the continued increase in regional population and building density the potential risk to this hazard





continues to increase. Future protection could be provided by the adoption of seismic design standards for any new development, particularly for critical and essential facilities to minimize any tremor or shaking impact.

- Any increase in development with Kansas Region G could potentially increase the exposure to and/or effects of **Expansive Soil**. Future protection could be provided by the adoption of engineering design requirements and the institution/application of building codes.
- Climate change models indicate that Kansas Region G can expected higher temperatures. Increases in development and population growth in the planning area would put increased demand on utility systems, potentially resulting in system failures, and likely increase both the impact of **Extreme Temperatures**. Additionally, any increases in agricultural activity would increase the potential impact of this hazard, however data indicates that agricultural activity is declining within the region.
- Kansas Region G is seeing an increase in building growth, potentially increasing future risk and impact to **Floods**. Floodplain management practices must continue to be a priority to ensure that development is not occurring in areas at risk to flooding. Many counties in Region G participate in the NFIP, so any development in the floodplain should be built according to corresponding floodplain management ordinances. Additionally, the jurisdictions that participate in the NFIP and the Community Rating System periodically review their floodplain management programs to minimize the impact of flooding on future growth.
- Kansas Region G is seeing an increase in building growth, which could increase the impact of future **Hailstorm** events. Additionally, increases in agricultural activity may increase the potential impact of this hazard.
- Increased development with Kansas Region G could potentially increase the exposure to and/or effects of **Land Subsidence**. Future protection could be provided by the adoption of engineering design requirements and the institution/application of building codes.
- Increase development in areas that have been identified with a **Landslide** risk tend will increase the potential impact of this hazard.
- New development anywhere in Kansas Region G will be susceptible to **Lightning** impacts. Regional population centers, which are experiencing growth, would also be more susceptible to this hazard. As these centers increase, they, in general, have increased population densities. These increased densities may result in an increased number of injuries and deaths as smaller lightning strikes could have a magnified impact.
- Any increases in agricultural activity would increase the potential impact of **Soil Erosion and Dust**. Data indicates that agricultural activity is expanding within the region. The institution and adherence to proper agricultural practices could minimize the impact of future events.
- New development anywhere in Kansas Region G will be susceptible to **Tornado** impacts. New manufactured housing development will particularly susceptible to damage, particularly if not anchored properly. Regional population centers, which are experiencing growth, would also be more susceptible to this hazard. As these centers increase, they, in general, have increased population densities. These increased densities may result in an increased number of injuries and deaths as smaller tornados could have a magnified impact.
- New development anywhere in Kansas Region G will be potentially susceptible to **Wildfire** impacts, and development in the WUI will increase susceptibility. Regional population centers, which are experiencing growth, are less likely to be susceptible to this hazard. As these centers increase, they, in general, have increased suburban development surrounding them. These





suburban development areas are generally low density, recently cleared of vegetation, and at a low risk for fires.

- New development anywhere in Kansas Region G will be susceptible to **Windstorm** impacts. New manufactured housing development will particularly susceptible to damage, particularly if not anchored properly. Future protection could be provided by the adoption of engineering design requirements and the institution/application of building codes. Additionally, increases in agricultural activity may increase the potential impact of this hazard. The institution and adherence to proper agricultural practices could minimize the impact of future events.
- New development anywhere in Kansas Region G will be susceptible to **Winter Storm** impacts. Future protection could be provided by the adoption of engineering design requirements and the institution/application of building codes. Additionally, increases in agricultural activity may increase the potential impact of this hazard. The institution and adherence to proper agricultural practices could minimize the impact of future events.
- In general, acts of **Civil Disorder** have historically been conducted in major population centers or large event venues. If larger public events are held in Kansas Region G, more potential may exist for these venues to become targets of attack. With human-caused hazards such as this that can have multiple variables involved, increases in development are not necessarily always factors in determining risk, although the physical cost of an event may increase due to an increase in building exposure.
- Local growth along transportation corridors or near **Hazardous Materials** (HazMat) facilities will increase the risk to this hazard. As the infrastructure and population of urban centers increases, along with the number and type of hazardous chemicals stored and transported through the region, the amount of potential losses could increase.
- As the population of Kansas Region G becomes denser in urban areas the vulnerability to a **Major Disease Outbreak** may increase. Additionally, any increase in the agricultural industry relating to the rearing, transport and holding of animals will increase the risk of future impactful disease outbreaks.
- Any population or development increase within the federally mandated 50-mile radius emergency planning zone (EPZ) for the Wolf Creek Nuclear Reactor (located to the northeast of the planning region in Coffey County) would increase the risk of a **Radiological Event**. However, only a very small, sparsely populated portion of Kansas Region G (the northeast corner of Butler County) is within the 50-mile EPZ for this plant. Additionally, any population or development increase along transportation corridors, and/or increases in the transportation of nuclear material along these corridors could potentially increase the exposure and risk of this hazard.
- In general, acts of **Terrorism** have historically been conducted in major population centers or on targets of high significance within the United States. If larger public events are held in Kansas Region G, more potential may exist for these venues to become targets of attack. With human-caused hazards such as this that can have multiple variables involved, increases in development are not necessarily always factors in determining risk, although the physical cost of an event may increase due to an increase in building exposure.
- Increases in development and population growth in the planning area would put increased demand on systems and likely increase both the potential and impact of a **Utility/Infrastructure Failure**. Additionally, as this hazard is often a concurrent event with other identified hazards, any increase in the occurrence of these hazards would increase the potential occurrence of a utility/infrastructure failure event.



5.0 Capability Assessment

5.1 – Introduction

44 CFR 201.6 does not require a capability assessment to be completed for local hazard mitigation plans. However, 201.6(c)(3) states "A mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools."

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. A capability assessment 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.

For this plan each participating jurisdiction was given an opportunity to present their capability assessment information.

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

Regulation

The scope of this local authority 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.





Acquisition

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).

Taxation

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.

Spending

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 – Governance

All counties within Kansas Region G operate under a county commissioner form of governance, with the elected board of commissioners overseeing county operations.

County Governance

Jurisdiction	Government Structure	Number of Commissioners
Butler County	Commission	5
Cowley County	Commission	3
Harper County	Commission	3
Harvey County	Commission	3
Kingman County	Commission	3
Marion County	Commission	3
McPherson County	Commission	3
Reno County	Commission	3
Rice County	Commission	3
Sedgwick County	Commission	5
Sumner County	Commission	3

In general, the participating towns and cities in Kansas Region G operate either under a Mayoral form of governance or an elected city council form of governance.

5.4 – Jurisdictional Capabilities

Information as to the current capacity of participating jurisdictions is summarized in the following sections and tables. All capability information was provided by jurisdictional officials through the above referenced questions and through outreach from the MPC.

The ability of a local government to develop and implement mitigation projects, policies, and programs is directly tied to its ability to direct staff time and resources for that purpose. Administrative capability can be evaluated by determining how mitigation-related activities are assigned to local departments and if there are adequate personnel resources to complete these activities. The degree of intergovernmental coordination among departments will also affect administrative capability for the implementation and success of proposed mitigation activities.

Many smaller jurisdictions have very limited to no planning, management, response or mitigation capabilities. Often these jurisdictions rely on the county or nearby larger municipalities for assistance. This lack of capabilities is reflected in the following tables. Additionally, many very small or extremely limited participating small jurisdictions, largely townships, are not listed on the capability list. This in no way diminishes the participation in the process of these jurisdictions. Finally, special district capabilities are included in their overarching jurisdiction.





5.4.1 – Jurisdictional Planning Capabilities

The planning capability assessment is designed to provide a general overview of the key planning and regulatory tools or programs in place or under development. This information helps identify opportunities to address existing planning gaps and provides an opportunity to review areas that mitigation planning actions can be utilized with existing plans. 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.

Critical Facilities Plan: A critical facilities plan is used to identify a jurisdiction’s critical facilities, including fire stations, police stations, hospitals, schools, day care centers, senior care facilities, major roads and bridges, critical utility sites, and hazardous material storage areas. Additionally, this plan may be used to determine methods to mitigate damage to these facilities.

Debris Management Plan: A debris management plan covers the response and recovery from debris-causing incidents such as tornados or floods. Planning considerations include debris removal and disposal, disposal locations, equipment availability, and personnel training.

Emergency Operations Plan: An emergency operations plan outlines responsibility, means and methods by which resources are deployed during and following an emergency or disaster.

Evacuation Plan: A plan that outlines routes and methods by which populations are evacuated during and following an emergency or disaster.

Fire Mitigation Plan: A fire mitigation plan is used to mitigate a jurisdictions 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.

Recovery Plan: A disaster recovery plan guides the recovery and reconstruction process following a disaster. Hazard mitigation principles should be incorporated into disaster recovery plans to assist in breaking the cycle of disaster loss.

Vulnerable Population Plan and/or Inventory: A vulnerable populations plan is used to develop a strategic approach for support to persons with functional or special needs before, during and following a disaster.

The table below summarizes relevant jurisdictional planning capabilities.





Jurisdictional Planning Capabilities

Jurisdiction	Comprehensive Plan	Critical Facilities Plan	Debris Management Plan	Emergency Operations Plan	Evacuation Plan	Firewise or other Fire Mitigation Plan	Flood Mitigation Assistance Plan	Recovery Plan	Vulnerable Population Plan or Inventory
Butler County	x			x	x				
Andover	x	x	x	x	x				
Augusta	x			x	x				
Benton	x	x		x					
Cassoday									
Douglass	x			x					
El Dorado	x		x		x		x	x	
Elbing									
Latham				x					
Leon									
Potwin	x	x		x			x		
Rose Hill	x			x					
Towanda	x								
Whitewater									
Cowley County		x		x	x				
Arkansas City	x			x				x	
Atlanta				x					
Burden									
Cambridge	x			x					
Dexter									
Geuda Springs	x			x					
Parkerfield									
Udall	x								
Winfield	x	x		x					
Harper County	x	x		x	x	x		x	x
Anthony									
Attica									
Bluff City									
Danville	x								x
Harper	x			x		x			
Waldron									
Harvey County	x			x					
Burrton	x	x	x	x					
Halstead	x			x	x				
Hesston	x			x					
Newton	x		x	x		x		x	





Jurisdictional Planning Capabilities

Jurisdiction	Comprehensive Plan	Critical Facilities Plan	Debris Management Plan	Emergency Operations Plan	Evacuation Plan	Firewise or other Fire Mitigation Plan	Flood Mitigation Assistance Plan	Recovery Plan	Vulnerable Population Plan or Inventory
North Newton	x			x	x				
Sedgwick	x			x					
Walton	x			x					
Kingman County	x			x				x	
Cunningham									
Kingman									
Nashville									
Norwich									
Penalosa									
Spivey									
Zenda									
McPherson County	x	x		x	x				
Canton									
Galva									
Inman	x			x					x
Lindsborg									
Marquette									
McPherson	x			x					
Moundridge	x	x		x					
Windom									
Marion County	x		x	x				x	
Burns									
Durham									
Florence									
Goessel									
Hillsboro									
Lehigh									
Lincolnville									
Lost Springs									
Marion									
Peabody									
Ramona									
Tampa									
Reno County	x		x	x				x	
Abbyville	x		x				x	x	
Arlington				x					





Jurisdictional Planning Capabilities

Jurisdiction	Comprehensive Plan	Critical Facilities Plan	Debris Management Plan	Emergency Operations Plan	Evacuation Plan	Firewise or other Fire Mitigation Plan	Flood Mitigation Assistance Plan	Recovery Plan	Vulnerable Population Plan or Inventory
Buhler	x	x		x			x		
Haven	x			x					
The Highlands				x					
Hutchinson	x			x					
Langdon									
Nickerson	x	x	x	x					
Partridge									
Plevna	x			x	x				
Pretty Prairie			x	x					
South Hutchinson	x	x		x					
Sylvia	x	x	x	x	x	x	x	x	x
Turon				x					
Willowbrook			x	x	x				
Rice County	x		x		x			x	x
Alden									
Bushton									
Chase		x		x			x		
Geneseo									
Little River									
Lyons									
Raymond									
Sterling									
Sedgwick County	x			x					
Andale									
Bel Aire	x	x	x	x	x		x		x
Bentley									
Cheney	x		x	x					x
Clearwater									
Colwich									
Derby				x					
Eastborough									
Garden Plain	x		x	x	x				
Goddard									
Haysville	x	x		x			x		
Kechi	x		x	x					
Maize	x	x	x	x					
Mount Hope									





Jurisdictional Planning Capabilities

Jurisdiction	Comprehensive Plan	Critical Facilities Plan	Debris Management Plan	Emergency Operations Plan	Evacuation Plan	Firewise or other Fire Mitigation Plan	Flood Mitigation Assistance Plan	Recovery Plan	Vulnerable Population Plan or Inventory
Mulvane									
Park City	x	x		x					
Sedgwick									
Valley Center	x	x	x	x	x				
Viola									
Wichita	x	x	x	x			x	x	
Sumner County									
Argonia									
Belle Plaine	x		x	x			x		
Caldwell									
Conway Springs									
Geuda Springs									
Mulvane									
Oxford									
South Haven									
Wellington									

5.4.2 – Jurisdictional Codes and Ordinances

Participating jurisdictions were asked if the following codes and ordinances and plans were established and enforced:

Building Code: Many structural mitigation measures involve constructing and retrofitting homes, businesses and other structures according to standards designed to make the buildings more resilient to the impacts of natural hazards. Many of these standards are imposed through the building code.

Floodplain Ordinance: In general, floodplain ordinances are used to:

- Minimize the extent of floods by preventing obstructions that inhibit water flow and increase flood height and damage.
- Prevent and minimize loss of life, injuries, and property damage in flood hazard areas.
- Promote the public health, safety and welfare of citizens in flood hazard areas.

Floodplain ordinances may allow jurisdictions to:

- Manage planned growth





- Adopt local ordinances to regulate uses in flood hazard areas
- Enforce those ordinances
- Grant permits for use in flood hazard areas that are consistent with the ordinance

These ordinances can also help ensure meeting the minimum requirements of participation in the NFIP. The incentive for local governments adopting such ordinances is that they will afford their residents the ability to purchase flood insurance through the NFIP.

Stormwater Ordinance: The purpose of a stormwater ordinance is to protect the quality and quantity of local, regional and state waters from the potential harm of unmanaged stormwater. Stormwater ordinances include protection from activities that result in the degradation of properties, water quality, stream channels, and other natural resources.

Nuisance Ordinance: Local governments may use their ordinance-making power to abate “nuisances,” which could include, by local definition, any activity or condition making people or property more vulnerable to any hazard.

Zoning: 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. Local governments are authorized to divide their jurisdiction into districts, and to regulate and restrict the erection, construction, reconstruction, alteration, repair or use of buildings, structures, or land within those districts. Districts may include general use districts, overlay districts, special use districts or conditional use districts. Zoning ordinances consist of maps and written text.

The table below summarizes relevant jurisdictional policies and ordinances.

Jurisdictional Codes and Ordinances

Jurisdiction	Building Code	Floodplain Ordinance	Nuisance Ordinance	Storm Water Ordinance	Zoning Ordinance
Butler County	X	X	X		X
Andover	X	X	X	X	
Augusta	X	X	X		X
Benton	X	X	X	X	X
Cassoday		X			
Douglass	X	X	X		X
El Dorado	X	X	X	X	X
Elbing		X			
Latham		X	X		





Jurisdictional Codes and Ordinances

Jurisdiction	Building Code	Floodplain Ordinance	Nuisance Ordinance	Storm Water Ordinance	Zoning Ordinance
Leon		X			
Potwin	X	X	X		X
Rose Hill	X	X	X		X
Towanda	X	X	X	X	X
Whitewater	X	X	X	X	X
Cowley County			X		X
Arkansas City	X	X	X	X	X
Atlanta			X		
Burden	X	X	X		
Cambridge		X	X		
Dexter		X			
Geuda Springs		X	X		
Parkerfield		X			
Udall	X	X	X		X
Winfield	X	X	X	X	X
Harper County		X			X
Anthony		X	X		
Attica		X	X		
Bluff City			X		
Danville	X		X		X
Harper	X	X	X		X
Waldron			X		
Harvey County	X	X	X	X	X
Burrton	X	X	X		X
Halstead	X	X	X	X	X
Hesston	X	X	X		
Newton	X	X	X	X	X
North Newton	X	X	X		X
Sedgwick	X		X	X	X
Walton	X		X		X
Kingman County		X			
Cunningham					
Kingman		X	X		
Nashville			X		
Norwich			X		





Jurisdictional Codes and Ordinances

Jurisdiction	Building Code	Floodplain Ordinance	Nuisance Ordinance	Storm Water Ordinance	Zoning Ordinance
Penalosa			X		
Spivey			X		
Zenda			X		
McPherson County	X	X			X
Canton			X		
Galva		X	X		
Inman		X	X		
Lindsborg		X	X		
Marquette		X			
McPherson	X	X	X	X	X
Moundridge	X	X	X		X
Windom					
Marion County		X			X
Burns		X	X		
Durham		X	X		
Florence		X	X		
Goessel		X	X		
Hillsboro		X	X		
Lehigh		X	X		
Lincolville			X		
Lost Springs			X		
Marion		X	X		
Peabody		X	X		
Ramona		X	X		
Tampa		X	X		
Reno County					
Abbyville	X	X	X		X
Arlington	X	X	X		
Buhler		X	X		
Haven	X	X	X	X	X
The Highlands					X
Hutchinson	X	X	X	X	X
Langdon		X			
Nickerson	X	X	X	X	X
Partridge		X			





Jurisdictional Codes and Ordinances

Jurisdiction	Building Code	Floodplain Ordinance	Nuisance Ordinance	Storm Water Ordinance	Zoning Ordinance
Plevna		x	x		
Pretty Prairie		x	x		x
South Hutchinson	x	x	x		
Sylvia		x	x		
Turon	x	x	x		
Willowbrook		x			x
Rice County		x			x
Alden		x			
Bushton		x			
Chase	x	x	x		x
Geneseo					
Little River		x			
Lyons		x			
Raymond		x			
Sterling		x			
Sedgwick County	x	x			x
Andale		x			
Bel Aire	x	x	x		x
Bentley		x			
Cheney	x	x	x		x
Clearwater		x			
Colwich		x			
Derby	x	x	x		x
Eastborough		x			
Garden Plain	x	x	x		x
Goddard		x	x		
Haysville	x	x	x		x
Kechi	x	x	x		x
Maize	x	x	x		x
Mount Hope		x			
Mulvane					
Park City	x	x	x		x
Sedgwick		x	x		
Valley Center	x	x	x	x	x
Viola		c	c		
Wichita	x	x	x	x	x





Jurisdictional Codes and Ordinances

Jurisdiction	Building Code	Floodplain Ordinance	Nuisance Ordinance	Storm Water Ordinance	Zoning Ordinance
Sumner County		X			
Argonia		X			
Belle Plaine	X	X	X	X	X
Caldwell		X			
Conway Springs		X			
Geuda Springs		X			
Mulvane		X			
Oxford		X			
South Haven		X			
Wellington		X			

5.4.3 – Jurisdictional Programs

This part of the capability’s assessment includes the identification and evaluation of existing programs for each participating jurisdiction:

Community Rating System program under the National Flood Insurance Program: The NFIP's Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Participants are offered flood insurance premium rates at a discount to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS. These goals are the reduction of flood damage to insurable property, the strengthening and support of insurance aspects of the NFIP, and the encouragement of a comprehensive approach to floodplain management.

Firewise Community Certification: The Firewise Communities Program encourages local solutions for safety by involving homeowners in taking individual responsibility for preparing their homes from the risk of wildfire. Firewise is a key component of Fire Adapted Communities, a collaborative approach that connects all those who play a role in wildfire education, planning and action with comprehensive resources to help reduce risk. The program is co-sponsored by the USDA Forest Service, the US Department of the Interior, and the National Association of State Foresters.

ISO Fire Rating: This assessment also includes the identification and evaluation of existing ISO fire ratings. The Fire Suppression Rating Schedule is a manual containing the criteria ISO uses in reviewing the fire prevention and fire suppression capabilities of individual communities or fire





protection areas. The schedule measures the major elements of a community’s fire protection system and develops a numerical grading called a Public Protection Classification.

National Flood Insurance Program: In 1968, Congress created the NFIP to help provide a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding.

National Weather Service StormReady Program: StormReady uses a grassroots approach to help communities develop plans to handle all types of severe weather. The program encourages communities to take a new, proactive approach to improving local hazardous weather operations by providing emergency managers with clear-cut guidelines on how to improve their hazardous weather operations

The table below summarizes relevant local programs.

Jurisdictional Programs

Jurisdiction	Community Rating System program	Firewise Community Certification	ISO Fire Rating	National Flood Insurance Program	National Weather Service Storm Ready Certification
Butler County	x		x	x	x
Andover			3	x	
Augusta			5	x	
Benton			7		
Cassoday			9	x	
Douglass			9	x	
El Dorado	x		3	x	
Elbing			6	x	
Latham			9	x	
Leon				x	
Potwin			x	x	
Rose Hill			6	x	
Towanda			5	x	
Whitewater			6	x	
Cowley County			x	x	x
Arkansas City			x	x	x
Atlanta			x		
Burden			6	x	x





Jurisdictional Programs

Jurisdiction	Community Rating System program	Firewise Community Certification	ISO Fire Rating	National Flood Insurance Program	National Weather Service Storm Ready Certification
Cambridge				x	
Dexter				x	
Geuda Springs			7	x	
Parkerfield			4	x	
Udall			6	x	x
Winfield			x	x	x
Harper County			x	x	
Anthony	x		4	x	
Attica				x	
Bluff City					
Danville					
Harper			3	x	
Waldron					
Harvey County	x		x	x	
Burrton			x	x	x
Halstead			3	x	
Hesston			x	x	
Newton	x		x	x	
North Newton			3	x	x
Sedgwick			x	x	
Walton			5	x	x
Kingman County				x	
Cunningham					
Kingman				x	
Nashville			9		
Norwich					
Penalosa					
Spivey					
Zenda					
McPherson County			x	x	
Canton					
Galva	x			x	
Inman			5	x	
Lindsborg				x	
Marquette				x	





Jurisdictional Programs

Jurisdiction	Community Rating System program	Firewise Community Certification	ISO Fire Rating	National Flood Insurance Program	National Weather Service Storm Ready Certification
McPherson			3	X	
Moundridge	X		X	X	
Windom					
Marion County				X	
Burns				X	
Durham				X	
Florence	X			X	
Goessel				X	
Hillsboro				X	
Lehigh				X	
Lincolnville					
Lost Springs					
Marion				X	
Peabody				X	
Ramona				X	
Tampa				X	
Reno County				X	
Abbyville			X	X	
Arlington				X	
Buhler			X	X	
Haven			X	X	
The Highlands					
Hutchinson			X	X	
Langdon				X	
Nickerson				X	
Partridge				X	
Plevna				X	
Pretty Prairie			X	X	
South Hutchinson			7	X	
Sylvia		X	X	X	X
Turon			X	X	
Willowbrook				X	
Rice County			X	X	X
Alden				X	
Bushton				X	
Chase			6	X	





Jurisdictional Programs

Jurisdiction	Community Rating System program	Firewise Community Certification	ISO Fire Rating	National Flood Insurance Program	National Weather Service Storm Ready Certification
Geneseo					
Little River				X	
Lyons	X			X	
Raymond				X	
Sterling				X	
Sedgwick County			3/3y	X	
Andale				X	
Bel Aire	X		X	X	
Bentley				X	
Cheney			X	X	
Clearwater				X	
Colwich				X	
Derby				X	
Eastborough				X	
Garden Plain			4	X	
Goddard				X	
Haysville	X		2	X	X
Kechi			X	X	
Maize			3	X	
Mount Hope				X	
Mulvane					
Park City				X	
Sedgwick				X	
Valley Center	X		4	X	
Viola				X	
Wichita			X	X	
Sumner County				X	
Argonia				X	
Belle Plaine			6	X	X
Caldwell				X	
Conway Springs				X	
Geuda Springs				X	
Mulvane				X	
Oxford				X	
South Haven				X	
Wellington				X	





In addition, participating jurisdictions operate with mutual aid agreements. These are understandings among localities to lend assistance across jurisdictional boundaries. Mutual aid may be requested only when an emergency occurs that exceeds local resources.

5.4.4 – Jurisdictional Staffing and Departmental Capabilities

A comprehensive mitigation program relies on many skilled professionals. These professionals include:

- Planners
- Emergency managers
- Floodplain managers
- GIS personnel

While exact responsibilities differ from jurisdiction to jurisdiction, the general duties of applicable departments are described below:

Building Official: Building officials are generally the jurisdictional administrator of building and construction codes, engineering calculation supervision, permits, facilities management, and accepted construction procedures. They may also inspect structures to ensure compliance with the plans and to check workmanship as well as code compliance.

Emergency Management Coordinator: The Emergency Management office is responsible for the mitigation, preparedness, response and recovery operations that deal with both natural and man-made disaster events. The formation of an emergency management department in each county is mandated under Kansas General Statutes.

Local Emergency Planning Committee: Local Emergency Planning Committees are generally housed at the county or municipal level. They do not function in actual emergency situations, but attempt to identify and catalogue potential hazards, identify available resources, mitigate hazards when feasible, and write emergency plans. The role of the LEPC is to anticipate and plan the initial response for foreseeable disasters in their jurisdiction.

Mapping Specialist: A geographic information system (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data. A GIS mapping specialist uses this data to create county maps, including flood plain, fire hazard, drought and other mitigation maps.

NFIP Floodplain Administrator: The NFIP floodplain administrator ensures a jurisdiction is meeting the minimum requirements of participation in the NFIP, and often is tasked with applying for funding or grants.

Planning Department: A planning department usually provides management and oversight of development through the application of codes, ordinances, building regulations and public input.





Public Works Official: Public works officials usually provide management and oversight of infrastructure projects such as public buildings (municipal buildings, schools, hospitals), transport infrastructure (roads, railroads, bridges, pipelines, airports), public spaces (public squares, parks), public services (water supply, sewage, electrical grid, dams), and other physical assets and facilities.

The table below summarizes relevant local staffing and departmental capabilities.

Jurisdictional Staffing and Departmental Capabilities

Jurisdiction	Building Code Official or Inspector	Emergency Management Coordinator	Local Emergency Planning Committee	Mapping Specialist	NFIP Floodplain Administrator	Planning Department	Public Works Official
Butler County	x	x	x	x	x	x	x
Andover	x	x	x	x	x	x	x
Augusta	x	x	x		x	x	
Benton	x					x	x
Cassoday					x		
Douglass	x			x	x	x	x
El Dorado	x		x	x	x	x	x
Elbing					x		
Latham					x		x
Leon					x		
Potwin		x			x	x	
Rose Hill	x		x		x	x	x
Towanda	x				x	x	x
Whitewater					x	x	x
Cowley County	x	x	x	x	x	x	x
Arkansas City	x	x	x	x	x	x	x
Atlanta		x		x			x
Burden		x	x		x		x
Cambridge					x		
Dexter					x		
Geuda Springs			x			x	x
Parkerfield		x	x	x	x		
Udall	x	x	x		x		
Winfield	x	x	x	x	x	x	x
Harper County		x	x	x	x	x	x
Anthony					x		x
Attica					x		x
Bluff City							x
Danville		x	x				x





Jurisdictional Staffing and Departmental Capabilities

Jurisdiction	Building Code Official or Inspector	Emergency Management Coordinator	Local Emergency Planning Committee	Mapping Specialist	NFIP Floodplain Administrator	Planning Department	Public Works Official
Harper		x			x	x	x
Waldron							x
Harvey County	x	x		x	x	x	x
Burrton	x				x	x	x
Halstead	x		x		x	x	x
Hesston	x		x		x	x	x
Newton	x		x	x	x	x	x
North Newton	x		x		x	x	x
Sedgwick	x	x		x		x	x
Walton	x		x	x		x	x
Kingman County		x			x		x
Cunningham							x
Kingman					x		x
Nashville							x
Norwich							x
Penalosa							x
Spivey							x
Zenda							x
McPherson County	x	x	x	x	x	x	x
Canton							x
Galva					x		x
Inman					x	x	x
Lindsborg					x		x
Marquette					x		x
McPherson	x	x	x	x	x	x	x
Moundridge	x				x	x	x
Windom							x
Marion County		x	x	x	x	x	x
Burns					x		x
Durham					x		x
Florence					x		x
Goessel					x		x
Hillsboro					x		x
Lehigh					x		x
Lincolnvile							x





Jurisdictional Staffing and Departmental Capabilities

Jurisdiction	Building Code Official or Inspector	Emergency Management Coordinator	Local Emergency Planning Committee	Mapping Specialist	NFIP Floodplain Administrator	Planning Department	Public Works Official
Lost Springs							X
Marion					X		X
Peabody					X		X
Ramona					X		X
Tampa					X		X
Reno County		X			X		X
Abbyville	X				X		X
Arlington	X				X		
Buhler	X	X			X	X	X
Haven	X				X	X	X
The Highlands	X					X	
Hutchinson	X	X	X	X	X	X	X
Langdon					X		
Nickerson	X				X	X	X
Partridge	X				X	X	X
Plevna					X		X
Pretty Prairie	X	X			X	X	X
South Hutchinson	X	X	X		X		X
Sylvia		X	X		X		X
Turon					X		X
Willowbrook					X		
Rice County		X	X	X	X		X
Alden					X		X
Bushton					X		X
Chase		X			X	X	X
Geneseo							X
Little River					X		X
Lyons					X		X
Raymond					X		X
Sterling					X		X
Sedgwick County	X				X	X	X
Andale					X		X
Bel Aire	X	X	X	X	X	X	X
Bentley					X		X
Cheney	X	X	X	X	X	X	X
Clearwater					X		X





Jurisdictional Staffing and Departmental Capabilities

Jurisdiction	Building Code Official or Inspector	Emergency Management Coordinator	Local Emergency Planning Committee	Mapping Specialist	NFIP Floodplain Administrator	Planning Department	Public Works Official
Colwich					X		X
Derby	X				X	X	X
Eastborough					X		X
Garden Plain	X				X		X
Goddard					X		X
Haysville	X	X	X	X	X	X	X
Kechi	X				X	X	X
Maize	X			X	X		X
Mount Hope					X		X
Mulvane							X
Park City	X	X			X	X	X
Sedgwick					X		X
Valley Center	X	X		X	X		X
Viola					X		X
Wichita	X	X	X	X	X	X	X
Sumner County		X			X		X
Argonia					X		X
Belle Plaine					X	X	X
Caldwell					X		X
Conway Springs					X		X
Geuda Springs					X		X
Mulvane					X		X
Oxford					X		X
South Haven					X		X
Wellington					X		X

5.4.5 – Non-Governmental Organizations Capabilities

Non-Governmental Organizations (NGOs) are legally constituted corporations that operate independently from any form of government and are not conventional for-profit businesses. In the cases in which NGOs are funded totally or partially by a government agency, the NGO maintains its non-governmental status by excluding government representatives from membership in the organization. The following is a brief discussion of both the American Red Cross and the Salvation Army, both of which provide regional operations and coverage.





American Red Cross: The American Red Cross is a humanitarian organization that provides emergency assistance, disaster relief and education. In addition, they offers services in five other areas: community services that help the needy; communications services and comfort for military members and their family members; the collection, processing and distribution of blood and blood products; educational programs on preparedness, health, and safety; and international relief and development programs.

Salvation Army: The Salvation Army is a Christian denomination and international charitable organization. In addition to being among the first to arrive with help after natural or man-made disasters, the Salvation Army runs charity shops and operates shelters for the homeless.

5.4.6 – Jurisdictional Fiscal Capabilities

In general, the jurisdictions of the Kansas Region G receive the majority of their revenue through state and local sales tax and federal and state pass through dollars. Based on available revenue information, and given that both the state and counties are experiencing budget deficits, funding for mitigation programs and disaster response is at a premium. Adding to the budget crunch is the increased reliance on local accountability by the federal government.

The following provide brief definitions of applicable fiscal programs:

Application and Management of Grant Funding: The jurisdiction has the staffing and capabilities to apply for grant funding and oversee all necessary provisions of the funding.

Authority to Levy Taxes: The authority to levy taxes would allow the jurisdiction to tax its population base.

Authority to Withhold Spending in Hazard Prone Areas: The ability of a jurisdiction to not provide funding for activities or actions in an area that is known to be prone to specific hazards.

Incur Debt through General Obligation Bonds: General obligation bonds are issued with the belief that a municipality will be able to repay its debt obligation through taxation or revenue from projects. General obligation bonds can be used to generate funds for mitigation projects.

Usage of Capital Improvement Funding for Mitigation Projects: Capital improvement allows for spending on identified capital projects and for equipment purchases, in this context related to mitigation projects.

The following table highlights each jurisdiction’s fiscal capabilities.





Jurisdictional Financial Capabilities

Jurisdiction	Apply for and Manage Grant Funding	Authority to levy taxes for specific purposes	Authority to Withhold spending in hazard prone areas	Incur Debt through General Obligation Bonds	Usage of Capital Improvement Funding for Mitigation Projects
Butler County	X	X	X	X	X
Andover	X	X		X	X
Augusta	X	X		X	X
Benton	X	X		X	X
Cassoday					X
Douglass	X	X		X	X
El Dorado	X	X	X	X	X
Elbing	X	X			X
Latham	X	X			X
Leon	X	X			X
Potwin	X	X			X
Rose Hill	X	X		X	X
Towanda	X	X		X	X
Whitewater	X	X		X	X
Cowley County	X	X	X	X	X
Arkansas City	X	X	X	X	X
Atlanta	X	X		X	X
Burden	X	X		X	X
Cambridge	X	X			X
Dexter	X	X	X	X	X
Geuda Springs	X	X	X	X	X
Parkerfield	X	X	X	X	X
Udall	X	X	X	X	X
Winfield	X	X			X
Harper County	X	X		X	X
Anthony	X	X			X
Attica	X	X			X
Bluff City	X	X			X
Danville	X	X	X	X	X
Harper	X	X	X	X	X
Waldron	X	X			X
Harvey County	X	X		X	X
Burrton	X	X	X	X	X
Halstead	X	X	X	X	X
Hesston	X	X	X	X	X
Newton	X	X		X	X





Jurisdictional Financial Capabilities

Jurisdiction	Apply for and Manage Grant Funding	Authority to levy taxes for specific purposes	Authority to Withhold spending in hazard prone areas	Incur Debt through General Obligation Bonds	Usage of Capital Improvement Funding for Mitigation Projects
North Newton	X	X		X	X
Sedgwick	X	X		X	X
Walton	X	X		X	X
Kingman County	X	X			X
Cunningham	X	X			X
Kingman	X	X			X
Nashville	X	X	X	X	X
Norwich	X	X			X
Penalosa	X	X			X
Spivey	X	X			X
Zenda	X	X			X
McPherson County	X	X	X	X	X
Canton	X	X			X
Galva	X	X			X
Inman	X	X		X	X
Lindsborg	X	X			X
Marquette	X	X			X
McPherson	X	X		X	X
Moundridge	X	X	X	X	X
Windom	X	X			X
Marion County	X	X		X	X
Burns	X	X			X
Durham	X	X			X
Florence	X	X			X
Goessel	X	X			X
Hillsboro	X	X			X
Lehigh	X	X			X
Lincolnvill	X	X			X
Lost Springs	X	X			X
Marion	X	X			X
Peabody	X	X		X	X
Ramona	X	X			X
Tampa	X	X			X
Reno County	X	X			X
Abbyville	X	X	X	X	X
Arlington	X	X		X	X





Jurisdictional Financial Capabilities

Jurisdiction	Apply for and Manage Grant Funding	Authority to levy taxes for specific purposes	Authority to Withhold spending in hazard prone areas	Incur Debt through General Obligation Bonds	Usage of Capital Improvement Funding for Mitigation Projects
Buhler	X	X	X	X	X
Haven	X	X		X	X
The Highland	X	X	X	X	X
Hutchinson	X	X		X	X
Langdon	X	X			X
Nickerson	X	X	X	X	X
Partridge	X	X		X	X
Plevna	X	X		X	X
Pretty Prairie	X	X		X	X
South Hutchinson	X	X	X	X	X
Sylvia	X	X	X	X	X
Turon	X	X		X	X
Willowbrook	X	X		X	X
Rice County	X	X	X	X	X
Alden	X	X			X
Bushton	X	X			X
Chase	X	X		X	X
Geneseo	X	X			X
Little River	X	X		X	X
Lyons	X	X			X
Raymond	X	X		X	X
Sterling	X	X			X
Sedgwick County	X	X		X	X
Andale	X	X			X
Bel Aire	X	X	X	X	X
Bentley	X	X			X
Cheney	X	X		X	X
Clearwater	X	X			X
Colwich	X	X			X
Derby	X	X		X	X
Eastborough	X	X			X
Garden Plain	X	X		X	X
Goddard	X	X			X
Haysville	X	X		X	X
Kechi	X	X		X	X
Maize	X	X		X	X
Mount Hope	X	X			X





Jurisdictional Financial Capabilities

Jurisdiction	Apply for and Manage Grant Funding	Authority to levy taxes for specific purposes	Authority to Withhold spending in hazard prone areas	Incur Debt through General Obligation Bonds	Usage of Capital Improvement Funding for Mitigation Projects
Mulvane	X	X			X
Park City	X	X	X	X	X
Sedgwick	X	X			X
Valley Center	X	X	X	X	X
Viola	X	X			X
Wichita	X	X		X	X
Sumner County	X	X			X
Argonia	X	X			X
Belle Plaine	X	X	X	X	X
Caldwell	X	X			X
Conway Springs	X	X			X
Geuda Springs	X	X			X
Mulvane	X	X			X
Oxford	X	X			X
South Haven	X	X			X
Wellington	X	X			X

5.4.7 – School Capability Assessment

Participating school districts were provided with a different set of questions that participating governmental jurisdictions. These questions were asked to ascertain the level of preparedness of the institution.

The following provides brief definitions of terms used in the capability assessment of schools. Please note that some definitions have been provided in previous sections.

Access to Local, Regional and State Funds: The ability to use local, regional and state funding on school activities and improvements.

Active Shooter Plan: An active shooter plan outlines responsibility, means and methods by which resources are deployed during an active shooter scenario.





Capital Improvement Plan: A capital improvement plan guides scheduling of, and spending on, school improvements. A capital improvement plan can guide future development away from identified hazard areas, and incorporate identified mitigation strategies.

District Master Plan: A master plan establishes the overall vision and serves as a guide to decision making. A master plan generally contains information on demographics, land use, transportation, and facilities. As a master plan is broad in scope the integration of hazard mitigation measures can enhance the likelihood of achieving risk reduction goals.

Emergency Operations Plan/Evacuation Plan: An emergency operations plan outlines responsibility, means and methods by which resources are deployed during and following an emergency or disaster. Often included in these plans are detailed evacuation procedures and policies.

Incur Debt through General Obligation Bonds: General obligation bonds are issued with the belief that an entity will be able to repay its debt obligation through taxation or revenue from projects. General obligation bonds can be used to generate funds for mitigation projects.

School Safety or Resource Officer: A person with overall responsibility for safety of the school, students and staff.

Information as to the current capacity of participating schools, colleges and universities is summarized in the following table.

College, Unified School District or University Capabilities

Jurisdiction	Access to Local, Regional and State funds	Active Shooter Plan or Policy	Capital Improvement Plan	District Master Plan	School Emergency and Evacuation Plans	School Safety or Resource Officers or Dedicated Law Enforcement
Butler County						
Butler County Community College	x	x	x	x	x	x
USD 205 - Bluestem	x	x			x	
USD 206 – Remington	x	x	x		x	
USD 375 – Circle	x	x			x	





College, Unified School District or University Capabilities

Jurisdiction	Access to Local, Regional and State funds	Active Shooter Plan or Policy	Capital Improvement Plan	District Master Plan	School Emergency and Evacuation Plans	School Safety or Resource Officers or Dedicated Law Enforcement
USD 385 – Andover	x	x			x	
USD 394 – Rose Hill	x	x	x	x	x	x
USD 396 – Douglass	x	x			x	
USD 402 – Augusta	x	x	x	x	x	x
USD 490 – El Dorado	x	x	x	x	x	x
USD 492 – Flinthills	x	x			x	
Cowley County						
Cowley County Community College	x	x			x	x
USD 462 – Central	x	x	x	x	x	x
USD 463 – Udall	x	x	x	x	x	x
USD 465 – Winfield	x	x	x	x	x	x
USD 470 – Arkansas City	x	x	x	x	x	x
USD 471 – Dexter	x	x	x	x	x	x
Harper County						
USD 361 - Anthony / Harper	x	x	x	x	x	x
USD - 511 Attica	x	x	x	x	x	x
Harvey County						
Bethel College	x	x	x		x	
Hesston College	x	x	x	x	x	
USD 369 - Burrton	x	x	x	x	x	
USD 373 - Newton	x	x			x	
USD 439 - Sedgwick	x	x	x	x	x	x
USD 440 - Halstead	x	x	x	x	x	
USD 460 - Hesston	x	x			x	
Kingman County						
St Patrick Catholic School		x			x	
USD 331 - Kingman / Norwich	x	x			x	x
USD 332 - Cunningham	x	x			x	
McPherson County						
Bethany College		x			x	
Central Christian College of Kansas		x			x	
Elyria Christian School		x			x	
Hutchinson Community College	x	x			x	
McPherson College	x	x			x	
St. Joseph Catholic School	x	x			x	
USD 400 - Smoky Valley	x	x			x	





College, Unified School District or University Capabilities

Jurisdiction	Access to Local, Regional and State funds	Active Shooter Plan or Policy	Capital Improvement Plan	District Master Plan	School Emergency and Evacuation Plans	School Safety or Resource Officers or Dedicated Law Enforcement
USD 418 - McPherson	x	x			x	
USD 419 - Canton	x	x	x	x	x	
USD 423 - Moundridge	x	x			x	
USD 444 - Windom	x	x			x	
USD 448 - Inman	x	x			x	
Marion County						
Tabor College		x				
USD 397 - Centre	x	x	x	x	x	
USD 398 - Peabody / Burns	x	x			x	
USD 408 - Marion / Florence	x	x			x	
USD 410 - Hillsboro	x	x			x	
USD 411 - Goessel	x	x	x	x	x	
USD 617 - Florence	x	x	x	x	x	
Reno County						
Central Christian School		x			x	
Hutchinson Catholic Schools	x	x	x		x	
Hutchinson Community College	x	x			x	
St. Joseph Catholic School		x	x		x	
USD 308 - Hutchinson	x	x	x	x	x	x
USD 309 - Nickerson	x	x	x	x	x	x
USD 310 - Fairfield	x	x	x	x	x	
USD 311 – Pretty Prairie	x	x			x	
USD 312 - Haven	x	x		x	x	
USD 313 - Buhler	x	x	x		x	x
Rice County						
Sterling College		x			x	
USD 112 – Central Plains	x	x			x	
USD 376 - Sterling	x	x	x		x	
USD 401 - Chase	x	x			x	
USD 405 - Lyons	x	x	x	x	x	
USD 444 - Windom	x	x	x	x	x	
Sedgwick County						
KU School of Medicine, Wichita	x	x			x	x
USD 259 - Wichita	x	x	x	x	x	x
USD 260 - Derby	x	x	x	x	x	x
USD 261 - Haysville	x	x			x	





College, Unified School District or University Capabilities

Jurisdiction	Access to Local, Regional and State funds	Active Shooter Plan or Policy	Capital Improvement Plan	District Master Plan	School Emergency and Evacuation Plans	School Safety or Resource Officers or Dedicated Law Enforcement
USD 262 - Valley Center	x	x			x	
USD 263 - Mulvane	x	x			x	
USD 264 - Clearwater	x	x			x	
USD 265 - Goddard	x	x			x	
USD 266 - Maize	x	x			x	
USD 267 - Renwick	x	x			x	
USD 268 - Cheney	x	x			x	
USD 312 - Haven	x	x			x	
USD 356 - Conway Springs	x	x			x	
USD 375 - Circle	x	x			x	
USD 385 - Andover	x	x			x	
USD 439 - Sedgwick	x	x	x	x	x	x
USD 440 - Halstead / Bentley	x	x			x	
Wichita State University	x	x			x	x
Sumner County						
USD 353 - Wellington	x	x			x	
USD 356 - Conway Springs	x	x			x	
USD 357 - Belle Plaine	x	x			x	x
USD 358 - Oxford	x	x			x	
USD 359 - Argonia	x				x	
USD 360 - Caldwell	x	x	x	x	x	x
USD 509 - South Haven	x	x			x	
Wellington Christian Academy		x			x	

Additionally, under K.S.A. 72-5457 (General Provisions for the Issuance of Bonds), all Kansas USDs may issue general obligation bonds to:

- Purchase or improve any site or sites necessary for school district purposes including housing and boarding pupils enrolled in an area vocational school
- Acquire, construct, equip, furnish, repair, remodel or make additions to buildings including housing and boarding pupils enrolled in an area vocational school operated under the board of education of a school district





5.5 – Opportunities for Capability Improvement

As part of this plan update, the MPC identified the following opportunities for improvement across the region concerning current capabilities:

- **Local Funding**
 - Integration of mitigation plans with other local plans and programs, such as capital improvement plans
 - Adoption of cost-effective mitigation measures when developing capital improvement projects
- **Public Education and Outreach**
 - Regular deployment of hazard awareness campaigns to enhance public awareness
- **Land Use Planning and Regulations**
 - Continued encouragement of using land use planning to identify areas at risk to natural hazards
 - Stormwater retention/detention projects to reduce flooding
 - Locally funded buyouts of hazard prone properties
- **Floodplain Management**
 - Encourage and support new participation in the NFIP and in the CRS
 - Continue the promotion and enforcement of NFIP and CRS floodplain management programs



6.0 Mitigation Strategy

6.1 – Introduction

As part of this planning effort, Kansas Region G and its participating jurisdictions worked to minimize the risk of future impacts from identified hazards to all citizens. In an attempt to shape future regulations, ordinances and policy decisions, the MPC reviewed and developed a hazard mitigation strategy. This comprehensive strategy includes:

- The consistent review and revision, as necessary, of obtainable goals and objectives
- The consistent review, revision and development of a comprehensive list of potential hazard mitigation actions

The development of a robust mitigation strategy allows for:

- The ability to effectively direct limited resources for maximum benefit
- The ability to prioritize identified hazard mitigation projects to maximize positive outcomes
- The increase in public and private level participation in hazard mitigation through transparency and awareness
- The potential direction of future policy decisions through awareness and education
- The achievement of the ultimate goal of a safer region for all our citizens

Considering the factors listed above, the MPC continues to implement the following mitigation strategy:

- **Implement** the recommendations of this plan.
- **Utilize** existing regulations, policies, programs, procedures, and plans already in place.
- **Share** information on Funding opportunities.
- **Communicate** the information contained in this plan so all jurisdictions and citizens have a clearer understanding of the hazards facing the region and what can be done to mitigate their impacts.
- **Publicize** the success stories that have been achieved through the region’s ongoing mitigation efforts.

6.2 – Emergency Management Accreditation Program Integration

As per requirements, in identifying and reviewing mitigation actions the following activities recommended by the EMAP 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.

6.3 – Identification of Goals

44 CFR 201.6 (c)(3)(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Through thorough discussions at stakeholder meetings, the MPC determined that the four previously identified primary hazard mitigation goals remained relevant and applicable. This was because the priorities of Kansas Region G in relation to hazard mitigation planning have not changed during the five-year planning cycle. These goals were reviewed through a well-established consideration process, instituted by the MPC during previous plan updates, which consisted of:

- A review of previously identified hazard mitigation goals
- A review of demographic and built environment data
- A review of identified hazards, hazard events, and vulnerabilities
- A review all identified hazard mitigation actions

The following goals represent the Kansas Region G vision for hazard mitigation and disaster resilience.

- **Goal 1:** Reduce or eliminate risk to the people and property of Kansas Region G from the impacts of the identified hazards in this plan.
- **Goal 2:** Strive to protect all vulnerable populations, structures, and critical facilities in Kansas Region G 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 understanding of the risk Kansas Region G faces due to the impacts of the identified hazards.
- **Goal 4:** Enhance communication and coordination among all agencies and between agencies and the public.

6.4– Completed Mitigation Actions

Sine the completion of the previous HMP, each jurisdiction has been tracking the completion status of all identified hazard mitigation actions. Each of the following completed actions should be viewed as a testament to the effectiveness of the HMP and a positive step in creating safer and more resilient communities.

Butler County and Participating Jurisdictions Completed Hazard Mitigation Actions

Jurisdiction	Action Description
Butler REC	Replace 8 miles of overhead three-phase lines to 8 miles underground lines. These existing overhead lines are becoming less reliable because of age and deterioration. The lines are a hazard to wildlife and aesthetically are not pleasing to the area.





Butler County and Participating Jurisdictions Completed Hazard Mitigation Actions

Jurisdiction	Action Description
Augusta	Purchase backup power generators for critical facilities
Cassoday	Pursue funding and potential locations for Tornado shelters/ safe rooms
Douglass	Continue and enhance housing rehabilitation program.
Elbing	Identify and evaluate areas in need of storm drainage improvements inside city limits and in township areas
Potwin	Permanent backup generator for City Water to keep potable water pumped to 2 cities: Potwin and Whitewater.

Cowley County and Participating Jurisdictions Completed Hazard Mitigation Actions

Jurisdiction	Action Description
Cowley	Continue public awareness and educational programs on all hazards
Cowley	Identify critical areas with limited access due to flooding
Winfield	Acquire and replace permanently mounted emergency generator for the Operation Center Utility
Winfield	Purchase/ Install backup generators in critical facilities

Harper County and Participating Jurisdictions Completed Hazard Mitigation Actions

Jurisdiction	Action Description
Harper County	Upgrade Countywide warning system.
Anthony	Upgrade Outdoor Warning Sirens.

Harvey County and Participating Jurisdictions Completed Hazard Mitigation Actions

Jurisdiction	Action Description
Harvey County	Adoption of Flood Maps
Harvey County	LIDAR Mapping of Harvey County
Harvey County	Drainage structure replacement, South Harvest Hill Road
Harvey County	Erosion control Bridge 8-K.8
Halstead	Bridge repair on Main Street
North Newton	Addition of outdoor warning siren
North Newton	Generator for City Hall
Walton	Bridge replacement in Beaver Creek housing addition with larger culverts
Alta Township	Drainage way maintenance
Alta Township	Culvert replacements throughout the township
Darlington Township	Drainage way maintenance
Halstead Township	Culvert replacement and wash out repair throughout the township
Highland Township	Replacement of smaller culverts with larger ones to handle water flow
Macon Township	Culvert replacement throughout the township
Pleasant Township	Shroeder drainage improvement
Pleasant Township	NE 12 th Street drainage way
Richland Township	Culvert replacement throughout the township





Harvey County and Participating Jurisdictions Completed Hazard Mitigation Actions

Jurisdiction	Action Description
Alta Township Drainage District	Waterflow improvement
RWD #1	Acquire a backup generator
RWD #1	Acquire a series of variable speed pumps
UDS 460	Purchase emergency communications system

McPherson County and Participating Jurisdictions Completed Hazard Mitigation Actions

Jurisdiction	Action Description
McPherson County	Acquire & install a permanently mounted emergency generator for the McPherson County Courthouse

Sedgwick County and Participating Jurisdictions Completed Hazard Mitigation Actions

Jurisdiction	Action Description
Valley Center	Remediate continual flooding problems on S. Meridian Street and erosion of ditches along Ramsey and Ford Streets.

Kansas Region G is committed to pursuing funding to complete all major hazard mitigation projects.

6.5 – Review and Addition of Mitigation Actions

For this plan update, members of the MPC and participating jurisdictions were asked to complete a thorough review of all not completed mitigation actions. Additionally, MPC members and participating jurisdictions were provided with the opportunity to identify and incorporate newly identified actions based on:

- Hazard events that have occurred since the last plan revision
- Updated risk assessments
- Identified goals and objectives
- Changing local capabilities
- New vulnerabilities.

In identifying new, or reviewing existing mitigation actions, the following general categories were considered:

Local Plans and Regulations: Actions that influence the way land and buildings are developed or constructed. Actions may include:

- Revision or institution planning and zoning ordinances
- Revision or institution of building codes
- Open space preservation
- Revision or institution floodplain regulations
- Revision or institution stormwater management regulations
- Drainage system maintenance





- Requirements for riverine setbacks

Structure and Infrastructure Projects: Actions that involve the modification of existing structures to protect, or remove from, a hazard or hazard area. Actions may include:

- Acquisition of hazard prone properties
- Relocation of hazard prone properties
- Revision or institution of building elevation requirements
- Critical facilities protection
- Installation or retrofitting of community safe rooms
- Requiring insurance
- Installation or update of warning systems

Natural Systems Protection: Actions that minimize hazard losses to natural systems. Actions may include:

- Mandatory floodplain area protection
- Revision or institution of comprehensive watershed management programs
- Requirements for riparian buffers
- Requirements for forest and shrub management
- Revision or institution of erosion and sediment control
- Wetland preservation and restoration
- Slope stabilization programs

Education and Awareness Programs: Actions to inform and educate about potential hazards and actions to mitigate against them. Actions may include:

- Educational outreach programs
- Speaker and/ or demonstration events
- Notifying citizens on where to get information
- School educational and event programs

Each action was reviewed using the following metrics, asking if it was:

- **Specific** – The action addresses a hazard or need
- **Measurable** – Achievement or progress can be measured
- **Attainable** – Accepted by those responsible for achieving it
- **Relevant** – Substantively addresses the problem
- **Time-bound** – Time period for achievement is clearly stated

Additionally, the MPC and each jurisdiction was instructed to provide a brief summary regarding the status of each of these actions using the following:





- **Not Started:** Action will provide reason(s) for lack of progress, which may include lack of Funding, differing priorities, changes in political climate, lack of technical skills, etc.
- **In progress:** Action will provide a summary, and if applicable, a of percentage work completed to date.
- **Deleted:** Actions deemed no longer viable were marked for deletion from the plan. These actions are detailed in the next section.

6.6 – Prioritization of Mitigation Actions

44 CFR 201.6 (c)(3)(iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

All participating jurisdictions worked together to review and prioritize both previously identified and newly created hazard mitigation actions, with a self-analysis method used for prioritization. This methodology takes all considerations into account to ensure that, based on capabilities, funding, public wishes, political climate, and legal framework and context, reasonable actions are determined. Major determining factors included the potential effects on the overall risk to life and property, ease of implementation, community and agency support, consistency with mitigation goals, and the availability of Funding.

Of major concern was the potential cost of each action. In general, identified actions were proposed to reduce future damages. As such, it is critical that selected and implemented actions provide a greater saving over the life of the action than the initial cost. For structural and property protection actions cost effectiveness is primarily assessed on:

- Likelihood of damages occurring
- Severity of the damages
- Potential effectiveness

For all other type of actions, including legislative actions, codes and ordinances, maintenance and education, cost effectiveness is primarily assessed on likely future benefits as these actions may not easily result in a quantifiable reduction in damage.

Based on this review, both previously identified and new action items were prioritized as per the following:

High priority:

- Actions that should be implemented as soon as possible
- Actions deemed most critical to achieve the identified mitigation goals

Medium priority:

- Actions that should be implemented in the long-term





- Actions deemed important to meet identified mitigation goals

Low priority

- Actions that should be implemented if Funding becomes available
- Actions that have lowest impact toward achieving mitigation goals

6.7 – Jurisdictional Mitigation Actions

44 CFR 201.6 (c)(3)(ii): A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

44 CFR 201.6 (c)(3)(iv): For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

The following tables identify mitigation action items for each participating jurisdiction, along with the following information:

- Hazard addressed
- Responsible party
- Overall priority
- Goal(s) addressed
- Estimated cost
- Potential Funding source
- Proposed completion timeframe
- Current status
- New actions that have been added to this plan update are identified as such.
- Actions that are in support of NFIP compliance are identified with a bold type **NFIP**





6.7.1 – Butler County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Butler County-1	Assist the incorporated cities in writing or updating their emergency plans, including assisting with development and delivery of exercises that provide opportunities to test those plans.	All Hazards	Emergency Management	Medium	3	Staff time	Local, State, Federal, EMPG	Annually	In process
Butler County-2	Implement a countywide public education program on severe weather alerts, sheltering methods, and continue to encourage local businesses to purchase and use NOAA weather radios	All Hazards	Emergency Management	Medium	2,3	\$5,000	Local, State, Federal, EMPG	2 yrs	In process
Butler County-3	Pursue opportunities to replace aging storm sirens or place new sirens in underserved areas with concentrations of vulnerable citizens.	Windstorm, Tornado	Emergency Management	Medium	1, 2	\$30,000	Local, State, Federal	5 yrs	Pending funding
Butler County-4	Acquire and distribute NOAA weather alert radios to county citizens with special emphasis on vulnerable populations (target 500 households/facilities).	Windstorm, Tornado	Emergency Management	Medium	1, 2	\$17,500	Local, State, Federal	2 yrs	Pending funding
Butler County-5	Work with GIS to identify and map critical infrastructure/critical facilities in Butler County for the local EOP.	All Hazards	Emergency Management / GIS	High	1, 2	\$3,000	Local, State, Federal	2 yrs	Planning
Butler County-6	As part of local response emergency planning, work with local healthcare and other partners to identify citizens with functional and access needs.	All Hazards	Emergency Management	High	1, 2	Staff time	Local, State, Federal	2 yrs	Planning
Butler County-7	Evaluate and implement mass notification/alert systems for notification of citizens and county employees of developing threats and protective actions.	All Hazards	Emergency Management, Emergency Communications and IT	High	1, 2, 3, 4	\$20,000	Local, State, Federal	1 yr	Planning
Butler County-8	Improve emergency communications redundancies through enhancement and further development of the county's amateur radio capabilities.	All Hazards	Emergency Management	Medium	2, 4	\$10,000	Local, State, Federal, EMPG	2 yrs	In process





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Butler County-9	Maintain the capabilities of the local HazMat team by offering regular Hazardous Materials response training, specifically HazMat Ops and HazMat Technician classes.	Hazardous Materials	Emergency Management / LEPC	High	1, 2	\$25,000 per offering	Local, State, Federal, HMEP	Every 3-5 years	Planning
Butler County-10	Assist watersheds in securing additional funding by providing them information on hazard mitigation grant program (NFIP)	Flood	Butler County Conservation District	Medium	1,3	\$1,200 annually	Local, state, federal, USDA-NRCS, KDA/Div of Conservation	Annually	On going
Butler County-11	Promote awareness for Federal requirements for erosion control and education on soil erosion control measures and other related hazards	Soil Erosion and Dust, Land Slides, Land Subsidence	Butler County Conservation District	High	2	\$720 annually	Local, state, federal, USDA-NRCS, KDA/Div of Conservation	Annually	On going
Butler County-12	Develop an annual outreach program to educate residents about the dangers of floods and flood prevention. (NFIP)	Flooding	Floodplain Administrator	Medium	3	\$1000	Local, state, federal	1-5 years	On-going
Butler County-13	Develop and recommend amendments to the existing Flood Damage Protection Ordinance to adopt higher regulatory standards. (NFIP)	Flooding	Floodplain Administrator	Medium	1, 2	Staff time	Local, state, federal	Pending funding	On-going
Butler County-14	Research, design and recommend an appropriate stream buffer ordinance to further protect the jurisdiction's water resources and to limit future flood damages adjacent to major water ways. (NFIP)	Flooding	Floodplain Administrator	Medium	1, 2	Staff time	Local, state, federal	Pending funding	On-going
Butler County-15	Commit to continued participation and compliance with the NFIP	Flooding	Floodplain Administrator	Medium	1, 2	Staff time	Local, state, federal	Continuous	On-going
Butler County-16	Install generators at the Butler County Landfill.	Utility/ Infrastructure Failure	Director of Public Works	Medium	1, 2, 3	\$50,000	CDBG Urgent Need	1 yr after funding	In process: one has been





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
							program, HMGP		purchased for the scale house, two more still needed.
Butler-17	Republican Creek Drainage Improvements, SW 90th St. Replace existing 29' Steel Beam span (OS #37) with new rigid frame box (RFB) structure to address flooding due to inadequate drainage.	Flooding	Butler County Engineer's Office	Medium	1, 2	\$149,000	Local, State, Federal	5 yrs	Pending funding
Butler-18	Tributary to the North Branch Little Walnut River Drainage Improvements, SE Flint Hills Rd. Replace existing (4) – 8' x 3' RCB (RS #49) with new rigid frame box (RFB) structure to address flooding due to inadequate drainage.	Flooding	Butler County Engineer's Office	Medium	1, 2	\$105,000	Local, State, Federal	5 yrs	Pending funding
Butler-19	Small Stream Drainage Improvements, SW 160th St. Replace existing 26' Steel Beam Span (OS #22) with new rigid frame box (RFB) structure to address flooding due to inadequate drainage.	Flooding	Butler County Engineer's Office	Medium	1, 2	\$144,000	Local, State, Federal	5 yrs	Pending funding
Butler-20	Branch of Rock Creek Drainage Improvements, SE 190th St. Replace existing (3) – 5' x 3' RCB with new rigid frame box (RFB) structure to address flooding due to inadequate drainage.	Flooding	Butler County Engineer's Office	Medium	1, 2	\$139,000	Local, State, Federal	5 yrs	Pending funding
Butler-21	Durechen Creek Drainage Improvements, NE Stony Creek Rd. Replace existing (3) - 8' x 6' RCB (RS #96) with new rigid frame box (RFB) structure to address flooding due to inadequate drainage.	Flooding	Butler County Engineer's Office	Medium	1, 2	\$175,000	Local, State, Federal	5 yrs	Pending funding
Butler-22	Muddy Creek Branch Drainage Improvements, SE 170th St. Replace	Flooding	Butler County Engineer's Office	Medium	1, 2	\$150,000	Local, State, Federal	5 yrs	Pending funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	existing (3) – 10’ x 5’ RCB (RS #104) with new rigid frame box (RFB) structure to address flooding due to inadequate drainage.								
Butler-23	Walnut River Branch Drainage Improvements, NE 150th St. Replace existing (3) – 7’ x 4’ RCB (RS #69) with new rigid frame box (RFB) structure to address flooding due to inadequate drainage.	Flooding	Butler County Engineer’s Office	Medium	1, 2	\$75,000	Local, State, Federal	5 yrs	Pending funding
Butler-24	South Fork Cottonwood River Drainage Improvements, NE 150th St. Replace existing (3) - 8’ x 5’ RCB (RS #70) with new rigid frame box (RFB) structure to address flooding due to inadequate drainage.	Flooding	Butler County Engineer’s Office	Medium	1, 2	\$114,000	Local, State, Federal	5 yrs	Pending funding
Andover-1	Continue to promote awareness and compliance with the City’s design manual and regulations for post-construction stormwater management required for development or redevelopment of sites larger than 1 acre	Soil Erosion and Dust, Land Slides, Land Subsidence	Stormwater Operator	Medium	2,3	\$25,000	Grants, Local/Storm water Fees	Continuous	In process
Andover-2	Continue to require all new construction to utilize underground utilities, and pursue opportunities for the burying of existing aerial utility lines	Windstorm, Winter Storm, Tornado, Utility/ Infrastructure Failure	Director of Public Works, Director of Community Development	High	1,2	\$15,000,000	HMGP, State, Local	Five years	Not started, lack of funding
Andover-3	Continue to encourage 100% compliance with flood management and building codes (NFIP)	Flood	Director of Public Works, Building Official, City Engineer	Medium	1,2	\$20,000	Local	Continuous	In process
Andover-4	Identify and Evaluate areas in need of storm drainage improvements inside city limits. (NFIP)	Flood	Director of Public Works, City Engineer	Medium	1,2	\$30,000	HMGP, State, Local	Continuous	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Andover-5	Enhance/ build drainage culverts, clean, deepen ditches and enhance sewer drainage. (NFIP)	Flood	Director of Public Works, City Engineer, Stormwater Operator	Medium	1,2	\$500,000	HMGP, State, Local	Continuous	Not started, lack of funding
Andover-6	Develop and construct agreements for secondary water sources that may be used during drought conditions	Drought	Director of Public Works, City Engineer	High	1,2,4	\$15,000,000	HMGP, State, Local	Five years	Not started, lack of funding
Andover-7	Upgrade/modernize outdoor hazardous condition warning sirens for the community.	All Hazards	Police Chief, Communications Director	High	1,2,3,4	\$500,000	HMGP, State, Local	Five years	Not started, lack of funding
Andover-8	Identify and pursue incentives for contractors to include safe room construction in new residential, commercial and public buildings	Tornado, Windstorm	Building Official	Medium	1,2	\$500,000	HMGP, State, Local	Five years	Not started, lack of funding
Andover-9	Require the successful completion of NIMS training for selected employees in all departments	All Hazards	Emergency Management Director, Human Resource Director	High	1,2,4	\$20,000	Local	Continuous	In process
Andover-10	Build additional 24-hour accessible storm shelter in Central Park	Tornado	Director of Public Works	Medium	1,2	\$1,000,000	HMGP,	Five years	Not started, lack of funding
Andover-11	Acquire bank of portable radios, chargers, and spare batteries for use in hazardous situations for volunteers	All Hazards	Police Chief, Communications Director	High	1,2,4	\$75,000	HMGP, Local	Five years	Not started, lack of funding
Andover-12	Acquire mobile command trailer	All Hazards	Police Chief, Communications Director	Medium	1,3	\$200,000	HMGP, Local	Five years	Not started, lack of funding
Andover-13	Acquire 2nd all-terrain vehicle (ATV) for accessibility during natural disasters	All Hazards	Police Chief	High	1,2	\$18,000	HMGP, Local	Five years	Not started, lack of funding
Andover-15	Acquire mobile surveillance and deterrence towers	All Hazards	Police Chief, Communications Director	Medium	1,2	\$100,000	HMGP, Local	Five years	Not started, lack of funding
Augusta-1	Continue to identify critical areas with limited access due to flooding (NFIP)	Flood	City Engineer	Medium	1,2,3	\$5,000	Local	2020	On-Going





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Augusta-2	Identify and Evaluate areas in need of storm drainage improvements inside city limits and in township areas (NFIP)	Flood	City Engineer	Medium	1,3	\$100,000	Local	2021	On-going
Augusta-3	Encourage 100% compliance with flood management and building codes. (NFIP)	Flood	City Inspector	Medium	1,2	Staff Time	None	Repeating	In progress
Augusta-4	Identify and pursue funding for tree trimming	Windstorm, Winter Storm, Tornado, Utility/ Infrastructure Failure	City Manager	Medium	2,3	\$50,000 Annually	HMGP, Local, State, Private	Ongoing	In progress
Augusta-5	Pursue funding and potential locations, and then construct tornado shelters/ safe rooms.	Tornado	City Manager	High	2	\$500,000	HMGP, Local, State	Ongoing	Ongoing
Augusta-6	Upgrade power line infrastructure standards and existing power lines to withstand high winds and ice loading	Windstorm, Winter Storm, Tornado, Utility/ Infrastructure Failure	Electric Utility Director	High	3	\$10,000,000	HMGP, Local, State	Ongoing	Ongoing
Augusta-7	Bury power lines for new construction	Windstorm, Winter Storm, Tornado, Utility/ Infrastructure Failure	Electric Utility Director	High	3	Per Site Basis	HMGP, Local, State	Ongoing	Ongoing
Benton-1	Conduct drainage system maintenance. (NFIP)	Flood	City Admin	High	1,3	\$300,000	Local	2030	Ongoing, with some actions complete
Benton-2	Identify and pursue funding for tree trimming	Windstorm, Winter Storm, Tornado, Utility/ Infrastructure Failure	City Admin	Medium	2,3	\$20,000	HMGP, Local, State	2025	On hold, researching funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Benton-3	Pursue funding and potential locations, and then construct tornado shelters/ safe rooms	Tornado	City Admin	High	2	\$500,000	HMGP, Local, State	2025	On hold, researching funding
Benton-4	Gain 100% compliance with flood management and building codes (NFIP)	Flood	City Admin	High	1,2	\$20,000 /year	Local	2025	Ongoing
Benton-5	GPS water and sewer infrastructure for easier locating after disaster	Tornado	City Admin	Medium	1,2	\$50,000	HMGP, Local, State	2025	On hold, researching funding
Cassoday-1	Purchase backup power generators for critical facilities	Utility/ Infrastructure Failure	City Mayor	Medium	2	\$100,000	HMGP, Local, State	Three years	Not started, lack of funding
Cassoday-2	Purchase and install back-up generator for City office and Community Center. This will allow the city office to remain functional if disaster is a long-term event.	All Hazards	City Mayor	Medium	2	\$100,000	HMGP, Local, State	Three years	Not started, lack of funding
Cassoday-3	Lease, Rent, Hire, Purchase Heavy Equipment for Cleanup or Repairs	All Hazards	City Council	Med	1	\$250,000	HMGP, Local, State	As Needed	New
Cassoday-4	Purchase Food, Water, Necessities to pre-stage for event	All Hazards	City Council	High	1	\$250,000	HMGP, Local, State	As Needed	New
Cassoday-5	Rebuilding Water Facilities/Infrastructure, ie Water Tower, lines, meters	Outside Hazards	City Council	High	1 & 2	\$500,000	HMGP, Local, State	Five years	New
Cassoday-6	Rebuilding Natural Gas Facilities/Infrastructure, i.e. Gas lines, meters	Outside Hazards	City Council	High	1 & 2	\$500,000	HMGP, Local, State	Five years	New
Cassoday-7	Continue to encourage 100% compliance with flood management and building codes (NFIP)	Flood	NFIP Director	Medium	1,2	Staff Time	Local	Continuous	In process
Cassoday-8	Identify and Evaluate areas in need of storm drainage improvements inside city limits. (NFIP)	Flood	NFIP Director	Medium	1,2	\$30,000	HMGP, State, Local	Continuous	Not started, lack of funding
Douglass-1	Identify and evaluate areas in need of storm drainage improvements inside city limits and in township areas (NFIP)	Flood	Public Works Director, Clerk/ Administrator	High	1,3	\$80,000	HMGP, Local, State	2021	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Douglass-2	Encourage 100% compliance with flood management and building codes (NFIP)	Flood	Public Works Director, Clerk/ Administrator	Medium	1,2	\$10,000	Local, State	2021	In progress
Douglass-3	Buyout of flood prone areas (NFIP)	Flood	Public Works Director, Clerk/ Administrator	Low	1,3	\$150,000	Local	2022	Not started, lack of funding
Douglass-4	Pursue funding and potential locations for Tornado shelters/ safe rooms	Tornado	Public Works Director, Clerk/ Administrator	High	2	\$500,000	HMGP, Local, State	2023	Not started, lack of funding
Douglass-5	Continue to pursue funds to elevate the township roadway leading to the city lagoons and lift station in Douglass (NFIP)	Flood	Public Works Director, Clerk/ Administrator	Low	1,3	\$500,000	Local, State	2022	Not started, lack of funding
Douglass-6	Identify and pursue funding for tree trimming, and removal of drought-stricken dead trees from public rights-of-way.	Windstorm, Winter Storm, Tornado, Utility/ Infrastructure Failure, Drought	Public Works Director, Clerk/ Administrator	Low	2,3	\$15,000	Local	2021	In progress
Douglass-7	Trim and remove trees and brush, grade and reshape the ditches. (NFIP)	Flood	Public Works Director, Clerk/ Administrator	Medium	1,3	\$25,000	Local	2022	In progress
Douglass-8	Develop a comprehensive stormwater management plan, including an engineer's study of the entire city in order to monitor flood prone areas and to improve the stormwater management systems. (NFIP)	Flood	Public Works Director, Clerk/ Administrator	High	1,3	\$80,000	HMGP, Local, State	2021	In progress
Douglass-9	Update the City's Emergency Operations Plan.	All Hazards	City Clerk/ Administrator	Medium	1,2,3	\$10,000	Local	2020	In progress
Elbing-1	Continued operation and management of jurisdictional NFIP activities.	Flood	Mayor	High	1,3	Staff Time	None	Repeating	Not started, lack of staff
Elbing-2	Purchase backup power generators for critical facilities	Utility/ Infrastructure Failure	Mayor	Medium	2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Elbing-3	Identify and pursue incentives for homeowners to build new homes to withstand high winds	Windstorm, Winter Storm, Tornado, Hail	Mayor	Low	2,3	Staff Time	None	Five years	Not started, lack of staff
Elbing-4	Pursue funding and potential locations, and construct tornado shelters/ safe rooms	Tornado	Mayor	Medium	2	\$500,000	HMGP, Local, State	Five years	Not started, lack of funding
El Dorado-1	Continue to identify critical areas with limited access due to flooding (NFIP)	Flood	City Engineer	Medium	1,2,3	Staff time	Local	2020	On Going
El Dorado-2	Continue to identify publicly owned flood prone facilities (NFIP)	Flood	City Engineer	Medium	1,3	Staff time	Local	2020	On Going
El Dorado-3	Identify and Evaluate areas in need of storm drainage improvements inside city limits and in township areas (NFIP)	Flood	Public Works Director	High	1,3	Staff time	Local	2019-2020	On Going
El Dorado-4	Encourage 100% compliance with flood management and building codes (NFIP)	Flood	City Engineer	Medium	1,2	Staff time	Local	2021	On Going
El Dorado-5	Promote awareness of new flood plain maps (NFIP)	Flood	City Engineer	High	1,2	\$1500	State/Local	2019	On Going
El Dorado-6	Implement soil erosion and sediment control programs	Soil Erosion and Dust, Land Slides, Land Subsidence	Public Works Director	Low	2,3	\$15,000	Local	2021	On Going
El Dorado-7	Purchase backup power generators for critical facilities	Utility/ Infrastructure Failure	Public Works Director	Medium	2	\$230,000	HMGP, Local, State	2022	Planning
El Dorado-8	Identify and pursue incentives for contractors to include safe room construction in new residential, commercial and public buildings	Tornado, Windstorm	City Engineer, Building Official	Medium	2	\$25,000	HMGP, Local, State	2022	Not started, lack of funding
El Dorado-9	Identify and pursue funding for tree trimming	Windstorm, Winter Storm, Tornado, Utility/ Infrastructure Failure	Public Works Director	Medium	2,3	\$20,000	HMGP, Local, State	2021	On Going
El Dorado-10	Pursue funding and potential locations for tornado shelters/ safe rooms	Tornado	City Manager	High	2	\$500,000	HMGP, Local, State	2022	Research





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
El Dorado-11	Promote awareness for Federal requirements for erosion control and education on soil erosion control measures and other related hazards	Soil Erosion and Dust, Land Slides, Land Subsidence	City Engineer, Public Works Director	High	2	\$15,000	HMGP, Local, State	On Going	Research
Latham-1	Continued compliance with the National Flood Insurance program (NFIP)	Flood	Mayor	High	1,3	Staff Time	None	Two years	Not complete, lack of funding
Latham-2	Identify and pursue funding for tree trimming	Windstorm, Winter Storm, Tornado, Utility/ Infrastructure Failure	Mayor	Medium	2,3	\$10,000	HMGP, Local, State	Two years	Not complete, lack of funding
Latham-3	Pursue funding and potential locations, and construct tornado shelters/ safe rooms	Tornado	Mayor	High	2	\$500,000	HMGP, Local, State	Five years	Not complete, lack of funding
Latham-4	Complete drainage and storm water runoff improvement projects throughout city. (NFIP)	Flood	Mayor	Medium	1,2	\$300,000	local	Three years	New
Leon-1	Identify and Evaluate areas in need of storm drainage improvements inside city limits and in township areas (NFIP)	Flood	City Maintenance	Medium	1,3	\$15,000	Grants, Local, State	One year	Planning
Leon-2	Encourage 100% compliance with flood management and building codes (NFIP)	Flood	Mayor	Medium	1,2	\$5,000	Local	Six months	Planning
Leon-3	Replace clay sewer with PVC	Flood, Utility/ Infrastructure Failure	City Maintenance	High	1,2,3	\$5,000,000	Grants, Local, State	Two years	Not started, lack of funding
Leon-4	Enhance/ build drainage culverts, clean, deepen ditches and enhance sewer drainage (NFIP)	Flood	City Maintenance	High	1,2,3	\$150,000	HMGP, Local, State	Two summers	Planning
Leon-5	The City needs the 90-degree angles removed and remapped to make the flow of the water flow correctly to keep the water from flooding the City. (NFIP)	Flood	City Maintenance	High	1,3	\$5,000,000	Grants, Local, State	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Potwin-1	Identify and pursue funding for tree trimming	Windstorm, Winter Storm, Tornado, Utility/ Infrastructure Failure	Mayor	Medium	2,3	\$8,000	Local	2020	ON GOING
Potwin-2	Pursue funding and potential locations for tornado shelters/ safe rooms	Tornado	Mayor	High	2	\$350,000	HMGP, Local, State	2025	Not started, lack of funding
Potwin-3	Replace existing Water and Sewer Lines. These lines are old and deteriorating and need replacing.	Multi-Hazard	City Manager, City Clerk	High	2	\$3,000,000	HMGP, Local, State	2030	Not started, lack of funding
Potwin-4	Increase public and Fire Department training on wildland-urban interface to be better prepared should this event occur.	Drought, Extreme Temperature, Lightning, Tornado, Wildfire, Windstorm	City Manager, City Clerk	High	1,2	\$500.00 per class	HMGP, Local, State	Five years	Not started, lack of funding
Potwin-6	Continue to encourage 100% compliance with flood management and building codes (NFIP)	Flood	NFIP Director	Medium	1,2	Staff Time	Local	Continuous	In process
Potwin-7	Identify and Evaluate areas in need of storm drainage improvements inside city limits. (NFIP)	Flood	NFIP Director	Medium	1,2	\$30,000	HMGP, State, Local	Continuous	Not started, lack of funding
Rose Hill-1	Identify and evaluate areas in need of storm drainage improvements inside city limits and in township areas	Flood	Public Works Director	High	1,3	\$15,000	Local	2020	In Progress
Rose Hill-2	Encourage 100% compliance with flood management and building codes (NFIP)	Flood	Public Works – Building Official	Medium	1,2	\$10,000	Local, State	2019	Not started, lack of funding
Rose Hill-3	Implement soil erosion and sediment control programs	Soil Erosion and Dust, Land Slide, Subsidence	Public Works Director	Medium	2,3	\$50,000	Local, State	2021	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rose Hill-4	Identify and pursue incentives for contractors to include safe room construction in new residential, commercial and public buildings	Tornado, Windstorm	Public Works – Building Official	Medium	2	\$100,000	Local	2020	Not started, lack of funding
Rose Hill-5	Identify and pursue funding for tree trimming; removal of drought stricken dead trees from public right-of-ways	Windstorm, Winter Storm, Tornado, Utility/ Infrastructure Failure	City Administrator	Medium	2,3	\$15,000	Local	2019	In Progress
Rose Hill-6	Identify and pursue incentives for homeowners to build new homes to withstand high winds	Windstorm, Winter Storm, Tornado, Hail	Public Works – Building Official	Low	2,3	\$250,000	Local, State	2019	Not started, lack of funding
Rose Hill-7	Pursue funding and potential locations for tornado shelters/safe rooms	Tornado	Chief of Police	High	2	\$500,000	HMGP, Local, State	2020	In Progress
Rose Hill-8	Identify critical areas with limited access due to flooding.	Flood	City Engineer	Medium	1,2,3	\$15,000	Local	2019	Not started, lack of funding
Rose Hill-9	Purchase back-up powered generators for critical facilities (City, Library, Community Center, WWTP, etc.)	Utility/Infrastructure Failure	Public Works Director	Medium	2	\$75,000	HMGP, Local, State	2020	Not started, lack of funding
Rose Hill-10	Bury power lines for new construction/development (residential and commercial)	Windstorm, Winter Storm, Tornado, Utility/Infrastructure Failure	Public Works Director	High	3	\$650,000	Local, State	2021	Not started, lack of funding
Rose Hill-11	Enhance/build drainage culverts; clean/deepen ditches; and enhance sewer drainage (NFIP)	Flood	Public Works Director	Medium	1,3	\$300,000	Local, State	2021	In Progress
Rose Hill-12	Promote awareness of new flood plain maps (NFIP)	Flood	City Engineer	High	1,2	\$10,000	Local	2020	Not started, lack of funding
Rose Hill-13	Buy-out flood prone areas (NFIP)	Flood	City Administrator	Medium	1,3	\$350,000	Local, State	2021	Not started, lack of funding
Rose Hill-14	Update city's Emergency Operations Plan	All Hazards	City Administrator	Medium	1,2,3	\$15,000	Local	2020	In Progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rose Hill-15	Develop a comprehensive citywide storm water management plan (NFIP)	Flood	City Administrator	High	1,3	\$25,000	Local, State	2020	Not started, lack of funding
Rose Hill-16	Replace old and deteriorating water and sewer lines	Multi-Hazard	Public Works Director/City Administrator	Medium	2	\$500,000	Local, State	2021	In Progress
Rose Hill-17	Enhance GIS programs to improve capabilities in mitigation, preparedness and response of all hazards	All Hazards	Public Works Director	Medium	2,3	\$30,000	HMGP, Local, State	2020	In Progress
Rose Hill-18	Coordinate County Fire and Police Department interface	All Hazards	City Administrator, Police and Public Works	Medium	1,2,3,4	\$10,000	Local	2019	Not started, lack of funding
Rose Hill-19	Identify funding for grade separation on Rose Hill Road and Railroad crossing	Emergency Access (All Hazards)	City Administrator	High	1,2	\$5,000,000	All Funding Sources (Fed, State, Local)	2022	Not Started, lack of funding
Towanda-1	Identify and pursue funding for tree trimming	Windstorm, Winter Storm, Tornado, Utility/ Infrastructure Failure	City Clerk	Medium	2,3	\$8,000	Local	5 yrs	Not started, lack of funding
Towanda-2	Identify and pursue incentives for homeowners to build new homes to withstand high winds	Windstorm, Winter Storm, Tornado, Hail	City Clerk	Low	2,3	Staff Time	None	5 yrs	Not started, lack of staff
Towanda-3	Pursue funding and potential locations, and construct tornado shelters/ safe rooms	Tornado	City Clerk	High	2	\$300,000	HMGP, Local, State	5 yrs	Not started, lack of funding
Towanda-4	Continue to encourage 100% compliance with flood management and building codes (NFIP)	Flood	NFIP Director	Medium	1,2	Staff Time	Local	Continuous	In process
Towanda-5	Identify and Evaluate areas in need of storm drainage improvements inside city limits. (NFIP)	Flood	NFIP Director	Medium	1,2	\$30,000	HMGP, State, Local	Continuous	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Whitewater-1	Encourage 100% compliance with flood management and building codes (NFIP)	Flood	Mayor, City Clerk	Medium	1,2	\$10,000	Local, State	2019	Not started, lack of funding
Whitewater-2	Identify and evaluate areas in need of storm drainage improvements inside city limits.	Flood	City Superintendent	High	1, 3	\$20,000	Local	2021	Not started, lack of funding
Whitewater -3	Identify and pursue incentives for contractors to include safe room construction in new residential, commercial and public buildings	Tornado, Windstorm	Mayor, City Clerk – Building Inspection	Medium	2	\$30,000	Local	2020	Not started, lack of funding
Whitewater-4	Identify and pursue funding for tree trimming; removal of drought stricken dead trees from public right-of-way's	Winter storm, Tornado, Windstorm, Utility Failure	City Superintendent, City Clerk	Medium	2,3	\$8,000	Local	2020	In progress
Whitewater-5	Pursue funding and potential locations for tornado shelters/safe rooms	Tornado	Mayor, City Clerk	High	2	\$100,000	HMGP, Local, State	2020	Not started, lack of funding
Whitewater-6	Upgrade back-up generator for City Building	Utility/ Infrastructure Failure	City Superintendent	Low	2	\$30,000	HMPG, Local State	2021	Not started, lack of funding
Whitewater-7	Update the City's Emergency Operations Plan	All Hazards	Mayor/ City Clerk	Medium	1,2,3	\$10,000	Local	2020	In progress
Augusta Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Augusta Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Augusta Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$30,000	HMGP, Local, State	Five years	Not started, lack of funding
Benton Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Benton Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Benton Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Bloomington Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Bloomington Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Bloomington Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$50,000	HMGP, Local, State	Five years	Not started, lack of funding
Bruno Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Bruno Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Bruno Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Chelsea Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Chelsea Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Chelsea Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$200,000	HMGP, Local, State	Five years	Not started, lack of funding
Clay Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Clay Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Clay Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$200,000	HMGP, Local, State	Winter 2019	In process – most culverts replaced.
Clifford Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Clifford Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Clifford Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Douglass Township-1	Replace box culvert on South Maple Street south of the Water Treatment Plant. This is a safety issue. (NFIP)	Flood	Township Trustee	High	1,3	\$80,000	HMGP, Local, State	Five years	Not started, lack of funding
El Dorado Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
El Dorado Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
El Dorado Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Fairmount Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Fairmount Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Fairmount Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Fairview Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Fairview Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	In progress
Fairview Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Repeating	In progress
Fairview Township-4	Repair and replace problem roads	Flood, Soil Erosion, Infrastructure Failure	Township Trustee	High	1,2	\$1,200	Local	Repeating	In progress
Glencoe Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Glencoe Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Glencoe Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Hickory Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Hickory Township-2	Identify critical areas with limited access due to flooding v	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Hickory Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Lincoln Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Lincoln Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Lincoln Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Little Walnut Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Little Walnut Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Little Walnut Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Logan Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Logan Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Logan Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, State, Local	Five years	Not started, lack of funding
Milton Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Milton Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Milton Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, State, Local	Five years	Not started, lack of funding
Murdock Township-1	Mitigate flooding risks by repairing/replacing old bridge at 50 th St, west of Butler Road. (NFIP)	Flood	Township Board	High	1, 2	\$100,000	Local budget; local, state	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
							and federal grants		
Murdock Township-2	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving drainage and ditches on north half of Tawakoni Rd. (NFIP)	Flood	Township Board	High	1, 2	\$50,000	Local budget; local, state and federal grants	Five years	Not started, lack of funding
Murdock Township-3	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving drainage, culvert and ditches on 10 th St, east edge of township line. (NFIP)	Flood	Township Board	High	1, 2	\$40,000	Local budget; local, state and federal grants	Five years	Not started, lack of funding
Murdock Township-4	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving drainage at the low area, T intersection of 10 th St and Prairie Creek. (NFIP)	Flood	Township Board	High	1, 2	\$40,000	Local budget; local, state and federal grants	Five years	Not started, lack of funding
Murdock Township-5	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving drainage at the low area, on the curve on 40 th east of Butler Rd. (NFIP)	Flood	Township Board	High	1, 2	\$40,000	Local budget; local, state and federal grants	Five years	Not started, lack of funding
Murdock Township-6	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving drainage at the low area, on the curve where the river meets Parallel Rd. (NFIP)	Flood	Township Board	High	1, 2	\$40,000	Local budget; local, state and federal grants	Five years	Not started, lack of funding
Murdock Township-7	Improve concrete culvert on Tawakoni at the ½ mile mark; correct low-water/drainage issues and risk to drivers due to narrow passage. (NFIP)	Flood	Township Board	High	1, 2	\$20,000	Local budget; local, state and federal grants	Five years	Not started, lack of funding
Pleasant Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Pleasant Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Pleasant Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, State, Local	Five years	Not started, lack of funding
Plum Grove Township-1	Identify and evaluate areas in need of storm drainage improvements due to flooding (NFIP)	Flood	Township Trustee	High	1, 2	\$2,000,00	HMGP	2039	In progress
Plum Grove Township-2	Replace road materials throughout Township	Flood, Winter Storm	Township Trustee	High	1	\$500,000	HMGP, PDM	2039	In progress
Plum Grove Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$1,500,000	HMGP, State, Local	2039	In progress
Prospect Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Prospect Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Prospect Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, State, Local	Five years	Not started, lack of funding
Richland Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Richland Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Richland Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Rock Creek Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Rock Creek Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Rock Creek Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Rosalia Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Rosalia Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rosalia Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$150,000	HMGP, Local, State	Five years	Not started, lack of funding
Spring Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Spring Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Spring Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Sycamore Township-1	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving drainage on Grey Rd between 150th and 135th. (NFIP)	Flood	Township Board	High	1, 2	\$20,000	Local budget, grants	Five years	Not started, lack of funding
Sycamore Township-2	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving bridge and ditches at Satchell Creek Rd and 170th. (NFIP)	Flood	Township Board	High	1, 2	\$20,000	Local budget, grants	Five years	Not started, lack of funding
Sycamore Township-3	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving culvert and ditches on 170th between Price Rd and Bluestem. (NFIP)	Flood	Township Board	High	1, 2	\$40,000	Local budget, grants	Five years	Not started, lack of funding
Sycamore Township-4	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving culvert and ditches on 130th between Price Rd and Bluestem. (NFIP)	Flood	Township Board	High	1, 2	\$40,000	Local budget, grants	Five years	Not started, lack of funding
Sycamore Township-5	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving culvert and ditches on 140th between Hwy 177 and Satchell Creek Rd. (NFIP)	Flood	Township Board	High	1, 2	\$40,000	Local budget, grants	Five years	Not started, lack of funding
Sycamore Township-6	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving drainage and ditches on	Flood	Township Board	High	1, 2	\$20,000	Local budget, grants	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	Satchell Creek Rd between 150th and 170th. (NFIP)								
Sycamore Township-7	Mitigate flooding risks to drivers and potential flood damage to infrastructure due to proximity to the river by improving drainage on Price Rd between 130th and 120th. (NFIP)	Flood	Township Board	High	1, 2	\$20,000	Local budget, grants	Five years	Not started, lack of funding
Sycamore Township-8	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving drainage and ditches on Price Rd between 140 th and 130 th .	Flooding	Township Board	High	1, 2	\$20,000	Local budget, grants	Pending funding	Not started, lack of funding
Sycamore Township-9	Mitigate flooding risks to drivers and potential flood damage to infrastructure by improving drainage and ditches at the 100 th St low water bridge.	Flooding	Township Board	High	1, 2	\$20,000	Local budget, grants	Pending funding	Not started, lack of funding
Towanda Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Towanda Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Towanda Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Union Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Union Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Union Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$80,000	HMGP, Local, State	Five years	Not started, lack of funding
Walnut Township-1	Identify and evaluate areas in need of storm drainage improvements (NFIP)	Flood	Township Trustee	High	1, 2	Staff Time	None	Five years	Not started, lack of staff
Walnut Township-2	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1	Staff Time	None	Five years	Not started, lack of staff
Walnut Township-3	Culvert/ ditch replacement and enhancement (NFIP)	Flood	Township Trustee	High	1, 2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Butler CC-1	Conduct regular emergency preparedness drills for students, faculty, and staff for issues such as Tornado, fires, and armed intruders.	Wildfire, Tornado, Terrorism, Civil Disorder, Windstorm	Facilities Management Director, Vice President of Student Services, Chief of Police, Director of Public Safety	High	1,2,3	Covered within existing budget	General Fund	Ongoing	Ongoing
Butler CC-2	Physical Security and Digital Infrastructure Upgrades to include campus security lighting, intruder alert system, alarm systems, digital alert signage, and proximity lock access systems.	Wildfire, Tornado, Terrorism, Civil Disorder	Vice President of Student Services, Director of Facilities Management, Chief of Police, Chief Information Officer	High	1,2,3 & 4	\$6,200,000	Capital Projects Mill Levy	36 months	In Progress
Butler CC - 3	Walk-through metal detectors for mass population attendance at activity events	Civil Unrest, Terrorism	Chief of Police, Director of Facilities Management	Medium	1,2,3	10 units @ \$3,000 per unit Total of \$30,000	Federal Grant	Five years	Not started, lack of funding
Butler CC - 4	Covered Car Parking for Butler Fleet Vehicles at Andover and El Dorado.	Hail	Facilities Management	Medium	1,2	\$400,000	Grant funding	Five years	Not started, lack of funding
USD#205-1	Implement construction of life saving shelters at high school and elementary school to minimize the threat to health and safety from tornados and other extreme wind events.	Tornado, Windstorm	Superintendent	High	1,2	\$2,500,000	HMGP	12-24 months	Not started, lack of funding
USD#205-2	Conduct regular emergency preparedness drills for students, faculty, and staff for issues such as tornado, fires, and hazard chemical spills.	All Hazards	Superintendent	High	1,2,3	Staff Time	Local	Ongoing	In progress
USD#205-3	Implement annual awareness campaigns to educate the public about potential risks to the area. Severe weather awareness campaign.	All Hazards	Superintendent	Medium	1,2,3	Staff Time	Local	24-36 months	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#206-1	Implement construction of life saving shelters to minimize the threat to health and safety from tornados and other extreme wind events.	Tornado, Windstorm	Superintendent	High	1,2	\$500,000	HMGP	Five years	Not started, lack of funding
USD#206-2	Purchase and install generators at the three school buildings as well as the district office and transportation center.	All Hazards	Superintendent	High	1,2,3	\$50,000	HMGP	Five years	New
USD#375-1	Purchase handheld two-way communication for crisis use throughout the district.	Crisis Management	Assistant Superintendent	High	1,2,4	\$7,000	HMGP Funds Grants Local Funds	One year	Not started, lack of funding
USD#375-2	Implement annual awareness campaigns to educate the public about potential risks to the area. Fire, Crisis, and Weather Awareness.	All Hazards	Assistant Superintendent	High	1,2,3	Staff Time	None	Annually	Ongoing
USD#375-3	Implement construction of life saving shelters to minimize the threat to health and safety from tornados and other extreme wind events. Construction of safe rooms to protect population at risk.	Tornado, Windstorm	Assistant Superintendent	High	1,2	\$400,000 per project. (CMS, CBE, CTI, CTP)	HMGP Local Bond	Five years	Planning
USD#375-4	Update secured entrances to allow for keyless entry and greater security.	Civil Unrest, Terrorism	Assistant Superintendent	Medium	1,2	\$80,000	HMGP Local Bond	Five years	Planning
USD#375-5	Provide emergency/crisis go bags to all classrooms	Civil Unrest, Terrorism	Assistant Superintendent	High	1,2,4	\$7,000	HMGP Local Funds	One year	Not started, lack of funding
USD#385-1	Build saferooms in all schools to keep the staff and students safe.	Tornado, Windstorm	USD 385 Director of Operations & Superintendent	High	1,2	\$30,000,000	Local Bond	Two years	Ongoing
USD#385-2	Controlled Access for all buildings	Civil Unrest, Terrorism	USD 385 Director of Operations & Superintendent	High	1,2	\$2,300,000	Local Bond, State Safety Grant, Local Capital Outlay Levy	Two years	Ongoing
USD#385-3	Replace/Upgrade Security Cameras and System for all buildings	Civil Unrest, Terrorism	USD 385 Director of Operations & Superintendent	High	1,2	\$550,000	Local Bond, State Safety Grant, Local	Two years	Ongoing





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
							Capital Outlay Levy		
USD#385-4	Purchase and Implementation of CrisisGo Mobile App	Civil Unrest, Terrorism	USD 385 Director of Operations & Superintendent	High	1,2,4	\$10,000	Local Funding	One year	Planning / Pilot
USD#385-5	Purchase Handheld Radios for each building	Civil Unrest, Terrorism	USD 385 Director of Operations & Superintendent	Medium	1,2,4	\$90,000	Local Capital Outlay Levy, State Safety Grant	Five years	Not started, lack of funding
USD#394-1	Purchase and install generators at school buildings and administration office	All Hazards	Capital Improvement Supervisor	High	1, 2	\$80,000	Bond, Grant	10 years	Planning
USD#394-2	Purchase multi-function radios that are compatible with area emergency responders	All Hazards	Superintendent	High	1, 2, 4	\$15,000	Local, Grant	Two years	Initiating project
USD#394-3	Construct brine mixing facility	Winter Storm	Capital Improvement Supervisor	Medium	1, 2	\$100,000	Bond, Grant	10 years	Planning
USD#394-4	Install controlled access entry at each school	Civil Unrest, Terrorism	Capital Improvement Supervisor	High	1, 2	\$80,000	Bond, Grant	One year	Initiating project
USD#394-5	Construct tornado shelters at each school	Tornado	Capital Improvement Supervisor	Medium	1, 2	\$10 million	Bond, Grant	10 years	Planning
USD#396-1	Purchase power supply backup generators for schools.	All Hazards	School Resource Officer	High	1,2,3	\$80,000	HMGP Grant, Local, bond	Three years	Not started, lack of funding
USD#396-2	Pursue funding for improved controllable entrances/ exits.	All Hazards	School Resource Officer	Medium	1,2,3	\$50,000	HMGP Grant, Local, bond	Three years	Not started, lack of funding
USD#396-3	Purchase communication radios	All Hazards	School Resource Officer	High	1,2,3,4	\$25,000	HMGP Grant, Local, bond	Three years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#396-4	Purchase security cameras	All Hazards	School Resource Officer	Medium	1,2,3	\$25,000	HMGP Grant, Local, bond	Three years	Not started, lack of funding
USD#402-1	Purchase 100 KW MTU on-site diesel generator, set at 208 V, 3-phase, 400 amp; concrete work, material, labor	Wind, Lightning	Superintendent	Medium	1, 2	\$48, 690	HMGP grant, local, bond	Five years	Not started, lack of funding
USD#402-2	Purchase and installation of 400, 120/277 LED emergency lights	All Hazards	Superintendent	Medium	1, 2	\$19,375	HMGP grant, local, bond	Five years	Not started, lack of funding
USD#490-1	Purchase and implementation of a comprehensive wireless radio system throughout the entire district. The district would have an FCC license, but dual-frequency radios would be given to SRO staff to have communication with EMS/LEA.	All Hazards	Assistant Superintendent	High	1,2,4	\$100,000	Pre-Disaster Mitigation Program; State Grant	July 2019	Design of scope for formalized proposals
USD#490-2	Purchase and install backup generator at the Bus Barn and PAC/Extend campus.	All Hazards	Assistant Superintendent	Low	1,2,4	\$80,000	Pre-Disaster Mitigation Program	July 2020	Not started, lack of funding
USD#490-3	Installation of a FEMA storm shelter at the Bus Barn	All Hazards	Assistant Superintendent	High	1,2	\$100,000	Hazard Mitigation Grant Program; District Capital Funds	July 2020	Formation of RFP for architects
USD#490-4	Updates and increases of crisis buckets in all classrooms and offices	All Hazards	Assistant Superintendent	Medium	1,2	\$10,000	Pre-Disaster Mitigation Program	July 2019	In progress
USD#490-5	Automation & integration of drill language & instructions into school phone and intercom systems	All Hazards	Assistant Superintendent	High	1,2,4	\$5,000	Pre-Disaster Mitigation Program; District Funds	July 2019	In progress
USD#492-1	Update secured entrances to allow for keyless entry and greater security.	Civil Unrest, Terrorism	Superintendent	High	1,2	\$20,000	HMGP Grants	One year	Planning





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#492-2	Update Security Camera System	Civil Unrest, Terrorism	Superintendent	High	1,2	\$6000	HMGP Grants	One year	Planning
USD#492-3	Continue annual awareness campaigns to educate the public about potential risks to the school including but not limited to fire, weather, and intruders.	All Hazards	Superintendent	High	1,2,3	Staff Time	Local	Annually	Ongoing
USD#492-4	Continue to provide Emergency/Crisis Bags & Buckets to all classrooms	Crisis Management/S tudent Safety	Building Principals	High	1,2,4	\$500 per year	Local	Annually	Ongoing
USD#492-5	Continue to supply local law enforcement/fire protection agencies with District Emergency Operations Plans	All Hazards	Superintendent	High	1,2,3,4	\$50 per year	Local	Annually	Ongoing
Butler REC-1	Re-enforce & strengthen existing 19 miles of 69kV transmission line by installing storm guys on each mile of line	Winter Storms/ Utility/ Infra-structure failure	Vice-President of Operations	High	1,2	\$162,000	HMGP, PDM, Local	One year	Not started, lack of funding
Butler REC-2	Re-conductor existing 19 miles of transmission line with Ice & Wind resistant T/2 Conductors	Winter Storms/ Utility/ Infra-structure failure	Vice-President of Operations	High	1,2	\$1,140,000	HMGP, PDM, Local	One year	Not started, lack of funding
Butler REC-3	Replace 8 miles of existing three-phase overhead lines, and older underground conductors at the El Dorado State Park to all new underground lines	Winter Storms/ Utility/ Infra-structure failure	Vice-President of Operations	High	1,2	\$1,800,000	HMGP, PDM, Local	18 months	Not started, lack of funding
Butler Co Fire District #1 / Andover Fire Rescue-1	Educational workshops for homeowners' associations and/ or rural communities to provide homeowners with property in the wildland urban interface & New Growth Cedar forest information on steps they can take on their own to defend their property from wildfire. Firewise program adapted to local fuel	Wildfire	Fire Chief, Kansas Forest Service	Medium	1,2,3	\$500 per workshop	Kansas Forest Service and Federal Grants Local Insurance company support	On going	Planning





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	conditions & topography & Ready Set Go as examples								
Butler Co Fire District #1 / Andover Fire Rescue -2	Implement Wildland Urban Interface (WUI) trainings to increase the general, tactical, and safety knowledge of anyone living in or responding to fires in the WUI.	Wildfire	Fire Chief, Kansas Forest Service	Medium	1,2,3	\$30 per student per training	Kansas Forest Service, State, Federal	On going	Planning
Butler Co Fire District #1 / Andover Fire Rescue -3	Identify & prioritize locations for Fuel Reduction in wildfire risk areas. & invasive New Growth Cedar forest plots	Wildfire	Fire Chief, Kansas Forest Service, Township board of Trustees, County & City Public works	Medium	1,2		Kansas Forest Service, Federal WUI grant dollars for hazardous fuel reduction projects	On going	Planning
Butler Co Fire District #1 / Andover Fire Rescue -4	Reduce hazardous fuels in prioritized wildfire risk areas. & invasive New Growth Cedar forest plots	Wildfire	Fire Chief, Kansas Forest Service, Township board of Trustees, County & City Public works	Medium	1,2	\$85.00 an acre for hazardous fuel reduction projects	KFS, Federal WUI grant dollars	On going	New
Butler Co Fire District #1 / Andover Fire Rescue -5	Brush & vegetation mediation on & adjacent to the Red Bud Trail, A Rails to Trails project	Wildfire	Fire Chief, Kansas Forest Service, Township board of Trustees, County & City Public works	Medium	1,2,3	\$85.00 an acre for hazardous fuel reduction projects	KFS, Federal WUI grant dollars Americor project potential	On going	New
Butler Co Fire District #1 / Andover Fire Rescue -6	Identify, record & communicate remote static water supply access points in all fire districts	Wildfire	Fire Chief, Kansas Forest Service, Township board of Trustees, County & City	Medium	1,2	\$750-1000 per site (Source US.DNR)	KFS, Federal WUI grant dollars, Private Insurance	Five years	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
			Public works, BCEM & BC911						
Butler Co Fire District #1 / Andover Fire Rescue -7	Develop improvements in vehicle access & water accessibility (Dry Hydrants, fixed/portable pumps)	Wildfire	Fire Chief, Kansas Forest Service, Township board of Trustees, County & City Public works	Medium	1,2	\$1500-10,000 per site	Kansas KFS, Federal WUI grant dollars Private Land owners, private insurance	Five years	New
Butler Co Fire District #1 / Andover Fire Rescue -8	Develop interagency communications strategies using the BU CERT Ham Radio network & local general Aviation interoperability	Wildfire,	Fire Chief, Kansas Forest Service, Township board of Trustees, County & City Public works	Medium	2, 4	\$1000	KFS, Federal WUI grant dollars, FAA, Local Air field operations	Five years	New
Butler County Rural Fire Districts (all Districts)-1	Educational workshops for homeowners' associations and/ or rural communities to provide homeowners with property in the wildland/ urban interface information on steps they can take on their own to defend their property from wildfire.	Wildfire	Fire Chiefs, Kansas Forest Service	Medium	1,2,3	\$500 per workshop	KFS and Federal Grants	Five years	Not started, lack of funding
Fire Districts (all Districts)-2	Implement Wildland Urban Interface (WUI) trainings to increase the general, tactical, and safety knowledge of anyone living in or responding to fires in the WUI.	Wildfire	Fire Chiefs, Kansas Forest Service	Medium	1,2,3	\$30 per student per training	KFS, State, Federal	Five years	Not started, lack of funding
Fire Districts (all Districts)-3	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	Fire Chiefs, Kansas Forest Service	Medium	1,2	\$85.00 an acre for hazardous fuel reduction projects	KFS, Federal WUI grant dollars	Five years	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Butler County RWDs (all Districts)-1	Acquire backup generators	All Hazards	RWD Directors	Medium	1, 2	\$50,000	HMGP	Five years	Not started, lack of funding
Butler County RWDs (all Districts)-2	Replace water line due to expansive soil. Shifting stream banks caused by floods. Soil movement due to earthquakes. Extend current line encasement	Expansive Soil	RWD Directors	Medium	1,2,3	\$1,000,000	Cash reserves or bond issuance.	Five years	Not started, lack of funding
Watershed Districts #18, #22, # 27, #28, #33 -1	Education about watersheds, building above or below the floodplain zone, and the impact on flooding (NFIP)	Flood	Watershed Contracting Officer	High	1,3	\$300 annually	Local, State, Federal, USDA-NRCS	Annually	On going
Watershed Districts #18, #22, # 27, #28, #33 -2	Conduct regular dam maintenance as required for established watershed districts.	Dam and Levee Failure/ Flood	Watershed Contracting Officer	High	1,2,3	\$600,000 annually	Local, State, Federal, USDA-NRCS	Annually	On going
Watershed Districts #18, #22, # 27, #28, #33 -3	Identify and clearly mark evacuation routes on watershed emergency Description plans. Ensure people are aware of evacuation routes in the event of major flooding. (NFIP)	Flood	Watershed Contracting Officer	High	1,2,3	\$2,900	Local, State, Federal, USDA-NRCS	Every 5 years	On going
Kansas Medical Center-1	Provide Influenza vaccinations through free clinics	Major Disease Outbreak	Director of the Pharmacy	Medium	1	Staff time and vaccine cost	HMGP, Local, State	8 months	In planning stage
Kansas Medical Center-2	Install electric shutoff valve for inlet water supply line	Flood	Maintenance Supervisor	Low	1, 2	Est. \$5000	Capital Resources and Internal Funding	6 months	New
Kansas Medical Center-3	HAZMAT/DECON training for staff	HazMat	Emergency preparedness coordinator/staff	High	1,2,4	Estimated~ \$3-5000 with new equipment	KMC, local, state, federal	12months	In progress
Kansas Medical Center-4	Purchase disaster supplies/equipment for mass causality/ natural disaster	All Hazards	Emergency preparedness coordinator/ Emergency department manager	Medium	1,2,3,4	Estimated~ \$8-10,000 with new equipment	KMC, local, state, federal	12 months	In planning stage





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Susan B Allen Hospital-1	Provide Influenza Vaccinations Through Free Clinics	Major Disease Outbreak	Manager of The Pharmacy	High	1	Staff time	HMGP, Local, State	8 months	Planning Stage
Susan B Allen Hospital-2	Installation Of Level 4 Bullet Resistant Glass At Two Registration Areas	Civil Unrest, Terrorism	Manager of Maintenance / Security & Emerg. Preparedness	High	1, 2	\$20,000	Capital Resources / Internal Funding	12 months	Planning Stage
Susan B Allen Hospital-3	Installation Of Steel Plates Used For Bullet Resistance At Registration Areas	Civil Unrest, Terrorism	Manager of Maintenance / Security & Emerg. Preparedness	High	1, 2	\$6,500	Capital Resources / Internal Funding	12 months	Planning Stage
Susan B Allen Hospital-4	Installation of Exterior Bollards To Prevent A Vehicle From Coming Through The Front Of The Building	Civil Unrest, Terrorism	Manager of Maintenance / Security & Emerg. Preparedness	High	1, 2	\$50,000	Capital Resources / Internal Funding	12 months	Planning Stage
Susan B Allen Hospital-5	HAZMAT / DECON Training & Equipment for Staff	HazMat	Emergency Preparedness	High	1, 2, 3	\$5,000	State, Federal, Local	12 months	Planning Stage





6.7.2 – Cowley County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Cowley County-1	Continue to comply with the NFIP regulations by enforcing floodplain management regulations	Flood	Health Department Administrator	High	1,3	Staff Time	None	Two years	In progress
Cowley County-2	Encourage NFIP participation for those communities not already participating	Flood	Health Department Administrator	High	1,3	Staff Time	None	Two years	Not started, lack of staffing
Cowley County-3	Migrate redundant IT disaster recovery storage to Cloud by two years	Utility/ Infrastructure Failure	Cowley County MIS/GIS Supervisor	High	1,2	Unknown	Local, Grants	Two years	Not started, lack of funding
Cowley County-4	Identify, inspect, and replace damaged culverts and as needed (NFIP)	Flood, Soil Erosion	Township Trustees	High	1,3	\$10,000 per Site	HMGP, PDM, Local, State, Federal	Two years	Not started, lack of funding
Cowley County-5	Purchase of fire trucks and upgrade fire station alarm systems	Wildfire	Cowley County Rural FD Chiefs	High	1,3	\$100,000	Local, Grants	Two years	Not started, lack of funding
Cowley County-6	Develop and train county governmental agencies in Continuity of Operations and Continuity of Government Planning along with a COOP exercise	All Hazards	Cowley County Administrator	High	1,2,4	Staff Time, \$100 per Meeting	Local	One year	In progress
Cowley County-7	Conduct an all hazards public education campaign with a goal of reaching 1,000 citizens per year	All Hazards	Cowley County EM Director	High	1,2,3,4	\$50 per Event	Local	Five years	In progress
Cowley County-8	Inspect and repair, upgrade, or replace aging outdoor warning sirens in existing locations	Tornado	Cowley County EM Director	Medium	1,2	\$2,000 - \$30,000 per Siren	HMGP, PDM, Local	90- Days per Siren	Not started, lack of funding
Cowley County-9	Obtain 100 additional NOAA Weather Radios to distribute to county residents	All Hazards	Cowley County EM Director	Medium	1,2,3	\$2,500	HMGP, PDM, Local	One year	Not started, lack of funding
Cowley County-10	Identify, inspect, and repair, upgrade, or replace damaged County roadways and related infrastructure as needed	Flood, Soil Erosion & Dust, Windstorm, Winter Storm, Utility/	Cowley County Public Works Director	High	1,2	\$1,000 - \$3,000,000 per Site	HMGP, PDM, Local	2 Days to Two years, Depending on Site	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
		Infrastructure Failure							
Cowley County-11	Purchase PPE and other critical firefighting related equipment as old equipment reaches end of life	Wildfire	Cowley County Rural Fire Chiefs	High	1,2	\$2,500 - \$350,000 per Item	HMGP, PDM, Local, AFG	One year per Item	Not started, lack of funding
Cowley County-12	Identify and mitigate overgrown trees and vegetation along road rights-of-way.	Windstorm, Winter Storm, Infrastructure Failure	Cowley County Public Works Director, Township Trustees	Medium	1,2	\$500 to \$10,000 per Site	HMGP, State, Local	30 Days per Site	Not started, lack of funding
Cowley County-13	Purchase critical roadway and right of way maintenance equipment as old equipment reaches end of life	Flood, Soil Erosion & Dust, Windstorm, Winter Storm, Utility/ Infrastructure Failure	Cowley County Public Works Director, Township Trustees	High	1,2	\$20,000 to \$200,000 per Item	HMGP, State, Local	90 Days per Item	Not started, lack of funding
Cowley County-14	Communicate hazards and dangers of floodplain activity with all residents that own property near or within a floodplain Flood	Flood	Flood Plain Administrator	High	1,2,3	Staff Time	Local	Continuous	Not started, lack of staffing
Arkansas City-1	Continue public awareness and educational programs on all hazards	All Hazards	Public Information Officer	High	1,2,3	\$500 per event	HMGP, Local, State,	Repeating	In progress
Arkansas City-2	Continue to participate in annual levee inspections conducted by US Army Corps of Engineers	Dam and Levee Failure, Flood	Public Works and City Emergency Management	High	1,3	Staff Time	None	Repeating	In progress
Arkansas City-3	Continue to comply with the NFIP regulations by enforcing floodplain management regulations	Flood	Neighborhood Services	High	1,3	Staff Time	None	Repeating	In progress
Arkansas City-4	Identify critical areas with limited access due to flooding (NFIP)	Flood	Public Works and Neighborhood Services	High	1,3	Staff Time	None	On-Going	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Arkansas City-5	Construct retention ponds (NFIP)	Flood	Developers	High	1,3	\$500,000	Local, State, Federal	Five years	In progress
Arkansas City-6	Purchase/ Install backup generators in critical facilities	Utility/ Infrastructure Failure	Public Works, Parks and Facilities	High	1,3	\$100,000	HMGP, Local, State	Five years	In progress
Arkansas City-7	Enhance existing GIS program to improve capabilities in mitigation, preparedness, and response for all hazards	All Hazards	Neighborhood Services	High	1,2,4	Staff Time	Local	Continuous	Not started, lack of staffing
Arkansas City-8	Continue and enhance housing rehabilitation program	All Hazards	Neighborhood Services	High	1,2,3	Unknown	Local, Federal, State	Five years	Not started, lack of funding
Arkansas City-9	Rebuild the Mill Canal Secondary Storm Water Pump	Flood	Public Works	High	1,2	\$175,000	HMGP, Local, State	Five years	Not started, lack of funding
Arkansas City-10	Replace/ install/ expand storm siren system	Tornado	City Emergency Manager	High	1,3	\$25,000	HMGP, Local, State	Five years	In progress
Atlanta-1	Continue public awareness and educational programs on all hazards	All Hazards	Mayor	High	1,2,3	\$500 per event	Local, HMGP, State	Five years	Not started, lack of funding
Atlanta-2	GIS Mapping of critical infrastructure	All Hazards	Mayor	High	1,3	Staff Time	None	Five years	Not started, lack of staffing
Atlanta-3	Design and construct a storm shelter or safe room.	Tornado, Windstorm	City Clerk	High	1,3	\$100,000	HMGP	One year	Not started, lack of funding
Burden-1	Continue public awareness and educational programs on all hazards	All Hazards	Mayor	High	1,2,3	\$200 per event	HMGP, Local, State	Five years	Not started, lack of funding
Burden-2	Construct FEMA approved Community Shelter	Tornado, Windstorm	Mayor	High	1,3	\$250,000	HMGP, Local, State	Five years	Not started, lack of funding
Burden-3	Maintain a master list of all people on oxygen	All Hazards	Mayor	High	1,3	Staff Time	None	Five years	Not started, lack of staffing





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Burden-4	Maintain a list of all storm shelters in the community (public and private)	Tornado	Mayor	High	1,3	Staff Time	None	On-Going	Not started, lack of staffing
Burden-5	Purchase of fire trucks and upgrade fire station alarm systems	Wildfire	Mayor	High	1,3	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
Burden-6	Purchase and install two storm sirens with battery backups	Tornado, Windstorm	City Clerk	Medium	1,3	\$30,000	HMGP, Local, State	Five years	Not started, lack of funding
Burden-7	Continue to encourage 100% compliance with flood management and building codes (NFIP)	Flood	NFIP Director, Mayor	Medium	1,2	Staff Time	Local	Continuous	In process
Burden-8	Identify and Evaluate areas in need of storm drainage improvements inside city limits. (NFIP)	Flood	NFIP Director, Mayor	Medium	1,2	\$30,000	HMGP, State, Local	Continuous	In progress
Burden-9	Acquire permanent back-up generator for the pump house	Utility/ Infrastructure Failure	Mayor	Medium	1,2	\$25,000	HMGP, Local, State	Six months	New
Cambridge-1	Continue public awareness and educational programs on all hazards	All Hazards	Mayor	High	1,2,3	Staff Time	None	Five years	Not started, lack of staffing
Cambridge-2	Acquire permanent back-up generator for critical facilities	Utility/ Infrastructure Failure	Mayor	Medium	1,2	\$25,000	HMGP, Local, State	Five years	Not started, lack of staffing
Cambridge-3	Continue to encourage 100% compliance with flood management and building codes (NFIP)	Flood	NFIP Director, Mayor	Medium	1,2	Staff Time	Local	Continuous	In process
Cambridge-4	Identify and Evaluate areas in need of storm drainage improvements inside city limits. (NFIP)	Flood	NFIP Director, Mayor	Medium	1,2	\$30,000	HMGP, State, Local	Continuous	Not started, lack of funding
Dexter-1	Continue public awareness and educational programs on all hazards	All Hazards	Mayor	High	1,2,3	\$500 per event	HMGP, Local	Five years	Not started, lack of funding
Dexter-2	Continue to comply with the NFIP regulations by enforcing floodplain management regulations	Flood	Mayor	High	1,3	Staff Time	None	Repeating	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Dexter-3	Identify critical areas with limited access due to flooding (NFIP)	Flood	Mayor	High	1,3	Staff Time	None	Five years	Not started, lack of staffing
Dexter-4	Replace/ Install/ Expand Storm Siren System	Tornado	Mayor	High	1,3	\$50,000	HMGP, Local	Five years	Not started, lack of funding
Dexter-5	Complete GIS maps of critical infrastructure for the city.	All Hazards	City Clerk	Medium	1,2,3	Staff Time	None	Five years	Not started, lack staff
Dexter-6	Purchase generator for community building, which may also be used as a Red cross shelter	Utility/ Infrastructure Failure	City Clerk	Medium	1,3	\$20,000	HMGP, Local	Five years	Not started, lack of funding
Gueda Springs-1	Continue public awareness and educational programs on all hazards	All Hazards	City Council	High	1,2,3	\$200 per event	HMGP, Local	Five years	Not started, lack of funding
Gueda Springs-2	Continue to enforce floodplain management regulations. (NFIP)	Flood	City Council	High	1,3	Staff Time	None	Repeating	In progress
Gueda Springs-3	Identify critical areas with limited access due to flooding (NFIP)	Flood	City Council	High	1,3	Staff Time	None	On-Going	Not started, lack of staffing
Gueda Springs-4	Culvert/ ditch replacement and enhancement	Flood, Soil Erosion	City Council	High	1,3	\$100,000	HMGP, Local	Five years	Not started, lack of funding
Gueda Springs-5	Acquire remote access to two outdoor warning sirens. Purchase and install remote access from the city building to both sirens. Purchase and install a new base radio at the city building with an additional 3 hand held radios for spotters.	Tornado, Windstorm	City Council	High	1,3	\$100,000	HMGP, Local	Five years	Not started, lack of funding
Parkerfield-1	Continue public awareness and educational programs on all hazards	All Hazards	Mayor	High	1,2,3	\$200 per event	HMGP, Local	Five years	Not started, lack of funding
Parkerfield-2	Continue to encourage 100% compliance with flood management (NFIP)	Flood	NFIP Director, Mayor	Medium	1,2	Staff Time	Local	Continuous	In process





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Parkerfield-3	Identify and evaluate areas in need of storm drainage improvements inside city limits. (NFIP)	Flood	NFIP Director, Mayor	Medium	1,2	\$30,000	HMGP, State, Local	Continuous	Not started, lack of funding
Parkerfield-4	Prepare a Disaster Preparedness & Continuity Plan	All Hazards	City Council	High	1,2,3	\$50,000	Local	Two years	New
Parkerfield-5	Purchase a generator for Community Center	All Hazards	City Council	Moderate	1,2,3	\$25,000	HMGP, Local	Three years	New
Udall-1	Continue public awareness and educational programs on all hazards	All Hazards	City Clerk	High	1,2,3	\$200 per event	HMGP, Local	Five years	In progress
Udall-2	Install new fire hydrants	Wildfire	City Clerk	High	1,3	\$10,000	HMGP, Local	Five years	Not started, lack of funding
Udall-3	Add battery backup to existing storm sirens. Additional warning for north side of town. Install additional siren and install battery backup to existing sirens.	Tornado	City Clerk	Medium	1,3	\$1,500 to \$2,500	HMGP, Local	6-12 months	In progress
Udall-4	Design and install a storm shelter for all trailer park and apartment residents.	Tornado	City Clerk	Medium	1,3	\$60,000	\$1,000,000	6-12 months	Land Purchased. Awaiting additional funding.
Udall-5	Continue to encourage 100% compliance with flood management (NFIP)	Flood	NFIP Director, Mayor	Medium	1,2	Staff Time	Local	Continuous	In process
Udall-6	Identify and Evaluate areas in need of storm drainage improvements inside city limits. (NFIP)	Flood	NFIP Director, Mayor	Medium	1,2	\$30,000	HMGP, State, Local	Continuous	In progress
Winfield-1	Continue to participate in annual levee inspections conducted by US Army Corps of Engineers	Dam and Levee Failure, Flood	Public Improvement, Streets, and Parks	High	1,3	\$15,00 per Inspection	None	Five years	In progress
Winfield-2	Complete Timber Creek MPD No. 29 Dam Inundation Map	Dam and Levee Failure, Flood	Public Improvement, Street and Parks	High	1,3	\$50,000	Local, State	Five years	In progress
Winfield-3	Identify critical areas with limited access due to flooding (NFIP)	Flood	Public Improvement	High	1,3	Staff Time	None	Five years	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Winfield-4	Continue to comply with the NFIP regulations by enforcing floodplain management regulations	Flood	Public Improvement	High	1,3	Staff Time	HMGP, Local	Repeating	In progress
Winfield-5	Electric Utility power line protection-tree trimming/pole inspection/pole replacement	Utility/ Infrastructure Failure	Electric Utilities	High	1,2	\$400,000	HMGP, Local	Repeating	In progress
Winfield-6	Plan, coordinate, & invest in water supply & water distribution systems utility	Utility/ Infrastructure Failure	Water Utility	High	1,2	\$100,000	HMGP, Local	Repeating	In progress
Winfield-7	Inspect, upgrade, expand, improve Storm water Management System	Utility/ Infrastructure Failure, Flood	Public Improvement	High	1,2	\$10,000 per Year	HMGP, Local	Repeating	In progress
Winfield-8	GIS enhancements to improve capabilities in mitigation, preparedness, and response for all hazards	All Hazards	Information Systems	High	1,2,4	\$250,000	HMGP, Local	Repeating	In progress
Winfield-9	Continue use of applicable building construction standards and codes with exception of 2014 Electric	All Hazards	Public Improvement	High	1,3,4	Staff Time	Local	Repeating	In progress
Winfield-10	Develop new Comprehensive Plan to include hazard resilience	All Hazards	Public Improvement	High	1,2,4	Staff Time	HMGP, Local	Fourth quarter, 2019	In planning stages
Bolton Township-1	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1,3	Staff Time	None	Five years	Not started, lack of staffing
Bolton Township-2	Culvert/ ditch replacement and enhancement (NFIP)	Flood, Soil Erosion	Township Trustee	High	1,3	\$50,000	HMGP, Local, State	Five years	Not started, lack of funding
Fairview Township-1	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Treasurer	High	1,3	Staff Time	None	Repeating	In progress, updated responsible entity
Fairview Township-2	Culvert/ ditch replacement and enhancement (NFIP)	Flood, Soil Erosion	Township Treasurer	High	1,3	\$50,000	HMGP, Local, State	Repeating	In progress, updated responsible entity
Fairview Township-3	Clean, repair, or rebuild culverts in problem areas	Flood, Soil Erosion	Township Treasurer	High	1,2	\$50,000	HMGP, Local, State	Repeating	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Fairview Township-4	Repair and improve problem roads and right of ways subject to flooding along the Walnut River to limit future issues	Flood, Soil Erosion, Infrastructure Failure Township	Township Treasurer	High	1,2	\$12,000 per Site	HMGP, Local, State	Repeating	New
Liberty Township-1	Bridge Safety. Older bridges on 172nd Road, 2 ½ miles east of 151st on 232nd, ¾ miles east of 151st. If severe flooding would occur these bridges might be damaged. Check for safety – load bearing capacity, reinforce if necessary	Flood	Trustee	Medium	1,3	\$500,000	HMGP, USACE, Local, State	Five years	In progress
Liberty Township-2	Install larger culvert and build up road 1-2ft on 141st Rd approx 1/4 mi North of 192nd Rd to prevent washout of roadway	Flood, Infrastructure Failure	Trustee	High	1,2	\$500,000	HMGP, Local	Two years	New
Liberty Township-3	Reinforce roadbed and culvert along portion of 182 nd Road to prevent future washout of half of roadway	Flood, Infrastructure Failure	Trustee	High	1,2	\$500,000	HMGP, Local	Five years	New
Liberty Township-4	Pack, raise, and widen portion of 181 st Road one mile South of 222 nd Road to mitigate sink hole issues	Land Subsidence, Infrastructure Failure	Trustee	High	1,2	\$500,000	HMGP, Local	Two years	New
Maple Township-1	Identify, inspect and replace damaged culverts as needed to prevent flooding and infrastructure failure (NFIP)	Infrastructure Failure, Flood	Township Trustee	High	1,2	\$21,500	HMGP, Local	Two years, 1-2 days per site	Not started, lack of staffing
Maple Township-2	Inspect and repair or replace damaged bridge near 41st and 52nd Road (NFIP)	Flood	Township Trustee	High	1,2	\$3,500	HMGP, Local, State	Two years, 1-2 days per repair	New
Ninnescah Township-1	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1,3	Staff Time	None	Repeating	In progress
Ninnescah Township-2	Culvert/ ditch replacement and enhancement(NFIP)	Flood, Soil Erosion	Township Trustee	High	1,3	\$50,000	HMGP, Local	Repeating	In progress
Ninnescah Township-3	Mitigate high erosion areas on large culverts	Flood, Soil Erosion	Township Trustee	High	1,2,3	\$20,000	HMGP, Local, State	Two years pending funding	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Omnia Township-1	Identify and respect and repair and replace damaged culverts as needed (NFIP)	Flood, Soil Erosion, Infrastructure failure	Township Treasurer	High	1,3	\$50,000	HMGP, Local, State	Two years, pending funding	In progress
Omnia Township-2	Inspect, inspect, and repair or replace bridge and road crossing drainage	Infrastructure Failure, Flood	Township Trustee	High	1,2	\$50,000	HMGP, Local, State	One year, funding dependent	New
Omnia Township-3	Identify and mitigate overgrown trees and vegetation along road right-of-ways and at intersections	Windstorm, Winter Storm, Infrastructure Failure	Township Trustee	High	1,2	\$50,000	HMGP, Local, State	One year, funding dependent	New
Pleasant Valley Township-1	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1,3	Staff Time	None	Five years	Not started, lack of staffing
Pleasant Valley Township-2	Culvert/ ditch replacement and enhancement (NFIP)	Flood, Soil Erosion	Township Trustee	High	1,3	\$50,000	HMGP, Local, State	Five years	Not started, lack of funding
Rock Creek Township-1	Conduct road ditch repair. (NFIP)	Flood	Rock Creek Township Treasurer	High	1,3	\$25,000	Local	Repeating	In progress
Rock Creek Township-2	Ditch maintenance, including mowing and cutting of weeds and small trees.	Winter Storm, Flood	Rock Creek Township Treasurer	Medium	1,3	\$8,000 per year	Local	Repeating	In progress
Rock Creek Township-3	Acquire funding to trim and maintain trees that overhang the roadways.	All Hazards	Rock Creek Township Treasurer	Medium	1,3	\$6,000		Repeating	In progress
Salem Township-1	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1,3	Staff Time	None	Repeating	In progress
Salem Township-2	Culvert/ ditch replacement and enhancement (NFIP)	Flood, Soil Erosion	Township Trustee	High	1,3	\$50,000	HMGP, Local, State	Repeating	In Progress
Salem Township-3	Construct community saferoom and/or storm shelter in New Salem	Tornado	Township Trustee	High	1,2	\$75,000	HMGP, Local, State	Six months, funding dependent	New
Salem Township-4	Construct community saferoom and/or storm shelter in Wilmot	Tornado	Township Trustee	High	1,2	\$75,000	HMGP, Local, State	Six months, funding dependent	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Sheridan Township-2	Replacement and enhancement of culverts and ditches along sections of 182nd Road (NFIP)	Flood, Soil Erosion, Infrastructure Failure	Township Trustee	High	1,2	\$4,734	HMGP, Local	Two years, six days per section	New
Sheridan Township-3	Replacement and enhancement of culverts and ditches along sections of 231st Road (NFIP)	Flood, Soil Erosion, Infrastructure Failure	Township Trustee	High	1,2	\$9,117	HMGP, Local	Two years, five days per section	New
Sheridan Township-4	Identify and mitigate overgrown trees and vegetation along road rights-of-way	Windstorm, Winter Storm, Infrastructure Failure	Township Trustee	High	1,2	\$2,990 for identified areas	HMGP, Local	Repeating	New
Silver Creek Township-1	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1,3	Staff Time	None	Repeating	In progress
Silver Creek Township-2	Culvert/ ditch replacement and enhancement (NFIP)	Flood, Soil Erosion	Township Trustee	High	1,3	\$50,000	HMGP, Local, State	Repeating	In progress
Silverdale Township-1	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1,3	Staff Time	None	Repeating	In progress
Silverdale Township-2	Culvert/ ditch replacement and enhancement (NFIP)	Flood, Soil Erosion	Township Trustee	High	1,3	\$50,000	HMGP, Local, State	Repeating	In progress
Vernon Township-1	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1,3	Staff Time	None	Repeating	In progress
Vernon Township-2	Culvert/ ditch replacement and enhancement (NFIP)	Flood, Soil Erosion	Township Trustee	High	1,3	\$50,000	HMGP, Local, State	Repeating	In progress
Windsor Township-1	Identify critical areas with limited access due to flooding (NFIP)	Flood	Township Trustee	High	1,3	Staff Time	Local	Repeating	In progress
Windsor Township-2	Culvert/ ditch replacement and enhancement (NFIP)	Flood, Soil Erosion	Township Trustee	High	1,3	\$50,000	HMGP, Local, State	Repeating	In progress
Cowley CC-1	Continue public awareness and educational programs on all hazards	All Hazards	College President	High	1,3	\$250.00 per event	HMGP, Local, State	Repeating	In progress
Cowley CC-2	Install surveillance cameras on college campus	Terrorism/ Agro-terrorism/ Civil Disorder	College President	High	1,2,3	\$25,000	HMGP, Local, State	Repeating	In progress
USD#462-1	Continue public awareness and educational programs on all hazards	All Hazards	Superintendent	High	1,2,3	\$250.00 per event	Local, HMGP	Repeating	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#462-2	Purchase/ Install backup generators in critical facilities	Utility/ Infrastructure Failure	Superintendent	High	1,3	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
USD#462-3	Purchase and install signage directing public to community storm shelter on school property	Tornado, Windstorm	Superintendent	High	1,2,3	\$500	HMGP, Local, State	One year	New
USD#462-4	Purchase and install intercom/ communications system for exterior of building grounds	Lightning, Hailstorm, Windstorm, Tornado	Superintendent	High	1,2,3	\$2,500	HMGP, Local, State	One year	New
USD#462-5	Purchase and install GPS tracking system for district school buses	Flood, Hailstorm, Windstorm, Tornado, Wildfire, Winter Storm	Superintendent, Transportation Director	High	1,2	\$15,000	HMGP, Local, State	One year	New
USD#463-1	Continue public awareness and educational programs on all hazards	All Hazards	Superintendent	High	1,2,3	\$250.00 per event	Local, HMGP	Repeating	In progress
USD#463-2	Construct FEMA approved safe rooms in schools	Tornado	USD 463 Superintendent	High	1,3	\$500,000	HMGP, Local, State	Two years	In progress
USD#463-3	Replace existing door locks with modern access control devices.	Civil Disorder, Terrorism	USD 463 Superintendent	Medium	1,3	\$100,000	HMGP, Local, State	One year	In progress, 2 external secured doors, 2 internal electronic doors
USD#465-1	Continue public awareness and educational programs on all hazards	All Hazards	Director of Operations	High	1,3	\$250.00 per event	HMGP, Local, State	Repeating	In progress
USD#465-2	Construct FEMA approved safe rooms in schools	Tornado	Director of Operations	High	1,2,3	\$500,000	HMGP, Local, State	Two years	Not started, lack of funding
USD#470-1	Continue public awareness and educational programs on all hazards	All Hazards	Superintendent	High	1,3	\$500 per event	HMGP, Local, State	Repeating	In progress
USD#470-2	Purchase/ Install backup generators in critical facilities	Utility/ Infrastructure Failure	Superintendent	High	1,2	\$50,000	HMGP, Local, State	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#470-3	Construct FEMA approved safe rooms in schools	Tornado	Superintendent	High	1,2	\$500,000	HMGP, Local, State	Five years	Not started, lack of funding
USD#470-4	Purchase and install backup generator for FEMA approved shelter	Tornado, Utility/ Infrastructure Failure	Superintendent	High	1,2	\$100,000	HMGP, Local, State	Five years	Not started, lack of funding
USD#471-1	Continue public awareness and educational programs on all hazards	All Hazards	Superintendent	High	1,3	\$500 per event	HMGP, Local, State	Repeating	In progress
USD#471-2	NOAA Radios for better communication between buildings, remote area that needs faster communication. Put NOAA radios in every classroom.	All Hazards	Superintendent	Medium	1,3	\$3,000	HMGP, Local, State	Five years	New
USD#471-3	Design and construct a saferoom as a means of providing life safety protection for students and citizens.	All Hazards	Superintendent	Medium	1,2	\$500,000	HMGP, Local, State	Two years	New
Cowley County Fire District #1-1	Continue public awareness and educational programs on all hazards	All Hazards	Fire Chief	High	3	\$500.00 per event	HMGP, Local, State	Repeating	In progress
Cowley County Fire District #1-2	Purchase of fire trucks and upgrade fire station alarm systems	Wildfire	Fire Chief	High	1, 2	\$500,000	HMGP, Local, State	Five years	New
Cowley County Fire District #1-3	Purchase and mount a hydrant on water tower East of Dexter	Wildfire	Fire Chief	High	1,2	\$5,000	HMGP, Local, State	Five years	New
Cowley County Fire District #1-4	Move OPS 1 repeater to a more optimal site for better coverage	All Hazards	Fire Chief	High	1,2	\$10,000	HMGP, Local, State	Five years	New
Cowley County Fire District #2-1	Provide homeowner education on wildfire mitigation in WUI areas	Wildfire	Fire Chief	High	1,2	\$500	HMGP, Local, State	Repeating	New
Cowley County Fire District #2-2	Evaluate existing buildings for saferooms and construct and/or refit buildings with saferooms	All Hazards	Fire Chief	High	1,2	\$1,000,000	HMGP, Local, State	Five years	New
Cowley County Fire District #2-3	Replace and/or upgrade existing firetruck fleet	All Hazards	Fire Chief	High	1,2	\$1,000,000	HMGP, Local, State	Five years	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Cowley County Fire District #2-4	Replacement or upgrade of existing fire stations	All Hazards	Fire Chief	High	1,2	\$1,000,000	HMGP, Local, State	Five years	New
Cowley County Fire District #4-1	Conduct public awareness campaign during the next Five years with a focus on wildfire	Wildfire	Fire Chief	High	1,2,3	\$500 per Event	HMGP, Local, State	Repeating, one day per event	New
Fire District Cowley County #4-2	Purchase of bunker gear to replace aging gear over the next Five years as they expire	All Hazards	Fire Chief	High	1,2	\$2,500 per Set	HMGP, Local, State	Five years	New
Cowley County Fire District #4-3	Purchase of replacement fire trucks over the next Five years as equipment reaches end of life	All Hazards	Fire Chief	High	1,2	\$200,000 per truck	HMGP, Local, State, AFG	Five years	New
Cowley County Fire District #5-1	Continue public awareness and educational programs on all hazards	All Hazards	Fire Chief	High	3	\$500.00 per event	HMGP, Local, State	Repeating	New
Cowley County Fire District #5-2	Become a Fire Wise USA Program which framework reduces wildfire risks at the local level	Wildfire	Fire Chief	High	1,2,3	\$24.14 per Dwelling	HMGP, Local, State	Two years	New
Fire District Cowley County #5-3	Purchase of Grass rig which is NFPA Compliant for safety	Wildfire	Fire Chief	High	1,2	\$130,000	HMGP, Local, State	Two years	New
Cowley County Fire District #5-4	Replace existing Fire Station generator to provide power to all critical systems at the Station	All Hazards	Fire Chief	High	1,2	\$25,000	HMGP, Local, State	Three years	New
Cowley County Fire District #8-1	Continue public awareness and educational programs on all hazards	All Hazards	Fire Chief	High	3	\$500 per event	HMGP, Local, State	Repeating	In progress
Cowley County Fire District #8-2	Purchase bunker gear and other essential PPE to replace aging gear over the next Five years as they expire	All Hazards	Fire Chief	High	1, 2	\$100,000	HMGP, Local, State	Five years	New
Cowley RWD #6-1	Install new well	All Hazards	Director	High	1,2	\$200,000	HMGP, Local, State	Five years	New
Cowley RWD #6-2	Build new water tower	All Hazards	Director	High	1,2	\$1,000,00	HMGP, Local, State	Five years	New





6.7.3 – Harper County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Harper County- 1	Identify additional community shelters.	Tornado, Windstorm	Emergency Management Director	High	1,2	Staff Time	HMGP, PDM, existing budget	Three years	In progress, Attica United Methodist Church project initiated
Harper County- 2	Educate Public on prescribed burns.	Wildfire	Emergency Management Director	High	1,2,3	Staff Time	Existing Budget	Repeating	Not started, lack of staffing
Harper County- 3	Provide and/ or require tree trimming/ maintenance for local utilities.	Tornado, Windstorm, Winter Storm	Emergency Management Director	High	1,2	Staff Time	Existing Budget	Three years	Not started, lack of staffing
Harper County- 4	Continue tornado spotter training and consider Community Emergency Response Team training.	Tornado, Windstorm	Emergency Management Coordinator	Medium	1,2,3	Staff Time	Existing Budget	Repeating	Not started, lack of staffing
Harper County- 5	Public education on the NFIP .	Flood	Flood Plain Administrator	Medium	1,2,3	Staff Time	Existing Budget	Repeating	Not started, lack of staffing
Harper County- 6	Apply for potentially available HMGP and FEMA Grants.	All Hazards	Emergency Management Director	Medium	1,3	Staff Time	Existing Budget	Repeating	In progress
Harper County- 7	Increase public and fire department training on wildland urban interface fires.	Wildfire	Emergency Management Director	Medium	2,3	\$30.00 per student per training session	Kansas Forest Service, State, and Federal	Three years	Not started, lack of funding
Harper County- 8	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	Emergency Management Director	Medium	1,2	~ \$85 an acre	Kansas Forest Service, Federal WUI Grant	Five years	Not started, lack of funding
Harper County- 9	Provide homeowner education on wildfire mitigation in wildland-urban interface.	Wildfire	Emergency Management Director	Medium	1,3	\$500	KFS, HOAs, Fire Departments	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Harper County- 10	Educate livestock owners on bio-security.	Agricultural Infestation	KSU Extension Agent	Low	1,3	Staff Time	Existing Budget, USDA	Within Five years	Not started, lack of staffing
Harper County- 11	Request an update of the countywide flood insurance rate map (NFIP)	Flood	Planning, Zoning, and Floodplain Administrator	Low	1,2,3	4 staff @ \$75 X 16 hours = \$4,800, and \$200,000	Staff Time, FEMA, DWR	Within Three years	Not started, lack of funding
Harper County-12	Preserve open space in the floodplain through regulatory and non-regulatory methods. This is to ensure flood prone areas are clear of new development. (NFIP)	Flood	Emergency Management Director	Low	1	\$1,000	General Funds	Three years	Not started, lack of funding
Harper County-13	Monitor School absenteeism rates weekly to compare the amount of illness being reported in individual schools to see how infectious diseases are affecting the school age population.	Major Disease Outbreak	Harper County Health Department Administrator	High	1,2,3	\$800 per year	Local Agency Budget	Two years	In progress
Harper County-14	Acquire a generator for the Harper County Courthouse.	Utility/ Infrastructure Failure	Emergency Management Director	High	1,2	\$25,000	General Fund, HMGP, DHS	Three years	Not started, lack of funding
Harper County-15	Complete epidemiological investigations on reportable diseases.	Major Disease Outbreak	Harper County Health Department Administrator	High	1,2	\$10,000.00 per year.	KDHE State Formula grant/ local agency budget	Repeating	In progress
Harper County-16	Acquire back-up generator for all water systems in the County.	Utility/ Infrastructure Failure	Emergency Management Director	High	1,2	\$10,000 per site	HMGP, General Fund	Two years	Not started, lack of funding
Harper County-17	Promote and provide routine vaccinations.	Major Disease Outbreak	Harper County Health Department Administrator	High	1,2	\$150,000.00 per year	KDHE, Billing, Local Agency Budget	Repeating	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Harper County-18	Acquire a reverse 911 system for citizen warning for all-hazards.	All Hazards	Emergency Management Director	High	1,2,3	\$10,000	General Fund, HMGP, DHS	Two years	Not started, lack of funding
Harper County-19	Continued participation in the NFIP . To keep flood prone areas clear of new development.	Flood	Planning, Zoning, and Floodplain Administrator	Medium	1,2,3	\$1,000	General Funds	Four years	Not started, lack of funding
Harper County-20	Rural water supply for wildland fire.	Wildfire	Emergency Management Director	Medium	1,3	\$1,000 per well site	HMGP, PDM	Four years	Not started, lack of funding
Harper County-21	Update Subdivision Regulations to include FEMA Minimum Standards. (NFIP)	Flood	Planning, Zoning, and Floodplain Administrator	Medium	1,3	\$10,000	General Fund	Three years	Not started, lack of funding
Anthony-1	Install community shelters.	Tornado, Windstorms	FP Admin	High	1.2.3	\$1,000,000 per shelter	HMGP, PDM, Staff Time, Existing Budget	Within one year	Not started, lack of funding
Anthony-2	Evaluation and reinforcement of Community Safe Room in Municipal Hall. Construct a community safe room that is compliant with FEMA 361 standards.	Tornado, Windstorm	FP Admin	High	1,2,3	\$20,000 for engineer's study, \$1,000,000 for shelter	HMGP, PDM	Five years	Not started, lack of funding
Anthony-3	Upgrade Sirens and add new sirens in growth areas.	Tornado, Windstorm	FP Admin	High	1,2,3	\$72,000	HMGP	Five years	In progress, five added
Anthony-4	Determine Base Flood Elevations around Anthony Lake Floodplain. (NFIP)	Flood	FP Admin	Medium	1,2,3	\$20,200	Self-Funded	Five years	Not started, lack of funding
Anthony-5	Continue to encourage 100% compliance with flood management and building codes (NFIP)	Flood	FP Admin	Medium	1,2	Staff Time	Local	Continuous	In process
Anthony-6	Identify and evaluate areas in need of storm drainage improvements inside city limits. (NFIP)	Flood	FP Admin	Medium	1,2	\$30,000	HMGP, State, Local	Continuous	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Attica-1	Upgrade outdoor warning sirens.	All Hazards	City Superintendent	High	1,2,3	\$300,000	HMGP, PDM	Within Two years	Not started, lack of funding
Attica-2	Design and construct stand-alone community shelters in neighborhoods where existing homes lack shelters.	Tornado, Windstorm	City Superintendent	High	1,2	\$1,000,000 per shelter	HMGP, PDM, Existing Budget	Within Five years	Not started, lack of funding
Attica-3	Continue to comply with NFIP and update current floodplain ordinance to reflect updated Flood Insurance Rate Maps. (NFIP)	Flood	City Superintendent, City Clerk	Medium	1,3	Staff Time	Local Budget	Five years	Not started, lack of staffing
Attica-4	Assist the study contractor in preparing Digital Flood Insurance Rate Maps (DFIRMs) for Harper County by identifying local mapping needs and participating in planning and review process. (NFIP)	Flood	City Superintendent	Low	1,2,3	\$300,000	Staff Time, FEMA, HMGP, PDM, FMA	Within Five years	Not started, lack of funding
Bluff City-1	Upgrade Outdoor Warning sirens.	All Hazards	City Council	High	1,2,3	\$300,000	HMGP, PDM	Within Two years	Not started, lack of funding
Bluff City-2	Design and construct stand-alone community shelters in neighborhoods where existing homes lack shelters.	Tornado, Windstorm	City Council	High	1,2,3	\$1,000,000 per shelter	HMGP, PDM	Within Five years	Not started, lack of funding
Bluff City-3	Drill a back-up water well.	All Hazards	City Council	Medium	1	\$200,000	HMGP, PDM	Within 10 years	Not started, lack of funding
Bluff City-4	Purchase and install generator at water well.	All Hazards	City Council	High	1,2	\$30,000	HMGP, PDM	Within Five years	Not started, lack of funding
Danville-1	Design and construct stand-alone community shelters in neighborhoods where existing homes lack shelters.	Tornado, Windstorm	Appointed councilman and Mayor	Low	1,2,3	\$1,000,000 per shelter	HMGP, PDM, Staff Time, Existing Budget	Within Five years. Partial remodel complete. Access to basement	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
								and bank safe vault.	
Harper-1	Design and construct stand-alone community shelters in neighborhoods where existing homes lack shelters.	Tornado, Windstorm	City Clerk	High	1,2,3	\$1,000,000 per shelter	HMGP, PDM, Staff Time, Existing Budget	Within One year	Not started, lack of funding
Harper-2	Upgrade outdoor warning sirens.	All Hazards	City Clerk	High	1,2,3,4	\$200,000	HMGP, PDM	Within One year	Not started, lack of funding
Harper-3	Enforce floodplain ordinance. (NFIP)	Flood	City Clerk	Medium	2,3	Staff Time	Staff Time, FEMA	Repeating	In progress
Harper-4	FIRM Update. (NFIP)	Flood	Zoning & Floodplain Administrator	Low	1,3	\$50,000	Staff Time	Within Five years	Not started, lack of funding
Harper-6	Upgrade/ Expand/ Improve Stormwater Management Systems. (NFIP)	Flood	City Clerk	Medium	1,2,3	\$200,000	HMGP, PDM	Five years	Not started, lack of funding
Harper-7	Continue to participate in the NFIP.	Flood	City Clerk	Medium	1,2,3	Staff Time	N/ A	Repeating	In progress m
Harper-8	Improve fire hazard mitigation.	Wildfire	Public Works City Clerk	Medium	1,2,3	\$10,000	Local	Five years	Not started, lack of funding
Waldron-1	Upgrade outdoor warning sirens.	All Hazards	Mayor	High	1,2,3,4	\$200,000	HMGP, PDM	Within Two years	Not started, lack of funding
Waldron-2	Design and construct stand-alone community shelters in neighborhoods where existing homes lack shelters.	Tornado, Windstorm	Mayor	Low	1,2,3	\$1,000,000 per shelter	HMGP, PDM	Five years	Not started, lack of funding
USD#361-1	Design and construct tornado shelter/ safe rooms for all school buildings.	Tornado, Windstorm	Superintendent	High	1,2,3	\$300,000 per school	HMGP	Within One year	Not started, lack of funding
USD#361-2	Construct a safe room/ storm shelter at all school buildings.	Tornado, Windstorm	USD 361 Superintendent	High	1,2,3	\$4,000,000	Municipal Bonds, Grants	18 months from date of approval.	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#361-3	Install automated call system to report a fire at Chaparral High School.	Wildfire	USD 361 Superintendent	High	1,2,3,4	\$1,000	Local Funds	2 months	Not started, lack of funding
USD#361-4	Install electromagnetic door locks for several doors in each of the student occupied properties in USD 361.	Civil Disorder, Terrorism	USD 361 Superintendent	Medium	1,2,3	\$14,000	Local	6 months	Not started, lack of funding
USD#361-5	Install security cameras at school district properties with significant value and safety concerns.	Civil Disorder, Terrorism	USD 361 Superintendent	Medium	1,2,3,4	\$29,000	District	6 months	Not started, lack of funding
USD#361-6	Looped plumbing system at CHS to allow for increased water flow in case of a fire in the building.	Wildfire, Lightning	USD 361 Superintendent	High	1,2	\$40,000	District	6 months	Not started, lack of funding
USD#511-1	Build safe room/tornado shelter for all school buildings	Tornado, Windstorm	Superintendent	High	1,2,3	\$300,000	HMGP	Within Five years	Not started, lack of funding
Hospital District #6-1	Conduct ice and snow removal	Winter Storm	Grants/ Preparedness Coordinator	Low	1, 2	\$10,000	Internal Budget	Repeating	Completed each winter
Hospital District #6-2	Conduct disaster drills	All Hazards	Disaster Planning Committee, Plant Operations Manager	Low	1	\$2,000	General Operations	Repeating	Not started, lack of funding





6.7.4– Harvey County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Harvey County-1	Continued operation and management of jurisdictional NFIP activities.	Flood	Flood Plain Manager	Low	1, 2,3	Staff Time	County, HMGP	Annual Review	In Progress
Harvey County-2	Acquisition of Flood Prone Properties. (NFIP)	Flood	Flood Plain Manager	Low	1,2	\$250,000	County/ HMGP	2023 Dependent on funding	In Progress
Harvey County-3	Erosion Control Bridge C-14.7. Stream restoration is needed as well as erosion control along the river bank up river. (NFIP)	Flood, Soil Erosion	Road & Bridge Superintendent	Low	1,2	\$65,200	County, HMGP	Four years	Not started, lack of funding
Harvey County-4	Erosion Control Bridge 15-B.6. Stream restoration is needed as well as erosion control along the river bank up river. (NFIP)	Flood Soil Erosion	Road & Bridge Superintendent	Low	1,2	\$62,000	County, HMGP	Four years	Not started, lack of funding
Harvey County-5	Erosion Control Bridge M-7.6. Stream restoration is needed as well as erosion control along the river bank up river. (NFIP)	Flood, Soil Erosion	Road & Bridge Superintendent	Medium	1,2	\$1,200,000	County, HMGP	Two years	New
Harvey County-6	Unpaved Road Repair countywide	Flood	Road & Bridge Superintendent	Medium	1,2	\$350,000 (\$75,000 Annually)	County	Four years	New
Harvey County-7	Acquire and install Mass Communication System countywide to provide emergency communication to the citizens in the event of an emergency.	All Hazards	Emergency Manager	High	1,2,3,4	\$25,000	County, HMGP, FEMA	Three years	New
Harvey County-8	Purchase and install outdoor warning siren – East Park	All Hazards	Parks Director	Low	1,2,4	\$37,000	County, HMGP, Other grants	Two years	New
Harvey County-9	Purchase and install outdoor warning siren – West Park	All Hazards	Parks Director	Low	1,2,4	\$34,000	County, HMGP, Other grants	Two years	New
Harvey County-10	Design and build a new community storm shelter in West Park	Tornado, Windstorm, Winter Storm	Parks Director	Medium	1,2,3	\$100,000	HMGP, Other grants	Four years	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Harvey County-11	Design and build a new community storm shelter in East Park	Tornado, Windstorm, Winter Storm	Parks Director	Medium	1,2,3	\$200,000	HMGP, Other grants	Four years	New
Harvey County-12	Design and build a new community storm shelter in Camp Hawk	Tornado, Windstorm, Winter Storm	Parks Director	Medium	1,2,3	\$50,000	HMGP	Four years	New
Harvey County-13	Tree Removal and maintenance.	Tornado, Windstorm, Winter Storm	Road & Bridge Superintendent	Low	1,2	\$32,400	HMGP, Local Grant	Annual review and dependent on funding.	In Progress
Harvey County-14	Seek funding for river bank stabilization projects throughout county (NFIP)	Flood	Road & Bridge Superintendent	Low	1,2	\$38,000 per project	HMGP	Five years	In Progress
Burrton-1	Drainage Way Improvement for streets that drain unacceptably following flooding and flash flooding. (NFIP)	Flood	Mayor	Medium	1,2	\$20,000	City, HMGP	Clear areas as needed with at least annual review	New
Burrton-2	Purchase fixed site emergency generator(s) for City Hall and Lift Stations.	Utility/ Infrastructure Failure	Mayor	Medium	1,2	\$150,000	HMGP, Other Grants, Local	Five years	New
Burrton-3	Continued operation and management of jurisdictional NFIP activities.	Flood	Mayor	Low	1,2,3	Staff Time	City	Annual Review	In Progress
Halstead-1	Design and build a new community storm shelter.	Tornado, Windstorm, Winter Storm	Mayor	High	1,2,3	\$350,000	City, HMGP	Four years	Not started, lack of funding
Halstead-2	Replace/rehabilitate some open ditches adjacent to Harvey County Highway 801 and the flood control levee in the City. (NFIP)	Flood	Mayor	Medium	1,2	S1: \$148,000, S2: \$151,200	City, HMGP Monies allocated as project progresses	Five years	In Progress
Halstead-3	Continued operation and management of jurisdictional NFIP activities.	Flood	Mayor	Low	1,2,3	Staff Time	City	Annual Review	In Progress
Halstead-4	Purchase and install outdoor warning sirens.	All Hazards	Mayor	Medium	1,2,3,4	\$40,000	HMGP, Other Grants, City	Pending funding	Not started, lack of funding
Halstead-5	Update City of Halstead Comprehensive Plan	All Hazards	Mayor	Medium	1,2,3,4	\$50,000	City	Three years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Hesston-1	Purchase fixed site emergency generator(s) for City Water Well Sites.	Drought, Utility/ Infrastructure Failure	Mayor	Medium	1,2	\$75,000	City, HMGP	Five years	Not started, lack of funding
Hesston-2	Complete an outdoor siren upgrade.	All Hazards	Mayor	High	1,2,3,4	\$25,000	City, HMGP	Four years	Not started, lack of funding
Hesston-3	Continued operation and management of jurisdictional NFIP activities.	Flood	Mayor	Low	1,2,3	Staff Time	City	Annual Review	In Progress
Hesston-4	Cleanout rebuild and repair gradient of the Middle Emma Creek waterflow. (NFIP)	Flood	Mayor	High	1,2	\$100,000	HMGP, Other grants, City	Three years	New
Hesston-5	Acquire and install Mass Communication System to provide emergency communication to the citizens in the event of an emergency.	All Hazards	Mayor	High	1,2,3,4	\$25,000	HMGP, FEMA, County, City	Three years	New
Newton-1	Complete the construction of a detention/ retention pond just outside the city to hold and detain storm water runoff that flows in Slate Creek and causes local street and private property flooding. This project also proposes to clean out channels restricting flow and capacity. (NFIP)	Flood	Mayor	Medium	1,2	\$1,200,000	Capital Improvement/ HMGP	Pending due to funding sources	Not started, lack of funding
Newton-2	Add an additional outdoor warning siren to the existing siren system.	All Hazards	Mayor	High	1,2,3,4	\$20,000	City, HMGP	Four years	Not started, lack of funding
Newton-3	Continued operation and management of jurisdictional NFIP activities.	Flood	Mayor	Low	1,2,3	Staff Time	City	Annual Review	In Progress
North Newton-1	Continued operation and management of jurisdictional NFIP activities.	Flood	Mayor	Low	1,2,3	Staff Time	City	Annual Review	In Progress
North Newton-2	Drainage Way Flow Improvement through Kidron Creek. (NFIP) . Monitor and remove any debris buildup and beaver dams.	Flood	Mayor	Medium	1,2	\$10,000	City, HMGP, Other	Completed at least bi-annually and cleanout as needed	In Progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Sedgwick-1	Acquire property within the park and complete construction of a Community Storm Shelter.	All Hazards	City Administrator	Medium	1,2,3	\$1,000,000	HMGP, other Grants	Five years	Not started, lack of funding
Sedgwick-2	Continued operation and management of jurisdictional NFIP activities. (NFIP)	Flood	City Administrator	Low	1,3	Staff Time	City	Annual Review	In Progress
Sedgwick-3	Gain entrance into the CRS Program. (NFIP)	Flood	City Administrator	Medium	1,3,4	Minimal	On Hand	Two years	Not Started
Walton-1	Continued operation and management of jurisdictional NFIP activities.	Flood	City Superintendent	Low	1,3	Staff Time	City	Annual Review	In Progress
Walton-2	Tree removal and drainage way maintenance of Beaver Creek on the west side of Walton Ave. (NFIP)	Flood	City Superintendent	Medium	1,2	\$3,000	City	One year	In Progress
Alta Township-1	Drainage Way Maintenance for all water ways to clear and maintain ditches and maintain foliage to improve storm water flow. (NFIP)	Flood	Township Trustee	Medium	1,2	\$10,000	HMGP, other Grants	Clear areas as needed with at least annual review	In Progress
Alta Township-2	Culvert Replacement throughout the township (NFIP)	Flood	Township Trustee	High	1,2	\$5,000	HMGP, other Grants, Local	Annual review. Several replaced or extended.	In Progress
Burrton Township-1	Culvert Replacement throughout the township (NFIP)	Flood	Township Trustee	High	1,2	\$30,000 - \$50,000	HMGP, other Grants	Several replaced with more identified as needing replaced	In Progress
Burrton Township-2	Storm water management throughout the township. Maintenance of road right of ways. (NFIP)	Flood	Township Trustee	Medium	1,2	\$5,000	Local, other grants	Clear ditches as determined by routine maintenance	New
Darlington Township-1	Drainage Way Flow Improvement throughout the township. Rebuilding of roadways. (NFIP)	Flood	Township Trustee	High	1,2	\$20,000	HMGP, other Grants	Dependent of funding	New
Darlington Township-2	Repair and maintain ditches that have been damaged due to Erosion (NFIP)	Flood	Township Trustee	Medium	1,2	\$3,000	HMGP, other Grants	Clear/repair ditches as	In Progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
								determined by routine maintenance and funding	
Darlington Township-3	Culvert Replacement throughout the township (NFIP)	Flood	Township Trustee	High	1,2	\$10,000	HMGP, Local	Annual review with several replaced and others identified.	In Progress
Emma Township-1	Conduct drainage way maintenance of 30-40 road miles and perform tree trimming as determined. (NFIP)	Flood	Township Trustee	Medium	1,2	\$30,000	HMGP, Other Grants	Clear areas as needed with at least annual review	New
Emma Township-2	Culvert Replacement/ Repair throughout the township. (NFIP)	Flood	Township Trustee	High	1,2	\$6,000	HMGP, other Grants	Several small culverts replaced and others identified.	In Progress
Garden Township-1	Conduct drainage way maintenance/replacement on culverts within Garden Township (NFIP)	Flood	Township Trustee	Medium	1,2	\$30,000	HMGP, other Grants	Several small culverts replaced and others identified.	In Progress
Garden Township-2	Conduct drainage way maintenance of 4-5 road miles and perform tree trimming as determined. (NFIP)	Winter Storm, Wind Storm	Township Trustee	Medium	1,2	\$12,000	HMGP, Local, Other grants	Annual review and clear areas identified	New
Halstead Township-1	Culvert Replacement & wash out repair throughout the township (NFIP)	Flood	Township Trustee	High	1,2	\$65,000	HMGP, other Grants	6 months, dependent on funding availability.	New
Halstead Township-2	Complete storm water management evaluation to identify hazard areas which create safety hazards. (NFIP)	Flood	Township Trustee	Medium	1,2,3	Staff Time	Current Budget	One year	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Highland Township-1	Install additional culverts in areas of flooding. (NFIP)	Flood	Township Trustee	Medium	1,2	\$900+	Local	2-3 days with funding. 2 new have been identified	In Progress
Highland Township-2	Road Way Elevation to prevent continual erosion of road bed.	Flood	Township Trustee	Medium	1,2	\$5,000	HMGP, other Grants	Three years	New
Lake Township-1	Storm Water Management throughout the township (NFIP)	Flood	Township Trustee	Medium	1,2	\$300,000	HMGP, Local, other Grants	2030	In Progress
Lake Township-2	Low Water Crossing Improvement. (NFIP)	Flood, Land Subsidence	Township Trustee	Medium	1,2	\$50,000	HMGP, other Grants	Three years Dependent on funding	Not started, lack of funding
Lakin Township-1	Road Way Elevation to prevent erosion (NFIP)	Flood	Township Trustee	Medium	1,2	\$30,000	Local, HMGP	Five years	Not started, lack of funding
Lakin Township-2	Culvert Replacement throughout the township (NFIP)	Flood	Township Trustee	Medium	1,2	\$5,000	Local, HMGP	Two years	New
Macon Township-1	Culvert Replacement throughout the township (NFIP)	Flood	Township Trustee	Medium	1,2	\$30,000	HMGP, other Grants	Several small culverts replaced, and 4 others identified.	In Progress
Macon Township-2	Complete a study to determine and prioritize culvert replacement program. (NFIP)	Flood	Township Trustee	High	1,2	Staff Time	Local	One year	NEW
Newton Township-1	Culvert Replacement throughout the township (NFIP)	Flood	Township Trustee	High	1,2	\$150,000	HMGP, Local, other Grants	Five years	In Progress
Newton Township-2	Elevate roadway at two locations in conjunction with concrete culvert replacement (NFIP)	Flood	Township Trustee	High	1,2	\$20,000	HMGP, Local, other Grants	Five years	New
Pleasant Township-1	Conduct tree trimming throughout township.	Winter Storm, Lightning, Windstorm	Township Trustee	Low	1,2	\$10,000 (\$2,000 Annually)	Local, HMGP, Other Grants	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Pleasant Township-2	Drainage ditches and culvert replacement, to include roadway elevation. (NFIP)	Flood	Township Trustee	Medium	1,2	\$10,800	HMGP, Local	One year	In Progress
Pleasant Township-3	Complete South Webb Road bridge improvement. (NFIP)	Flood	Township Trustee	Medium	1,2	\$15,000	HMGP, Local	Three years	Not started, lack of funding
Pleasant Township-4	Remove brush and debris in White Water Creek. (NFIP)	Flood, Soil Erosion	Township Trustee	Medium	1,2	\$5,000	HMGP, Local	Two years	In Progress
Richland Township-1	Culvert Replacement throughout the township (NFIP)	Flood	Township Trustee	High	1,2	\$1,000 per culvert	HMGP, Local	Annual review with several replaced and others identified.	In Progress
Richland Township-2	Re-build and elevate roadway in low lying areas (NFIP)	Flood	Township Trustee	Medium	1,2	\$5,000	HMGP, other Grants	Three years	New
Richland Township-3	Place Rip-Rap on identified slopes of washed out intersections (NFIP)	Flood	Township Trustee	Low	1,2	TBD by Harvey County	HMGP, Local	Five years	New
Sedgwick Township-1	Culvert Replacement throughout the township (NFIP)	Flood	Township Trustee	High	1,2	\$1,000 per culvert	HMGP, Local	Annual review with several replaced and others identified.	In Progress
Sedgwick Township-2	Install 4' concrete culvert, raise roadway, and hard plate road. SW60th, 1/2mile west of Ridge (NFIP)	Flood	Township Trustee	High	1,2	\$30,000	HMGP, Other Grants	Three years	New
Walton Township-1	Culvert Replacement throughout the township. (NFIP)	Flood	Township Trustee	High	1,2	\$1,000 per culvert	HMGP, Local	Annually several replaced and others identified.	In Progress
Walton Township-2	Maintain/clear ditches to prevent obstructions and damage to culverts. (NFIP)	Flood	Township Trustee	Medium	1,2	Staff Time & Equipment	HMGP, Local	Annual review and clear areas identified	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Bethel College-1	Purchase generators for Bethel College.	All Hazards	Director of Facilities	Medium	1,2	\$250,000	Local, Grants	Dependent upon funds availability.	Not started, lack of funding
Hesston College-1	Maintain the emergency contact system that uses a multi-communication approach (e.g. text, email, automated voice call)	All Hazards	Dean of Students	High	1,2,3,4	\$2,000	Budget	Bi-Annual Update	In Progress
Hesston College-2	Purchase and install generators at key facilities.	Tornado, Windstorm, Winter Storm, Utility/ Infrastructure Failure	Director of Building and Grounds	High	1,2	\$80,000	HMGP, Other Grants	Pending available funding	New
Hesston College-3	Improve I/T infrastructure to facilitate total cell phone coverage on campus to enhance on-site mass communication system.	All Hazards	Dean of Students	High	1,2,3,4	\$60,000	HMGP, Other Grants	One year	New
USD#369-1	Purchase and install permanent mounted generator for Burrton Schools.	All Hazards	Superintendent	Medium	1,2	\$20,000	HMGP, Other Grants, Local	Three years	New
USD#369-2	Conduct Emergency Preparedness Drills each month and take corrective actions for any identified problems.	All Hazards	Superintendent	Low	2,3,4	Staff Time	Budget	Conducted at various times/dates	In Progress
USD#373-1	Install safe rooms at all school facilities	Tornado, Windstorm	Superintendent	High	1,2	\$1.2 M	HMGP, Other Grants, Local	Three years	New
USD#373-2	Conduct Emergency Preparedness Drills each month and take corrective actions for any identified problems.	All Hazards	Superintendent	Low	2,3,4	Staff Time	Budget	Repeating	In Progress
USD#439-1	Maintain the emergency contact system that uses a multi-communication approach (e.g. text, email, automated voice call)	All Hazards	Superintendent	High	1,2,3,4	\$1,000	Budget	Bi-Annual Update	In Progress
USD#439-2	Conduct Emergency Preparedness Drills each month and take corrective actions for any identified problems.	All Hazards	Superintendent	Low	2,3,4	Staff Time	Budget	Repeating	In Progress
USD#439-3	Maintain a community storm shelter.	Tornado, Winter Storm, Lightning	Superintendent	High	1,2,3	Staff Time & Normal	Budget	Annual Review within EOP	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
						Operating Cost			
USD#439-4	Maintain a transportation infrastructure that would support mass transportation needs in the event of warranted evacuation	All Hazards	Superintendent	High	1,2,3,4	Staff Time & Associated Costs	HMGP, Other Grants	Annual Review	New
USD#439-5	Maintain a facilities infrastructure that can support temporary shelter for community members post-incident	All Hazards except flood	Superintendent	High	1,2,4	Staff Time & Normal Operating Cost	HMGP, Other Grants, Local	As determined by the incident	New
USD#440-1	Construct a Community Storm shelter at the swimming pool facility.	Tornado, Windstorm, Winter Storm, Lightning	Superintendent	High	1,2,3	\$50,000	HMGP, City, Other Grants	2023	Not started, lack of funding
USD#440-2	Conduct Emergency Preparedness Drills each month and take corrective actions for any identified problems.	All Hazards	Superintendent	Low	2,3	Staff Time	Current Budget	Repeating	In Progress
USD#440-3	Upgrade generator at High School and add a generator at the middle school.	All Hazards	Director of Buildings and Grounds	High	1,2	\$150,000	HMGP, Other Grants, Budget	Three years	New
USD#460-1	Purchase generators for all schools. High priority given to the high school.	All Hazards	Superintendent	High	1,2	\$250,000	HMGP, other Grants, Budget	Four years	Not started, lack of funding
USD#460-2	Conduct Emergency Preparedness Drills each month and take corrective actions for any identified problems.	All Hazards	Superintendent	Low	1,2,3	Staff Time	Current Budget	Repeating	In Progress
USD#460-3	Develop and implement a plan to install building access controls including keycard entry at all major entrances in all three school buildings	All Hazards	Superintendent	Medium	1,2,3,4	\$60,000	Safety Grants, FEMA, Budget	Two years	Not started, lack of funding
USD#460-4	Designate Hesston High School as a community response center for disaster agencies, e.g. American Red Cross	All Hazards	Superintendent	High	1,2,4,	Policy Update, then Staff Time & Normal Operating Cost	HMGP, Other Grants, Budget	One year	In Progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Alta Township Drainage District-1	Water Flow Improvement to include tree maintenance (NFIP)	Flood, Dam/Levee Failure	Director	Medium	1,2	\$200,000	HMGP, Other grants, County	Completed as budget or funding allows.	In Progress
Alta Township Drainage District-2	Conduct a water flow study to determine areas of potential risk of crop and property damage. (NFIP)	Flood	Director	Medium	1,2	Staff Time	Budget	Two years	New
Butler REC-1	Re-enforce & strengthen existing (9) miles of 69kV transmission line by installing storm guys on each mile of line	Winter Storm, Utility/Infrastructure Failure	Vice President of Operations	High	1,2	\$77,000	HMGP, FEMA, Pre-Disaster Mitigation	12 Months from fund availability	Not started, lack of funding
Butler REC-2	Re-conductor existing (9) miles of transmission line with Ice & Wind resistant T/2 Conductors	Winter Storm, Utility/Infrastructure Failure	Vice President of Operations	High	1,2	\$540,000	HMGP, FEMA, Pre-Disaster Mitigation	12 months from funding	Not started, lack of funding
Butler REC-3	Rebuild 2 miles of three-phase tie-line in township 24S, range 2E.	Winter Storm, Utility/Infrastructure Failure	Vice President of Operations	High	1,2	\$88,000	HMGP, FEMA, Pre-Disaster Mitigation	12 months from funding	Not started, lack of funding
Harvey County Fire District #1-1	Conduct public education on wildfire prevention.	Wildfire	Chief	High	1,2,3	\$5,000	HMGP, Forestry Grants, Local funding	Annual Outreach Program	In Progress
Harvey County Fire District #1-2	Participate in the State Fire Marshal Smoke Alarm Installation Program	Fire	Chief	High	1,2,3	None	Office of the State Fire Marshal	Two years	New
Harvey County Fire District #5-1	Develop & sustain fire break in the Sand Hills to mitigate hazards wildfire conditions	Wildfire	Fire Board	High	1,2,3	\$100,000	HMGP, forestry Grants, Local	Three years	New
Harvey County Fire District #5-2	Purchase and install outdoor warning siren – Hutchinson Watersports Club	All Hazards	Fire Board	Low	1,2,4	\$35,000	County, HMGP, Other grants	Four years	New
Harvey County Fire District #5-3	Purchase and install outdoor warning siren – Pete’s Puddle	All Hazards	Fire Board	Low	1,2,4	\$35,000	County, HMGP, Other grants	Four years	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Harvey County RWD #1-1	Acquire a portable backup generator to be used as a backup for the office or well sites.	All Hazards	Chairman of the Board	Medium	1, 2	\$30,000	HMGP, Other Grants	Five years	New
Harvey County RWD #1-2	Acquire a series of variable speed pumps.	All Hazards	Chairman of the Board	Medium	1, 2	\$50,000	HMGP, Other Grants	Five years	New
Little Arkansas River Drainage District-1	Complete a study of low-lying areas and low water bridges to ascertain and prioritize mitigation actions to prevent crop and property flooding. (NFIP)	Flood	Director	Medium	1,2	\$3,000	County, Other Grants	Two years	In Progress
Little Arkansas River Drainage District-2	Once study is complete, develop a budget to address actions needed such as water flow improvement, road improvements, and/or culvert replacement. (NFIP)	Flood	Director	Medium	1,2	TBD according to study	Count, Other Grants	Five years	New
Sand Creek Watershed-1	Conduct an EAP tabletop exercise to aid in the education of the Watershed Board.	Flood, Dam and Levee Failure	Watershed Treasurer	Medium	1,2,3,4	\$5,000	HMGP, Other Grants	Annually	In Progress
Sand Creek Watershed-2	Water Flow Improvement to include tree maintenance (NFIP)	Flood, Dam/ Levee Failure	Watershed Treasurer	Medium	1,2	\$50,000	HMGP, County, Other grants	Completed as budget or funding allows.	In Progress





6.7.5 – Kingman County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Kingman County-1	Educate public on prescribed burns.	Wildfire	Emergency Manager	High	1,3	\$1,500	Local, State	Repeating	Not started, lack of funding
Kingman County-2	Investigate potential for emergency preparedness network and if viable purchase a system. (similar to a reverse 911 system).	All Hazards	Emergency Manager	High	1,2,3,4	\$150,000	HMGP, PDM, DHS Grants	1-Two years	Not started, lack of funding
Kingman County-3	Provide mobile generators for water/wastewater system operations.	All Hazards	Emergency Manager	High	1,2	\$12,000, purchase cost of generator \$5,000 - \$30,000	HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Kingman County-4	Identify potential additional water hydrant locations and install system	Wildfire	Emergency Manager	High	1,2	\$5,000 to \$10,000	HMGP, PDM, DHS Grants	Repeating	Not started, lack of funding
Kingman County-5	Investigate necessary steps to standardize system of emergency communication between jurisdictions.	All Hazards	Emergency Manager	High	1,2,4	\$6,000	DHS Grants	One year	Not started, lack of funding
Kingman County-6	Relocate Sheriff's Office to non-flood area.	Flood	Emergency Manager	High	1,2	\$300,000	HMA Programs	Five years	Not started, lack of funding
Kingman County-7	Community outreach education on the NFIP and flood insurance for enhanced NFIP compliance and maintenance.	Flood, Dam and Levee Failure	Planning and Zoning Director	Medium	1,3,4	Staff Time	Existing Budget	Two years	Not started, lack of staff
Kingman County-8	Continue Tornado spotter training and consider Community Emergency Response Team (CERT) Training.	Tornado, Winter Storm, Windstorm, Hailstorm, Lightning	Emergency Manager	Medium	1,2,3	Staff Time	Existing budget, NWS Grant	Repeating	Not started, lack of staff
Kingman County-9	Upgrade countywide warning system.	All Hazards	Emergency Manager	Medium	1,2,3,4	\$200,000	HMGP, PDM, DHS Grants	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Kingman County-10	Identify additional community shelters. Construct safe rooms in neighborhoods where existing homes lack shelters.	Tornado, Winter Storm, Windstorm, Hailstorm, Lightning	Emergency Manager	Medium	1,2	\$500,000 each	HMGP, PDM, Staff Time, Local	Five years	Not started, lack of funding
Kingman County-11	Increase public and fire department training on wildland urban interface fires	Wildfire	Local Fire Chiefs	Medium	1,3,4	\$30 per student per training session	Kansas Forest Service, Local	Repeating	Not started, lack of funding
Kingman County-12	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	Local Fire Chiefs	Medium	1,2	\$85 per acre	Kansas Forest Service and WUI Grant	Repeating	Not started, lack of funding
Kingman County-13	Provide homeowner education on wildfire mitigation in wildland-urban interface.	Wildfire	Local Fire Chiefs	Medium	1,2,3,4	\$500 per workshop	Kansas Forest Service, Local, Home owners associations, Rural Communities	Repeating	Not started, lack of funding
Kingman County-14	Investigate and update existing roadway overtopping design standards. (NFIP)	Flood	County Road and Bridge Director	Low	1,2	\$1,000 - \$5,000	Staff Time, Local	Five years	Not started, lack of funding
Kingman County-15	Coordinate with Red Cross/ Salvation Army during extreme temperature events.	Extreme Temperature	Emergency Manager	Low	1,2,4	\$1,000 - \$5,000	Local	Five years	Not started, lack of funding
Kingman County-16	Develop communication network for elderly and isolated population	All Hazards	Emergency Manager	Low	1,2,3,4	\$1,000	Local	Five years	Not started, lack of funding
Kingman County-17	Educate Townships on benefits of roadside tree trimming and maintenance	Wildfire	Noxious Weed Director	Low	1,2,3	Staff Time	Local	Five years	Not started, lack of staff
Kingman County-18	Educate livestock owners on bio-security.	Agricultural Infestation	Emergency Manager	Low	1,2,3	Staff Time, up to \$20,000	Local, USDA	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Kingman County-19	Request an update of the countywide flood insurance rate map (FIRM) (NFIP).	Flood, Dam and Levee Failure	Planning and Zoning Director	Low	1,2	Staff Time: \$4,800	Staff Time, FEMA	Five years	Not started, lack of funding
Kingman County-20	Apply annually for potentially available HMGP and FMA grants.	All Hazards	Emergency Manager	Low	1,2	Staff Time: \$600	Local	Repeating	Not started, lack of funding
Kingman County-21	Continued compliance with NFIP.	Flood	Emergency Manager	High	1,2	Staff Time:	Local	Repeating	In progress
Cunningham-1	Assist the study contractor in preparing revised DFIRMs (NFIP)	Flood	City Clerk	Medium	1,2	\$9,000	Staff Time, FEMA	Five years	Not started, lack of funding
Cunningham-2	Strengthen floodplain ordinance after DFIRM upgrade (NFIP)	Flood	City Clerk	Medium	1,2	Staff Time	Local	Three years	Not started, lack of staff
Cunningham-3	Implement monitoring process to enhance enforcement of floodplain regulations. (NFIP)	Flood	City Clerk	Medium	1,2,3,4	Staff Time	Local	Three years	In progress
Cunningham-4	Fire Department Readiness. :1) Increase public and fire department training on wildland-urban interface fires. 2) Continue to work with townships served by the fire department to upgrade equipment and facilities. 3) Assess vulnerability of critical facilities,	Wildfire	Fire Chief & City Clerk	High	1,2,3	\$1,000,000	General fund or grants	On-Going for training, Three years for Equipment	Not started, lack of funding
Cunningham-5	Promote the purchase and use of NOAA Weather radios in homes and long term care facilities and other businesses.	All Hazards	City Clerk	High	1,2,3	\$3,500	Grant/ General Fund/ Lions Club and/ or PRIDE as a project	Two years	Not started, lack of funding
Cunningham-6	1. Seek funding for a storm shelter/ saferoom at a school or public building. 2. Assess vulnerability of critical facilities. 3. Develop a program or system for supporting vulnerable populations during emergency events.	Tornado, Windstorm	City Clerk	High	1,2,3	\$1,000,000	HMGP, PDM, DHS Grants	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Cunningham-7	acquire outdoor warning sirens for the north side of town and relocate the existing siren to the south side of town.	Tornado, Windstorm	City Clerk	High	1,2,3,4	\$12,500	HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Cunningham-8	Improve lighting and traffic controls at critical intersections and / or work to improve and widen Valley Street.	All Hazards	City Clerk	High	1,2	\$100,000	City General Fund	Five years	Not started, lack of funding
Cunningham-9	Acquire a series of variable speed pumps to assure the ability of the city to supply water during natural and man-made disasters. Replace water lines in jeopardy of being damaged due to expansive soils.	All Hazards	City Clerk	Medium	1,2	Transfer switch \$3,200. Variable drive \$8,500.	HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
City of Kingman-1	Identify and develop potential evacuation and transportation routes for the southern portion of the City of Kingman during flood events.	Flood	Public Works Director	High	1,2,3,4	Staff Time, \$6,000	Local	Three years	Not started, lack of funding
City of Kingman-2	Enhance NFIP compliance by assisting the study contractor in preparing revised maps.	Flood	Flood Plain Administrator	Medium	1,2,3	\$9,000	Staff Time, FEMA	Five years	Not started, lack of funding
City of Kingman-3	Strengthen and enforce floodplain ordinance, as appropriate, following DFIRM development (NFIP)	Flood	Flood Plain Administrator	Medium	1,2,3,4	Staff Time, \$600	Staff Time	Five years	Not started, lack of funding
City of Kingman-4	Relocation of the Sheriff's Office out of the floodplain. (NFIP)	Flood	City Manager	High	1,2,3	\$12,000,000	Federal	Five years	Not started, lack of funding
City of Kingman-5	Identify a location for a safe room. Tornado is a high hazard risk for Kingman. There are safe rooms in 2 of the schools, however there are not any other safe rooms for the public and other citizens. Safe room funding will be sought.	Tornado, Winter Storm, Hailstorm, Lightning	City Manager	High	1,2	\$1,000,000	HMA	Five years	Not started, lack of funding
City of Kingman-6	Continued compliance with NFIP.	Flood	Flood Plain Administrator	High	1,2	Staff Time:	Local	Repeating	In progress
Nashville-1	Update and improve fire protection capability of the City. Local Fire Department shall also update existing	Wildfire	Mayor of Nashville	High	1,2	\$15,000	CDBG, US Forest Service	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	mutual aid agreement with neighboring Zenda for fire protection services.								
Nashville-2	Prepare grant applications for the purchase and installation of a storm siren within the City.	Tornado, Winter Storm, Hailstorm, Lightning	Mayor of Nashville	High	1,2,3,4	Staff Time: \$15-20,000	Staff Time, Existing Budget, DHS Grant, NWS Grant	10 years	Not started, lack of funding
Norwich-1	Expand public outreach and natural hazards education through the NWS training program.	All Hazards	Mayor	Medium	1,3	\$700	Local	Repeating	Not started, lack of funding
Norwich-2	Publish article in the newspaper about tornado hazard preparedness.	Tornado, Windstorm, Hail	Mayor	Medium	1,3	Staff Time	Existing Budget	Repeating	Not started, lack of staff
Norwich-3	Provide Generators for critical buildings within city	All Hazards	City Maintenance Supervisor	High	1,2	\$10,000 - \$50,000	HMGP, PDM, DHS Grants	5-10 years	Not started, lack of funding
Norwich-4	Update current outdoor warning device	Tornado, Windstorm, Hail, Flood, Winter Storm	City Maintenance Supervisor	High	1,2,3,4	\$15,000 - \$25,000	HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Norwich-5	Seek funding to design and construct a safe room for the community of Norwich to protect its population.	Tornado, Windstorm	Mayor	High	1,2	\$350,000	Local, State, Federal	One year	Not started, lack of funding
Penalosa-1	Implement codes, policies and procedures that protect the safety and welfare of the citizens of Penalosa.	All Hazards	Mayor	High	1,2,3,4	Staff Time	Local	Five years	Not started, lack of staff
Penalosa-2	Provide preparedness kits for each household. Put on the training and purchase the items.	All Hazards	Mayor	Medium	1,2,3	\$2,500 - \$3,000	Local, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Penalosa-3	Enhance fire prevention program.	Wildfire	Mayor	High	1,2,3	\$10,000	Local	Repeating	Not started, lack of funding
Penalosa-4	Seek funding to design and construct individual/community shelters	Tornados, Windstorms	Mayor	Medium	1,2	\$500,000	HMGP, PDM, DHS Grants	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Spivey-1	Increase public education and outreach for Tornado specifically mobile home Owners.	Tornado, Windstorm, Hail	Mayor	High	1,2,3	\$9,000	Staff Time, FEMA	Five years	Not started, lack of funding
Spivey-2	Public education outreach about the importance of mobile home tie-down practices.	Tornado, Windstorm, Hail	Mayor	High	1,2,3	\$200 per training	Staff Time	Three years	Not started, lack of funding
Spivey-3	Seek funding for distribution of mobile home tie-downs to disadvantaged families	Tornado, Windstorm, Hail	Mayor	Medium	1,2	\$50,000	Potential Insurance Funding	Two years	Not started, lack of funding
Spivey-4	Construct a community safe room	Tornado, Windstorm	Mayor	High	1,2,3	\$500,000	Local, State, Federal	Three years	Not started, lack of funding
Spivey-5	Lower Insurance premiums for residents (ISO). Work with state departments.	Wildfire	Mayor	High	1,2,3,4	Staff Time		Two years	Not started, lack of staff
Zenda-1	Provide storm sirens for the City.	Multi-Hazard	Mayor	High	1,2,3,4	Staff time: \$9,000 and cost of siren	Staff Time, Existing budget, DHS Grant, NWS Grant	Three years	Not started, lack of funding
Zenda-2	Provide permanent back-up electric power generator for primary city water supply.	Multi-Hazard	Mayor	High	1,2	\$50,000	HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Zenda-3	Provide permanent back-up electric power generator for City Office/Community Center.	Multi-Hazard	Mayor	High	1,2	\$50,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Zenda-4	Construct acceptable community safe room/storm shelter.	Multi-Hazard	Mayor	High	1,2	\$500,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Zenda-5	Identify storm water drainage paths and evaluate effectiveness thereof. (NFIP)	Flood	Mayor	High	1,2	410,000	Local, State, HMGP,	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
							PDM, DHS Grants		
Zenda-6	Eliminate blockages, replace insufficient/ineffective drainage culverts, and if necessary, build additional drainages for storm water control. (NFIP)	Flood	Mayor	High	1,2	\$150,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Zenda-7	Identify additional sources of financial and technical assistance for mitigation activities.	Multi-Hazard	Mayor	High	1,2	Staff Time	Local	Five years	Not started, lack of staff
Zenda-8	Devise and implement fire hazard mitigation plans for abandoned/untended properties within the City.	Multi-Hazard	Mayor	High	1,2	\$10,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Zenda-9	Continue and enhance housing rehabilitation program.	Multi-Hazard	Mayor	High	1,2	\$400,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Zenda-10	Provide public with information regarding fire safety.	Multi-Hazard	Mayor	High	3	Staff Time	Local	Repeating	Not started, lack of staff
Zenda-11	Provide public with information regarding storm/emergency safety and preparedness.	Multi-Hazard	Mayor	High	3	Staff Time	Local	Repeating	Not started, lack of staff
Zenda-12	Conduct training with local emergency responder groups.	Multi-Hazard	Mayor	High	4	Staff Time	Local	Repeating	Not started, lack of staff
Zenda-13	Conduct hazard identification meetings with local businesses.	Multi-Hazard	Mayor	High	3	Staff Time	Local	Repeating	Not started, lack of staff
Zenda-14	Asses vulnerability of water distribution system and prioritize fixes.	Multi-Hazard	Mayor	High	1,2	Staff Time	Local	Five years	Not started, lack of staff
Zenda-15	Develop and conduct hazard training with neighboring communities and emergency services.	Multi-Hazard	Mayor	High	4	Staff Time	Local	Repeating	Not started, lack of staff
Allen Township-1	Culvert replacement and resize and raise road elevation to help prevent flooding and road washing away. (NFIP)	Flood	Township Trustee	Medium	1,2	\$200,000	Local, State, HMGP,	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
							PDM, DHS Grants		
Bennett Township-1	Replace culverts in rock roads and improve ditches to help with the flow of water caused by flood, and winter storms (NFIP)	Flood	Township Treasurer	High	1,2	\$200,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Canton Township-1	Study drainage throughout the township and implement measures for flood control management and improvement. Increase culvert size if necessary. (NFIP)	Flood	Township Treasurer	Medium	1,2	\$200,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Canton Township-2	Trim or remove trees in areas that may block or block roadways	Tornado, Winter Storm, Windstorm, Lightning	Township Treasurer	Medium	1,2	\$10,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Chikaskia Township-1	Study drainage throughout the township and implement measures for flood control management and improvement. Increase culvert size if necessary. (NFIP)	Flood	Township Trustee	Medium	1,2	\$200,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Chikaskia Township-2	Trim or remove trees in areas that may block or block roadways.	Tornado, Winter Storm, Windstorm, Lightning	Township Trustee	Medium	1,2	\$10,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Dresden Township-1	Trim or remove trees in areas that may block or block roadways resulting in less of a chance of the roadways becoming impassable.	Tornado, Winter Storm, Windstorm, Lightning	Township Trustee	Medium	1,2	\$10,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Dresden Township-2	Study drainage throughout the township and implement measures for flood control management and improvement. Increase culvert size if necessary. (NFIP)	Flood	Township Trustee	Medium	1,2	\$300,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Eagle Township-1	Culvert Replacement and repair. We are increasing culvert size 3 – 4 inches (NFIP)	Flood	Eagle Township Trustee	Medium	1,2	\$250,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Eureka Township-1	Study drainage throughout the township and implement measures for flood control management and improvement. (NFIP)	Flood	Township Treasurer	Medium	1,2	\$200,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Eureka Township-2	Trim or remove trees in areas that may block or block roadways	Tornado, Winter Storm, Windstorm, Lightning	Township Trustee	Medium	1,2	\$10,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Evan Township-1	Study drainage throughout the township and implement measures for flood control management and improvement. Increase culvert size if necessary. (NFIP)	Flood	Township Treasurer	Medium	1,2	\$200,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Evan-Township-2	Trim or remove trees in areas that may block or block roadways	Tornado, Winter Storm, Windstorm, Lightning	Township Trustee	Medium	1,2	\$10,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Galesburg Township-1	Study drainage throughout the township and implement measures for flood control management and improvement. Increase culvert size if necessary. (NFIP)	Flood	Township Treasurer	Medium	1,2	\$200,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Galesburg Township-2	Trim or remove trees in areas that may block or block roadways.	Tornado, Winter Storm, Windstorm, Lightning	Township Trustee	Medium	1,2	\$10,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Hoosier Township-1	Study drainage throughout the township and implement measures for flood control management and improvement. Increase culvert size if necessary. (NFIP)	Flood	Township Treasurer	Medium	1,2	\$200,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Kingman Township-1	Replace undersized culvert with larger ones and put fills on road. (NFIP)	Flood	Township Trustee	Medium	1,2	\$200,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Peter Township-1	Water Erosion. Raise the road and replace culvert to a bigger size. Educate the public on the effects the drought plays on trees.	Drought, Flood	Township Treasurer	Medium	1,2	\$200,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Richland Township-1	Avoid road closure-provide a way for water to avoid going over top of road. 1) remove trees, raise road bed base 3 feet and re-channel downstream water flow, new culverts. 2) Remove deep sand and replace with keel fill base and culverts. (NFIP)	Flood	Township Treasurer	Medium	1,2	\$200,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Rural Township-1	Replace small culverts with larger ones. (NFIP)	Flood	Township Trustee	Medium	1,2	\$200,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Union Township-1	Clearing ditches and increase the size of culverts where needed to allow for better drainage. (NFIP)	Flood	Township Treasurer	Medium	1,2	\$100,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Valley Township-1	Study drainage throughout the township and implement measures for flood control management and improvement. Increase culvert size if necessary. (NFIP)	Flood	Township Treasurer	Medium	1,2	\$300,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Valley Township-2	Trim or remove trees in areas that may block or block roadways.	Tornado, Winter Storm, Windstorm, Lightning	Township Trustee	Medium	1,2	\$20,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
Vinita Township-1	Conduct regularly scheduled culvert inspections and maintenance	Flood, Soil Erosion	Township Trustee	Medium	1,2	\$10,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
White Township-1	Study drainage throughout the township and implement measures for flood control management and improvement. Increase culvert size if necessary. (NFIP)	Flood	Township Treasurer	Medium	1,2	\$400,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
White Township-2	Trim or remove trees in areas that may block or block roadways	Tornado, Winter Storm, Windstorm, Lightning	Township Trustee	Medium	1,2	\$30,000	Local, State, HMGP, PDM, DHS Grants	Five years	Not started, lack of funding
St. Patrick School Kingman-1	Designate schools as community response/ recovery centers; and for disaster agencies, like the American Red Cross, to utilize in times of disaster.	All Hazards	Parish Pastor, School Principal, Area Red Cross Representative	High	1,2	Staff Time	Local, State	Five years	Not started, lack of staff
St. Patrick School Kingman-2	Educate Parish and School about purpose of community response/ recovery centers.	All Hazards	Parish Pastor, Kingman County Emergency Management Office	Medium	1,2,3	Staff Time	Local, State	Five years	Not started, lack of staff
St. Patrick School-3 Kingman	Design and construct safe rooms to provide for both school and parish use.	Tornado, Winter Storm, Windstorm, Hail, Lightning	Parish Pastor, School Principal	High	1,2,3	\$1,000,000	School Budget, State, Federal, and Other Grants that may	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
							become available.		
USD#331-1	Designate schools as community response/ recovery centers; and for disaster agencies, like the American Red Cross, to utilize in times of disaster. Community partnership	All Hazards	Superintendent, Area Red Cross Representative	High	1,2,3,4	Staff Time	Local, Red Cross	Two years	Not started, lack of staff
USD#331-2	Educate public about purpose of community response/ recovery centers.	All Hazards	Superintendent, Kingman County Emergency Management Director	Medium	1,2,3,4	Staff Time	School and Emergency Operations Budget, State and Federal Grants	Repeating	Not started, lack of staff
USD#331-3	Design and construct safe rooms for USD#331 facilities.	Tornado, Winter Storm, Windstorm, Hail, Lightning	Superintendent, School Board Members	High	1,2	\$1,000,000	School Budget, State, Federal, Grants	Five years	Not started, lack of funding
USD#331-4	Provide emergency backup generators for all school facilities	Utility/ Infrastructure Failure	Superintendent, School Board Members	High	1,2	\$30,000 each	School Budget, State, Federal	Five years	Not started, lack of funding
USD#332-1	Conduct FEMA recognized exercises with support from the National Guard and in participation with the Civil Air Patrol cadet program	All Hazards	Superintendent, Area Red Cross Representative	Medium	1,2,3,4	Staff Time	School Budget	Repeating	Not started, lack of staff
USD#332-2	Improve parent-student education outreach program about disaster Emergencies	All Hazards	Superintendent, Area Red Cross Representative	High	1,2,3	Staff Time	School Budget, Emergency Management	Repeating	Not started, lack of staff
USD#332-3	Designate schools as community response/ recovery centers; and for disaster agencies, like the American Red Cross, to utilize in times of disaster.	All Hazards	Superintendent, Area Red Cross Representative	High	1,2,3	Staff Time	Local, Red Cross	Two years	Not started, lack of staff





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#332-4	Educate public about purpose of community response/ recovery centers	All Hazards	Superintendent, Kingman County Emergency Management Director	Medium	1,2,3	Staff Time	Local	Repeating	Not started, lack of staff
USD#332-5	Design and construct safe rooms for USD#332 facilities.	Tornado, Winter Storm, Windstorm, Hail, Lightning	Superintendent, School Board Members	High	1,2	\$1,000,000	School Budget, State, Federal	Five years	Not started, lack of funding
USD#332-6	Provide emergency backup generators for all school facilities	Utility/ Infrastructure Failure	Superintendent, School Board Members	High	1,2	\$30,000 each	School Budget, State, Federal	Five years	Not started, lack of funding
Arkansas Valley Electric COOP-1	Kingman: Rebuild 0.8 mi 1 ph cwc as 1 ph #2 ACSR, from 27-10-25-40 to 27-10-26-40. Rebuild 0.8 mi 1 ph cwc between ACSR line, in existing ROW. Copperweld between ACSR. About 6 miles/ 18 meters downline, mostly cwc.	Utility/ Infrastructure Failure	Operations Director	High	1,2	\$31,080	HMGP	Five years	Not started, lack of funding
Arkansas Valley Electric COOP-2	Kingman: Rebuild 0.9 mi 1 ph cwc as 1 ph #2 ACSR, from 28-9-16-10 to 28-9-16-40. Rebuild 0.9 mi 1 ph cwc between ACSR line. Remove trees and straighten it out. Copperweld between ACSR. About 15 miles/ 24 meters downline, about half ACSR. Line diverts behind trees in swamp for two long spans. Remove them and straighten it. Added some dollars for the tree work.	Utility/ Infrastructure Failure	Operations Director	High	1,2	\$31,080	HMGP	Five years	Not started, lack of funding
Arkansas Valley Electric COOP-3	Kingman: Rebuild 1.0 mi 1 ph cwc as 1 ph #2 ACSR, from 27-9-28-10 to 27-9-29-10. Rebuild 1.0 mi 1 ph cwc between ACSR line. Move 0.25 mi of it north across road to under build, to avoid trees. Copperweld between ACSR. About 15 miles/ 37 meters downline,	Utility/ Infrastructure Failure	Operations Director	High	1,2	\$34,946	HMGP	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	mostly cwc. Line diverts behind trees for 1/4 mile. Could move that portion to under build on Kingman's 34.5 kV line across the road. Remove large trees.								
Arkansas Valley Electric COOP-4	Kingman: Rebuild 3.0 mi 1 ph cwc as 1 ph #2 ACSR, from 28-9-15-10 to 28-9-35-40. Rebuild 3.0 mi 1 ph cwc between ACSR line, in existing PROW. Copperweld between ACSR. About 20 miles/ 35 meters downline, all ACSR.	Utility/ Infrastructure Failure	Operations Director	High	1,2	\$44,567	HMGP	Five years	Not started, lack of funding
Kingman Community Hospital-1	Installation of emergency generator to supply 600-amp service to supply electrical power to a 200 amp service panel and a 400 amp additional panel for emergency electrical needs.	All Hazards	Director of Engineering and Safety, Kingman Community Hospital	Medium	1,2	\$200,000	Grants, FEMA, Local	Five years	Not started, lack of funding
Kingman Community Hospital-2	Safe Room/ Shelter to be constructed, connected to, or close by the hospital facility	Tornado, Windstorms, Hail, Winter Storms	Hospital Director of Engineering and Safety	High	1,2	\$600,000	FEMA, Local	One year	Not started, lack of funding
Kingman Community Hospital-3	Install a water well and well sanitizer to assure the ability to supply potable water to hospital for patients, visitors, community, and staff.	All Hazards	Hospital Director of Engineering and Safety	Medium	1,2	\$14,000	Grants, FEMA, Local	3 months from funding availability	Not started, lack of funding
Wheatland's Care Center-1	Design and construct a safe room for residents.	All Hazards	Administrator	High	1,2,3	\$300,000 - \$500,000	Local, Fund Raising, Tax credits, Grants.	2 – Five years	Not started, lack of funding
Wheatland's Care Center-2	Purchase backup generators for the care center.	All Hazards	Administrator	Medium	1,2,3	\$10,000 - \$50,000		2 – Five years	Not started, lack of funding
Wheatland's Care Center-3	Update fire control center. Replace the control system portion of the Fire Suppression System.	Wildfire	Administrator	Medium	1,2	\$100,000	Local, Fund Raising, Tax credits, Grants	Five years	Not started, lack of funding





6.7.6– McPherson County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
McPherson County-1	Construct community safe rooms for townships and unincorporated areas within the county	Tornado, Windstorm	County Emergency Manger	High	1, 2	\$500,000 each	Local, PDM, HMGP	Five years	Not started, lack of funding
McPherson County-2	Maintain compliance with the NFIP requirements.	Flood	County Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
McPherson County-3	Mitigate potential terrorist attacks or acts of violence by purchasing a G6 GPS tracker.	Terrorism, Civil Disorder	Sheriff	High	1,2,4	\$20,000	Local, Grant	One year upon receipt of equipment.	Not started, lack of funding
McPherson County-4	Purchase a TCU-02 system tactical communications unit (throw phone) for use as emergency communication in a hostage/ terrorist event and a ballistic blanket level 111A Five years to be used in casualty recovery.	Terrorism, Civil Disorder	Sheriff	High	1,2,4	\$20,000	Local, grant	Upon receiving equipment	Not started, lack of funding
McPherson County-5	Provide secure screening and physical protection within the courthouse	Terrorism, Civil Disorder	Sheriff	High	1,2,4	\$100,000	Local Budget, Grant	Within Five years	Not started, lack of funding
McPherson County-6	Complete Law Enforcement Center expansion and upgrade project.	All Hazards	County Administrator	High	1,2,4	\$300,000	Local Budget, Grant	Within Five years	Not started, lack of funding
McPherson County-7	Purchase and remove structures from floodplain (NFIP)	Flood	Floodplain Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Canton-1	Construct FEMA approved Community Safe Room.	Tornado	City Clerk	High	1,2	\$200,000 - \$350,000	Local, Grant	Within Five years	Not started, lack of funding
Canton-2	Design and install drainage culverts	Flood	City Clerk	High	1,2	\$6,000	Local, Grant	Within Five years	Not started, lack of funding
Canton-3	Drainage ditch dredging in the City	Flood	City Clerk	High	1,2	\$10,000	Local	Within Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Canton-4	Purchase and install additional emergency alert warning sirens.	Tornado	City Clerk	High	1,2,3,4	\$13,000 for installation of NEW siren, \$4,000 for upgrades of existing sirens.	Local, Grant	Within Five years	Not started, lack of funding
Canton-5	Emergency backup generator for critical facilities.	Utility/ Infrastructure Failure	City Clerk	High	1,2	\$95,000	Local, Grant	Within Five years	Not started, lack of funding
Canton-1a	Purchase and install backup generators for water wells.	Utility/ Infrastructure	City Clerk	High	1,2	\$30,000		3 – Five years	Not started, lack of funding
Galva-1	Maintain compliance with the NFIP requirements.	Flood	City Clerk	High	1,2,3	Staff Time	Local	Repeating	In progress
Galva-2	Conduct hydrology study. Survey flood channel to determine capability to carry water to a depth equal to 100-year stages. (NFIP)	Flood	City Clerk	High	1,2	\$250,000	Local, Grant	Within Five years	Not started, lack of funding
Inman-1	Maintain compliance with the NFIP requirements.	Flood	City Supervisor	High	1,2,3	Staff Time	Local	Repeating	In progress
Inman-2	Construct FEMA approved Community Safe Room.	Tornado	City Supervisor	High	1,2	\$200,000	Local, Grant	Within Five years	Not started, lack of funding
Inman-3	Install/ Upgrade outdoor storm sirens.	Tornado	City Supervisor	High	1,2,3,4	\$20,000	Local, Grant	Within Five years	Not started, lack of funding
Inman-4	Purchase emergency backup generator for critical facilities	Utility/ Infrastructure Failure	City supervisor	High	1,2	\$50,000	Local, Grant	Within Five years	Not started, lack of funding
Inman-5	Develop Emergency Preparedness Plan.	All Hazards	City Supervisor	High	1,2	\$2,500	Local	Within One year	Not started, lack of funding
Inman-6	Complete city well house elevation project. (NFIP)	Flood	City Supervisor	High	1,2	\$5,000	Local, Grant	Within Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Inman-7	Purchase of radio system for city.	All Hazards	City Supervisor	High	1,2,4	\$30,000	Local, Grant	Within Five years.	Not started, lack of funding
Inman-8	Equip patrol cars with mountable laptops and wireless cards	All Hazards	City Supervisor	High	1,2,4	\$10,000	Local, Grant	Within Five years	Not started, lack of funding
Lindsborg-1	Maintain compliance with the NFIP requirements.	Flood	City Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
Lindsborg-2	Construct FEMA approved Community Safe Room	Tornado	City Administrator	High	1,2	\$300,000	Local, Grant	Within Five years	Not started, lack of funding
Lindsborg-3	Upgrade outdoor storm sirens.	Tornado	Safety Director	High	1,2,3,4	\$75,000	Local, Grant	Within Five years	Not started, lack of funding
Lindsborg-4	Complete projects to mitigate Cow Creek flash flooding.	Flood	Public Works Director	High	1,2	\$400,000	Local, Grant	Within One year	Not started, lack of funding
Lindsborg-5	Facilitate an incident command center.	All Hazards	Safety Director	High	1,2,4	\$2,500	Local, Grant	Within Five years	Not started, lack of funding
Lindsborg-6	Develop Hazardous Materials Plan (Mid Kansas Cooperative Stores Anhydrous Ammonia within the city boundary).	Hazardous Materials	Safety Director	High	1,2	\$2,500	Local, Grant	Within Five years	Not started, lack of funding
Lindsborg-7	Purchase and remove structures from floodplain (NFIP)	Flood	City Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Marquette-1	Maintain compliance with the NFIP requirements.	Flood	Mayor	High	1,2,3	Staff Time	Local	Repeating	In progress
Marquette-2	Install/ Upgrade outdoor storm sirens.	Tornado, Windstorms	Mayor	High	1,2,3,4	\$60,000	Local/ Grant	24 months	Not started, lack of funding
Marquette-3	Fire Equipment upgrade/ purchase.	Hazardous Materials	Fire Chief	High	1,2	\$100,000	Local, Grant	Within Five years	Not started, lack of funding
Marquette-4	Purchase and remove structures from floodplain (NFIP)	Flood	City Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
City of McPherson-1	Maintain compliance with the NFIP requirements.	Flood	City Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
City of McPherson-2	Construct FEMA approved Community Safe Room.	Tornado	City Administrator	High	1,2	\$700,000	Local, Grant	Within Two years	Not started, lack of funding
City of McPherson-3	Emergency backup generator for critical facilities.	Utility/ Infrastructure Failure	City Administrator	High	1,2	\$30,000	Local, Grant	Within Two years	Not started, lack of funding
City of McPherson-4	Purchase and install security system for Hospital, annex, and EMS facilities.	Terrorism, Civil Disorder	Safety Coordinator, McPherson Hospital	High	1,2	\$50,000	Local, Grant	Within Five years	Not started, lack of funding
City of McPherson-5	Upgrade communication system at the hospital and EMS.	Utility/ Infrastructure Failure	EMS Director	High	1,2,4	\$50,000	Local, Grant	Within Five years	Not started, lack of funding
City of McPherson-6	Construct a FEMA approved safe room in Hospital.	Tornado, Windstorm	Safety Coordinator, McPherson Hospital	High	1,2	\$300,000	Local, Grant	Within Five years	Not started, lack of funding
City of McPherson-7	Purchase and remove structures from floodplain (NFIP)	Flood	City Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Moundridge-1	Maintain compliance with the NFIP requirements.	Flood	City Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
Moundridge-2	Promote Public Awareness of all hazards within this plan and actions to take to mitigate damages.	All Hazards	City Administrator	High	1,2,3	\$250,000	Local, Grant	Repeating	Not started, lack of funding
Moundridge--3	Construct a Community Shelter/ Safe Room.	Tornado, Windstorm	City Administrator	High	1,2	\$200,000	Local, grant	Within Five years	Not started, lack of funding
Moundridge-4	Purchase and remove structures from floodplain (NFIP)	Flood	City Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Windom-1	Join the NFIP .	Flood	City Clerk	High	1,2	Staff Time	Local	Two years	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Windom-2	Upgrade outdoor storm sirens. To include battery backup.	Tornado	City Clerk	High	1,2,3,4	\$30,000	Local, Grant	Within Five years	Not started, lack of funding
Windom-3	Water line replacement project. Replace 17 miles of waterline from the City of McPherson to the City of Windom.	Utility/ Infrastructure Failure	City Clerk	High	1,2	\$1,000,000	Local, Grants	Within Five years	Not started, lack of funding
Bethany College	Install storm shelter, safe room in all campus buildings.	Tornado, Windstorm	President	High	1,2	\$600,000	Local, Grant	Five Years	Not started, lack of funding
Central Christian College-1	Continue public awareness and educational programs on hazards.	All Hazards	Business Manager	High	1,2,3	\$2,500	Local, Grant	Repeating	Not started, lack of funding
Central Christian College-2	Install storm shelter, safe room in dorms and buildings.	Tornado, Windstorm	Business Manager	Medium	1,2	\$300,000	Local, Grant	Five Years	Not started, lack of funding
Elyria Christian School-1	Install storm shelter, safe room in dorms and buildings.	Tornado, Windstorm	School Director	High	1,2	\$300,000	Local, Grant	Five Years	Not started, lack of funding
Hutchinson Community College-1	Continue public awareness and educational programs on hazards.	All Hazards	Branch Director	High	1,2,3	\$2,500	Local, Grant	Repeating	Not started, lack of funding
McPherson College-1	Construct FEMA approved Safe Rooms	Tornado	Maintenance and Safety Supervisor	High	1,2	\$250,000	Local, Grant	Within Five years	Not started, lack of funding
St Joseph Catholic School-1	Construct a safe room at St Joseph Catholic School. Currently there is not a storm shelter on school property or in the community.	Tornado, Windstorm, winter Storm	Principal	High	1,2	\$350,000	Local, HMGP	Within Three years of funding availability	New
St Joseph Catholic School-2	Purchase and install an Emergency Notification System to help more effectively communicate with students, parents and staff.	All Hazards	Principal	Medium	1,2	\$5000 to \$10000	Local, HMGP	Within two years with available funding.	New
USD#400-1	Construct FEMA approved safe rooms for school buildings in the districts.	Tornado	Superintendent	High	1,2	\$150,000 - \$350,000	Local, HMGP	Within Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#400-2	Continue public awareness and educational programs on hazards.	All Hazards	Superintendent	High	1,2,3	\$2,500	Local, HMGP	Repeating	Not started, lack of funding
USD#418-1	Construct FEMA approved safe rooms for school buildings in the districts.	Tornado	Assistant Superintendent	High	1,2	\$150,000 - \$350,000	Local, HMGP	Within Five years	Not started, lack of funding
USD#418-2	Public Awareness Project. Continue public awareness and educational programs on hazards.	All Hazards	Assistant Superintendent	High	1,2,3	\$2,500	Grant	Repeating	Not started, lack of funding
USD#418-3	Complete HVAC & building fire detection upgrade.	Wildfire	Supervisor	High	1,2	\$300,000	Capital Outlay, HMGP	Within Five years	Not started, lack of funding
USD#419-1	Construct FEMA approved safe rooms in all school buildings	Tornado	Maintenance Director, superintendent	High	1,2	\$300,000	Local, Grant	Within Five years	Not started, lack of funding
USD#423-1	Purchase of emergency backup generators	Utility/ Infrastructure	Superintendent	High	1,2	\$50,000	Local, Grant	Within Five years	Not started, lack of funding
USD#423-2	Purchase and install new communication system	Utility/ Infrastructure Failure	Superintendent	High	1,2,4	\$50,000	Local, Grant	Within Five years	Not started, lack of funding
USD#444-1	Construct FEMA approved safe rooms in all school buildings	Tornado	Superintendent	High	1,2	\$350,000	Local, HMGP	Within Five years	Not started, lack of funding
USD#444-2	Continue public awareness and educational programs on hazards.	All Hazards	Superintendent	High	1,2,3	\$250,000	Local and Grant	Repeating	Not started, lack of funding
USD#448-1	Construct FEMA approved safe rooms for school buildings	Tornado	Superintendent	High	1,2	\$350,000	Local, HMGP	Within Five years	Not started, lack of funding
USD#448-2	Purchase and install emergency notification system for all schools.	All Hazards	Superintendent	High	1,2,3,4	\$15,000	Local, HMGP	Within Two years	Not started, lack of funding
Arkansas Valley Electric-1	Replace and upgrade an undetermined number of miles of distribution line.	Utility/ Infrastructure Failure	Director of Operations	High	1,2	\$10,000,000	Local, Grant	Within Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Arkansas Valley Electric-2	Complete conductor and pole replacement projects.	Utility/ Infrastructure Failure	Director of Operations	Low	1,2	\$30,000 - \$45,000	Grant, Local	6 – 9 months	Not started, lack of funding
DS&O Electric -1	Continue public awareness and educational programs on utility failure.	Utility/ Infrastructure Failure	Operations Manager	High	1,2,3	\$2,500	Local, Grant	Repeating	Not started, lack of funding
Flint Hills Electric-1	Retrofit 40 miles of existing electrical distributions systems that were constructed prior to current construction standards	Utility/ Infrastructure Failure	Operations Manager	High	1,2	\$2,000,000	Local, Grant	Within Five years	Not started, lack of funding
Flint Hills Electric-2	Complete electric facility retrofit project.	Utility/ Infrastructure Failure	Assistant Manager	High	1,2	Harvey \$800,000, McPherson \$1,440,000, Marion \$5,000,000,	Local, Federal	Within Five years	Not started, lack of funding
Lindsborg Community Hospital-1	Safe room/ shelter to be constructed, connected to, or close by the hospital facility	Tornado, Windstorms, Hail, Winter Storms	Hospital Director	High	1,2	\$600,000	FEMA, Local	One year	New
McPherson Board of Public Utilities-1	Conduct an annual water conservation festival with 4 th graders	Drought	Director	Medium	3	Staff Time	Local	Repeating	New
McPherson Hospital-1	Safe room/ shelter to be constructed, connected to, or close by the hospital facility	Tornado, Windstorms, Hail, Winter Storms	Hospital Director	High	1,2	\$600,000	FEMA, Local	One year	New
Mercy Hospital-1	Safe room/ shelter to be constructed, connected to, or close by the hospital facility	Tornado, Windstorms, Hail, Winter Storms	Hospital Director	High	1,2	\$600,000	FEMA, Local	One year	New





6.7.7 – Marion County and Participating Jurisdiction Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Marion County-1	NFIP Regulation Compliance. Comply with NFIP regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Marion County-2	Identification of areas with limited access due to flooding. Develop a plan to mitigate those areas. (NFIP)	Flood	Floodplain Manager	High	1,2	\$20,000	Local Budget	Five years	Not started, lack of funding
Marion County-3	Repave roads that have deteriorated due to various weather-related hazards and road usage. Projects include 330 th Road from Meridian to K-15, 60 th Road from Old Mill to timber Road, 40 th Road from Timber to Yarrow Road, and 120 th Road from Old Mill to Timber.	Utility/ Infrastructure Failure	Road and Bridge Superintendent	High	1,2	\$3,172,260	Capital Improvement Fund, Grant through KDOT	Within Five years	Not started, lack of funding
Marion County-4	Increase Public Awareness of Hazards. Continue Public Awareness and educational programs on all hazards.	All Hazards	EM Director	High	1,2,3	Staff Time	Local	Repeating	In progress
Marion County-5	Marion Watershed Restoration and Project Strategy. Maintain and enhance the quality of water in Marion Reservoir and its tributaries.	Agricultural Infestation, Soil Erosion and Dust, Utility/ Infrastructure Failure	Marion Reservoir & Cotton wood WRAPS Coordinator	High	1,2	\$200,000 annually	KDHE Grant	Within Five years	Not started, lack of funding
Burns-1	NFIP Regulation Compliance. Comply with National Flood Insurance Program regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	None	Local Budget	Repeating	In progress
Burns-2	Construct a FEMA approved Community Save Room.	Tornado	City Manager	High	1,2	\$100,000 - \$250,000	Local, Grant	Within Five years	Not started, lack of funding
Burns-3	Identification of areas with limited access due to flooding. Develop a plan to mitigate those areas. (NFIP)	Flood	Floodplain Manager	High	1,2	\$20,000	Local Budget	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Burns-4	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	EM Director	High	1,2,3	Staff Time	Local	Repeating	In progress
Durham-1	Construct a FEMA approved Community Save Room.	Tornado	EM Director	High	1,2	\$100,000 - \$250,000	Local, Grant	Within Five years	Not started, lack of funding
Durham-2	Identification of areas with limited access due to flooding. Develop a plan to mitigate those areas. (NFIP)	Flood	Floodplain Manager	High	1,2	\$20,000	Local Budget	Five years	Not started, lack of funding
Durham-3	NFIP Regulation Compliance. Comply with National Flood Insurance Program regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Durham-4	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	Mayor	High	1,2,3	Staff Time	Local	Repeating	In progress
Florence-1	Construct a FEMA approved Community Safe Room.	Tornado	Mayor	High	1,2	\$100,000 - \$250,000	Local, Grant	Within Five years	Not started, lack of funding
Florence-2	Identification of areas with limited access due to flooding. Develop a plan to mitigate those areas. (NFIP)	Flood	Floodplain Manager	High	1,2	\$20,000	Local Budget	Five years	Not started, lack of funding
Florence-3	NFIP Regulation Compliance. Comply with National Flood Insurance Program regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Florence-4	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	Mayor	High	1,2,3	Staff Time	Local	Repeating	In progress
Florence-5	Obtain Levee Certification.	Flood, Dam and Levee Failure	Mayor	High	1,2	\$100,000 - \$200,000	Local, Grant	2 – Three years.	Not started, lack of funding
Goessel-1	Purchase of backup generator for community saferoom.	Utility/ Infrastructure Failure	Mayor	High	1,2	\$5,000 - \$10,000	Local, Grant	Within Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Goessel-2	Identification of areas with limited access due to flooding. Develop a plan to mitigate those areas. (NFIP)	Flood	Floodplain Manager	High	1,2	\$20,000	Local Budget	Five years	Not started, lack of funding
Goessel-3	NFIP Regulation Compliance. Comply with National Flood Insurance Program regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Hillsboro-1	Purchase of backup generator for community saferoom.	Utility/ Infrastructure Failure	City Administrator	High	1,2	\$5,000 - \$10,000	Local, Grant	Within Five years	Not started, lack of funding
Hillsboro-2	Identification of areas with limited access due to flooding. Develop a plan to mitigate those areas. (NFIP)	Flood	Floodplain Manager	High	1,2	\$20,000	Local Budget	Five years	Not started, lack of funding
Hillsboro-3	NFIP Regulation Compliance. Comply with National Flood Insurance Program regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Hillsboro-4	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	City Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
Lehigh-1	Identification of areas with limited access due to flooding. Develop a plan to mitigate those areas. (NFIP)	Flood	Floodplain Manager	High	1,2	\$20,000	Local Budget	Five years	Not started, lack of funding
Lehigh-2	NFIP Regulation Compliance. Comply with National Flood Insurance Program regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Lehigh-3	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	City Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
Lincolnvile-1	Construct a FEMA approved Community Save Room.	Tornado	City Administrator	High	1,2	\$100,000 - \$250,000	Local, Grant	Within Five years	Not started, lack of funding
Lincolnvile-2	Join the NFIP . Identify critical areas with limited access due to flooding and adopt floodplain regulations	Flood	Floodplain Manager	High	1,2	Staff Time	Local	Repeating	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Lincolntonville-3	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	City Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
Lost Springs-1	Construct a FEMA approved community safe room.	Tornado	City Administrator	High	1,2	\$250,000 - \$500,000	Local, Grant	Within Five years	New
City of Marion-1	Update Response Plan Annually.	All Hazards	City Administrator	High	1,2,3,4	Staff Time	Local	Repeating	In progress
City of Marion-2	Identification of areas with limited access due to flooding. Develop a plan to mitigate those areas. (NFIP)	Flood	Floodplain Manager	High	1,2	\$20,000	Local Budget	Five years	Not started, lack of funding
City of Marion-3	NFIP Regulation Compliance. Comply with National Flood Insurance Program regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
City of Marion-4	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	City Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
City of Marion-5	Water Conservation Plan. Manage and conserve water by maintaining quality of water and ensuring there is an adequate supply for residents.	Drought, Utility/ Infrastructure Failure	City Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
City of Marion-6	Construct a FEMA approved community safe room.	Tornado	City Administrator	High	1,2	\$250,000 - \$500,000	Local, Grant	Within Five years	Not started, lack of funding
City of Marion-7	Obtain Levee Certification. Project already underway and is being completed in phases. (NFIP)	Flood	City Administrator	High	1,2	\$100,000 - \$200,000	Local/ Grant	2 – Three years	In progress
Peabody-1	Update Response Plan Annually.	All Hazards	City Administrator	High	1,2	Staff Time	Local	Repeating	In progress
Peabody-2	Identification of areas with limited access due to flooding. Develop a plan to mitigate those areas. (NFIP)	Flood	Floodplain Manager	High	1,2	\$20,000	Local Budget	Five years	Not started, lack of funding
Peabody-3	NFIP Regulation Compliance. Comply with National Flood Insurance Program regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Peabody-4	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	City Administrator	High	1,2,5	Staff Time	Local	Repeating	In progress
Ramona-1	Construct a FEMA approved community safe room.	Tornado	City Administrator	High	1,2	\$250,000 - \$500,000	Local, Grant	Within Five years	New
Tampa-1	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	City Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
Tampa-2	Identification of areas with limited access due to flooding. Develop a plan to mitigate those areas. (NFIP)	Flood	Floodplain Manager	High	1,2	\$20,000	Local Budget	Five years	Not started, lack of funding
Tampa-3	NFIP Regulation Compliance. Comply with National Flood Insurance Program regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Tabor College-1	Design and construct FEMA approved safe rooms for all college buildings	Tornado	President	High	1,2	\$300,000 - \$1,000,000	HMGP, PDM, Local	Five years	New
USD#397-1	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	Superintendent	High	1,2,3	Staff Time	Local	Repeating	In progress
USD#397-2	Design and construct FEMA approved safe rooms for all school buildings in the district.	Tornado	Superintendent	High	1,2	\$300,000 - \$1,000,000	Local	Five years	Not started, lack of funding
USD#398-1	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	Superintendent	High	1,2,3	Staff Time	Local	Repeating	Not started, lack of funding
USD#398-2	Replace Entryways/ exits and walkways. Replace concrete entry/ exits and walkways damaged due to soil expansion/ contraction.	Land Subsidence, Utility/ Infrastructure Failure	Superintendent	High	1,2	\$20,000	Local/ Grant	Five years	Not started, lack of funding
USD#398-3	Install backup generator. Purchase and install backup generator to maintain electrical services during storms.	Utility/ Infrastructure Failure	Superintendent	High	1,2	\$80,000	Local/ Grant	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#408-1	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	Superintendent	High	1,2,3	Staff Time	Local	Repeating	In progress
USD#408-2	Design and construct FEMA approved safe rooms for all school buildings in the district.	Tornado	Superintendent	High	1,2	\$300,000 - \$1,000,000	Local	Within five years.	Not started, lack of funding
USD#410-1	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	Superintendent	High	1,2,3	Staff Time	Local	Repeating	In progress
USD#410-2	Design and construct FEMA approved safe rooms for all school buildings in the district.	Tornado	Superintendent	High	1,2	\$300,000 - \$1,000,000	Local	Five years	Not started, lack of funding
USD#411-1	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	Superintendent	High	1,2,3	Staff Time	Local	Repeating	In progress
USD#411-2	Design and construct FEMA approved safe rooms for all school buildings in the district.	Tornado	Superintendent	High	1,2	\$300,000 - \$1,000,000	Local	Five years	Not started, lack of funding
USD#617-1	Design and construct FEMA approved safe rooms for all school buildings in the district.	Tornado	Superintendent	High	1,2	\$300,000 - \$1,000,000	Local	Five years	New
Flint Hills REC-1	Marion County Reconnector Project. Retrofit existing electrical distributions systems that were constructed prior to current construction standards established by the cooperative and approved by FEMA Public Assistance Program.	Utility/ Infrastructure Failure	Director	High	1,2	\$2,000,000	Local, Grant	Five years	Not started, lack of funding
Flint Hills REC-2	Increase Public Awareness of Hazards. Continue Public Awareness and Educational Programs on all hazards.	All Hazards	Director	High	1,2,3	Staff Time	Local	Repeating	In progress
Hillsboro Hospital-1	Installation of emergency generators for all hospital buildings	All Hazards	Hospital Director	Medium	1,2	\$200,000	Grants, FEMA, Local	Five years	New
Hillsboro Hospital-2	Safe room/ shelter to be constructed, connected to, or close by the hospital facility	Tornado, Windstorms,	Hospital Director	High	1,2	\$600,000	FEMA, Local	Five years	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
		Hail, Winter Storms							
Marion County RFDs (all Districts)-1	Implement Wildland Urban Interface (WUI) trainings to increase the general, tactical, and safety knowledge of anyone living in or responding to fires in the WUI.	Wildfire	Fire Chiefs	Medium	1,2,3	\$30 per student per training	Kansas Forest Service, State, Federal	Repeating	New
Marion County RFDs (all Districts)-2	Identify & prioritize locations for Fuel Reduction in wildfire risk areas. & invasive New Growth Cedar forest plots	Wildfire	Fire Chiefs	Medium	1,2		Kansas Forest Service, Federal WUI grant dollars for hazardous fuel reduction projects	Repeating	New
MidWest Energy	Retrofit existing electrical distributions systems that were constructed prior to current construction standards established by the cooperative and approved by FEMA Public Assistance Program.	Utility/ Infrastructure Failure	Director	High	1,2	\$2,000,000	Local, Grant	Five years	New
St. Luke Hospital-1	Installation of emergency generators for all hospital buildings	All Hazards	Hospital Director	Medium	1,2	\$200,000	Grants, FEMA, Local	Five years	New
St. Luke Hospital-2	Safe room/ shelter to be constructed, connected to, or close by the hospital facility	Tornado, Windstorms, Hail, Winter Storms	Hospital Director	High	1,2	\$600,000	FEMA, Local	Five years	New
WestStar-1	Retrofit existing electrical distributions systems that were constructed prior to current construction standards established by the cooperative and approved by FEMA Public Assistance Program.	Utility/ Infrastructure Failure	Director	High	1,2	\$2,000,000	Local, Grant	Five years	New





6.7.8 – Reno County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Reno County-1	Educate the public on prescribed burns.	Wildfire	Emergency Management Director	High	1,2,3	\$500	Existing Budget	Repeating	Not started, lack of funding and staff
Reno County-2	Provide mobile generators for water/wastewater system operations.	All Hazards	Reno County Public Works Director	High	1,2	\$50,000	Staff Time, HMGP, PDM, DHS Grant	Within Three years	Not started, lack of funding
Reno County-3	Identify potential additional water hydrant locations	Wildfire	County Fire District Chiefs	High	1,2	Staff Time	Staff Time, Local	Within Five years	Not started, lack staff
Reno County-4	Investigate necessary steps to standardize system of emergency communication between jurisdictions.	All Hazards	Emergency Manager	High	1,2,4	Staff Time	DHS Grant	Within Five years	Not started, lack staff
Reno County-5	Educate the public on the NFIP and flood insurance.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	Not started, lack staff
Reno County-6	Continue Tornado spotter training and CERT.	Tornado	Emergency Management Director	Medium	1,2,3	Staff Time	Local, NWS Grant	Repeating	Not started, lack staff
Reno County-7	Increase public and fire department training on wildland urban interface fires.	Wildfire	Emergency manager	Medium	1,2	\$30.00 per student per class	KS Forest Svc, State, Federal, Local	Within Five years	Not started, lack of funding
Reno County-8	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	Emergency Management Director	Medium	1,2	\$85/ ac	KS Forest Svc, Federal WUI grant	Within Five years	Not started, lack of funding
Reno County-9	Provide homeowner education on wildfire mitigation in wildland-urban interface.	Wildfire	All County Fire Chiefs	Medium	1,2,3	\$500 per work shop	KS Forest Svc and Federal Grants	Within Five years	Not started, lack of funding
Reno County-10	Investigate and update existing roadway overtopping design standards. (NFIP)	Flood	Public Works Director	Low	1,2	Staff Time	Staff Time, Local	Within Five years	Not started, lack staff





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Reno County-11	Coordinate with Red Cross/ Salvation Army during extreme temperature events	Extreme Temperature	Emergency Management Director/ Director of Public Health	Low	1,2,4	Staff Time	Funding :Local	Within One year	Not started, lack staff
Reno County-12	Educate townships on benefits of roadside spraying programs.	Wildfire	County Weed Supervisor, Public Information Officer	Low	1,2,3	Staff Time	Staff Time, HMGP, PDM	Within Three years	Not started, lack staff
Reno County-13	Educate livestock owners on bio-security.	Agricultural Infestation	Public Health/ Sheriff	Low	1,2,3	Staff Time	Local, USDA	Within Three years	Not started, lack staff
Reno County-14	Continue NFIP compliance to include update FIRM	Flood	Floodplain Manager	Low	1,2,3	Staff Time	Staff Time, FEMA	Repeating	In progress
Reno County-15	Put emergency generators in all county fire stations	All Hazards	County Fire District Chiefs	Low	1,2	\$400,000	Local/ HMGP	Within Five years	Not started, lack of funding
Reno County 16	Implementation and execution of removing fuel loads (trees, ground and ladder fuels) along major waterways of Reno County.	Flooding, Wild Fire	Reno County Fire Districts, Townships, and Public Works	Low	1,2	\$100/ ac	KS Forest Svc, Federal WUI/ Local/ HMGP	Within Five years	Not started, lack of funding
Reno County 17	Install water pumps at county fire stations.	Wildfire, Fire Suppression	Reno County Fire Districts	Low	1,2	\$120,000	Local/ HMGP	Within Five years	Not started, lack of funding
Abbyville-1	Institute a city-wide tree trimming program.	Winter Storm, Windstorm	City Clerk	High	1,2	\$10,000	Local, HMGP	Five years	Not started, lack of funding
Abbyville-2	Purchase back-up generators for water and sewer services. Evaluate power requirements. Rewire electrical service to accommodate switching to the generators. Purchase and install generators	Utility/ Infrastructure Failure	City Clerk	Medium	1,2	\$15,000	Local, HMGP	Five years	In progress, generator purchased for water.
Abbyville-3	Construct community storm shelter(s) for residents.	Tornado, Windstorm	City Council	High	1,2	\$500,000	Local, HMGP	Two years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Abbyville-4	NFIP Regulation Compliance. Comply with National Flood Insurance Program regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Abbyville-5	Purchase and remove structures from floodplain (NFIP)	Flood	City Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Arlington-1	Continue NFIP compliance to include FIRM Update.	Flood	City Mayor	Medium	1,2,3	Staff Time	Staff Time, FEMA	Repeating	In progress
Arlington-2	Strengthen floodplain ordinance, as appropriate, following DFIRM development. (NFIP)	Flood	City Mayor	Medium	1,2	Staff Time	Staff Time	Completion Time: Within Five years	Not started, lack of staff
Arlington-3	Purchase and install a permanent generator which is needed for the well	Utility/ Infrastructure Failure	City Clerk	High	1,2	\$50,000	HMGP	Within Five years	Not started, lack of funding
Arlington-4	Purchase and install a generator for Community Center and City Hall.	Utility/ Infrastructure	City Clerk	High	1,2	\$50,000 each	HMGP	Within Five years	Not started, lack of funding
Buhler-1	Construct a City Building Community safe room.	Tornado, Windstorm, Winter Storm	City Clerk	Medium	1,2	\$300,000	HMGP	Within Two years	Not started, lack of funding
Buhler-2	Conduct flood zones engineering study for drainage improvement.	Flood	City Clerk	Medium	1,2	\$25,000 for study only	Local, HMGP	Within Two years.	Not started, lack of funding
Buhler-3	NFIP Regulation Compliance. Comply with National Flood Insurance Program regulations by enforcing floodplain management regulations.	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Buhler-4	Purchase and remove structures from floodplain (NFIP)	Flood	City Clerk	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Haven-1	Install additional drainage under Haven Road.	Flood	City Administrator	High	1,2	\$500,000	Local, USDA Loan, HMGP	Four years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Haven-2	Administer, evaluate, and enforce flood area management zoning regulations (NFIP)	Flood	City Administrator	Medium	1,2	\$50,000	Local, HMGP	Four years	Not started, lack of funding
Haven-3	Purchase emergency power generator for community building shelter.	Utility/ Infrastructure Failure	City Administrator	Medium	1,2	\$25,000	Local, HMGP	Five years	Not started, lack of funding
Haven-4	Conduct underground electrical distribution upgrades.	Tornado, Windstorm, Winter Storm	City Administrator	Medium	1,2	\$1,500,000	Local, HMGP	Four years	Not started, lack of funding
Haven-5	Continue NFIP Compliance to include FIRM Update.	Flood	City Administrator	Medium	1,2,3	Staff Time	Staff Time, FEMA	Repeating	In process
Haven-6	Strengthen floodplain ordinance, as appropriate, following DFIRM development. (NFIP)	Flood	City Administrator	Medium	1,2	Staff Time	Staff Time	Within Five years.	Not started, lack of staff
Haven-7	Electric power upgrade program designed to protect lines by tree trimming and pole replacement.	Utility/ Infrastructure Failure	City Administrator	Medium	1,2	\$350,000	Local, HMGP	Two years	Not started, lack of funding
The Highlands-1	Educate the public on prescribed burns.	Wildfire	Council	High	1,2,3	\$500	Local, HMGP	Repeating	New
The Highlands -2	Provide and/ or require tree trimming/ maintenance training.	Utility/ Infrastructure Failure, Winter Storms, Tornado, Windstorm	Council	Medium	1,2	\$15,000	Local, HMGP	Five years	New
The Highlands -3	Reduce hazardous fuels in prioritized wildfire risk areas. As part of the planning process a wildfire hazard assessment has been conducted to begin to identify those locations that might be in need of some hazard fuel reduction work. In those areas that have been prioritized as posing a threat for wildland/ urban interface fires, fuel reduction will be used to create fuel breaks between the wildland fuels and the urban environment. Methods used	Wildfire	Council	Medium	1,2,3	\$500	Local, HMGP	Five years	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	will be mechanical removal of fuel, mechanical thinning of fuel, and/ or prescribed fire.								
The Highlands -4	Provide homeowner education on wildfire mitigation in wildland-urban interface	Wildfire	Council	High	1,2,3	\$500	Local, HMGP	Five years	New
The Highlands -5	Upgrade current outdoor warning devices from phone line to RF activation.	Tornado, Wind Storm	Council	High	1,2,3	\$20,000 per device	Local, HMGP	Two years	New
The Highlands -6	Pursue funding to obtain NOAA All Hazards Weather Radios for residents	All Hazards	Council	High	1,2,3	\$40 per radio	Local, HMGP	Two years	New
The Highlands -7	Construct a Community Storm Shelter/City Building.	All Hazards	Council	High	1,2,3	\$350,000	Local, HMGP	Two years	New
The Highlands -8	Purchase generators for critical facilities	Utility/ Infrastructure Failure	Council	High	1,2,3	\$350,000	Local, HMGP	Two years	New
The Highlands -9	Construct a city building capable for protecting assets out of the weather and under a locked facility, rather than continue parking outside	All Hazards	Council	High	1,2,3	\$60,000	Local, HMGP	Two years	New
The Highlands -10	Purchase of equipment to assist in removal of tree removal/debris, wildfire fuel reduction, winter weather snow/ice removal. Tractor/w bucket, grapple and snow blade, bat wing mower Wood chipper 7' x 14' trailer w36" side and hydraulic hoist	All Hazards	Council	High	1,2,3	\$92,833	Local, HMGP	Two years	New
Hutchinson-1	GVI-Phase IV (Storm Drainage). This storm drainage project is the final phase of the GVI open channel drainage system to alleviate storm water and flooding throughout the City of Hutchinson. (NFIP)	Flood	City of Hutchinson Engineering Department	Medium/ High	1,2	\$40 - \$50 million	Local, HMGP	Dependent upon funding.	Not started, lack of funding
Hutchinson-2	Implement the City Storm Water Master Plan to mitigate internal storm water issues (NFIP)	Flood	City of Hutchinson Engineering Department	Medium/ High	1,2	\$5 - \$40 million	Local, HMGP	Dependent upon funding.	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Hutchinson-3	The City is seeking funding support for development of a regional training center.	All Hazards	Fire Chief	High	1,2,4	\$600,000	Local	Within Five years	Not started, lack of funding
Hutchinson-4	Assist the study contractor in preparing revised DFIRMs. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Staff Time	Staff Time, FEMA	Within Five years	Not started, lack of staff
Hutchinson-5	Continue Compliance with NFIP to include strengthen floodplain ordinance, as appropriate, following DFIRM development. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	Staff Time	Staff Time, KS Division of Water Resources	Within Five years	In process
Hutchinson-6	Construct safe room.	Tornado, Windstorm	City Administrator	High	1,2	\$350,000	Donations	10 months	Not started, lack of funding
Hutchinson-7	Establish safer evacuation routes (county roads) that also serve as effective fire breaks.	Wildfire	City of Hutchinson Fire Chief	High	1,2,3,4	\$250,000	Local/Grant	Three years	Not started, lack of funding
Langdon-1	Clean waterway ditches and enlarge culverts. (NFIP)	Flood	City Mayor	High	1,2	\$50,000	Local, USDA Grant, HMGP	Three years	Not started, lack of funding
Langdon-2	Purchase and install outdoor warning sirens.	Tornado, Windstorm, Hail, Lightning	City Mayor	High	1,2,3,4	\$50,000	Local, HMGP	Three years	Not started, lack of funding
Langdon-3	Construct safe room for the community, with generator, water, and supplies.	Tornado, Windstorm	Council Member	High	1,2	\$32,400	FEMA Grant, Local	Two years	Not started, lack of funding
Langdon-4	Provide home-owner education on wildland-urban interface danger	Wildfire	Council Member	Medium	1,2,3	Staff Time	Local	Three years	Not started, lack staff
Langdon-5	Purchase and remove structures from floodplain (NFIP)	Flood	NFIP Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Nickerson-1	Continue NFIP Compliance to include FIRM Update.	Flood	City Clerk	High	1,2,3	\$10,000	Staff Time	Repeating	In process
Nickerson-2	Seek funding for the design and construction of a community safe room.	Tornado, Windstorm	City Clerk	Medium	1,2	\$250,000	Local, HMGP	2 – 8 years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Nickerson-3	Purchase and remove structures from floodplain (NFIP)	Flood	NFIP Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Partridge-1	Purchase and emergency generator for sewer lift system.	Utility/ Infrastructure Failure	City Mayor	High	1,2	\$25,000	Local, HMGP	On-Going	Not started, lack of funding
Partridge-2	Purchase emergency generator for City Hall/ Library.	Utility/ Infrastructure Failure	City Mayor	High	1,2	\$30,000	Local, HMGP	On-Going	Not started, lack of funding
Partridge-3	Clean waterway ditches and resize/ replace culverts.	Flood	City Mayor	High	1,2	\$45,000	Local, USDA Loan Grant	On-Going	Not started, lack of funding
Partridge-4	Continue NFIP Compliance to include FIRM update.	Flood	City Mayor	Medium	1,2,3	Staff Time	Staff Time, FEMA	Repeating	In process
Partridge-6	Implement a public notification system for hazards and bad weather	Hazardous Materials, All Hazards	City Council	Medium	1,2,3,4	Minimal	Local staff/ volunteers	Four years	Not started, lack staff
Partridge-7	Acquire and install a second siren	All Hazards	City Council	Medium	1,2,3,4	\$50,00	HMGP, State	Three years	Not started, lack of funding
Partridge-8	Provide public outreach and educational programs and materials about natural hazards	All Hazards	City Council	Medium	1,2,3	\$2,000	Local, HMGP	Within two years	Not started, lack of funding
Partridge-9	Develop a plan for supporting medically fragile and special needs residents during emergency events.	All Hazards	City Council	Medium	1,2	\$1,000	Staff, volunteers	Within Four years	Not started, lack of funding
Partridge-10	Purchase and remove structures from floodplain (NFIP)	Flood	NFIP Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Plevna-1	Institute a tree trimming program.	Tornado, Windstorm, Winter Storm	City Clerk	High	1,2	\$300,000	Local Funds	On-Going	Not started, lack of funding
Plevna-2	Continue NFIP Compliance to include FIRM update.	Flood	NFIP Administrator	Medium	1,2,3	Staff Time	Staff Time, FEMA	Repeating	In process
Plevna-3	Purchase and remove structures from floodplain (NFIP)	Flood	NFIP Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Pretty Prairie-1	Continue NFIP Compliance to include FIRM Update.	Flood	City Clerk	High	1,2,3	Staff Timer	Local	Repeating	In process
Pretty Prairie-2	Purchase new outdoor warning sirens.	Tornado, Windstorm, Hail, Lightning	City Clerk	High	1,2,3,4	\$50,000	HMGP, Local	Three years if funding available.	Not started, lack of funding
Pretty Prairie-3	Conduct repairs & renovations to Eastside Drainage Canal. (NFIP)	Flood	City Clerk	High	1,2	\$155,000	FMA	Five years	Not started, lack of funding
Pretty Prairie-4	Purchase and remove structures from floodplain (NFIP)	Flood	NFIP Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
South Hutchinson-1	Continue NFIP Compliance to include FIRM Update.	Flood	City Clerk	High	1,2,3	Staff Timer	Local	Repeating	In process
South Hutchinson-2	Identify and plan for evacuation of vulnerable populations.	All Hazards	Fire Chief, Police Chief	High	1,2	\$10,000	Local	1 – 2 months	Not started, lack of funding
South Hutchinson-3	Acquire and permanently install flood mitigation pumps (NFIP)	Flood	City Administrator	High	1,2	\$1,500,000 - \$3,000,000	Local, FEMA	3 – 6 months	Not started, lack of funding
South Hutchinson-4	Develop a local mitigation plan including emergency operations procedure and critical facilities analysis.	All Hazards	City Administrator	High	1,2	\$15,000	FEMA, Local	6 – 12 months	Not started, lack of funding
South Hutchinson-5	Seek funding to design and construct a community safe room	Tornado, Windstorm	City Administrator	Medium	1,2	\$250,000	FEMA, Local	2 – Four years	Not started, lack of funding
South Hutchinson-6	Provide built-in generators at major traffic lights	Utility/ Infrastructure Failure	City Administrator	Low	1,2	\$30,000	FEMA, Local	1 – 2 months	Not started, lack of funding
South Hutchinson-7	Support a program to relocate existing primary electric lines to underground.	Utility/ Infrastructure Failure	City Administrator	Medium	1,2	\$750,000	Local, cooperative Funding with major businesses	3 – Five years.	Not started, lack of funding
South Hutchinson-8	Purchase and remove structures from floodplain (NFIP)	Flood	NFIP Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Sylvia-1	Seek funding for the design and construction of a Tornado Safe Room	Tornado, Windstorm, Winter Storm, Hail	City Clerk	High	1,2	\$250,000	HMGP, Local	2 – Five years after funding availability.	Not started, lack of funding
Sylvia-2	Continue NFIP compliance.	Flood	City Clerk	Medium	1,2,3	NA	Staff time	Repeating	In process
Sylvia-3	Purchase and remove structures from floodplain (NFIP)	Flood	NFIP Administrator	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Turon-1	Acquire back-up power source for water wells and outdoor warning devices.	Utility/ Infrastructure Failure	City Clerk	High	1,2	\$40,000	Local, HMGP	Within Two years of funding availability.	Not started, lack of funding
Turon-2	Acquire back-up power source for fire station and community shelter.	Utility/ Infrastructure Failure	City Clerk	Medium	1,2	\$40,000	Local, HMGP	Within Two years of funding availability	Not started, lack of funding
Willowbrook-1	Purchase auxiliary pump(s). Enlarge lift station enclosure to house new pump(s). Lay new larger conduit, if required.	Flood, Utility/ Infrastructure Failure	Mayor	High	1,2	\$42,000	Local, USDA loan Grant, HMGP	Dependent on funding availability	Not started, lack of funding
Willowbrook-2	Continue NFIP Compliance to include FIRM Update.	Flood	Mayor	Medium	1,2,3	Staff Time	Local	Repeating	In process
Willowbrook-3	Strengthen floodplain ordinance, as appropriate, following DFIRM development. (NFIP)	Flood	Mayor	Medium	1,2	Staff Time	Staff Time	Within Five years	Not started, lack staff
Willowbrook-4	Design and construct a Tornado Safe Room in Public buildings	Tornado, Windstorm, Hail	Mayor	Medium	1,2	\$250,000 per shelter	FEMA HMGP	Within Five years	Not started, lack of funding
Willowbrook-5	Acquire funding to construct a community safe room the City.	Tornado, Windstorm	Mayor	High	1,2	\$75,000	HMGP, Local	One year after funding availability	Not started, lack of funding
Enterprise Township-1	Maintain a program to keep ditches along roadways free from debris and sediment	Flood	Township Clerk	Medium	1,2	\$10,000	Local/ HMGP	Within Five years	Not started, lack of funding
Enterprise Township-2	Construct a township building capable for protecting assets out of the weather and under a locked facility	All Hazards	Township Clerk	Medium	1,2	\$40,000	Local/ HMGP	Within Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Castleton Township-1	Get funding to allow proper inspections, mediation, planning, and construction of ditches, pipes and build up surfaces of roadways to handle seasonal flooding.	Flood	Township Clerk	High	1,2	\$80,000	Local/HMGP	Within Five years	Not started, lack of funding
Castleton Township-2	Begin a maintenance a program to keep ditches along roadways free from debris and sediment	Flood	Township Clerk	High	1,2	\$10,000	Local/HMGP	Within Five years	Not started, lack of funding
Clay Township-1	Grant funding to allow proper inspections, mediation, planning, and construction of ditches, pipes and build up surfaces of roadways to handle seasonal flooding. (NFIP)	Flood	Township Clerk	High	1,2	\$80,000	Federal, Local, HMGP	Two years after the study and available funding	Not started, lack of funding
Haven Township-1	Build/ construct or purchase a township building capable for protecting assets out of the weather and under a locked facility	All Hazard	Township Board	Medium	1,2	\$40,000	Local/HMGP	Within Five years	Not started, lack of funding
Langdon Township-1	Grant funding to allow proper inspections, mediation, planning, and construction of ditches, pipes and build up surfaces of roadways to handle seasonal flooding. (NFIP)	Flood	Township Clerk	High	1,2	\$40,000	Local/HMGP	Within Five years	Not started, lack of funding
Langdon Township- 2	Maintain a program to keep ditches along roadways free from debris and sediment (NFIP)	Flood	Township Clerk	Medium	1,2	\$10,000	Local/HMGP	Within Two years of funding	Not started, lack of funding
Langdon Township- 3	Emergency signage for closing roads for public safety	All Hazards	Township Clerk	Medium	1,2	\$10,000	Local/HMGP	Within Five years	Not started, lack of funding
Loda Township-1	Grant funding to allow proper inspections, mediation, planning, and construction of ditches, pipes and build up surfaces of roadways to handle seasonal flooding. (NFIP)	Flood	Township Clerk	High	1,2	\$75,000	Local/HMGP	Within Five years	Not started, lack of funding
Loda Township-2	Maintain a program to keep ditches along roadways free from debris and sediment (NFIP)	Flood	Township Clerk	High	1,2	\$10,000 per year	Local/HMGP	Within Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Loda Township-3	Design and install water conduits in areas of know run-off damage. (NFIP)	Flood	Township Clerk	High	1,2	\$15,000	Local/HMGP	Within Five years	Not started, lack of funding
Miami Township-1	Support tree trimming to reduce travel risks and reduce electric power outage potential	Winter Storm, Windstorm, Tornado	Township Trustee	Medium	1,2	\$6,000	Federal, Local	6 months	Not started, lack of funding
Miami Township-2	Construct a township building capable for protecting assets	All Hazards	Township Trustee	Medium	1,2	\$30,000	FEMA, Local	6 months	Not started, lack of funding
Reno Township-1	Raise Pennington Rd from the Cow Creek bridge north to quarter mile north of 43rd. (NFIP)	Flood	Township Trustee	High	1,2	\$60,000	Local, HMGP	Within Five years.	Not started, lack of funding
Reno Township-2	Raise Pennington Rd from the Cow Creek bridge south to the levee. (NFIP)	Flood	Township Trustee	High	1,2	\$90,000	Local, HMGP	Within Five years	Not started, lack of funding
Salt Creek Township-1	Grant funding to allow proper inspections, mediation, planning, and construction of ditches, pipes and build up surfaces of roadways to handle seasonal flooding. (NFIP)	Flood	Township Clerk	High	1,2	\$80,000	Local/HMGP	Within Five years	Not started, lack of funding
Salt Creek Township-2	Maintain a program to keep ditches along roadways free from debris and sediment (NFIP)	Flood	Township Clerk	Medium	1,2	\$5,000 per year	Local/HMGP	On-Going	Not started, lack of funding
Salt Creek Township-3	Construct a township building capable for protecting assets	All Hazards	Township Clerk	Medium	1,2	\$40,000	Local/HMGP	Within Five years	Not started, lack of funding
Sumner Township-1	Grant funding to allow proper inspections, mediation, planning, and construction of ditches, pipes and build up surfaces of roadways to handle seasonal flooding. (NFIP)	Flood	Township Clerk	High	1,2	\$10,000	Local/HMGP	Within Five years	Not started, lack of funding
Sumner Township-2	Maintain a program to keep ditches along roadways free from debris and sediment (NFIP)	Flood	Township Clerk	High	1,2	\$10,000	Local/HMGP	Within Two years of funding	Not started, lack of funding
Sylvia Township-1	Grant funding to allow proper inspections, mediation, planning, and construction of ditches, pipes and build	Flood	Township Clerk	High	1,2	\$80,000	Local/HMGP	Within Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	up surfaces of roadways to handle seasonal flooding (NFIP)								
Sylvia Township-2	Maintain a program to keep ditches along roadways free from debris and sediment (NFIP)	Flood	Township Clerk	High	1,2	\$10,000	Local/HMGP	On-Going	Not started, lack of funding
Sylvia Township-3	Construct a township building capable of protecting assets	All Hazards	Township Clerk	High	1,2	\$40,000	Local/HMGP	Within Five years	Not started, lack of funding
Walnut Township-1	Get funding to allow proper inspections, mediation, planning, and construction of ditches, pipes and build up surfaces of roadways to handle flooding.	Flood	Township Clerk	High	1,2	\$80,000	Local/HMGP	Within Five years	Not started, lack of funding
Walnut Township-2	Begin a maintenance a program to keep ditches along roadways free from debris and sediment	Flood	Township Clerk	High	1,2	\$10,000	Local/HMGP	Within Five years	Not started, lack of funding
Yoder Township-1	Grant funding to allow proper inspections, mediation, planning, and construction of ditches, pipes and build up surfaces of roadways to handle seasonal flooding of road ways in a flood plain. (NFIP)	Flood	Township Clerk	High	1,2	\$340,000	Local/HMGP	Within Five years	Not started, lack of funding
Yoder Township-2	Maintain a program to keep ditches along roadways free from debris and sediment	All Hazards	Township Clerk	High	1,2	\$10,000	Local/HMGP	Within Five years	Not started, lack of funding
Yoder Township-3	Construct a township building capable for protecting assets	All Hazards	Township Clerk	High	1,2	\$40,000	Local/HMGP	Within Five years	Not started, lack of funding
Yoder Township-4	Emergency signage for closing roads for public safety	All Hazards	Township Clerk	High	1,2,3	\$10,000	Local/HMGP	Within Five years	Not started, lack of funding
Yoder Township-5	Purchase a grapple attachment for backhoe to remove debris	All Hazards	Township Clerk	High	1,2	\$20,000	Local/HMGP	Within Five years	Not started, lack of funding
Central Christian School-1	Construction of safe room.	Tornado, Windstorm	Development Director	High	1,2	\$350,000	Donations, local	Within Two years of funding availability	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Hutchinson Catholic Schools-1	Construct a safe room at Trinity Catholic Jr./ Sr. High School.	Tornado, Windstorm, winter Storm	Building Principals	High	1,2	\$300,000	Local, HMGP	Within 2 – Three years of funding availability	Not started, lack of funding
Hutchinson Catholic Schools-2	Purchase and install an Emergency Notification System to help more effectively communicate with students, parents and staff.	All Hazards	Building Principals	medium	1,2	\$5,000 to 10,000	Local, HMGP, Donations	Up to two years with available funding.	Not started, lack of funding
Hutchinson Catholic Schools-3	Purchase and install emergency backup generators for school building.	All Hazards	Building Principals	medium	1,2	Unknown	Local, HMGP, Donations	Up to two years with available funding.	Not started, lack of funding
Hutchinson Community College-1	Tornado Shelter/ Safe Room to protect students, staff, and guests.	Tornado, Windstorm, Winter Storm, Hail	Director of Facilities	High	1,2	\$1,000,000		Up to two years with available funding.	Not started, lack of funding
Hutchinson Community College-2	Implement a program promoting the purchase and use of NOAA weather radios in all HCC buildings.	All Hazards	Director of Facilities	High	1,2,3	\$2,000	HCC	12 months	Not started, lack of funding
Hutchinson Community College-3	Acquire and install a permanent emergency generator for each dormitory and support facility	Utility/ Infrastructure Failure	Director of Facilities	High	1,2	\$180,000	Local/ HMGP	Up to two years for available funding.	Not started, lack of funding
Hutchinson Community College-4	Complete HCC's underground electrical distribution to reduce the weather's effect on HCC's electrical power.	Utility/ Infrastructure Failure	Director of Facilities	High	1,2	\$100,000	Local/ HMGP	Up to two years with available funding.	Not started, lack of funding
St Joseph Catholic School-1	Construct a safe room at St Joseph Catholic School. Currently there is not a storm shelter on school property or in the community.	Tornado, Windstorm, winter Storm	Principal	High	1,2	\$350,000	Local, HMGP	Within Three years of funding availability	New
St Joseph Catholic School-2	Purchase and install an Emergency Notification System to help more effectively communicate with students, parents and staff.	All Hazards	Principal	Medium	1,2	\$5000 to \$10000	Local, HMGP	Within two years with available funding.	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
St Joseph Catholic School-3	Purchase and install emergency backup generators for school buildings.	All Hazards	Principal	Medium	1,2	unknown	Local, HMGP	Within two years with available funding	New
USD#308-1	Design and construct a safe room for all school buildings	Tornado, Windstorm, Winter Storm, Hail	USD#308 School Board	High	1,2	\$500,000 - \$1,000,000	Local, HMGP	Within 2 – Three years of available funding	Not started, lack of funding
USD#308-2	Conduct age-appropriate Crisis Drills in all USD#308 facilities.	Civil Disorder	Public Information Director	Medium	1,2,3	Minimal	District General Fund	Two Years	Not started, lack of funding
USD#309-1	Design and construct a safe room for all school buildings.	Tornado, Windstorm, Winter Storm, Hail	USD#309 School Board	High	1,2	\$500,000 - \$1,000,000	Local, HMGP	Within 2 – Three years of available funding	Not started, lack of funding
USD#310-1	Design and construct a safe room for all school buildings	Tornado, Windstorm, Winter Storm, Hail	USD#310 School Board	High	1,2	\$500,000 - \$1,000,000	Local, HMGP	Within 2 – Three years of available funding	Not started, lack of funding
USD#311-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	New
USD#311-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$100 - \$5,000 depending on scope.	Capital	Repeating	New
USD#312-1	Seek funding for the design and construction of a safe room for all USD#312 facilities.	Tornado, Windstorm, Winter Storm, Hail	Superintendent, USD#312 Haven	High	1,2	\$500,000 - \$1,000,000	Local, HMGP	Within Two years of funding availability	Not started, lack of funding
USD#313-1	Pursue funding for additional true hardened safe rooms at USD#313 facilities.	Tornado, Windstorm, Winter Storm, Hail	Superintendent	High	1,2	\$500,000 - \$1,000,000	Local, HMGP	Dependent on funding	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Arkansas Valley Electric-1	Huntsville: Rebuild 0.7 mi 3 ph cwc as 3 ph #2 ACSR, from 25-9-16-120 to 25-9-16-40. Rebuild 0.7 mi 3 ph cwc between ACSR line, in existing ROW. Copperweld between ACSR. Just downline from Fairfield school. Serves about 6 miles/ 15 meters, mostly irrigation, some oil & gas.	Utility/ Infrastructure Failure	Director Operations	High	1,2	\$49,245	HMGP	Within Five years	Not started, lack of funding
Arkansas Valley Electric-2	Rebuild overhead platform bank at Fairfield school.	Utility/ Infrastructure Failure	Director of Operations	High	1,2	\$23,500	HMGP	Within Five years	Not started, lack of funding
Arkansas Valley Electric-3	Huntsville: Rebuild 1.0 mi 3 ph cwc as 3 ph #2 ACSR, from 25-9-10-160 to 25-9-15-160. Rebuild 1.0 mi 3 ph cwc between ACSR lines, in existing ROW. Copperweld between ACSR. Serves Fairfield School & pivots, wells, about 19 miles & 33 meters. Has ten steel poles with arms, raptor hazard.	Utility/ Infrastructure Failure	Director of Operations	High	1,2	\$70,350	HMGP	Within Five years	Not started, lack of funding
Arkansas Valley Electric-4	Huntsville: Rebuild 1.1 mi 3 ph cwc as 3 ph #2 ACSR, from 25-9-22-40 to 25-9-16-130. Rebuild 1.1 mi 3 ph cwc between ACSR lines, in existing ROW. Copperweld between ACSR. Includes tap around Fairfield School, serves them & pivots, wells, about 17 miles & 30 meters. Would remove large cottonwoods @ 25-9-16-140 that are too close for being so tall.	Utility/ Infrastructure Failure	Director of Operations	High	1,2	\$80,902	HMGP	Within Five years	Not started, lack of funding
Arkansas Valley Electric-5	Noblesville: Rebuild 1.0 mi 1 ph cwc as 1 ph #2 ACSR, from 22-7-33-40 to 22-7-33-130. Rebuild 1.0 mi 1 ph cwc between ACSR lines, in existing ROW, including through yard at north end. Copperweld between ACSR. North end goes behind trees through yard, is still	Utility/ Infrastructure Failure	Director of Operations	High	1,2	\$38,850	HMGP	Within Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	the best path About 10 miles/ 30 meters downline, all ACSR.								
Arkansas Valley Electric-6	Medora: Rebuild 2.3 mi 3 ph cwc as 3 ph 1/ 0 ACSR from 21-4-22-80 to 21-4-3-160. Rebuild 2.3 mi 3 ph cwc between 1/ 0 ACSR lines, in existing ROW.	Utility/ Infrastructure Failure	Director of Operations	High	1,2	\$161,850	HMGP	Within Five years	Not started, lack of funding
Arkansas Valley Electric-7	Medora: relocate 3-phase 1/ 0 ACSR to opposite side of road at 21-4-22-160	Utility/ Infrastructure Failure	Director of Operations	High	1,2	\$1,700	HMGP	Within Five years	Not started, lack of funding
Arkansas Valley Electric-8	Medora: convert .5 mi of URD	Utility/ Infrastructure Failure	Director of Operations	High	1,2	\$36,251	HMGP	Within Five years	Not started, lack of funding
Arkansas Valley Electric-9	Relocate Pretty Prairie substation	Utility/ Infrastructure Failure	Director of Operations	High	1,2	\$370,250	HMGP	Within Five years	Not started, lack of funding
Cow Creek Drainage District #2-1	Maintain correct level of Dike. Raising low levels to correct height.	Flood, Dam and Levee Failure	Cow Creek Drainage District #2 Board	High	1,2	\$74,000	Local, HMGP	Three years	Not started, lack of funding
Drainage District #2-1	Update an emergency management program	Flood, Dam and Levee Failure	DD#2 President and Secretary-Treasurer	Medium	1,2	\$500	County, Grants	Five years	New
Drainage District #2-2	Conduct levee repairs and improvements	Flood, Dam and Levee Failure	DD#2 President and Secretary-Treasurer	Medium	1,2	\$50,000	County, Grants	Five years	New
Drainage District of #2 of Reno, McPherson, Harvey-1	Maintain correct level of Dike. Raising low levels to correct height.	Flood, Dam and Levee Failure	Drainage District Board	High	1,2	\$80,000	Local, PDM, HMGP	Three years	New
Hutchinson Correctional Facility – 1	Purchase east unit taut wire early warning escape fence system.	Civil Disorder	DOC Lieutenancy	High	1,2,3,4	\$360,000	Local, HMGP	Three years	Not started, lack of funding
Hutchinson Regional Hospital-1	Installation of emergency generators for all hospital buildings	All Hazards	Hospital Director	Medium	1,2	\$200,000	Grants, FEMA, Local	Five years	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Hutchinson Regional Hospital-2	Safe room/ shelter to be constructed, connected to, or close by the hospital facility	Tornado, Windstorms, Hail, Winter Storms	Hospital Director	High	1,2	\$600,000	FEMA, Local	Five years	New
MidWest Energy-1	Retrofit existing electrical distributions systems that were constructed prior to current construction standards established by the cooperative and approved by FEMA Public Assistance Program.	Utility/ Infrastructure Failure	Director	High	1,2	\$2,000,000	Local, Grant	Five years	New
Reno County Drainage District #3-2	Conduct levee stabilization-Mile 1 through Mile 9.	Flood, Dam and Levee Failure	Board Member	High	1,2	Portion of existing \$175,000 bond which was issued in 2008.	Local, Bond	Five years	Not started, lack of funding
Reno County Drainage District #3-3	Development of an emergency management program	Flood, Dam and Levee Failure	Board Member	High	1,2	\$1,000	Local	Two years	Not started, lack of funding
Reno County Drainage District #3-4	Conduct levee repairs and improvements.	Flood, Dam and Levee Failure	Drainage District #3	High	1,2	\$500,000	Local, HMGP	Three years	Not started, lack of funding
Reno County Drainage District #3-5	Raise and widen existing levee.	Flood, Dam and Levee Failure	Drainage District #3	High	1,2	\$200,000	Local, HMGP	Five years	Not started, lack of funding
Reno County Rural Fire District #2-1	Establish safer evacuation routes (county roads) that also serve as effective fire breaks.	Wildfire	Fire Chief	High	1,2,3	Staff Time	Minimal	Local	Not started, lack staff
Reno County Rural Water District # 3 - 1	1,600 foot of water pipe long Ranger Road needs to be replaced with 6" line. Two valves also need to be replaced. An additional hydrant may be needed, and the current hydrant reset.	Utility/ Infrastructure failure.	Rural Water District # 3 Board	High	3	\$17,000	Local Funds/ HMGP	Within Five years	Not started, lack of funding
Reno County Rural Water District # 3 - 2	Relocate pipeline at Kansas Law Enforcement Center	Utility/ Infrastructure failure.	Rural Water District # 3 Board	High	1, 2	\$40,000	Local Funds/ HMGP	Within Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Reno County Rural Water District # 3 - 3	Purchase generator to run pumps when power is not available	Utility/ Infrastructure failure	Rural Water District # 3 Board	High	1, 2	\$40,000	Local Funds/ HMGP	Within Five years	Not started, lack of funding
Reno County Rural Water District # 3 - 4	6" and 8" old valves need to be replaced	Utility/ Infrastructure failure.	Rural Water District # 3 Board	High	1, 2	\$6,000	Local Funds/ HMGP	Within Five years	Not started, lack of funding





6.7.9 – Rice County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rice County-1	Advertise and promote the availability of flood insurance to county property owners by direct mail at least twice a year. (NFIP)	Flood	Emergency Manager	High	1,2,3	Staff Time	Local	Repeating	Not started, lack of staff
Rice County-2	Collect educational materials on individual and family preparedness and/or mitigation measures for property owners	All Hazards	Emergency Manager	High	1,2,3	Staff Time	Local	Repeating	Not started, lack of staff
Rice County-3	Identify the county's most at-risk critical facilities, and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible	All Hazards	Emergency Manager	High	1,2	Staff Time	State	Repeating	Not started, lack of staff
Rice County-4	Annually host a public "hazards workshop" for residents in combination with local festivals, fairs, or other appropriate events.	All Hazards	Emergency Manager	High	1,2,3	Staff Time	Local	Repeating	Not started, lack of staff
Rice County-5	Encourage the construction of safe rooms and Tornado shelters in public and private schools, day care centers and senior care facilities.	Tornados, Windstorms	Emergency Manager	Low	1,2,3	Staff Time	FEMA, State, Local	Repeating	Not started, lack of staff
Rice County-6	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	Emergency Manager	High	1,2,3	Staff Time	Local	Repeating	Not started, lack of staff
Rice County-7	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-terrorism, Civil Disorder	Emergency Manager	High	1,2,3	Staff Time	Local, State, Federal	Repeating	Not started, lack of staff
Rice County-8	Rice County and the cities of Alden, Chase, Little River, Lyons and Raymond are committed to continued participation and compliance with the National Flood Insurance Program (NFIP) .	Flood	Emergency Manager	High	1,2,3	Staff Time	State, FEMA, Grants	Repeating	In progress
Rice County-9	Coordinate county mitigation efforts with Rural Electric Cooperatives	Utility/ Infrastructure Failure	Emergency Manager	High	1,2	Staff Time	Local, State, FEMA	Repeating	Not started, lack of staff





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rice County-10	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. (NFIP)	Flood	Emergency Manager	Low	1,2,3	\$500,000	Local, State, Federal	Repeating	Not started, lack of funding
Rice County-11	On an annual basis, contact all owners of FEMA-identified repetitive loss properties and inform them of the assistance available through the Federal Flood Mitigation Assistance (FMA) program (NFIP)	Flood	Emergency Manager	High	1,2,3	Staff Time	Local	Repeating	Not started, lack of staff
Rice County-12	Regularly calculate and document the amount of flood prone property that is preserved as open space to reduce flood insurance burden to the County. (NFIP)	Flood	Emergency Manager	High	1,2	Staff Time	NA	Repeating	Not started, lack of staff
Rice County-13	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to county (NFIP)	Flood	Emergency Manager	High	1,2	Staff Time	Local	Five years	Not started, lack of staff
Rice County-14	Revise the county's Flood Damage Prevention Ordinance including a "no-rise (in base flood elevation)" clause for the Jurisdiction. (NFIP)	Flood	Emergency Manager	High	1,2	Staff Time	NA	Five years	Not started, lack of staff
Rice County-15	Research and design an appropriate stream buffer ordinance to further protect Rice (NFIP)	Flood	Emergency Manager	High	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of staff
Rice County-16	Research and recommend 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 30 mobile home spaces.	Tornado, Windstorm	Emergency Manager	High	1.2	Staff Time	Local	Five years	Not started, lack of staff
Rice County-17	Develop cross-departmental information collection capabilities, data utilizing a GIS for purposes	All Hazards	Emergency Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of staff
Rice County-18	Develop and implement a wildfire prevention/ education program	Wildfire	District Fire Chief	High	1,2,3	Staff Time	Local	Five years	Not started, lack of staff





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rice County-19	Examine the current agreements within the jurisdiction and assess the need to expand or update cooperative agreements for firefighting resources.	Wildfire	District Fire Chief	High	1,2,4	Staff Time	Local	Five years	Not started, lack of staff
Rice County-20	Authorize a working group to evaluate the firefighting water supply resources within the jurisdiction.	Wildfire	District Fire Chief	High	1,2,4	Staff Time	Local	Five years	Not started, lack of staff
Rice County-21	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	High	1,2	\$30,000	Local	Five years	Not started, lack of staff
Alden-1	Pursue funding for the purchase and installation of a backup power generator for lift stations.	All Hazards, Utility/ Infrastructure Failure	Mayor	Medium	1,2	\$50,000	Local, State, FEMA	Five years	Not started, lack of funding
Alden-2	Appoint a planning committee to identify flood prone areas to consider flood reduction measures to city planners. (NFIP)	Flood	Mayor	High	1,2,4	Staff Time	Local	Five years	Not started, lack of staff
Alden-3	Seek funding to design and build safe rooms.	Tornado	Mayor	Low	1,3	\$100,000	Local, State, FEMA	Five years	Not started, lack of funding
Alden-4	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. (NFIP)	Flood	Mayor	Low	1,2,3	\$500,000	Local, State, Federal, FMA	Repeating	Not stated, lack of funding
Alden-5	Continue to participate in the NFIP.	Flood	Mayor	High	1,2,3	Staff Time	Local	Repeating	In Progress
Bushton-1	Seek funding to design and build safe rooms.	Tornado	Mayor	Low	1,2		FEMA, State	Five years	Not stated, lack of staff
Bushton-2	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to city planners.	Flood	Mayor	High	1,2,4		Local	Five years	Not stated, lack of staff
Bushton-3	Continue to participate in the NFIP.	Flood	Mayor	High	1,2,3	Staff Time	Local	Repeating	In Progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Bushton-4	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. (NFIP)	Flood	Emergency Manager	Low	1,2,3	\$500,000	Local, State, Federal	Repeating	Not stated, lack of funding
Chase-1	Seek funding to design and build safe rooms for the town of Chase.	Tornado	Mayor	Low	1,2	\$1,000,000	FEMA/ State	Five years	Not stated, lack of funding
Chase-2	Appoint a planning committee to identify flood prone areas to consider flood reduction measures to city planners. (NFIP)	Flood	Mayor	High	1,2,4	Staff Time	Local	Five years	Not stated, lack of staff
Chase-3	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. (NFIP)	Flood	Mayor	Low	1,2,3	\$500,000	Local, State, Federal, FMA	Repeating	Not stated, lack of funding
Chase-4	Continue to participate in the NFIP .	Flood	Mayor	High	1,2,3	Staff Time	Local	Repeating	In Progress
Geneseo-1	Seek funding to design and build safe rooms for the town of Geneseo.	Tornado	Mayor	Low	1,2	\$1,000,000	FEMA/ State	Five years	
Geneseo-2	Provide educational materials about natural hazards and risks to customers in utility bills.	All hazards	City Clerk	Low	1,2,3	\$500.00	Local, FEMA, State	Five years	Not stated, lack of funding
Little River-1	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to city planners (NFIP)	Flood	Mayor	High	1,2,4	Staff Time	Local	Five years	Not stated, lack of staff
Little River-2	Seek funding to design and build safe rooms for the town.	Tornado	City Clerk	Low	1,2,3	\$300,000	Local, FEMA, State	Five years	Not stated, lack of funding
Little River-3	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. (NFIP)	Flood	Mayor	Low	1,2,3	\$500,000	Local, State, Federal, FMA	Repeating	New
Little River-4	Continue to participate in the NFIP .	Flood	Mayor	High	1,2,3	Staff Time	Local	Repeating	In Progress
Lyons-1	Advertise local regulations pertaining to floodplain management and promote the availability of flood insurance to city	Flood	Mayor	High	1,2,3	\$7,500 annually	Local	Repeating	Not stated, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	property owners by direct mail at least twice a year (NFIP)								
Lyons-2	Acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. (NFIP)	Flood	Mayor	Low	1,2,3	\$30,000	Local, State, FEMA	Five years	Not stated, lack of funding
Lyons-3	Establish a committee to research and pursue funding for backup power sources for the critical facilities	Utility/ Infrastructure Failure	Mayor	Low	1,2,4	\$125,000	Local, State, FEMA	Three years	Not stated, lack of funding
Lyons-4	Conduct a storm water drainage study for the city, and consider adopting a storm water drainage plan and/ or ordinance to protect the infrastructure of Lyons (NFIP)	Flood	Mayor	Medium	1,2	\$50,000	Local, State, FEMA	Three years	Not stated, lack of funding
Lyons-5	Promote the use of severe weather alert radios for the entire community of Lyons. Seek funding to subsidize purchase and distribution of weather radios.	All Hazards	Mayor	Medium	1,2,3	\$20,000	Local, State, FEMA	Five years	Not stated, lack of funding
Lyons-6	Establish a committee to research and seek funding to conduct a project to divert stream runoff along Century Road. (NFIP)	Flood	Mayor	Low	1,2,4	\$350,000	Local, State, FEMA	Five years	Not stated, lack of funding
Lyons-7	Establish a committee to research and seek funding to conduct a project to divert stream runoff along US Highway 56. (NFIP)	Flood	Mayor	Low	1,2,4	\$300,000	Local, State, FEMA	Three years	Not stated, lack of funding
Lyons-8	Work in coordination with the local National Weather Service office to promote and advertise the Turn Around Don't Drown (TADD) program to local residents. (NFIP)	Flood	Mayor	High	1,2,4	\$5,000	Local, FEMA	Three years	Not stated, lack of funding
Lyons-9	Seek funding to design and build safe rooms for the City of Lyons.	Tornado	Mayor	Low	1,2	\$120,000	Local, State, FEMA	Three years	Not stated, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Lyons-10	Appoint a committee to research and develop city guidelines for participation in the National Flood Insurance Program's Community Rating System (CRS) and complete an application for participation. (NFIP)	Flood	Mayor	High	1,2,4	\$30,000	Local, Federal	Three years	Not stated, lack of funding
Lyons-11	Continue to participate in the NFIP.	Flood	Mayor	High	1,2,3	Staff Time	Local	Repeating	In progress
Raymond-1	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to city planners (NFIP)	Flood	Mayor	High	1,2,4	Staff Time	Local	Five years	Not stated, lack of staff
Raymond-2	Seek funding to design and build safe rooms for the town of Raymond.	Tornado, Windstorm	Mayor	Low	1,2	\$1,000,000	FEMA, State	Five years	Not stated, lack of funding
Raymond-3	Pursue funding for the purchase and installation of a backup power generator for city building.	Utility/ Infrastructure Failure	Mayor	Medium	1,2	\$50,000	Local, State, FEMA	Five years	Not stated, lack of funding
Raymond-4	Assess elevations and water flow for the City of Raymond to qualify the benefit of flood control projects for the town.	Dam and Levee Failure, Flood	Mayor	Medium	1,2	Staff Time	Local, State, Federal	Five years	Not stated, lack of staff
Raymond-5	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. (NFIP)	Flood	Mayor	Low	1,2,3	\$500,000	Local, State, Federal, FMA	Repeating	New
Raymond-6	Continue to participate in the NFIP.	Flood	Mayor	High	1,2,3	Staff Time	Local	Repeating	In Progress
Sterling-1	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to city planners. (NFIP)	Flood	Mayor	Medium	1,2,4	Staff Time	Local	Five years	Not stated, lack of staff
Sterling-2	Establish a committee to determine if the City of Sterling levee, as identified on the FEMA FIRM is subject to Title 44, Chapter 1, Part 65, Section 65.10 levee certification requirements.	Dam and Levee Failure, Flood	Mayor	Medium	1,2,4	Staff Time	Local, State, FEMA	Five years	Not stated, lack of staff
Sterling-3	Develop a program to acquire and preserve parcels of land subject to	Flood	Mayor	Low	1,2,3	\$500,000	Local, State, Federal, FMA	Repeating	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	repetitive flooding from willing and voluntary property owners. (NFIP)								
Sterling-4	Continue to participate in the NFIP.	Flood	Mayor	High	1,2,3	Staff Time	Local	Repeating	In Progress
Sterling College-1	Develop and fund mitigation projects for the construction of safe rooms in all college buildings	Tornado	President	High	1,2	\$1,000,000	Local, State, FEMA	Five years	New
USD#112-1	Develop and fund mitigation projects for the construction of tornado safe rooms in all USD 112 schools.	Tornado	Superintendent	High	1,2	\$1,000,000	Local, State, FEMA	Five years	New
USD#376-3	Establish a committee to research and evaluate the benefits of acquiring audio and visual emergency communications and notification systems for interior and exterior of school district buildings. Acquire recommended system.	Utility / Infrastructure Failure	Superintendent	High	1	\$50,000	Local, State	Five years	Not stated, lack of funding
USD#401-1	Develop and fund mitigation projects for the construction of safe rooms in Unified School District 401 schools.	Tornado	Superintendent	High	1,2	\$1,000,000	Local, State, FEMA	Five years	Not stated, lack of funding
USD#405-1	Develop and fund mitigation projects for the construction of Tornado safe rooms in Unified School District 405 schools.	Tornado	Superintendent	Low	1,2	\$1,000,000	Local, State, FEMA	Five years	Not stated, lack of funding
USD#444-1	Develop and fund mitigation projects for the construction of Tornado safe rooms in Unified School District 444 schools.	Tornado	Superintendent	High	1,2	\$1,000,000	Local, State, FEMA	Five years	Not stated, lack of funding
Arkansas Valley Electric-1	Little River: Rebuild 1.0 mi 1 ph cwc as 1 ph #2 from 18-7-28-40 to 18-7-28-130. Rebuild 1.0 mi 1 ph cwc between NEW FEMA lines. Move 0.6 mi of it across road to west to avoid trees.	Utility/ Infrastructure Failure	Director Operations	High	1,2	\$38,850	HMGP	Five years	Not stated, lack of funding
District Hospital #1-1	Seek funding to design and build safe rooms for the District Hospital.	Tornado	Director	High	1,2	\$1,000,000	Local, State, FEMA	Five years	Not stated, lack of funding
Hospital District #2-1	Seek funding to design and build safe rooms for all hospital district buildings.	Tornado	Director	High	1,2	\$1,000,000	Local, State, FEMA	Five years	Not stated, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
MidWest Energy-1	Retrofit existing electrical distributions systems that were constructed prior to current construction standards established by the cooperative and approved by FEMA Public Assistance Program.	Utility/ Infrastructure Failure	Director	High	1,2	\$2,000,000	Local, Grant	Five years	New





6.7.10 – Sedgwick County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Sedgwick County -1	Completion of engineering analysis, permitted repairs, and required documentation.	Dam and Levee Failure, Flood	Stormwater Utility Manager	High	1,2	\$15,000,000	City/ County	Five years	Not started, lack of funding
Sedgwick County-2	Develop and promote the capacity to effectively implement HAZUS-MH3 to assess potential flood impacts. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Staff Time	Local	Repeating	Not started, lack staff
Sedgwick County-3	Maximize the value of flood hazard mapping. Identify additional flood hazard data needs. Establish a life-cycle approach to mapping updates, including areas protected by levees. (NFIP)	Flood	Floodplain Managers	Low/ Medium	1,2	Staff Time	Local	Repeating	Not started, lack staff
Sedgwick County-4	Create a county-wide critical facilities inventory lexicon.	All Hazards	Emergency Management Director	High	1,2	Staff Time	Local	Repeating	Not started, lack staff
Sedgwick County-5	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Managers,	High	1,2,3	Staff Time	Local	Repeating	Not started, lack staff
Sedgwick County-6	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Sedgwick County-7	Compliance with ordinances, i.e local floodplain management ordinances. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Sedgwick County-8	Acquisition/ elevation or relocation of flood prone properties and structures. (NFIP)	Flood	Emergency Management Director	High	1,2	\$10,000,000	None	Five years	Not started, lack of funding
Sedgwick County-9	Implement annual awareness campaigns to educate the public	All Hazards	Emergency Management Director	High	1,2,3	\$5,000.	None	Repeating	Not started, lack of funding
Sedgwick County-10	Promote awareness of the effective date of new floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000	None	Repeating	Not started, lack of funding
Sedgwick County-11	Promote purchase of flood insurance in the six-month period prior to the official	Flood	Floodplain Manager	Medium	1,2,3	\$5,000	None	6 months prior to effective	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	effective date of the new floodplain maps. (NFIP)							date of new floodplain maps.	
Sedgwick County-12	Purchase back up generators to prevent interruption of critical services and operations.	Utility/ Infrastructure Failure	Division Directors	High	1,2	\$100,000	Department Funding	Repeating	Not started, lack of funding
Sedgwick County-13	Support and participate in information exchange with regulatory agencies and stakeholders.	Wildfire	SCFD Fire Chief	Medium	1,2,4	Staff Time	None	Local	In progress
Sedgwick County-14	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	General Budget	Repeating	Not started, lack of funding
Sedgwick County-15	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Emergency Management Director	Medium	1,2	Up to \$75,000	HMGP	Repeating	Not started, lack of funding
Sedgwick County-16	Maintain certification as Stormready community	All Hazards	Emergency Management Director	High	1,2	Staff Time	Local	Five years	Not started, lack staff
Sedgwick County-17	Develop a comprehensive list of local disaster declarations.	All Hazards	Emergency management Director	High	1,2	Staff Time	Local	Five years	Not started, lack staff
Sedgwick County-18	Update the Sedgwick County Hazard Analysis and incorporate the use of HAZUS as a tool.	All Hazards	Emergency Management Director	Medium	1,2	Up to \$5,000	HMGP	Five years	Not started, lack of funding
Sedgwick County-19	Standardize protocols for drainage design and construction. (NFIP)	Flood	Floodplain Manager	High	1,2	Staff Time	Local	Five years	
Sedgwick County-20	Wichita-Valley Center Floodway project Recertification	Flood, Dam and Levee Failure	Stormwater Utility Manager	High	1,2	\$17,600,000 for short term \$44,700,000 for long term	City/ County	Four years	Not started, lack of funding
Andale-1	Maximize the value of flood hazard mapping. Identify additional flood hazard data needs (NFIP)	Flood	Floodplain Manager	Low/ Medium	1,2	Staff Time	Local	Repeating	Not started, lack staff





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Andale-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	Not started, lack staff
Andale-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Andale-4	Compliance with ordinances, i.e local floodplain management ordinances. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Andale-5	Implement Severe weather awareness campaign.	All Hazards	Emergency Management Director	High	1,2,3	\$5,000 depending on scope.	Department Budget	Repeating	Not started, lack of funding
Andale-6	Promote awareness of the effective date of new floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000 depending on scope	General budget	Repeating	Not started, lack of funding
Andale-7	Promote purchase of flood insurance in the six-month period prior to the official effective date of the new floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000	General Budget	6 months prior to effective date of new floodplain maps.	Not started, lack of funding
Andale-8	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	Up to \$75,000	General Budget	Repeating	Not started, lack of funding
Andale-9	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Emergency Management Director	Medium	1,2,3	Up to \$75,000	Department Budget	Repeating	Not started, lack of funding
Bel Aire-1	Maximize the value of flood hazard mapping. Identify additional flood hazard data needs. Establish a life-cycle approach to mapping updates, including areas protected by levees. (NFIP)	Flood	City Engineer	Low/ Medium	1,2	Staff Time	Local	Repeating	Not started, lack staff
Bel Aire-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Zoning Administrator, City Engineer	High	1,2,3	Staff Time	Local	Repeating	Not started, lack staff
Bel Aire-3	Continue participation in the NFIP .	Flood	City Engineer	High	1,2,3	Staff Time	Local	Repeating	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Bel Aire-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	City Engineer	High	1,2,3	Staff Time	Local	Repeating	In progress
Bel Aire-5	Mitigation of risk to critical structure by using impact resistant materials.	All Hazards	City Engineer	High	1,2	\$50,000	Local, HMGP	Pending project approval.	Not started, lack of funding
Bel Aire-6	Prevent recurring interruptions of critical infrastructure.	Utility/ Infrastructure Failure	City Engineer	High	1,2	\$175,000	Local, HMGP	Pending project approval	Not started, lack of funding
Bel Aire-7	Promote awareness of the effective date of floodplain maps. (NFIP)	Flood	Floodplain Manager, Economic Development Specialist	High	1,2,3	\$5,000	Local, State, Federal, Grant	Repeating	Not started, lack of funding
Bel Aire-8	Promote purchase of flood insurance in the six-month period prior to the official effective date of the floodplain maps. (NFIP)	Flood	Floodplain Manager, Economic Development Specialist	Medium	1,2,3	\$5,000	Local, State, Federal, Grant	6 months prior to effective date of new floodplain maps.	Not started, lack of funding
Bel Aire-9	Implement erosion control measures.	Soil Erosion	City Engineer	Medium	1,2	\$85,000	Local, State, Federal, Grant	Pending project approval.	Not started, lack of funding
Bel Aire-10	Develop/ enhance flood control. Ditch/ drainage channel restoration/ expansion (NFIP)	Flood	City Engineer	High	1,2	Rip Rap: \$150,000, Floodway Concrete Pilot Channel: \$100,000	Local, State, Federal, Grant	Pending Project Approval	Not started, lack of funding
Bel Aire-11	Prevent interruption of critical services and operations. Backup power source.	Utility/ Infrastructure Failure	City Engineer	High	1,2	City Hall - \$30,000, Pump House \$35,000	Local, State, Federal, Grant	Pending project approval	Not started, lack of funding
Bel Aire-12	Enhance and maintain existing warning systems. Outdoor weather warning devices.	Tornado, Windstorm	Sedgwick Co. Emergency	High	1,2,3	\$75,000	Local, State, Federal, Grant	Pending project approval	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
			Management by contract						
Bel Aire-13	Enhance critical transportation nodes.	Utility/ Infrastructure Failure, Winter Storms	City Engineer	Medium	1,2	\$3,800,000	Local, State, Federal, Grant	Pending funds	Not started, lack of funding
Bel Aire-14	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager, City Engineer	Medium	1,2	Up to \$75,000	Local, State, Federal, Gra nt	Repeating	Not started, lack of funding
Bel Aire-15	Promote tornado risk reduction performance tracking.	Tornado, Windstorm	City Engineer	Medium	1,2	Up to \$75,000	Local, State, Federal, Gra nt	Five years	Not started, lack of funding
Bel Aire-16	Tributary 7 rehabilitation (east Fork Chisholm Creek). Trib #7, a drainage channel 1,650' has a stream of water in the except maybe in the hottest months of the year.	Flood, Utility/ Infrastructure Failure	City Engineer	High	1,2	\$1,500,000 – all phases. Sanitary sewer line is estimated at \$415,000.	Local, State, Federal, Gra nt	Five years	Not started, lack of funding
Bel Aire-17	Relocate Central Park Tornado Siren	Tornado, Windstorm	Sedgwick County Emergency Management, City Engineer, Chief of Police	Medium	1,2	\$75,000	Local, Grant	Five years	Not started, lack of funding
Bel Aire-18	Purchase additional warning sirens for installation.	Tornado, Windstorm	Sedgwick County Emergency Management, City Engineer, Chief of Police	Medium	1,2,3	\$75,000	Local, Grant, Specials	Five years	Not started, lack of funding
Bel Aire-19	Purchase backup Generators for critical facilities	Utility/ Infrastructure Failure	City Engineer	Medium	1,2	\$35,000, \$65,000 for both	Grants	Five years	Not started, lack of funding
Bel Aire-20	Purchase backup Generator City Hall.	Utility/ Infrastructure Failure	City Engineer	Medium	1,2	\$65,000	Grants	Five years	Not started, lack of funding
Bel Aire-21	Design and construct a safe room at the City Hall Emergency Operations	Tornado, Windstorm	City Engineer, Chief of Police, Zoning Officer	Medium	1,2	\$65,000	Grants	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Bel Aire-22	Stormwater Management Department needs additional resources to include personnel and equipment.	Flood	City Engineer	Medium	1,2	\$40,000	Grants, Budget	Three years	Not started, lack of funding
Bel Aire-23	Complete box culvert plan 0013TDT. The basic design is to install a 8x4 box culvert with end sections at 39th St. and N. Harding Street.	Flood	City Engineer	Medium	1,2	\$40,000	Grant, Budget	Three years	Not started, lack of funding
Bel Aire-24	Woodlawn Blvd, road and Stormwater project. Multi-phase road improvement project. (NFIP)	Flood	City Engineer	Medium	1,2	\$4,000,000	Grants, Budget, KDOT	10 years	Not started, lack of funding
Bel Aire-25	Deliver stormwater management public education program. (NFIP)	Flood	City Engineer, City Manager, Finance Director, Economic Development Specialist	Medium	1,2,3	\$40,000	Grants, Budget	Three years	Not started, lack of funding
Bel Aire-26	Complete the City Lakes Rip-Rap Project.	Flood, Dam and Levee Failure	City Engineer	Medium	1,2	\$60,000	Grants, Budget	One year	Not started, lack of funding
Bentley-1	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Manager	Low/Medium	1,2	Staff Time	Local	Repeating	Not started, lack staff
Bentley-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Bentley-3	Continue participation in the NFIP.	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Bentley-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Bentley-5	Promote awareness of the effective date of floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000 depending on scope	General Budget	Repeating	Not started, lack of funding
Bentley-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the new floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000 depending on scope	General budget	6 months prior to effective date of new	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
								floodplain maps.	
Bentley-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	General Budget	Repeating	Not started, lack of funding
Bentley-8	Promote tornado risk reduction performance tracking	Tornado, Windstorm	Emergency Management Director	Medium	1,2	Up to \$75,000	General Budget	Five years	Not started, lack of funding
Cheney-1	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Manager	Low/Medium	1,2	Staff Time	Local	Repeating	Not started, lack staff
Cheney-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	Not started, lack staff
Cheney-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Cheney-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	Not started, lack staff
Cheney-5	Promote awareness of the effective date of floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000 depending on scope	General Budget	Repeating	Not started, lack of funding
Cheney-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000 depending on scope	General Budget	6 months prior to new maps	Not started, lack of funding
Cheney-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	General Budget	Repeating	Not started, lack of funding
Cheney-8	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Fire Chief	Medium	1,2	Up to \$75,000	Grants	Five years	Not started, lack of funding
Clearwater-1	Maximize the value of flood hazard mapping. Identify additional flood hazard data needs. (NFIP)	Flood	Floodplain Manager	Low/Medium	1,2	Staff Time	Local	Repeating	In progress
Clearwater-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Clearwater-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Clearwater-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Clearwater-5	Promote awareness of the effective date of NEW floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000	General Budget	Repeating	Not started, lack of funding
Clearwater-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the new floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000	General Budget	6 months prior NEW floodplain maps	Not started, lack of funding
Clearwater-7	Develop/ enhance flood control. Ditch/ drainage channel restoration/ expansion (NFIP)	Flood	Floodplain Manager	High	1,2	\$50,000	CIP	Repeating	Not started, lack of funding
Clearwater-8	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	General Budget	Repeating	Not started, lack of funding
Clearwater-9	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Emergency Management Director	Medium	1,2	Up to \$75,000	Department budget	Repeating	Not started, lack of funding
Colwich-1	Maximize the value of flood hazard mapping. Identify additional flood hazard data needs. (NFIP)	Flood	Floodplain Manager	Low/ Medium	1,2	Staff Time	Local	Repeating	In progress
Colwich-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation flooding (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Colwich-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Colwich-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Colwich-5	Promote awareness of the effective date of floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000	General Budget	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Colwich-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the new floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000	General Budget	6 months prior new floodplain maps.	Not started, lack of funding
Colwich-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	General Budget	Repeating	Not started, lack of funding
Colwich-8	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Emergency Management Director	Medium	1,2	Up to \$75,000	Department Budget	Repeating	Not started, lack of funding
Derby-1	Maximize the value of flood hazard mapping. Identify additional flood hazard data needs. (NFIP)	Flood	Floodplain Manager	Low/ Medium	1,2	Staff Time	Local	Repeating	In progress
Derby-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Derby-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Derby-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Derby-5	Promote awareness of the effective date of NEW floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000	Local, FMA	Repeating	Not started, lack of funding
Derby-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000	Local, FMA	6 months prior to new floodplain maps	Not started, lack of funding
Derby-7	Enhance and maintain existing warning systems. Outdoor weather warning devices	Tornado, Windstorm	Mayor	High	1,2,3	Siren replacement: \$17,500, siren acquisition: \$17,500	HMGP	Pending project approval	Not started, lack of funding
Derby-8	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	Local, FMA	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Derby-9	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Mayor	Medium	1,2	Up to \$75,000	HMGP		Not started, lack of funding
Derby-10	Upgrade/ Improve Storm Water Management systems. (NFIP)	Flood	Environmental Compliance Officer	High	1,2	\$100,000	PDM	Two years initially, then Repeating.	Not started, lack of funding
Derby-11	Prevent interruption of critical services and operations. Provide a backup power source for the new proposed "Venue" Civic Center.	Utility/ Infrastructure Failure	Operations & Facilities Director	Medium	1,2	\$80,000	HMGP	2014	Not started, lack of funding
Derby-12	Construction of safe room at new "Venue" facility.	Tornado, Windstorm, Lightning, Hail	Operations and Facility Management Director	Medium	1,2	\$500,000	HMGP	Completion Date 2014	Not started, lack of funding
Derby-13	Provide Assistance for business Planning for Disasters.	All Hazards	Economic Development Director	Medium	1,2	\$50,000	PDM	Five years, Repeating	Not started, lack of funding
Derby-14	Preserve open space in the floodplain through regulatory and non-regulatory methods. (NFIP)	Flood	Directors of Planning and Engineering.	Medium	1,2,3	\$100,000	HMGP	Five years	Not started, lack of funding
Derby-15	Enhance existing GIS program to improve capabilities.	All Hazards	Directors of Planning and Engineering and Public Works	Medium	1,2	\$100,000	HMGP	Five years	Not started, lack of funding
Derby-16	Provide needed resources to rehabilitate older housing for severe weather including winter storms, flooding, and Tornadoes.	Winter Storm, Tornado, Flood	Economic Development director	Medium	1,2	\$150,000	HMGP	Repeating	Not started, lack of funding
Derby-17	Improving lighting and traffic controls at critical intersections and roadways to improve safety.	Utility/ Infrastructure Failure	Director of Planning and Engineering.	Medium	1,2	\$150,000	HMGP	Five years	Not started, lack of funding
Derby-18	Spring Creek Watershed Study. Create a partnership with Sedgwick County to study what can be done. (NFIP)	Flood	Director of Planning and Engineering	Medium	1,2	\$50,000	General Budget	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Derby-19	Replace existing overhead electric lines to underground.	Utility/ Infrastructure Failure	Director of Planning and Engineering Department	Medium	1,2	\$2,000,000	HMGP	Repeating	Not started, lack of funding
Derby-20	Water Utility Communication Upgrade. Replace aging radio equipment with cellular based equipment.	Utility/ Infrastructure Failure	Public Works Director	High	1,2	\$6,000	Utility Revenue	2 months	Not started, lack of funding
Eastborough-1	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Manager	Low/ Medium	1,2	Staff Time	Local	Repeating	In progress
Eastborough-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Eastborough-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Eastborough-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Eastborough-5	Promote awareness of the effective date of new floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000	Local, Grants	Repeating	Not started, lack of funding
Eastborough-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the new floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000	Local, Grants	6 months prior to effective date of new floodplain maps.	Not started, lack of funding
Eastborough-7	Promote flood risk reduction performance tracking.	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	Local, Grants	Repeating	Not started, lack of funding
Eastborough-8	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Mayor	Medium	1,2	Up to \$75,000	Local, Grants	Repeating	Not started, lack of funding
Eastborough-9	Prevent interruption of critical services and operations through purchase of backup power source.	Infrastructure Failure	Mayor	High	1,2	\$5,000	Local, Grants	Three years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Eastborough-10	Upgrade/ expand/ improve Stormwater Management Systems. (NFIP)	Flood	MKEC Engineers/ Council Member	Medium	1,2		FMA Grants	One year	Not started, lack of funding
Garden Plain-1	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Manager	Low/ Medium	1,2,3	Staff Time	Local	Repeating	In progress
Garden Plain-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Garden Plain-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Garden Plain-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Garden Plain-5	Promote awareness of the effective date of NEW floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000	FMA Grants	Repeating	Not started, lack of funding
Garden Plain-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the new floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000 depending on scope	FMA Grants	6 months prior new floodplain maps.	Not started, lack of funding
Garden Plain-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	FMA Grants	Repeating	Not started, lack of funding
Garden Plain-8	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Mayor	Medium	1,2	Up to \$75,000	HMGP		Not started, lack of funding
Garden Plain-9	Develop/ implement a hazard training plan.	All Hazards	City Clerk, GAS System Operator, Mayor & Council	High	1,2	\$2,500	General Fund	Repeating	Not started, lack of funding
Garden Plain-10	Acquire a permanent backup generator for chlorine buildings.	Hazardous Material, Utility/ Infrastructure Failure	Water Operator	High	1,2	\$6,000	Water Fund	Five years	Not started, lack of funding
Garden Plain-11	Public education and outreach on the impacts of drought and specifically water conservation due to drought.	Drought, Utility/	Water Operator	High	1,2,3	\$2,000	Water Fund	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
		Infrastructure Failure							
Goddard-1	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Manager, Director of Community Development	Low/Medium	1,2,3	Staff Time	Local	Repeating	In progress
Goddard-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager, Director of Community Development	High	1,2,3	Staff Time	Local	Repeating	In progress
Goddard-3	Continue participation in the NFIP .	Flood	Floodplain Managers, Director of Community Development	High	1,2,3	Staff Time	Local	Repeating	In progress
Goddard-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Floodplain Managers, Director of Community Development	High	1,2,3	Staff Time	Local	Repeating	In progress
Goddard-5	Promote awareness of the effective date of floodplain maps. (NFIP)	Flood	Floodplain Manager, Director of Community Development	High	1,2,3	\$5,000	General Fund	Repeating	Not started, lack of funding
Goddard-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the floodplain maps. (NFIP)	Flood	Floodplain Manager, Director of Community Development	Medium	1,2,3	\$5,000	General Fund	6 months prior to effective date of new floodplain maps.	Not started, lack of funding
Goddard-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager, Director of Community Development	Medium	1,2	Up to \$75,000	General fund	Repeating	Not started, lack of funding
Goddard-8	Promote Tornado risk reduction performance tracking	Tornado, Windstorm	Director of community Development	Medium	1,2	Up to \$75,000	General Fund	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Haysville-1	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Manager	Low/Medium	1,2,3	Staff Time	Local	Repeating	In progress
Haysville-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Haysville-3	Continue participation in the NFIP . Participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Haysville-4	Compliance with ordinances, i.e local floodplain management ordinances. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Haysville-5	Promote awareness of the effective date of floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000	None	Repeating	Not started, lack of funding
Haysville-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000	None	6 months prior new floodplain maps.	Not started, lack of funding
Haysville-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	None	Repeating	Not started, lack of funding
Haysville-8	Promote tornado risk reduction performance tracking.	Tornado, Windstorm	Public Works Director and/ or Emergency Management Director	Medium	1,2	Up to \$75,000	None	Repeating	Not started, lack of funding
Kechi-1	Maximize the value of flood hazard mapping (NFIP)	Flood	Planning & Zoning Administrator	Low/Medium	1,2,3	Staff Time	Local	Repeating	In progress
Kechi-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Planning & Zoning Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
Kechi-3	Continue participation in the NFIP .	Flood	Planning & Zoning Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
Kechi-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Planning & Zoning Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Kechi-5	Promote awareness of the effective date of floodplain maps. (NFIP)	Flood	Planning & Zoning Administrator	High	1,2,3	Staff Time	Local	Repeating	In progress
Kechi-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the new floodplain maps. (NFIP)	Flood	Planning & Zoning Administrator	Medium	1,2,3	None	None	6 months prior to new floodplain maps	Not started, lack of funding
Kechi-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Planning & Zoning Administrator	Medium	1,2	Up to \$75,000	25/ 75 cost share	Repeating	Not started, lack of funding
Kechi-8	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Planning & Zoning Administrator	Medium	1,2	Up to \$75,000	25/ 75 cost share		Not started, lack of funding
Maize-1	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Manager	Low/ Medium	1,2,3	Staff Time	Local	Repeating	In progress
Maize-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Maize-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Maize-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Maize-5	Promote awareness of the effective date of floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000	General Budget	Repeating	Not started, lack of funding
Maize-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000	General Budget	6 months prior to new floodplain maps	Not started, lack of funding
Maize-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	General Budget	Repeating	Not started, lack of funding
Maize-8	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Emergency Management Director	Medium	1,2	Up to \$75,000	Department budget	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Mount Hope-1	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Manager	Low/Medium	1,2,3	Staff Time	Local	Repeating	In progress
Mount Hope-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Mount Hope-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1.2.3	Staff Time	Local	Repeating	In progress
Mount Hope-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1,2,4	Staff Time	Local	Repeating	In progress
Mount Hope-5	Promote awareness of the effective date of floodplain maps.	Flood	Floodplain Manager	High	1,2,3	\$5,000	General Budget	Repeating	Not started, lack of funding
Mount Hope-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the new floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000	General budget	6 months prior new floodplain maps.	Not started, lack of funding
Mount Hope-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1.2	Up to \$75,000	General Budget	Repeating	Not started, lack of funding
Mount Hope-8	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Emergency Management director	Medium	1.2	Up to \$75,000	Department Budget	Repeating	Not started, lack of funding
Mulvane-1	Prevent recurring electrical interruptions of critical infrastructure.	Utility/ Infrastructure Failure	Utilities Supervisor	High	1,2	\$1 million	Electric Rates & CIP	Pending Project Approval	Not started, lack of funding
Mulvane-2	Seek funding for the design and construction of safe rooms for the community.	Tornado, Windstorm	Fire Rescue Captain	High	1.2	\$300,000	Not known	pending Project Approval	Not started, lack of funding
Mulvane-3	Develop/ enhance flood control structures to prevent recurring losses. Retention ponds and acquisition and expansion of storm drainage channel. (NFIP)	Flood	City Engineer	High	1.2	\$500,000	General Tax Fund	Pending project Approval	Not started, lack of funding
Mulvane-4	Enhance and maintain existing warning systems.	Tornado, Windstorm	Fire Rescue Captain	High	1.2.3	\$140,000 (7 sirens)	CIP	Pending Project Approval	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Mulvane-5	Clean silt out of Styx Creek drainage canal. (NFIP)	Flood	Mulvane Fire Rescue Captain	High	1.2	\$50,000	Local	4 – 6 months	Not started, lack of funding
Mulvane-6	Acquire outdoor warning sirens for newly annexed areas of the city & replace old worn out WW-ii vintage equipment.	Tornado, Windstorm	Mulvane Fire Rescue Captain	High	1.2.3	\$80,000 for 4 sirens	HMGP, Local, General Tax Fund	90 days after funding received (Partially completed 2 new sirens)	Not started, lack of funding
Mulvane-7	Continue NFIP participation and compliance.	Flood	Mulvane Fire Captain	Medium	1.2.3	Staff Time	Local Budget	Repeating	In progress
Park City-1	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Manager	Low/Medium	1.2.3	Staff Time	Local	Repeating	In progress
Park City-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager	High	1.2.3	Staff Time	Local	Repeating	In progress
Park City-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1.2.3	Staff Time	Local	Repeating	In progress
Park City-4	Compliance with ordinances, i.e local floodplain management ordinances. Participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1.2.3	Staff Time	Local	Repeating	In progress
Park City-5	Promote awareness of the effective date of new floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1.2.3	\$5,000	Local	Repeating	Not started, lack of funding
Park City-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1.2.3	\$5,000	Local	6 months prior to effective date of new floodplain maps.	Not started, lack of funding
Park City-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1.2	Up to \$75,000	FMA grant	Repeating	Not started, lack of funding
Park City-8	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Emergency Preparedness Committee	Medium	1,2	Up to \$75,000	HMGP	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
City of Sedgwick-1	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Managers	Low/Medium	1,2,3	Staff Time	Local	Repeating	In progress
City of Sedgwick-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Managers,	High	1,2,3	Staff Time	Local	Repeating	In progress
City of Sedgwick-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
City of Sedgwick-4	Compliance with ordinances, i.e local floodplain management ordinances. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
City of Sedgwick-5	Promote awareness of the effective date of floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000	None	Repeating	Not started, lack of funding
City of Sedgwick-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000	None	6 months prior to new floodplain maps	Not started, lack of funding
City of Sedgwick-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	None	Repeating	Not started, lack of funding
City of Sedgwick-8	Promote Tornado risk reduction performance tracking	Tornado, Windstorm	Emergency Management Director	Medium	1,2	Up to \$75,000	Department Budget	Repeating	Not started, lack of funding
City of Sedgwick-9	Storm water Drainage Improvements. Have constructed two Dams – 1 detention and 1 retention that drain into Sedgwick Drainage ditch. Ditch impedes progress made by having dams. Proper ditch management, farming practices and regular maintenance. Remediation with existing drainage district to either maintain or relinquish control to local entity.	Flood, Dam and Levee failure	City Administrator	High	1,2	Up to \$1,000,000	Tax-bonds	2-Five years	Not started, lack of funding
City of Sedgwick-10	Accomplish requirements for CRS and continue to attain higher level. (NFIP)	Flood	City Administrator	Medium	1,2,3	Minimal	Local Budget	2 -5years,	In process
Valley Center-1	Maximize the value of flood hazard mapping (NFIP)	Flood	Floodplain Manager	Low/Medium	1,2,3	Staff Time	Local	Repeating	In progress





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Valley Center-2	Enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Valley Center-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Valley Center-4	Compliance with ordinances, i.e local floodplain management ordinances. Continued participation in the CRS. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Valley Center-5	Develop/ enhance flood control structures to prevent recurring losses. Ditch/ drainage channel restoration/ expansion. (NFIP)	Flood	Public Works Director	High	1,2	\$1,150,000 for Ford Expansion Phase I project.	HMGP	Five years	Not started, lack of funding
Valley Center-6	Develop/ enhance flood control structures to prevent recurring losses, including the construction of retention ponds. (NFIP)	Flood	Public Works Director	High	1,2	Drainage and retention ponds - \$1,400,000	HMGP	Five years	Not started, lack of funding
Valley Center-7	Seek funding for the design and construction of community safe rooms.	Tornado, Windstorm	Public Safety Director	High	1,2	\$400,000 – Mini fire station W. of RR Tracks, \$1.2M – Library construction, \$500,000 – Public Safety building Addition	HMGP	Five years	Not started, lack of funding
Valley Center-8	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	HMGP	Repeating	In progress
Valley Center-9	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Public Safety Director	Medium	1,2	Up to \$75,000	HMGP	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Valley Center-10	Construction of a “Safe Room” at Valley Center’s Public Safety Building.	Tornado, Windstorm	Public Safety Director	High	1,2	\$150 per square foot	Capital Improvement Plan	Three years	Not started, lack of funding
Viola-1	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Managers	Low/Medium	1,2,3	Staff Time	Local	Repeating	In progress
Viola-2	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Managers,	High	1,2,3	Staff Time	Local	Repeating	In progress
Viola-3	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Viola-4	Compliance with ordinances, i.e local floodplain management ordinances. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Viola-5	Promote awareness of the effective date of floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	\$5,000	CIP Funding	Repeating	Not started, lack of funding
Viola-6	Promote purchase of flood insurance in the six-month period prior to the official effective date of the floodplain maps. (NFIP)	Flood	Floodplain Manager	Medium	1,2,3	\$5,000	CIP Funding	6 months prior to new floodplain maps.	Not started, lack of funding
Viola-7	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000	HMGP	Repeating	Not started, lack of funding
Viola-8	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Emergency Management Director	Medium	1,2	None	None	Repeating	
Wichita-1	Wichita Levee Accreditation. Completion of engineering analysis, permitted repairs, and required documentation.	Dam and Levee Failure, Flood	Mayor	High	1,2	\$2,400,000 for the engineering and geotechnical services to complete the accreditation study. Mapping and	HMGP	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
						Engineering: \$4,000,000 Construction of Repairs \$10,000,000			
Wichita-2	Maximize the value of flood hazard mapping. (NFIP)	Flood	Floodplain Managers	Low/Medium	1,2,3	Staff Time	Local	Repeating	In progress
Wichita-3	Adopt and/ or enforce zoning regulations that promote hazard mitigation for flooding (NFIP)	Flood	Floodplain Managers,	High	1,2,3	Staff Time	Local	Repeating	In progress
Wichita-4	Continue participation in the NFIP .	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Wichita-5	Compliance with ordinances, i.e local floodplain management ordinances. (NFIP)	Flood	Floodplain Managers	High	1,2,3	Staff Time	Local	Repeating	In progress
Wichita-6	Eliminate repetitive disaster losses. Acquisition/ elevation or relocation of flood prone properties and structures. (NFIP)	Flood	Emergency Management Director	High	1,2	\$10,000,000	HMGP	Five years	Not started, lack of funding
Wichita-7	Mitigation of flood evacuation routes to ensure life safety. (NFIP)	Flood	Emergency Management Director	Medium	1,2	\$25,000	HMGP	Repeating	Not started, lack of funding
Wichita-8	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Emergency Management Director	High	1,2,3	Staff Time	Local	Repeating	In progress
Wichita-9	Promote awareness of the effective date of floodplain maps. (NFIP)	Flood	Floodplain Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Wichita-10	Promote purchase of flood insurance in the six-month period prior to the official effective date of the new floodplain maps.	Flood	Floodplain Manager	Medium	1,2,3	Staff Time	Local	6 months prior new floodplain maps.	Not started
Wichita-11	Develop/ enhance flood control structures to prevent recurring losses. Overflow detention facility. (NFIP)	Flood	Stormwater Utility Manager	High	1,2	\$20,000,000	CIP Budget	Pending project approval	Not started, lack of funding
Wichita-12	Prevent interruption of critical services and operations through purchase of backup power source.	Utility/ Infrastructure Failure	Stormwater Utility Manager	High	1,2	\$1,050,000 for Standby	CIP Budget	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
						Electrical Generators			
Wichita-13	Promote flood risk reduction performance tracking. (NFIP)	Flood	Floodplain Manager	Medium	1,2	Up to \$75,000 depending on level of implementation	CIP Budget	Repeating	Not started, lack of funding
Wichita-14	Promote Tornado risk reduction performance tracking.	Tornado, Windstorm	Emergency Management Director	Medium	1,2	Staff Time	Local	Repeating	
Wichita-15	Standardize protocols for drainage design and construction. (NFIP)	Flood	Floodplain Manager	High	1,2	Staff Time	Local	Underway	In progress
Wichita-16	Evaluate the adequacy of storm water system. (NFIP)	Flood	Floodplain Manager	High	1,2	Staff Time	Local	Underway	In progress
Wichita-17	Wichita-Valley Center Floodway Project Recertification. Improvements include collecting LIDAR to update ground elevation information, acquire additional right-of-way, construct new levees and structures, and construct embankment protection.	Flood, Dam and Levee Failure	Stormwater Utility Manager	High	1,2	\$17,600,000 for short term , \$44,700,000 for long term	City/ County	Repeating	Not started, lack of funding
KU School of Medicine, Wichita-1	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$5,000	Local	Repeating	Not started, lack of funding
KU School of Medicine, Wichita-2	Construction of safe rooms to protect population at risk.	Tornado, Windstorm	Emergency Management Director	High	1,2	\$8,000,000	HMGP	Pending Project Approval	Not started, lack of funding
USD#259-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#259-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$5,000	Local, State, Federal, HMGP, PDM	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#259-3	Prevent interruption of critical services and operations through the purchase of backup power source.	Utility/ Infrastructure Failure	Superintendent	High	1,2	\$50,000	Local, State, Federal, HMGP, PDM	Pending Project Approval	Not started, lack of funding
USD#260-1	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$100-\$1,000 depending on scope.	USD#260 general fund	Repeating	Not started, lack of funding
USD#260-2	Construct Storm Shelters (Derby High School, Derby Middle School, Derby North Middle School, Oaklawn Elementary, El Paso Elementary, Derby Hills Elementary and Swaney Elementary).	Tornado, Windstorm	Director of Operations	High	1,2	\$2,117,320	USD260 capital outlay fund and contingency fund	August Five years	Not started, lack of funding
USD#261-1	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$100 - \$5,000 depending on scope.	Capital	Repeating	Not started, lack of funding
USD#261-2	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#262-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#262-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Assistant Superintendent	High	1,2,3	\$100 - \$5,000 depending on scope.	Capital	Repeating	Not started, lack of funding
USD#263-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#263-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$100 - \$5,000 depending on scope.	Capital	Repeating	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#263-3	Emergency Management Plan training.	All Hazards	Safety Director	High	1,2	\$5,000	General Fund	Repeating	Not started, lack of funding
USD#263-4	Emergency action/ ICS kit acquisition.	All Hazards	Safety Director	High	1,2	\$25,000	Grants, Donations, General Funds	6 months – One year	Not started, lack of funding
USD#263-5	Safe Room construction. Construction of four additional FEMA Safe Rooms, two at the Mulvane Middle School and two at the Mulvane High School.	Tornado, Windstorm	Safety Director	Low	1,2	\$8,000,000	FEMA, Bonds, Capital Outlay	Pending Project Approval	Not started, lack of funding
USD#263-6	Conduct and implement the recommendations of a Radio Communications Improvement Project.	All Hazards	Superintendent	Low	1,2,4	\$250,000	Grants, Capital Outlay	Pending Project Approval	Not started, lack of funding
USD#264-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#264-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$100 - \$5,000 depending on scope.	Capital	Repeating	Not started, lack of funding
USD#265-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#265-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Director of Security	High	1,2,3	\$100 - \$5,000 depending on scope.	Capital	Repeating	Not started, lack of funding
USD#265-3	Conduct regular emergency preparedness drills for school children at all levels	All Hazards	Director of Security	Medium	1,2,3	Staff Time	Local	Repeating	Not started, lack of funding
USD#265-4	Acquire audio/ visual emergency communications and notification systems for interior and exterior of schools.	All Hazards	Director of Security	Medium	1,2,4	\$5,000 - \$10,000 per school.	Grants, General Fund, Capital	3 – 5+ years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
							Outlay funding		
USD#266-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#266-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$100 - \$5,000 depending on scope.	Capital	Repeating	Not started, lack of funding
USD#267-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Four shelters completed with two shelters in planning and funding stage	In process
USD#267-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$100 - \$5,000 depending on scope.	Capital	Repeating	Not started, lack of funding
USD#268-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Four shelters completed with two shelters in planning and funding stage	Not started, lack of funding
USD#268-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$100 - \$5,000 depending on scope	Capital	Repeating	Not started, lack of funding
USD#312-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD#312-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$100 - \$5,000 depending on scope.	Capital	Repeating	Not started, lack of funding
USD#356-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#356-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$100 - \$5,000 depending on scope.	Capital	Repeating	Not started, lack of funding
USD#375-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#375-2	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	\$100 - \$5,000 depending on scope.	Capital	Repeating	Not started, lack of funding
USD#385-1	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#385-2	Controlled Access for all buildings	Building, Student, Staff Security	USD 385 Director of Operations & Superintendent	High	1,2	\$2,300,000	Local Bond, State Safety Grant, Local Capital Outlay Levy	Two years	Not started, lack of funding
USD#385-3	Replace/Upgrade Security Cameras and System for all buildings	Building, Student, Staff Security	USD 385 Director of Operations & Superintendent	High	1,2	\$550,000	Local Bond, State Safety Grant, Local Capital Outlay Levy	Two years	New
USD#385-4	Purchase and Implementation of CrisisGo Mobile App	Crisis Management,	USD 385 Director of Operations & Superintendent	High	1,2,4	\$10,000	Local Funding	One year	New





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
		Student/Staff Safety							
USD#385-5	Purchase Handheld Radios for each building	Building, Student, Staff Security / Crisis Management	USD 385 Director of Operations & Superintendent	Medium	1,2,4	\$90,000	Local Capital Outlay Levy, State Safety Grant	Five years	New
USD#439-1	Acquire and install a permanently mounted emergency generator for Sedgwick Public Schools.	All Hazards	Superintendent	Medium	1,2	\$100,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#439-2	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
USD#440-1	Purchase generators for all Bentley Schools.	Utility/ Infrastructure Failure	Director of Buildings and Grounds	High	1,2	\$60,000	Grants, local	Five years	Not started, lack of funding
USD#440 -2	Construct of safe rooms for all school buildings to protect students and staff.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
Wichita State University-1	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	Staff Time	Local	Repeating	Not started, lack staff
Wichita State University-2	Construction of safe rooms to protect population at risk.	Tornado, Windstorm	Emergency Management Director	High	1,2	\$8,000,000	HMGP	Pending Project Approval	Not started, lack of funding
Wichita State University-3	Acquire audio emergency communication and notification systems for the interior of campus buildings and exterior of campus building grounds.	All Hazards	University Police Chief	High	1,2,4	\$500,000	FEMA Grant	4 fiscal years.	Not started, lack of funding
Andale District Library-1	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	None	None	Repeating	In process





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Butler REC-1	Prevent recurring interruptions of critical infrastructure. Retrofit electrical systems to prevent loss of critical services, including burial of electrical distribution lines.	Utility/ Infrastructure Failure	Director	High	1,2	\$10,000,000	Local, State, Federal, HMGP, PDM	Pending Project Approval	Not started, lack of funding
Butler REC-2	Prevent interruption of critical services and operations through the purchase of backup power source.	Utility/ Infrastructure Failure	Director	High	1,2	\$50,000	Local, State, Federal, HMGP, PDM	Pending Project Approval	Not started, lack of funding
Cerebral Palsy Research Foundation-1	Construction of safe rooms to protect population at risk.	Tornado, Windstorm	Superintendent	High	1,2	\$500,000	Local, State, Federal, HMGP, PDM	Five years	Not started, lack of funding
Resurrection Catholic Church-1	Construction of safe rooms to protect population at risk.	Tornado, Windstorm	Church Priest	High	1,2	\$500,000	FEMA Grant	4 fiscal years.	Not started, lack of funding
Sedgwick County Fire District #1-1	Support and participate in information exchange with regulatory agencies and stakeholders.	Wildfire	Chief	Medium	1,2,4	None	None	Repeating	In process
Sedgwick County REC-1	Prevent recurring interruptions of critical infrastructure. Retrofit electrical systems to prevent loss of critical services, including burial of electrical distribution lines.	Utility/ Infrastructure Failure	Director	High	1,2	\$10,000,000	Local, State, Federal, HMGP, PDM	Pending Project Approval	Not started, lack of funding
Sedgwick County REC-2	Prevent interruption of critical services and operations through the purchase of backup power source.	Utility/ Infrastructure Failure	Director	High	1,2	\$50,000	Local, State, Federal, HMGP, PDM	Pending Project Approval	Not started, lack of funding
Sedgwick County REC-3	Strengthen lines by replacing poles and installing new conductor to withstand wind and ice storms better.	Utility/ Infrastructure Failure	Line Superintendent	Medium	1,2	\$2,250,000	Local, State, Federal, HMGP, PDM	~ Two years.	Not started, lack of funding
South Central KS Library District-1	Implement annual awareness campaigns to educate the public about potential risks to the area.	All Hazards	Superintendent	High	1,2,3	None.	None	Repeating	In process





6.7.11 – Sumner County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Sumner County-1	Acquire and install permanent back-up power generator for Sumner County EOC.	Extreme Temperatures, Flood, Hail, Lightning, Tornado, Utility/ Infrastructure Failure, Windstorm, Winter Storm	Emergency Management Director	High	1,2	\$30,000 - \$40,000	HMGP, County General Funds	60 days after acquiring funding	Not started, lack of funding
Sumner County-2	Continue to participate in the National Flood Insurance Program and remain in good standing by actively managing the floodplain in accordance with adopted Floodplain Management Ordinance. (NFIP)	Flood	Emergency Management Director	Medium	1,2,3	None	None	Repeating	In progress
Sumner County-3	Acquire and install outdoor warning sirens	Tornado, Windstorm	Emergency Management Director	Medium	1,2,3	\$500,000 to \$650,000	HMGP, CDBG, USDA Rural Development Grants, County	One year	Not started, lack of funding
Sumner County-4	Countywide Drainage Survey/ Implementation/ Maintenance Plan to include all 30 townships.	Dam and Levee Failure, Flood, Soil Erosion and Dust	Emergency Management Director	High	1,2	\$300,000	HMGP, CDBG, USDA Rural Development Grants, County	8 – 10 years	Not started, lack of funding
Sumner County-5	Purchase and remove structures from floodplain (NFIP)	Flood	Planning & Zoning Director	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Argonia-1	Acquire outdoor Tornado warning sirens for the Argonia and rural area.	Tornado, Windstorm	City Clerk	High	1,2,3	\$100,000	HMGP, Capital Improvement Fund	Within One year	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Argonia-2	Develop and implement a local disaster training plan.	All Hazards	City Clerk	High	1,2	\$30,000	HMGP	On-Going	Not started, lack of funding
Argonia-3	Continue to participate in the NFIP and remain in good standing by actively managing the floodplain in accordance with currently adopted Floodplain Management Ordinance.	Flood	City Clerk	High	1,2,3	None	General Budget	Repeating	In progress
Argonia-4	Purchase and remove structures from floodplain (NFIP)	Flood	Planning & Zoning Director	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Belle Plaine-1	Acquire and install a permanently mounted emergency propane generator for the water well	Extreme Temperatures, Flood, Hail, Lightning, Tornado, Utility/ Infrastructure Failure, Windstorm, Winter Storm	Mayor	High	1,2	\$18,000	HMGP, General and Reserve Funds	One year	Not started, lack of funding
Belle Plaine-2	Create and construct a multi-purpose safe room with kitchen services and generator.	Tornado, Windstorm	Mayor	High	1,2	\$750,000	HMGP, General Funds	1 – Three years	Not started, lack of funding
Belle Plaine-3	Continue to participate in the NFIP and remain in good standing by actively managing the floodplain in accordance with currently adopted Floodplain Management Ordinance.	Flood	Mayor	High	1,2,3	None	General Funds	Repeating	In progress
Belle Plaine-4	Purchase and remove structures from floodplain (NFIP)	Flood	Planning & Zoning Director	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Caldwell-1	Construct a saferoom on site at Friendship Village Saferoom in accordance with FEMA guidance	Tornado, Windstorm	Mayor	High	1,2	\$40,000	HMGP	One year after project approval	Not started, lack of funding
Caldwell-2	Construct a saferoom area to provide adequate sheltering in accordance with FEMA standards	Tornado, Windstorm	City Clerk/ Administrator	High	1,2	\$60,000	HMGP	Within one year of project approval	Not started, lack of funding
Geuda Springs-1	Continued enforcement of Floodplain Management Ordinance and promote NFIP .	Flood	Mayor	High	1,2,3	None	General Budget	Repeating	In progress
Geuda Springs-2	Get remote access to two outdoor warning sirens. Get radio communications with spotters and EOC. Purchase and install a new base radio at the city building, perhaps with an additional 2 – 3 hand held radios	Tornado, Windstorm	Mayor	High	1,2,3	\$200,000	HMGP, PDM	Five years	Not started, lack of funding
Geuda Springs-3	Purchase and remove structures from floodplain (NFIP)	Flood	Planning & Zoning Director	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Mulvane-1	Clean silt out of Styx Creek drainage canal	Flood, Soil Erosion and Dust	Mulvane Fire Rescue Captain	High	1,2	\$50,000	Local	4 – 6 months	Not started, lack of funding
Mulvane-2	Continue to participate in the NFIP and remain in good standing by actively managing the floodplain in accordance with currently adopted Floodplain Management Ordinance.	Flood	Mulvane Fire Captain	Medium	1,2,3	Staff Time	Local Budget	Repeating	In progress
Mulvane-3	Purchase and remove structures from floodplain (NFIP)	Flood	Planning & Zoning Director	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Oxford-1	Construct a Tornado saferoom in park in accordance with FEMA design standards.	Tornado, Windstorm	City Clerk	High	1,2	\$54,000	HMGP	Within One year of approval	Not started,





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
									lack of funding
South Haven-1	Upgrade outdoor Tornado warning sirens. Purchase a new omni-directional siren that can be activated with a remote or by telephone	Tornado, Windstorm	City Clerk	High	1,2,3	\$20,000 to \$25,000	HMGP, General Funds, Donations	3 – 6 months	Not started, lack of funding
South Haven-2	Acquire a permanent back-up generator for the north water well. Purchase a new Onan 3-phase propane powered generator	Extreme Temperatures, Flood, Hail, Lightning, Tornado, Utility/ Infrastructure Failure, Windstorm, Winter Storm	City Clerk	High	1,2	\$15,000 to \$25,000	HMGP, USDA Rural Development Grant, CDBG, General Funds, Donations	1 – Two years	Not started, lack of funding
South Haven-3	Continue to participate in the NFIP and remain in good standing by actively managing the floodplain in accordance with currently adopted Floodplain Management Ordinance.	Flood	City Clerk	Medium	1,2,3	Staff Time	General Budget	Repeating	In progress
South Haven-4	Construct new safe room areas to provide adequate sheltering in accordance with FEMA standards	Tornado, Windstorm	City Clerk	High	1,2	\$50,000 to \$75,000	HMGP, General Funds, Donations	Within one year or less of project approval	Not started, lack of funding
South Haven-5	Purchase and remove structures from floodplain (NFIP)	Flood	Planning & Zoning Director	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
Wellington-1	Enforce Floodplain Ordinance/ Promote NFIP .	Flood	Fire Chief	Medium	1,2,3	Staff Time	General Budget	Repeating	In progress
Wellington-2	Purchase and install an alternative method for sounding tornado sirens for the City.	Tornado, Windstorm	Fire Chief	High	1,2,3	\$500	General Budget	One year	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wellington-3	Purchase and remove structures from floodplain (NFIP)	Flood	Planning & Zoning Director	Medium	1,2	\$500,000 (project dependent)	HMGP, CDBG, county	Five years	Not started, lack of funding
USD#353-1	Construct new saferoom areas to provide adequate sheltering in accordance with FEMA standards for each school	Tornado, Windstorm	Superintendent	High	1,2	\$500,000 per saferoom	HMGP	Five years	Not started, lack of funding
USD#356-1	Construct new safe room areas to provide adequate sheltering in accordance with FEMA standards for each school, and in some cases, community residents	Tornado, Windstorm	Superintendent	High	1,2	\$150,000	HMGP	Five years	Not started, lack of funding
USD#357-1	Construct saferoom areas to provide adequate sheltering for each school with easy access when sheltering is required. Provide access for local citizens in saferooms.	Tornado, Windstorm	Superintendent	High	1,2	\$525,000	HMGP	Five years	Not started, lack of funding
USD#358-1	Construct new saferoom areas to provide adequate sheltering in accordance with FEMA standards for each school	Tornado, Windstorm	Superintendent	High	1,2	\$500,000 per saferoom	HMGP	Five years	Not started, lack of funding
USD#359-1	Construct new saferoom areas to provide adequate sheltering in accordance with FEMA standards for each school	Tornado, Windstorm	Superintendent	High	1,2	\$500,000 per saferoom	HMGP	Five years	Not started, lack of funding
USD#360-1	Construct new saferoom areas to provide adequate sheltering in accordance with FEMA standards for each school	Tornado, Windstorm	Superintendent	High	1,2	\$500,000 per saferoom	HMGP	Five years	Not started, lack of funding
USD#509-1	Construct new saferoom areas to provide adequate sheltering in accordance with FEMA standards (per FEMA 361 guidance) for all students, faculty and staff.	Tornado, Windstorm	Superintendent	Medium	1,2	\$200,000	HMGP	Five years	Not started, lack of funding





Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wellington Christian Academy-1	Construct new saferoom areas to provide adequate sheltering in accordance with FEMA standards for school	Tornado, Windstorm	Superintendent	High	1,2	\$109,000 per saferoom	HMGP	Five years	New
Sumner/Cowley Electric Cooperative-1	Retrofit existing electrical distributions systems that were constructed prior to current construction standards established by the cooperative and approved by FEMA Public Assistance Program.	Utility/ Infrastructure Failure	Director	High	1,2	\$2,000,000	Local, Grant	Five years	New





6.8 –Mitigation Actions No Longer Under Consideration

For this plan update, members of the MPC and participating jurisdictions were asked to consider if all previous mitigation actions were still viable. Due to the thorough nature of the review, and the comprehensive updating of mitigation actions to meet both the needs of the participating jurisdictions and FEMA planning requirements, many actions were either modified or removed from consideration. A full comparison of jurisdictional actions may be completed by comparing the actions detailed in this plan against the actions from the 2013 regional hazard mitigation plan.

6.9 – Action Implementation and Monitoring

44 CFR 201.6 (c)(3)(iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

Kansas Region G and relevant participating jurisdictions are responsible for implementing their identified mitigation action(s). To foster accountability and increase the likelihood that actions will be implemented, every proposed action is assigned to an action champion. In general:

- The identified champion will be responsible for tracking and reporting on action status.
- The identified champion will provide input on whether the action as implemented is successful in reducing vulnerability.
- 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 assist in tracking the continued viability of the action if not completed, and to assist participating jurisdictions in potentially programming Funding to complete the actions.

In general, each participating jurisdiction, along with the MPC, is responsible for monitoring the progress of mitigation activities and projects. To facilitate the tracking of mitigation actions the Kansas Region G MPC and KDEM, in conjunction with participating jurisdictions, will compile a list of projects funded and completed. Additionally, the MPC and participating jurisdictions will be solicited annually to provide information on any other mitigation projects that were not funded through hazard mitigation grants for tracking and update purposes.

To track mitigation projects from initiation to closeout, participating jurisdictions will use a project tracking methodology that includes, at a minimum, the following information:

- Applicant data
- Grant identifier
- Award date





- Awarded contractor
- Period of Performance
- Total project cost, including local share of project
- Quarterly Reports

Upon completion of a project the awarded participating jurisdiction will conduct a closeout site visit to:

- Review all project documents
- Review all procurement documents and contracts
- Photograph completed project

Project closeout packages will generally be submitted no more than 90 days after a project has been completed, and should include the following:

- All available documentation
- Photographs of completed project
- Materials, labor and equipment documentation
- Close-out certification

6.10 – Jurisdictional Compliance with NFIP

44 CFR 201.6 (c)(3)(ii) All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

Participating jurisdictions are committed to continued involvement and compliance with the NFIP. To help facilitate compliance, each participating jurisdiction:

- Adopts floodplain regulations through local ordinance
- Enforces floodplain ordinances through building restrictions as detailed in relevant ordinance
- Regulates new construction in Special Flood Hazard Areas as outlined in their floodplain ordinance
- Utilizes FEMA FIRMs
- Monitors floodplain activities

Currently, no participating jurisdiction has available funding to complete local requests for floodplain map updates. Additionally, as of this plan, there are no active community assistance or monitoring activities occurring in any participating jurisdiction. Key to achieving across the board reduction in flood damages is a robust community assistance, education and awareness program. As such, Kansas Region G and its participating jurisdictions will continue to develop both electronic (including social media) and in person outreach activities.





Specific mitigation actions supporting regional commitment to both the NFIP and potential CRS application and compliance were identified above with a bold type **NFIP** in the subsequent mitigation action sections.

6.11 –Primary Mitigation Action Funding Sources

It is generally recognized that mitigation actions help communities realize long term savings by preventing future losses due to hazard events. However, many mitigation actions are beyond the budgetary capabilities a jurisdiction and Funding assistance, often in the form of grants, may be required. This following table provides a general description of some of the primary avenues available to jurisdictions to defray the cost of implementing mitigation actions.

Primary Hazard Mitigation Funding Mechanisms

Program	Funding Agency	Funding Match Requirement	Program Description
Community Development Block Grant Program	Department of Housing and Urban Development	N/A	Program is a competitive grant process through which about half of the Funding goes to support the development of community facilities and water and sewer projects. grants in four categories, community improvement, urgent need, Kansas Small Towns Environment Program and economic development.
Federal Public Assistance	FEMA	Varied	Provides Funding used to restore the parts of a structure that was damaged during a disaster. The restoration must provide protection from subsequent events.
Federal Individual Assistance	FEMA	Varied	Provides assistance for qualified homeowners/renters whose primary residence was damaged or destroyed in a declared designated area.
Flood Mitigation Assistance	FEMA	Varied	Program provides Funding to States, Territories, federally-recognized tribes and local communities for projects and planning that reduces or eliminates long-term risk of flood damage to structures insured under the NFIP. Funding is also available for management costs.
Hazard Mitigation Grant Program	FEMA	25%	Program is to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster. Funding is available, when authorized under the Presidential Major Disaster Declaration, in the areas of the state requested by the governor. The amount of Funding available to the applicant is based upon the total federal assistance provided by FEMA for disaster recovery under the major disaster declaration.
Pre-Disaster Mitigation Program	FEMA	25%	Program is designed to assist states, territories, Indian tribal governments, and local communities to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on federal Funding from future major disaster declarations.





6.12 – Additional Hazard Mitigation Funding Mechanisms

A wide variety of federal and state agencies offer mechanisms for funding mitigation projects. A thorough, but by no means complete, list of potential mitigation funding sources are detailed in the following table along with a brief program description.

Additional Potential Hazard Mitigation Funding Mechanisms

Department	Program	Program Description
FEMA	Fire Management Assistance Grant Program	Provides for the mitigation, management, and control of fires on publicly or privately-owned forests or grasslands. The process is initiated when the state requests federal assistance for an event where the threat of major disaster exists for either single fires or numerous small fires.
FEMA	Risk Mapping, Assessment, and Planning (Risk Map)	The Risk MAP strategy incorporates floodplain management with hazard mitigation by using tools such as DFIRMs, HAZUS reports, and risk assessment data to deliver quality data that increases public awareness and leads to action to reduce risk to life and property.
National Oceanic and Atmospheric Administration National Weather Service (NOAA NWS)	StormReady Program	StormReady is a voluntary program that was developed by NOAA NWS to help communities better prepare for and mitigate effects of all types of severe weather from tornadoes to flooding. The program encourages communities to take a new, proactive approach to improving local hazardous weather operations by providing emergency managers with clear-cut guidelines on how to improve their hazardous weather operations.
Mutual Aid	Kansas Water, Wastewater, Gas and Electric Utility Mutual Aid Program (KSMAP)	KSMAP has been developed to serve as the mutual aid program for Kansas utilities to help with provision of equipment, materials and personnel to assist in the restoration and continuation of utility service for those utilities needing assistance. The project is a joint effort of Kansas Municipal Utilities, Kansas Rural Water Association, the Kansas Section – American Water Works Association, the Kansas Water Environment Association, Kansas Corporation Commission, Kansas Department of Health & Environment and the Kansas Division of Emergency Management.
FEMA	Individual & Households, Other Needs Assistance (ONA) Program	The ONA 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 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. The current maximum allowable amount for any one disaster to individuals or families is \$25,000.
Council of Western State Foresters	Wildland Urban Interface (WUI) Grants	The WUI Grant may be used to apply for financial assistance towards hazardous fuels and educational projects within the four goals of: improved prevention, reduction of hazardous fuels, restoration of fire-adapted ecosystems and promotion of community assistance.





Additional Potential Hazard Mitigation Funding Mechanisms

Department	Program	Program Description
Small Business Administration	Disaster Loans	SBA 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.
Kansas Department of Agriculture – Division of Conservation (KDA-DoC)	Multipurpose Small Lakes Program	Provides state cost-share assistance to a government entity for the construction or renovation of a dam for flood control and water supply and/or recreational purposes. It requires a general plan of works and a local nonpoint source pollution control plan.
(KDA-DoC)	State Assistance to Watershed Dam Construction	Provides state cost-share assistance to a government entity for the construction or renovation of a dam for flood control and water supply and/or recreational purposes. It requires a general plan of works and a local nonpoint source pollution control plan.
(KDA-DoC)	State Assistance to Watershed Dam Construction	Provides cost-share assistance to organized watershed districts and other special purpose districts for the implementation of structural and nonstructural practices that reduce flood damage. Structural practices must be approved by the chief engineer of the Division of Water Resources.
(KDA-DoC)	Water Resources Cost Share Program	Provides state cost-share assistance to landowners for the establishment of enduring water conservation practices to protect and improve the quality and quantity of Kansas water resources.
(KDA-DoC)	Water Conservation Program	Provides financial incentives for voluntary retirements of private water rights in high priority areas.
(KDA-DoC)	Water Conservation Program	Provides financial incentives for voluntary retirements of private water rights in high priority areas.
Kansas Department of Agriculture – Division of Water Resources (KDA-DWR)	Community Assistance Program	This program enhances the State’s capability to provide floodplain management information and technical assistance to help local officials in NFIP and CRS participating communities. It also encourages nonparticipating communities to join the NFIP and CRS.
KDA-DWR	Floodplain Management Program	Program provides technical assistance for local, state and federal floodplain management, including managing the NFIP and floodplain ordinances and regulations adopted by city and county governments.
Kansas Department of Commerce (KDC)	Community Service Tax Credit	Program offers Kansas tax credits to for nonprofit organizations for contributions to approved projects. Projects eligible for tax credit awards include community service, crime prevention and health care
KDC	Kansas Partnership Fund	This fund provides low-interest state loans to cities and counties for infrastructure improvements that support Kansas basic enterprises.
Kansas Department of Health and Environment—Bureau of Environmental Remediation (KDHE-BER)	Abandoned Mine Land Program	Program provides for the remediation of sites that are an immediate threat to the health and safety of the public.
KDHE-BER	Kansas Brownfields Program	Programs to assist communities with the redevelopment of brownfields properties
KDHE-BER	State Water Plan Contamination Remediation Program	Program provides Funding for the evaluation, monitoring, and remediation of contaminated groundwater or surface water sites and provides Funding to supply alternate water sources as an emergency





Additional Potential Hazard Mitigation Funding Mechanisms

Department	Program	Program Description
		response action to residences with contaminated drinking water sources.
Kansas Department of Transportation	Transportation Enhancement Program	This is an annual competitive Federal Transportation Enhancement funded program that can be used for transportation enhancement activities that include environmental mitigation to address water pollution due to highway runoff or reduce vehicle-caused wildlife mortality while maintaining habitat connectivity.
Kansas Forest Service (KFS)	Community Forestry Program	Program provides assistance, education, and support to communities and municipalities in organizing urban and community forestry programs, identifying resource needs, setting priorities of work, and training city employees.
KFS	Rural Forestry Program	Professional foresters provide on-site forest management and agroforestry analysis and recommendations through inventory of forests, woodlands and windbreaks.
KFS	Firewise Program	The Kansas Firewise program offers prevention materials for homeowners to reduce the threat of wildland fire in rural and high-risk areas.
KFS	Forest Health Program	Program monitors the impacts of insects, diseases, drought, flooding and other health issues in forests, woodlands, windbreaks and conservation tree plantings by providing diagnosis and control recommendations and mitigation and planning for Emerald Ash Borer, Asian Bush Honeysuckles and other invasive species.
KFS	Landowner Education	Provides information and education to farmers regarding the benefits of good forest management. This includes information about federal cost share practices including the Environmental Quality Incentives Program, Conservation Reserve Program, and the Riparian and Wetland Protection Program.
KFS	Rural Fire Protection	Program provides fire support services to rural fire departments, including wildfire training, Smokey Bear fire prevention materials, and the acquisition and distribution of excess military vehicles for conversion to firefighting units.
Kansas Highway Patrol	Federal Preparedness Grant Program	Through this program, the Department of Homeland Security/FEMA provides Funding to states to prevent, respond to, and recover from acts of terrorism by enhancing and sustaining capabilities.
Kansas State Fire Marshal's Office	Fire Prevention Program	Program focuses on structural inspection to ensure compliance with the Kansas Fire Prevention Code.
Kansas State Fire Marshal's Office	Hazardous Materials Program	Program provides training, planning, and analysis related to hazardous materials accidents/incidents and WMD events to help local facilities and local, state, and federal agencies before an event occurs.
Kansas Water Office (KWO)	Public Information and Education	This public education program provides information on water resource issues to the general public through publication of articles, pamphlets, news reports, etc. It also provides support for environmental education and local leadership development programs.
KWO	Stream Gauging Program	State financial assistance is provided for the operation of selected gauging stations operated by the U.S. Geological Survey.





Additional Potential Hazard Mitigation Funding Mechanisms

Department	Program	Program Description
KWO	Technical Assistance to Water Users	Program provides technical assistance to municipalities, irrigators, and other groups to assist in the reduction of water use and improve water use efficiency.
KWO	Public Information and Education	Eligible jurisdiction can use loans for construction, replacement, acquisition and ownership of facilities, land and easement procurement, improvements for developing and utilization of water resources, projects to supply quality water to residents, provide water for navigation, provide recreational access to lakes and streams, reclaim, preserve and protect the state's land resources, and protect the wealth of the state from disastrous floods.



7.0 Plan Maintenance

7.1 – Hazard Mitigation Plan Monitoring and Evaluation

44 CFR 201.6 (c)(4) A plan maintenance process that includes: (i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

The Kansas Region G Hazard Mitigation Plan will be updated then approved by FEMA every five years. 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.

To achieve this, the MPC will meet annually after plan approval. If needed, additional meetings will take place during this timeframe. The State of Kansas State Hazard Mitigation Officer will determine the meeting dates and location and is responsible for sending invitations.

During the five-year evaluation phase, the MPC is responsible for assessing the effectiveness of the plan by:

- 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

In addition to these meetings, the MPC will monitor and evaluate the progress of mitigation projects via regular reports, site visits, and correspondence. Progress and viability of identified mitigation actions will be measured based on the following variables:

- The number of projects successfully implemented
- The breadth of disbursement of mitigation grant funds
- The disaster losses avoided over time
- Public awareness
- Success of completed mitigation projects in helping address and achieve identified goals and objectives
- Have the completed mitigation actions resulted in a safer Kansas Region G

In order to monitor the implementation of plan actions and the overall progress of plan goals, MPC members will report on the following information:

- 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 participating jurisdictions are receiving technical assistance





7.2 – Jurisdictional Maintenance Requirements

Kansas Region G and all participating jurisdictions will be tasked with plan monitoring, evaluation, and maintenance. All participating jurisdictions, led by MPC, will:

- Regularly monitor and evaluate the implementation of the plan
- When applicable, after a disaster event, evaluate the effectiveness of the plan
- Act as a think tank for all issues related to hazard mitigation planning
- Act as a clearinghouse for hazard mitigation ideas and activities
- Assist with the implementation of all identified actions with available resources
- Monitor all available funding opportunities for mitigation actions
- Coordinate the cycle for the revision and update of the mitigation plan
- Report on plan progress and recommended changes to the relevant governing bodies
- Inform and solicit input from the public

Each participating jurisdiction will also be responsible for promoting the integration of the hazard mitigation plan into all relevant plans, policies, procedures and ordinances.

7.3 – Plan Maintenance and Update Process

44 CFR 201.6 (c)(4) A plan maintenance process that includes: (i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle."

Kansas Region G, the State of Kansas, and the MPC will facilitate a yearly plan review and the subsequent hazard mitigation plan revision and re-adoption process within the required five-year period.

Information from the annual meetings will be incorporated in to the plan update. Starting in calendar year 2022, the formal update process will begin. A thorough review and revision of the plan will take place, following all requirements detailed in 44 CFR 201.4, FEMA guidance documents, and DMA 2000. The following represents a general timeline for the next required plan revision.

- **2021 Spring Meeting:** The MPC will begin updating the plan risk assessment. Hazards will be analyzed for continued relevancy and a review will be conducted to determine and new potential hazards.
- **2021 Fall Meeting:** The MPC will begin updating the vulnerability assessment. Data will be gathered on jurisdictional assets, critical facilities, building stock values, crop losses, jurisdictional damages, etc.
- **2022 Spring Meeting:** The MPC will review all information from previous meetings and determine if hazard mitigation goals and objectives are still relevant. Actions will be reviewed for currency and applicability.
- **2022 Fall Meeting:** The MPC will evaluate the policies, programs, capabilities, and funding sources from the previous plan to determine if they are still accurate and determine if additions are required.





- **2023 Spring Meeting:** The MPC will be going through the process of the formal five-year plan update.
- **2023 Fall Meeting:** The MPC 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.

As part of the plan maintenance process, and consistently during the five-year HMP approval period, the MPC will continually monitor all elements of the plan, including:

- The incorporation of the HMP into other planning mechanisms
- All revisions and updates to the HMP
- Continued public participation

This monitoring will be done through outreach efforts to include:

- Email communication
- Phone communication
- In person communication at meetings, relevant conferences, and local planning events

Through consistent monitoring the MPC will then be able to efficiently incorporate these elements into the next plan revision.

Upon each successive revision, the plan will need to be re-adopted by all participating jurisdictions. Circumstances, including a major disaster or a change in regulations or laws, may modify the required five-year planning cycle.

7.4 – Post-Disaster Declaration Procedures

Following a disaster, each participating jurisdiction and the MPC may review the plan to determine if any additional actions need to be identified, additional funding has become available, or any identified actions need to be re-prioritized.

7.5 – Incorporation of HMP into Other Planning Mechanisms

44 CFR 201.6 (c)(4)(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

The hazard mitigation plan is an overarching document that is both comprised of, and contributes to, various county and local plans. Under the leadership of the MPC, it is hoped that when each of these other plans is updated, they will be measured against the contents of this Hazard Mitigation Plan.

Below is a list of the various jurisdictional planning efforts, either solely or jointly administered, and relevant planning documents. While each plan can stand alone, each participating jurisdiction, under the leadership of their MPC member, will actively work to incorporate relevant parts of this hazard mitigation plan into the following:





- All participating jurisdictions Codes and Ordinances
- All participating jurisdictions Comprehensive Plans
- All participating jurisdictions Critical Facilities Plans
- All participating jurisdictions Economic Development Strategic Plans
- All participating jurisdictions Emergency Operations Plans
- All participating jurisdictions Flood Mitigation Assistance Plan
- All participating jurisdiction Land-Use Plans
- Community Wildfire Protection Plans

Additionally, 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.

Finally, 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. Potential avenues for implementation may include:

- Operation plans
- General or master plans
- Ordinances
- Capital improvement plans
- Budget revisions or adoptions
- Hiring of staff
- Stormwater planning
- Land use planning

Where appropriate, the MPC will take the lead in integrating this HMP into overarching, countywide plans, code, ordinances and any other relevant documents, policies or procedures.

7.6 – Continued Public Involvement

44 CFR 201.6 (c)(4)(iii) Discussion on how the community will continue public participation in the plan maintenance process.

Public participation is an important part of the continued mitigation planning process. Every effort will be made to keep the public informed on both relevant mitigation issues and the five-year plan revision cycle. Strategies for continued public involvement may include:

- Postings on electronic media, to include websites
- Notifications, when possible, in local media
- Making plans available for review in public locations
- A review of local mitigation strategies and goals





- A review completed and remaining hazard mitigation actions



Appendix A

Adoption Resolutions





Model Resolution

Resolution # ____: **Adopting the Kansas Homeland Security Region G Hazard Mitigation Plan**

Whereas, the (Name of Government/District/Organization) recognizes the threat that natural hazards pose to people and property within our community; and

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

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

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

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

Whereas, the (Name of Government/District/Organization) fully participated in the FEMA prescribed mitigation planning process to prepare this Multi-Hazard Mitigation Plan; and

Whereas, the Kansas Division of Emergency Management and FEMA Region VII officials have reviewed the Kansas Homeland Security Region G Hazard Mitigation Plan, and approved it contingent upon this official adoption of the participating governing body; and

Whereas, the (Name of Government/District/Organization) desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Kansas Homeland Security Region G Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the (Name of Government/District/Organization) demonstrates the jurisdictions’ commitment to fulfilling the mitigation goals and objectives outlined in this plan, and

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

Now, therefore, be it resolved, that the (Name of Government/District/Organization) adopts the Kansas Homeland Security Region G Hazard Mitigation Plan as an official plan; and

Be it further resolved, the (Name of Government/District/Organization) will submit this Adoption Resolution to the Kansas Division of Emergency Management and FEMA Region VII officials to enable the plan’s final approval.

_____:Date _____: Approved by



Appendix B

FEMA Approval Documents

