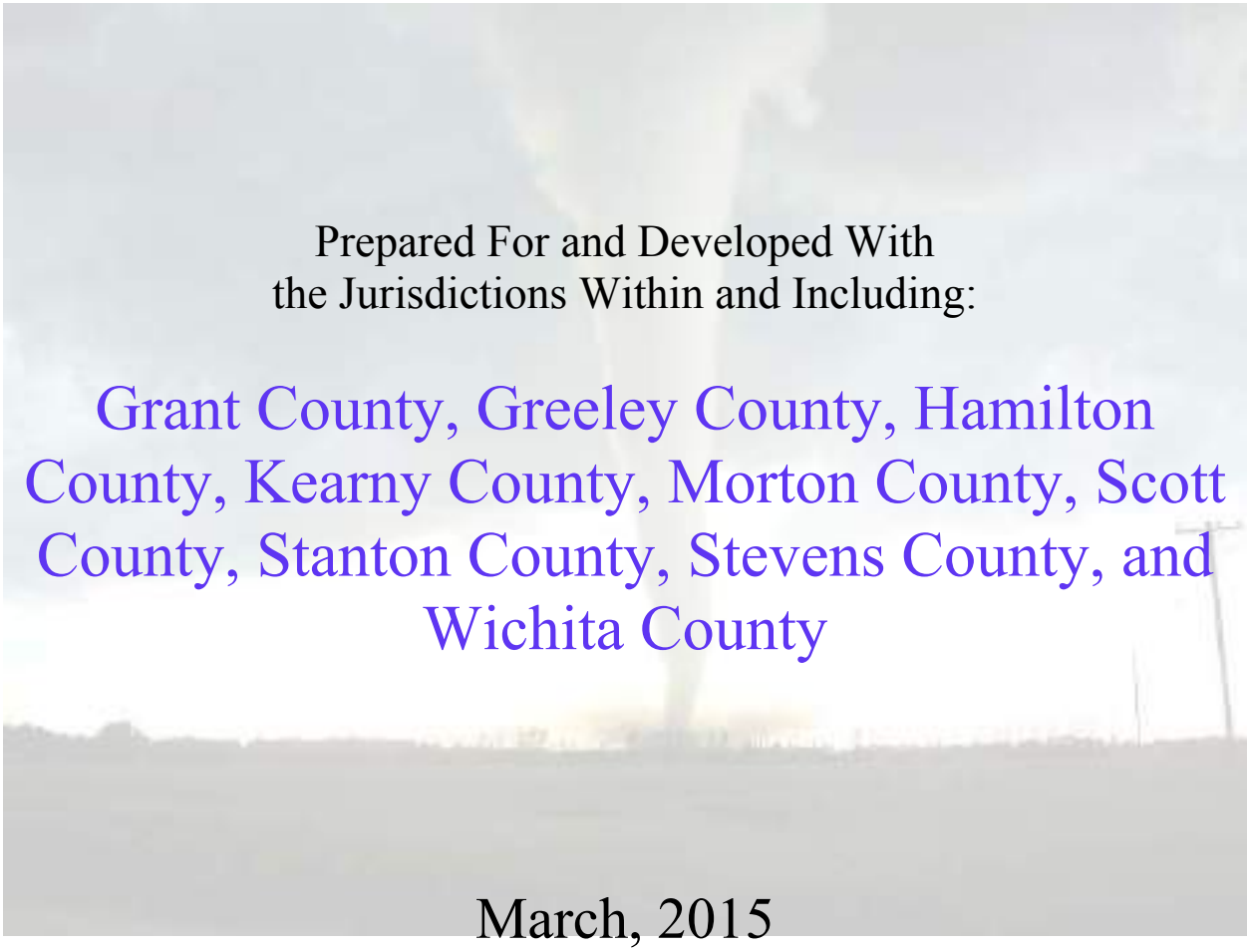
Southwest Kansas
(Homeland Security Region C)
Multi-Hazard, Multi-Jurisdictional
Mitigation Plan



Prepared For and Developed With
the Jurisdictions Within and Including:

Grant County, Greeley County, Hamilton County, Kearny County, Morton County, Scott County, Stanton County, Stevens County, and Wichita County

March, 2015

Prepared By:

Blue
Umbrella

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APPENDIX

List of Acronyms

Acronym	Meaning
ANFO	Ammonium Nitrate/Fuel Oil
BATF	Bureau of Alcohol, Tobacco and Firearms
BSE	Bovine Spongiform Encephalopathy
CAFO	Concentrated Animal Feeding Operation
CDBG	Community Development Block Grant
CDC	Centers for Disease Control and Prevention
CFR	Code of Federal Regulations
CPRI	Calculated Priority Risk Index
CRS	Community Rating System
CWPP	Community Wildfire Protection Plans
DASC	Data Access and Support Center
DFIRM	Digital Flood Insurance Rate Map
DWR	Division of Water Resources
EAP	Emergency Action Plan
EF	Enhanced Fujita
EMAP	Emergency Management Accreditation Program
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ºF	Fahrenheit
FIA	Flood Insurance Administration
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance
GIS	Geographic Information System
HFRA	Healthy Forests Restoration Act
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMPC	Hazard Mitigation Planning Committee
IPSR	Institute for Policy and Social Research
K.S.A	Kansas Statutes Annotated
KCC	Kansas Corporation Commission
KCP&L	Kansas City Power and Light
KDA	Kansas Department of Agriculture
KDEM	Kansas Division of Emergency Management
KDHE	Kansas Department of Health and Environment
KDOT	Kansas Department of Transportation
km	Kilometer

Acronym	Meaning
KWO	Kansas Water Office
LAMP	Levee Analysis Mapping Procedures
LEPC	Local Emergency Planning Committee
LSP	Levee Safety Program
MH 2.1	Multi Hazard version 2.1
MLI	Mid-Term Levee Inventory
MPH	Miles per Hour
NCDC	National Climatic Data Center
NFIP	National Flood Insurance Program
NFIRS	National Fire Incident Reporting System
NGO	Non-Governmental Organization
NLD	National Levee Database
NOAA	National Oceanic and Atmospheric Administration
NSFHA	No Special Flood Hazard Area
NWS	National Weather Service
ONA	Other Needs Assistance
PA	Public Assistance
PAL	Provisionally Accredited Levee
PDM	Pre-Disaster Mitigation
PDSI	Palmer Drought Severity Index
PIO	Public Information Officer
REC	Rural Electric Cooperative
RMP	Risk Management Plan
SBA	Small Business Administration
SHMO	State Hazard Mitigation Officer
SoVI	Social Vulnerability Index
SRL	Severe Repetitive Loss
STAPLEE	Social, Technical, Administrative, Political, Legal, Economic and Environmental
USACE	United States Army Corps of Engineers
USD	Unified School District
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WUI	Wildland Urban Interface

EXECUTIVE SUMMARY

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.

In order to create an effective, realistic and useful plan, a methodical and thoughtful planning process that included regional and local stakeholders and followed Federal Emergency Management Agency (FEMA) Guidelines has been completed.

This is a multi-hazard, multi-jurisdictional mitigation plan combination and update covering Kansas Homeland Security Region C. Region C is comprised of nine participating counties and is located in the southwestern region of the State. This plan was prepared to meet the requirements of the Disaster Mitigation Act of 2000 (DMA 2000), as defined in regulations set forth by the Interim Final Rule (44 Code of Federal Regulation (CFR) Part 201.6).

A regional Hazard Mitigation Planning Committee (HMPC), formed by participating County Emergency Managers and State of Kansas Mitigation Planners, conducted a regional risk assessment that identified and characterized potential hazards, suggested incorporation of review elements from previous plans into new regional plan, conducted a regional vulnerability analysis, and proposed and explored potential mitigation actions. The outcome was a mitigation plan that combined each discrete county plan into one regional plan.

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.

The following table presents a list of participating jurisdictions, by county. A warm welcome is extended to the City of Tribune, Greeley County, the City of Coolidge, Hamilton County, USD #494 - Syracuse, the City of Elkhart, Morton County, Scott County Hospital, USD #452 – Stanton County new participants to the planning process.

Grant County Participating Cities and Townships

Grant County
City of Ulysses

Greeley County Participating Cities and Townships

Greeley County
City of Horace
City of Tribune

Hamilton County Participating Cities and Townships

Hamilton County
City of Coolidge
City of Syracuse

Kearny County Participating Cities and Townships

Kearny County
City of Deerfield
City of Lakin

Morton County Participating Cities and Townships

Morton County
City of Elkhart
City of Rolla

Scott County Participating Cities and Townships

Scott County
City of Scott City

Stanton County Participating Cities and Townships

Stanton County
City of Johnson City
City of Manter

Stevens County Participating Cities and Townships

Stevens County
City of Hugoton
City of Moscow

Wichita County Participating Cities and Townships

Wichita County
City of Leoti

The following table presents a list of participating colleges, universities and USDs. The information also presents the district covered, if applicable, and the county.

Participating Colleges, Universities, and USDs

School, College or University	District
Grant County	
USD #214	Ulysses
Greeley County	
USD #200	Greeley County
Hamilton County	
USD #494	Syracuse
Kearny County	
USD #215	Lakin
USD #216	Deerfield
Morton County	
USD #217	Rolla
USD #218	Elkhart
Scott County	
USD #466	Scott County
Stanton County	
USD #452	Stanton County
Stevens County	
USD #209	Moscow
USD #210	Hugoton
Wichita County	
USD #467	Leoti

In addition to the above noted jurisdictions, many special districts are covered under the participation and adoption by the overarching county. These entities include:

- Fire Districts
- Sewer Districts
- Water Districts
- Watershed Districts

Additionally, numerous private, non-profit and charitable organizations independently participated in this planning effort, including:

Private and Non-Profit Participating Stakeholders

Grant County
Pioneer Electric COOP
Greeley County
Greeley County Hospital
Wheatland Electric COOP
Hamilton County
Pioneer Electric COOP
Wheatland Electric COOP
Kearny County
Pioneer Electric COOP
Wheatland Electric COOP
Morton County
Pioneer Electric COOP
Tri-County Electric COOP
Scott County
Mid-West Energy
Lane-Scott Electric
Scott County Hospital
Wheatland Electric COOP
Stanton County
Pioneer Electric COOP
Stanton County Hospital
Stevens County
Pioneer Electric COOP

All previously participating jurisdictions elected to participate in this planning process.

GOALS

Based upon the research conducted to complete this document, the HMPC identified goals and objectives to reduce potential risks associated with identified hazards. The goals and objectives of this multi-hazard mitigation plan are to:

- **Goal 1:** Reduce and/or eliminate the risk to the people and property of southwest Kansas from the identified hazards in this plan.
- **Goal 2:** Strive to protect all of the vulnerable populations, structures, and critical facilities in southwest Kansas from the impacts of the identified hazards.
- **Goal 3:** Improve public outreach initiatives to include education, awareness and partnerships with all willing entities in order to enhance understanding of the risks southwest Kansas faces due to the impacts of the identified hazards.
- **Goal 4:** Enhance communication and coordination among all agencies and between agencies and the public.

To accomplish the above identified goals, the HMPC has developed a series of robust and achievable mitigation actions. These actions are discussed in detail in Section 5 of this plan.

HAZARD MITIGATION PLANNING COMMITTEE

The following table presents the members of the southwest Kansas HMPC. Each planning committee member served as a point of contact for their county, assisting with the direction and dissemination of information concerning the planning effort. A special thanks is afforded to these people who made the successful completion and adoption of this plan possible.

Hazard Management Planning Committee

Participant	Title	Organization
Donald Button	Emergency Manager	Grant County
Luther Keith	Emergency Manager	Greeley County
Steve Phillips	Emergency Manager	Hamilton County
Don Robertson	Emergency Manager	Kearny County
Dusty Brillhart	Emergency Manager	Morton County
Larry Turpin	Emergency Manager	Scott County
Vaughn Lorenson	Emergency Manager	Stanton County
Rodney Kelling	Emergency Manager	Stevens County
Mike Wilson	Emergency Manager	Wichita County
Jeanne Bunting	Mitigation Planner	Kansas Division of Emergency Management
Matt Eyer	Plan Author	Blue Umbrella Solutions

In addition to these HMPC members, representatives from each participating jurisdiction deserve a special thanks for assisting in this planning effort. Through their submission of data, participation in discussions and meetings, and feedback on plan revisions they assisted in making a robust plan.

RESOLUTIONS OF ADOPTION

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 added to the Appendix documents. Additionally, the following table will be completed noting adoption date for each participating jurisdiction and, if applicable, resolution number.

GRANT COUNTY

	Adoption Date	Resolution Number
Grant County		
City of Ulysses		
USD #214 - Ulysses		

GREELEY COUNTY

	Adoption Date	Resolution Number
Greeley County		
City of Horace		
City of Tribune		
USD #200 – Greeley County		

HAMILTON COUNTY

	Adoption Date	Resolution Number
Hamilton County		
City of Coolidge		
City of Syracuse		
USD #494 - Syracuse		

KEARNY COUNTY

	Adoption Date	Resolution Number
Kearny County		
City of Deerfield		
City of Lakin		
USD #215 - Lakin		
USD #216 - Deerfield		

MORTON COUNTY

	Adoption Date	Resolution Number
Morton County		
City of Elkhart		
City of Rolla		
USD #217 - Rolla		
USD #218 - Elkhart		

SCOTT COUNTY

	Adoption Date	Resolution Number
Scott County		
City of Scott City		
USD #466 – Scott County		

STANTON COUNTY

	Adoption Date	Resolution Number
Stanton County		
City of Johnson City		
City of Manter		
USD #452 – Stanton County		

STEVENS COUNTY

	Adoption Date	Resolution Number
Stevens County		
City of Hugoton		
City of Moscow		
USD #209 - Moscow		
USD #210 - Hugoton		

WICHITA COUNTY

	Adoption Date	Resolution Number
Wichita County		
City of Leoti		
USD #467 - Leoti		

INDEPENDENTLY PARTICIPATING STAKEHOLDERS

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

	Adoption Date	Resolution Number
Grant County		
Pioneer Electric COOP		
Greeley County		
Greeley County Hospital		
Wheatland Electric COOP		
Hamilton County		
Pioneer Electric COOP		
Wheatland Electric COOP		
Kearny County		
Pioneer Electric COOP		
Wheatland Electric COOP		
Morton County		
Pioneer Electric COOP		
Tri-County Electric COOP		
Scott County		
Mid-West Energy		
Lane-Scott Electric		
Scott County Hospital		
Wheatland Electric COOP		
Stanton County		
Pioneer Electric COOP		
Stanton County Hospital		
Stevens County		
Pioneer Electric COOP		

Completed resolutions of adoption may be found in Appendix A.

EXAMPLE RESOLUTION OF ADOPTION

The following presents an example resolution of adoption for participating jurisdictions to use as a template, if necessary.

Model Resolution

Resolution # _____: **Adopting the Southwest Kansas (Region C) Multi-Hazard, Multi-Jurisdictional 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 Multi-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 Southwest Kansas (Region C) Multi-Hazard, Multi-Jurisdictional 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 Southwest Kansas (Region C) Multi-Hazard, Multi-Jurisdictional 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 Southwest Kansas (Region C) Multi-Hazard, Multi-Jurisdictional 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.

_____ _____

Passed Certifying Official

1.0 INTRODUCTION AND PLANNING PROCESS

1.1 INTRODUCTION

Nine participating counties within the southwest Kansas region (Kansas Homeland Security Region C) prepared this Regional Multi-Hazard Mitigation Plan 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 southwest Kansas's 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.

This plan was also developed to make participating jurisdictions with southwest Kansas eligible for applicable federal disaster assistance, including the FEMA's Hazard Mitigation Grant Program, Pre-Disaster Mitigation program, and Flood Mitigation Assistance program. Additionally, this regional Plan will serve as the basis for the State of Kansas to prioritize available grant funding.

This Plan has been prepared in coordination with the FEMA Region VII and the Kansas Division of Emergency Management (KDEM).

This Plan has been designed to be a living document, a document that will evolve to reflect regional changes, correct any omissions, and constantly strive to ensure the safety of Southwest Kansas's citizens. In addition, this document allows each participating jurisdiction to integrate the data, information and hazard mitigation goals and actions from the plan into other planning mechanisms.

1.2 BACKGROUND

Southwest Kansas is vulnerable to a wide range of natural hazards, including flooding, tornadoes, drought, and winter storms. These hazards threaten the safety of citizens and have the potential to damage or destroy property and disrupt local and regional economies. Their occurrence is natural and there is little we can do to control their force and intensity. Each year some of these hazards cause disasters that cost hundreds of lives, cause countless injuries, and cost taxpayers billions of dollars to help communities recover. And while the intensity of these natural disasters cannot be controlled, there are many actions that can be taken to minimize their potential impacts to the region. Actions taken to reduce the potential impact of a hazard can greatly diminish the possibility that the hazard will result in a disaster. The practice of minimizing risks to people and property from identified hazards is referred to as hazard mitigation. FEMA describes hazard mitigation as "sustained action taken to reduce or eliminate long-term risk to people and their property from hazards and their effects."

1.3 DISASTER MITIGATION ACT OF 2000

In an effort to reduce natural disaster losses the United States Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) in order to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act). DMA 2000 amended the Stafford Act by repealing the previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322). Section 322 of the DMA makes the development of a hazard mitigation plan a specific eligibility requirement for any local government applying for Federal mitigation grant funds.

This 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).

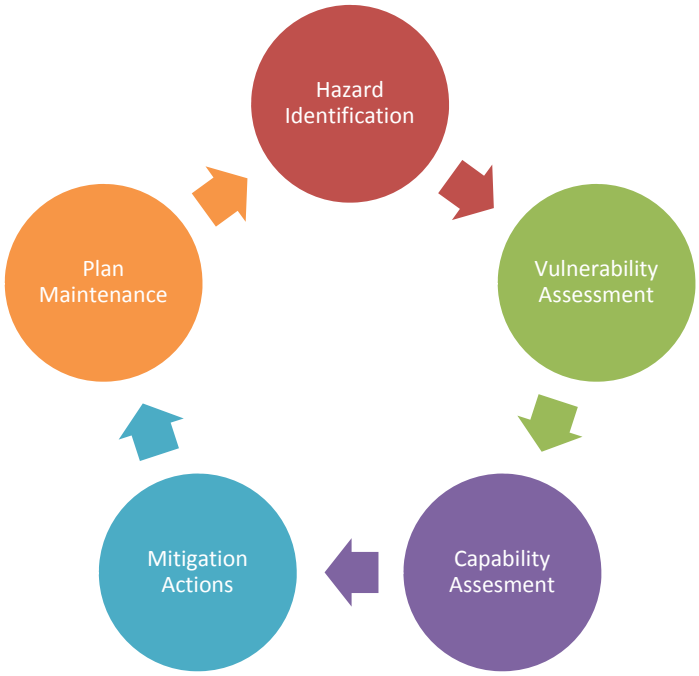
1.4 HAZARD MITIGATION PLANNING PROCESS

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.

KDEM contracted with Blue Umbrella Solutions in November 2014 to assist southwest Kansas in developing a multi-jurisdictional, multi-hazard mitigation plan. Blue Umbrella Solutions and the southwest Kansas HMPC worked together in developing this Plan to meet the requirements of the DMA 2000, as defined in regulations set forth by the Interim Final Rule (44 CFR Part 201.6). As part of this process, the following tasks were conducted:

- Consultation with FEMA Region VII on Plan development
- Review of current mitigation plans for all participating jurisdictions
- Incorporation of review elements into new regional plan
- Delivery of organizational and planning meetings
- Solicitation of public input as to Plan development
- Assessment of potential regional risks
- Assessment of vulnerabilities and assets
- Development of the mitigation actions
- Development of a draft multi-jurisdictional, multi-hazard mitigation plan
- Implementation, adoption, and maintenance of the Plan

In general, the following diagram shows the planning cycle:



1.5 PLANNING PROCESS PARTICIPATION REQUIREMENTS

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 within southwest Kansas 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, universities and community colleges, special districts, including rural fire and water 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

County Emergency Managers were designated as HMPC representatives for each participating jurisdiction within their county. Jurisdiction provision of information, identification of mitigation

actions and Plan review and comment are detailed throughout this Plan and were, in general, coordinated by each relevant HMPC member.

Jurisdictions who were unable to attend meetings due to budgetary or time constraints were contacted by their HMPC member via email or phone to discuss hazard mitigation planning, including the process, goals, mitigation actions, local planning concerns and Plan review.

Multiple methods of communication with HMPC members, participating jurisdictions, and the public were used during the planning process. Communications used include:

- On-site meetings
- Telephone
- Email
- Internet resources
- Social media

1.6 CONSULTATION WITH FEMA REGION VII

Upon initiation of the planning process, a meeting was held with FEMA Region VII to review current and pending planning requirements and to discuss methods to provide for a smooth planning and review process. The meetings were held on January 3 and 4, 2013 at the FEMA Region VII offices, and the following participants were in attendance:

Participant	Organization
Joe Chandler	FEMA Region VII
Michelle Wolf	FEMA Region VII
Jeanne Bunting	State of Kansas
Matthew Eyer	Blue Umbrella Solutions

1.7 REVIEW OF PREVIOUS MITIGATION PLANS

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

Prior to the delivery of the southwest Kansas project kickoff meetings, all relevant southwest Kansas hazard mitigation plans and applicable planning documents were reviewed and mined for data to be used in the consolidation and creation of the new regional Plan, and for use to guide kickoff meeting discussions. In addition to the regional mitigation plans, the Kansas State Hazard Mitigation Plan and available relevant data from state and federal agencies was reviewed. These sources are noted throughout the Plan.

1.8 ORGANIZATIONAL AND PLANNING MEETINGS

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

Within southwest Kansas 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.

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

Meeting Number	Date	Location	Purpose
1	10/06/2014	Leoti	Review of planning process, project coordination, scope, participation requirements, strategies for public involvement. Formation of HMPC. Discussion and review of potential hazards.
	10/06/2014	Syracuse	
	10/07/2014	Hugoton	
2	01/14/2015	Garden City	Results of the hazard identification, classification, and delineation discussed Sections of the plan were made available for review and comment. Development of mitigation goals and actions
3	03/02/2015	Leoti	Review of completed draft Plan. Review of public comments. Incorporation of any changes. Discussion of approval and adoption timeframes.
	03/02/2015	Hugoton	
	03/03/2015	Syracuse	

A series of kick-off meetings were held with available representatives from jurisdictions within the planning region in attendance. At the kickoff meeting, the planning process, project coordination, scope, participation requirements, strategies for public involvement, and schedule were discussed in detail. Additionally, the HMPC was created to include the Emergency Manager from each participating county along with relevant State of Kansas partners. HMPC

members were tasked with the following roles and responsibilities that continued for the duration of the planning process:

- Meeting attendance and facilitation assistance
- Data collection and submission
- Assistance in soliciting public involvement and input
- Draft and final Plan review
- Oversight of facilitation of final Plan adoption by respective jurisdictions

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. Based on this discussion, a comprehensive list of regional hazards was created.

At the conclusion of the meeting, all participants were provided with a data collection forms to solicit information needed to properly complete the Plan. 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.

Each participating jurisdiction was required to complete and return the forms and actions to be considered as participating. These forms were used in the development of this Plan.

A series of mid-term planning meetings were held with HMPC representatives in attendance. Based upon the initial research, discussions held during the kickoff meetings, information obtained from the data collection forms, additional research, and subsequent discussion with HMPC members, the results of the hazard identification, classification, and delineation were discussed in detail. In addition, sections of the Plan 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 representatives from jurisdictions within the planning region in attendance. The completed draft Plan was made available for review and comment.

1.9 PUBLIC OUTREACH

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 (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

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

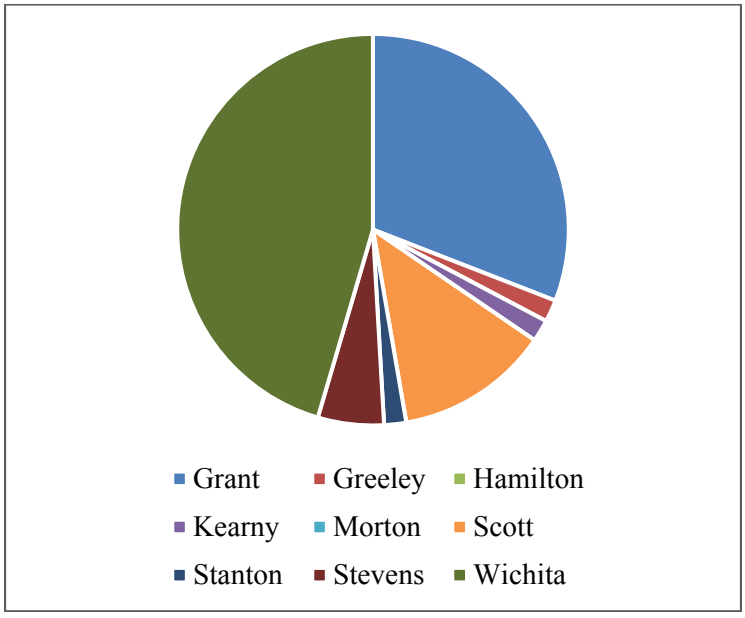
- SurveyMonkey (online survey)
- Facebook
- Meeting with local emergency managers
- Two week comment period upon completion of draft Plan

Input from the general public provided the HMPC with a clearer understanding of regional 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. To facilitate input from a cross section of the regional population, the SurveyMonkey online survey was translated and provided in Spanish language.

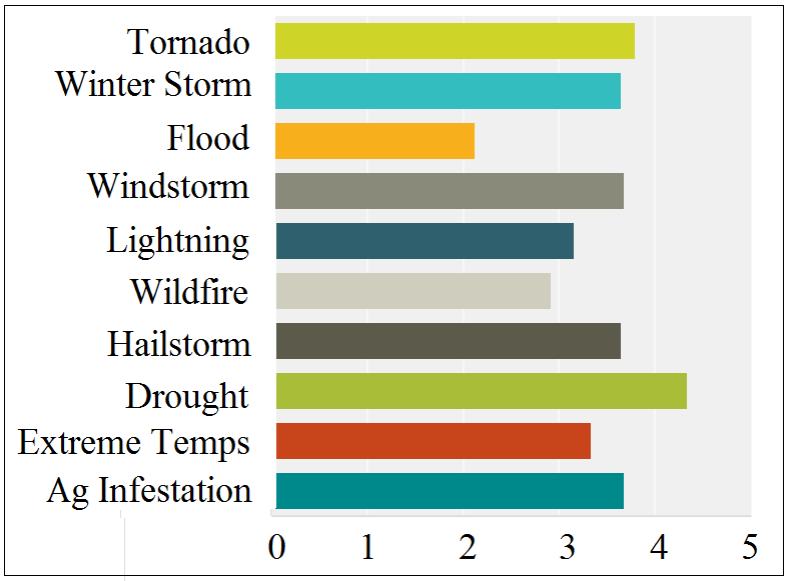
Additionally, as citizens were made more aware of potential hazards and the local and regional process to mitigation against their impacts, it was believed that they would take a stronger role in making their homes, neighborhoods, schools, and businesses safer from the potential effects of natural hazards.

The following graphics show the results of the public input, with 57 responses received, from the SurveyMonkey online survey for the region for each question asked. The survey was provided in both English and Spanish to ensure a broad reach across communities.

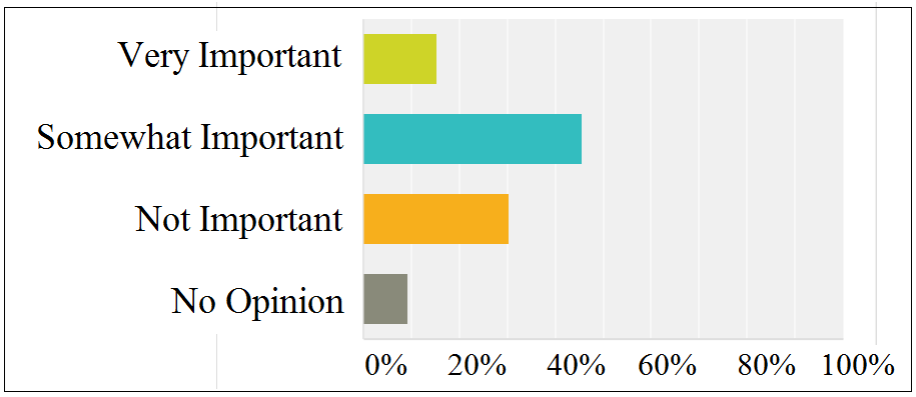
Question 1: What County and jurisdiction do you live in?



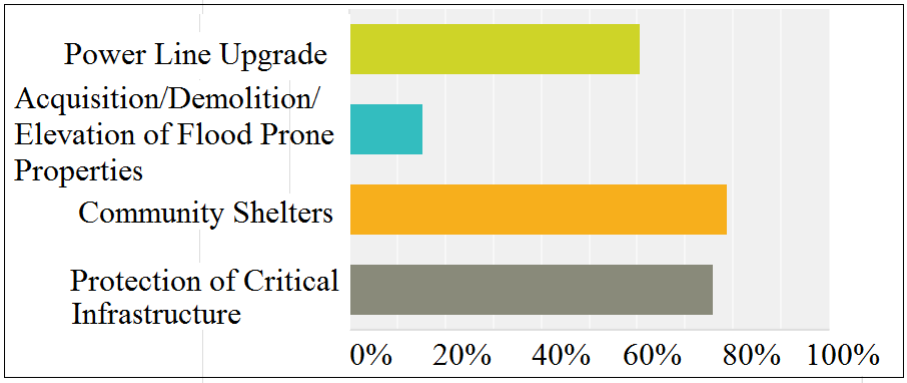
Question 2: In the Region consisting of Grant, Greeley, Hamilton, Kearny, Morton, Scott, Stanton, Stevens and Wichita Counties, the planning committee has determined that the hazards listed below are of significance to the area. Please indicate the level of risk, or extent of potential impacts, in the Region, that you perceive for each hazard.



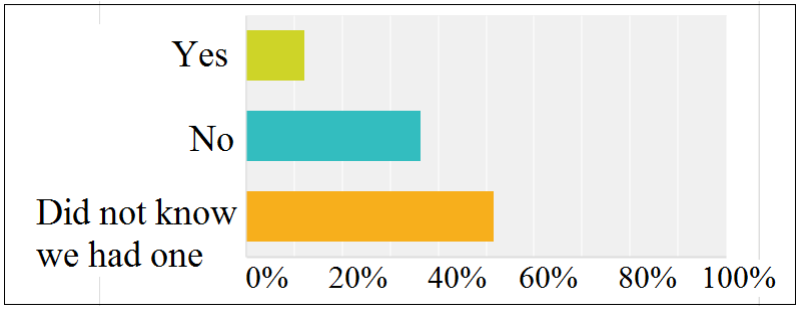
Question 3: In the region, the planning committee has determined that a flood event is a hazard for your region. How important to you is it that you participate or continue to participate in the National Flood Insurance Program?



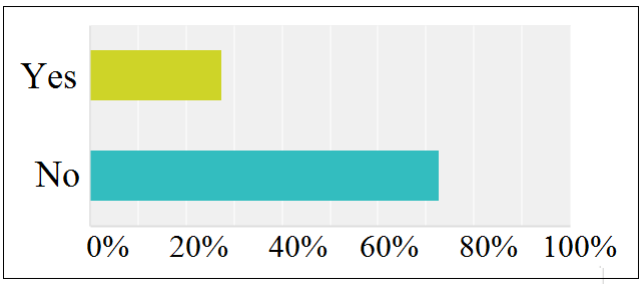
Question 4: Funding requests for FEMA Hazard Mitigation Grant Program funds are currently reviewed initially by the Kansas Division of Emergency Management. Listed below are their current funding priorities. Please check those that benefit your community.



Question 5: Have you had an opportunity to read your current Hazard Mitigation Plan?



Question 6: Do you know where the mitigation plan for your county can be found if you wanted to look at it?



In addition, the following comments relating to mitigation planning were from interested citizens of the region. Please note that questions answered with a "none," "non-applicable," or similar response, or left blank are not reported.

Question 7: Your input is valuable to this planning process. Please comment on any other issues that the planning committee should consider in developing a strategy to reduce future losses caused by natural hazard events.

- Generators in critical facilities
- Potential for biohazard risks due to materials brought into county via trucks/highway amd rail associated with ice storms, tornado, fire, etc.
- Food supply storage in the event of an emergency
- Coop plan
- Electrical Service upgrades is a real concern. The current Wheatland Electric process to replace aging poles is weak. The small crew they have only does the new service and repairs. The upgrading of services is never done due to no crew to do it, unless there is a critical outage and additional crews can be called it. They are reactive not proactive.

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

- A shelter/half way house not just for in times of emergency but year round. Would probably go under different committee but very much needed.
- Safe rooms for schools
- More safe rooms in schools and businesses
-

A copy of the surveymonkey.com questionnaire may be found in Appendix C.

1.10 RISK ASSESSMENT

44 CFR 201.6(c) Plan Content. The plan shall include the following: (2) A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment shall include: (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.

44 CFR 201.6(c)(2)(iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

As part of the mitigation planning effort, the hazards that could potentially impact jurisdictions in southwest Kansas were identified based on historical data, past occurrences, and local and regional knowledge. Identified hazards were then provided with a risk ranking using a weighted formula whose parameters included probability of occurrence, potential magnitude/severity of the event, event duration, warning time of occurrence.

Initially, participants of the kickoff meetings discussed hazard data sourced from their previous hazard mitigation plans and any recent regional hazard events. In general, participants were asked to consider:

- Previously identified mitigation plan hazards
- State of Kansas mitigation plan identified hazards
- FEMA identified hazards
- Recent hazard events, including declared disasters

Participants were encouraged to discuss past hazard events, including magnitude and severity, past impacts, and the future probability for all identified hazards. Based on this discussion, a comprehensive list of regional hazards was created. It should be noted that all discussed hazards did not warrant inclusion in the southwest Kansas Plan.

Finally, a data collection form to solicit and further develop the discussed hazards was provided to participants. Based upon the initial research, discussion held during the kickoff meetings, information obtained from the data collection forms, additional research, and subsequent discussion with HMPC members, a complete profile was developed for each selected hazard, and each hazard was assigned a risk ranking. HMPC participants were asked to review the profiled and developed hazards at the second planning meeting to further refine the information.

Further discussion of hazards, and justification for hazard omission may be found in Section 3.

1.11 VULNERABILITY ASSESSMENT AND LOSS ESTIMATION

44 CFR 201.6(c)(2)(ii) A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of: (A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; (B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate; (C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

As part of the information collection process, participating jurisdictions created an inventory of assets that could be potentially impacted by identified hazards, including a total number, identified values and potential losses, and development trends if available. Based on the gathered information a southwest Kansas assets at risk inventory was created.

Identified assets include:

- Critical facilities
- Critical infrastructure
- Historic structures and locations
- Economic assets
- Vulnerable populations
- Special needs populations

Further discussion of vulnerabilities and loss may be found throughout the Plan.

1.12 CAPABILITY ASSESSMENT

A capability assessment was conducted to determine the abilities, policies, and available resources of local and regional jurisdictions to implement mitigation actions. The following information was researched as part of the capability assessment:

- Existing and proposed local and regional ordinances, regulations, and policies
- Active and proposed plans related to mitigation planning, regional and local planning
- Current and proposed public outreach measures and programs
- Available personnel
- Available resources, including technological capabilities
- Available financial resources related to mitigation activities

Additionally, this assessment assisted in identifying any roadblocks, limitations or conflicts that could potentially obstruct mitigation actions and in identifying those activities that could be enhanced to further mitigation goals.

Further discussion of regional capabilities may be found in Section 4.

1.13 DEVELOPMENT OF MITIGATION GOALS

44 CFR 201.6(c)(3) 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 shall include: (i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Based upon the developed regional hazards the HMPC and participating jurisdictions were asked during the second planning meeting to assist in developing a set of goals related to future hazard event outcomes. Research conducted prior to the meeting provided participants with a list of goals from previous planning efforts as a starting point for development. In general, the goals and objectives of this Plan are to:

- **Goal 1:** Reduce and/or eliminate the risk to the people and property of southwest Kansas from the identified hazards in this plan.
- **Goal 2:** Strive to protect all of the vulnerable populations, structures, and critical facilities in southwest Kansas from the impacts of the identified hazards.
- **Goal 3:** Improve public outreach initiatives to include education, awareness and partnerships with all willing entities in order to enhance understanding of the risks southwest Kansas faces due to the impacts of the identified hazards.
- **Goal 4:** Enhance communication and coordination among all agencies and between agencies and the public.

The above identified goals are discussed in detail in Section 5 of this Plan.

1.14 DEVELOPMENT OF 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. 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. (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. (iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

To accomplish the above identified goals, the HMPC has developed a list of robust and achievable mitigation actions for each participating jurisdiction that address hazard vulnerabilities that exist today and in the foreseeable future.

The mitigation actions noted in this Plan include both structural and non-structural measures. Examples include:

- Requiring resistant new construction
- Relocation of structures
- Structural modification
- Construction of shelters
- Construction of barrier, deflection, or retention systems
- Detection and warning systems
- Regulatory measures
- Community awareness and education programs
- Behavioral modification

Mitigation actions were prioritized by the responsible jurisdiction based on both historical and new information and jurisdictional capabilities.

A complete discussion of the development of mitigation actions can be found in Section 5.

1.15 DEVELOPMENT OF SOUTHWEST KANSAS MULTI-HAZARD MITIGATION PLAN

44 CFR 201.6(d) Plan review.(1) Plans must be submitted to the State Hazard Mitigation Officer (SHMO) for initial review and coordination. The State will then send the plan to the appropriate FEMA Regional Office for formal review and approval. Where the State point of contact for the FMA program is different from the SHMO, the SHMO will be responsible for coordinating the local plan reviews between the FMA point of contact and FEMA.

Information obtained from previous mitigation plans, research, meetings, data collection forms, conversations, and public input was used to complete a draft of the Plan. The Plan was made available online for review for public comment. Valid comments and suggestions received from stakeholders were integrated into the final Plan. The Plan was then submitted to the KDEM SHMO for initial review. The SHMO then submitted the Plan to FEMA Region VII for review and approval

1.16 PLAN ADOPTION, REVIEW AND MAINTENANCE

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. (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. (iii) Discussion on how the community will continue public participation in the plan maintenance process.

44 CFR 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.

In order to have an approved hazard mitigation plan, DMA 2000 requires that each jurisdiction officially adopt the Plan. After FEMA Region VII review and Approval Pending Adoption status participating jurisdictions were tasked with formally adopting the Plan. Information concerning adoption dates and, if applicable, resolution number were presented in the Resolutions of Adoption section and copies of the resolutions are presented in Appendix A.

Prior the Plan adoption process, the HMPC developed a long-term maintenance strategy. This strategy is discussed in detail in Section 6.

1.17 PLANNING PROCESS PARTICIPATION

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.

1.17.1 GRANT COUNTY

	Meeting Attendance or Communication with HMPC Representative	Data Submission	Mitigation Action
Grant County	x	x	x
City of Ulysses	x	x	x
USD #214 - Ulysses	x	x	x

1.17.2 GREELEY COUNTY

	Meeting Attendance or Communication with HMPC Representative	Data Submission	Mitigation Action
Greeley County	x	x	x
City of Horace	x	x	x
City of Tribune	x	x	x
USD #200 – Greeley County	x	x	x

1.17.3 HAMILTON COUNTY

	Meeting Attendance or Communication with HMPC Representative	Data Submission	Mitigation Action
Hamilton County	x	x	x
City of Coolidge	x	x	x
City of Syracuse	x	x	x
USD #494 - Syracuse	x	x	x

1.17.4 KEARNY COUNTY

	Meeting Attendance or Communication with HMPC Representative	Data Submission	Mitigation Action
Kearny County	x	x	x
City of Deerfield	x	x	x
City of Lakin	x	x	x
USD #215 - Lakin	x	x	x
USD #216 - Deerfield	x	x	x

1.17.5 MORTON COUNTY

	Meeting Attendance or Communication with HMPC Representative	Data Submission	Mitigation Action
Morton County	x	x	x
City of Elkhart	x	x	x
City of Rolla	x	x	x
USD #217 - Rolla	x	x	x
USD #218 - Elkhart	x	x	x

1.17.6 SCOTT COUNTY

	Meeting Attendance or Communication with HMPC Representative	Data Submission	Mitigation Action
Scott County	x	x	x
City of Scott	x	x	x
USD #466 – Scott County	x	x	x

1.17.7 STANTON COUNTY

	Meeting Attendance or Communication with HMPC Representative	Data Submission	Mitigation Action
Stanton County	x	x	x
City of Johnson City	x	x	x
City of Manter	x	x	x
USD #452 – Stanton County	x	x	x

1.17.8 STEVENS COUNTY

	Meeting Attendance or Communication with HMPC Representative	Data Submission	Mitigation Action
Stevens County	x	x	x
City of Hugoton	x	x	x
City of Moscow	x	x	x
USD #209 - Moscow	x	x	x
USD #210 - Hugoton	x	x	x

1.17.9 WICHITA COUNTY

	Meeting Attendance or Communication with HMPC Representative	Data Submission	Mitigation Action
Wichita County	x	x	x
City of Leoti	x	x	x
USD #467 - Leoti	x	x	x

1.17.10 STAKEHOLDERS

The following list includes stakeholders involved in the planning process, including private, non-profit and charitable organizations.

Stakeholder	Meeting Attendance or Communication with HMPC Representative	Mitigation Action
Grant County		
Pioneer Electric COOP	x	x
Greeley County		
Greeley County Hospital	x	x
Wheatland Electric COOP	x	x
Hamilton County		
Pioneer Electric COOP	x	x
Wheatland Electric COOP	x	x
Kearny County		
Pioneer Electric COOP	x	x
Wheatland Electric COOP	x	x
Morton County		
Pioneer Electric COOP	x	x
Tri-County Electric COOP	x	x
Scott County		
Mid-West Energy	x	x
Lane-Scott Electric	x	x
Scott County Hospital	x	x
Wheatland Electric COOP	x	x
Stanton County		
Pioneer Electric COOP	x	x
Stanton County Hospital	x	x
Stevens County		
Pioneer Electric COOP	x	x

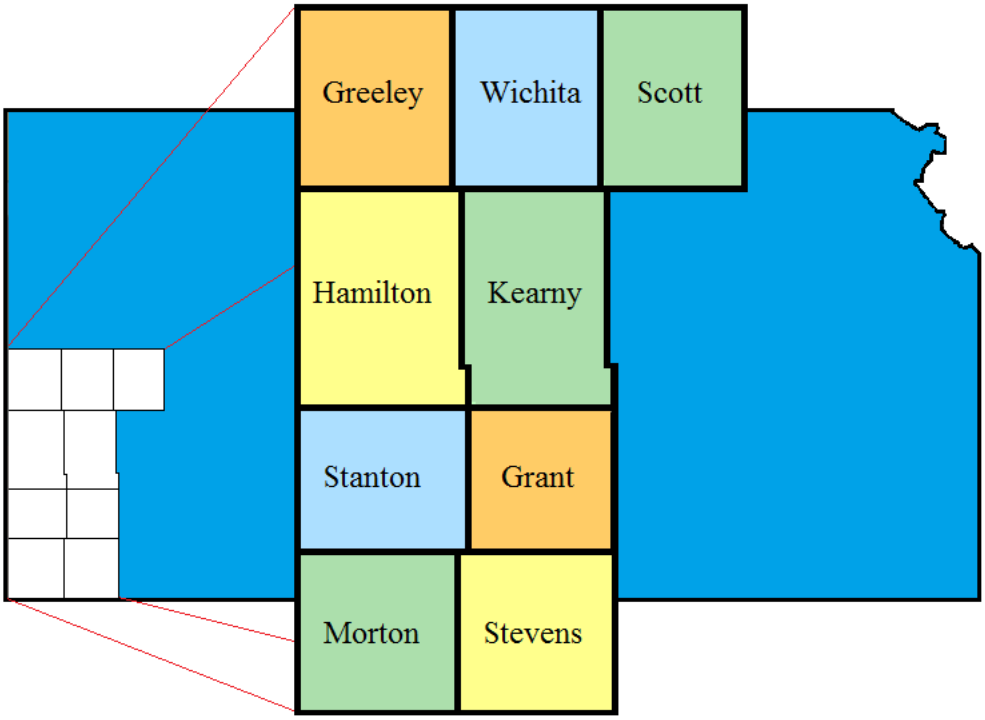
1.18 NON-PARTICIPATING JURISDICTIONS

All previously participating jurisdictions participated in this planning effort.

2.0 REGIONAL PROFILE

2.1 PLANNING REGION

The southwest Kansas planning region includes Grant, Greeley, Hamilton, Kearny, Morton, Scott, Stanton, Stevens and Wichita counties, as well as the cities and towns located within these counties. The counties and majority of the cities participating in the 2015 hazard mitigation plan update plan are briefly summarized in the following two sections.



2.2 COUNTY AND TRIBE PROFILES

The following includes a general discussion of participating counties.

Grant County

Grant County is located in southwest Kansas, and encompasses 575 square miles, with approximately 0.03 square miles being covered by water. It is bound to the north by Kearny County, to the south Stevens County, to the east by Haskell County and to the west by Stanton County.

Grant County was originally established in 1874, but was temporarily encompassed in to neighboring counties in 1883,

until re-established in 1888. By popular vote, the city of Ulysses was determined as the county seat in 1888. The county was named for President Ulysses S. Grant.

The main watercourses within the county include the North Fork of the Cimarron River, the Cimarron River, Bear Creek, and Wolf Creek. However, these are generally reported as dry during the majority of the year. There are no major lakes or reservoirs within the county.

Major roads include K-25, a north-south route that travels through the city of Ulysses and U.S. Highway 160, an east-west route that passes through Ulysses.

According to the 2013 United States Census (Census), the population estimate for Grant County was 7,950 (statistically unchanged from a 2000 Census population of 7,909), with a population density of 14 people per square mile.

Greeley County

Greeley County is located in southwest Kansas along the state border with Colorado and encompasses approximately 778 square miles. It is bound to the north by Wallace County, to the south by Hamilton County, to the east by Wichita County, and to the west by Cheyenne and Kiowa Counties, Colorado.

Greeley County was founded in 1873 with Tribune as the county seat. The county named for Horace Greeley, editor of the New York Tribune who encouraged western settlement.

There are no major water courses, reservoirs or lakes within the county.

Major roads include K-27, a north-south route that travels through the city of Tribune and K-96, an east-west route that passes through Tribune.

According to 2013 Census data, the population estimate for Greeley County was 1,290 (a 15.9% decrease from a 2000 Census population of 1,534), with a population density of 2 people per square mile.

Hamilton County

Hamilton County is located in southwest Kansas along the state border with Colorado and encompasses 998 square miles, with approximately 1.1 square miles being covered by water. It is bound to the north by Greeley County, to the south by Stanton County, to the east by Kearny County, and to the west by Prowers County, Colorado.

Hamilton County was founded in 1873 with Syracuse as the county seat. The county was named in honor of Alexander Hamilton.

Major rivers and creeks include the Arkansas River, which enters the county from the west and trends east through the county, Bridge Creek, Cheyenne Creek, Dry Creek, East Bridge Creek, North Bear Creek, Plum Creek, Sand Creek, Shirley Creek, Spring Creek, Syracuse Creek, and West Bridge Creek. A majority of these a dry throughout the year. There are no major lakes or reservoirs within the county.

Major roads include K-27, a north-south route that travels through the city of Syracuse and U.S. 50, an east-west route that passes through Syracuse.

According to 2013 Census data, the population estimate for Hamilton County was 2,609 (a 2.3% decrease from a 2000 Census population of 2,670), with a population density of 3 people per square mile.

Kearny County

Kearny County is located in southwest Kansas. The county encompasses 871 square miles, with approximately 0.4 square mile being covered by water. It is bound to the north by Wichita County, to the south by Grant County, to the east by Finney County, and to the west by Hamilton County.

Kearny County was originally established in 1873, but was temporarily encompassed in to neighboring counties, until re-established in 1887. The city of Lakin is the county seat. The county was named for General Philip Kearny.

Major rivers include the Arkansas River, which runs in an easterly direction across the center part of the county. Named creeks include Bear Creek and two Sand Creeks. A majority of these are dry throughout the year. Major lakes include Clear Lake and Lake McKinney.

Major roads include K-25, a north-south route that travels through the city of Lakin and U.S. 50, an east-west route that passes through Lakin.

According to 2013 Census data, the population estimate for Kearny County was 3,923 (a 13.4% decrease from a 2000 Census population of 4,531), with a population density of 5 people per square mile.

Morton County

Morton County is located in southwest Kansas along the state borders with Oklahoma and Colorado. The county encompasses 730 square miles, with approximately 0.2 square miles being covered by water. It is bound to the north by Stanton County, to the south by Texas County, Oklahoma, to the east by Stevens County, and to the west by Baca County, Colorado.

Morton County was founded in 1886 with the City of Elkhart as the county seat. The county was named in honor of Oliver Morton, a United States Senator from Indiana.

Major watercourses include the Cimarron River and the North Fork Cimarron River, both of which enter the southwest corner of the county from Colorado and run northeast exiting into Stevens County. Major creeks include Crooked Anger Creek, Crosby Creek, Dry Creek, Forsha Creek, Gimlet Creek, Oak Creek, and Spring Creek. These watercourses are generally dry throughout the year. There are no major lakes or reservoirs within the county.

Major roads include K-27, a north-south route that travels through the city of Elkhart and U.S. 56, an east-west route that passes through Elkhart.

According to the 2013 United States Census, the population estimate for Morton County was 3,143 (a 10.1% decrease from a 2000 Census population of 3,496), with a population density of 4 people per square mile.

Scott County

Scott County is located in southwest Kansas and encompasses 718 square miles, with approximately 0.1 square miles being covered by water. It is bound to the north by Gove and Logan Counties, to the south by Finney County, to the east by Lane County, and to the west by Wichita County.

Scott County was established in 1873 with Scott City as the county seat. The county was named in honor of Winfield Scott, a U.S. Army general.

There are no major rivers in Scott County. Notable streams and creeks include Rattlesnake Creek, Beaver Creek, and White Woman Creek. Major bodies of water include Dry Lake and Scott State Lake.

Major roads include K-96, an east-west route passing through Scott City, K-4, an east-west route that passes through the east-center of the county, and U.S. Highway 83, a north-south route passing through the center of the county and Scott City.

According to 2013 Census data, the population estimate for Scott County was 5,035 (a 1.7% decrease from a 2000 Census population of 5,120), with a population density of 7 people per square mile.

Stanton County

Stanton County is located in southwest Kansas along the State border with Colorado. The county encompasses 680 square miles, with approximately 0.07 square miles being covered by water. It is bound to the north by Hamilton County, to the south by Morton County, to the east by Grant County, and to the west by Baca and Prowers Counties, Colorado.

Stanton County was established in 1887 with Johnson City as the county seat. The county was named for Edwin M. Stanton, Secretary of War from 1862 to 1868.

There are no major rivers in Stanton County. Notable creeks include Bear Creek, Little Bear Creek and Sand Arroyo Creek. There are no major lakes or reservoirs within the county.

Major roads include U.S. Highway 160, an east-west route passing through the Johnson City and K-27, a north-south route passing through Johnson City.

According to 2013 Census data, the population estimate for Stanton County was 2,194 (an 8.8% decrease from a 2000 Census population of 2,406), with a population density of 3 people per square mile.

Stevens County

Stevens County is located in southwest Kansas along the State border with Oklahoma. The county encompasses 727 square miles, with approximately 0.2 square miles being covered by water. It is bound to the north by Grant County, to the south by Texas County, Oklahoma, to the east by Seward County, and to the west by Morton County.

Stevens County was founded in 1886 with the

City of Hugoton as the county seat. The county was named in honor of the politician Thaddeus Stevens of Pennsylvania.

The main water course is the Cimarron River, which passes through the northwestern portion of the county. There are no major lakes or reservoirs within the county.

Major roads include K-25, a north-south route that travels through the city of Hugoton, K-51, an east-west route passing through Hugoton joining with U.S. 56, and U.S. 56, an east-west route that passes through Hugoton.

According to 2013 Census data, the population estimate for Stevens County was 5,816 (a 6.5% increase from a 2000 Census population of 5,463), with a population density of 5 people per square mile.

Wichita County

Wichita County is located in southwest Kansas and encompasses 719 square miles. It is bound to the north by Logan and Wallace Counties, to the south by Kearny County, to the east by Scott County, and to the west by Greeley County.

Wichita County was founded in 1886 with the City of Leoti as the county seat. The county was named in honor of the Wichita people.

There are no major rivers in the county. Notable creeks include Chalk Creek and Ladder Creek. There are no major lakes or reservoirs within the county.

Major roads include K-96, an east-west route passing through the City of Leoti and K-25, a north-south route passing through the center of the county and Leoti.

According to 2013 Census data, the population estimate for Wichita County was 2,192 (a 13.4% decrease from a 2000 Census population of 2,531), with a population density of 3 people per square mile.

2.3 CITY PROFILES

The following includes a brief discussion of participating cities, broken down by county.

Regional Cities

Grant County

Ulysses, founded in 1885 and named for President Ulysses S. Grant, is located near the center of the county along U.S. Highway 160 and K-25. The 2010 census indicates the city has a total area of 3.18 square miles, with 0.18 square miles of water, and a population of 6,161. Ulysses is the county seat of Grant County.

Greeley County

Horace, founded in 1886 and named after newspaper editor Horace Greeley, is located near the center of the county north of K-96 and west of K-27. The 2010 census indicates the city has a total area of 0.25 square miles a population of 70.

Tribune, founded in 1886 and named for the New York Tribune, is located in the center of the county at the intersection of K-27 and K-96. In 2009, the city and the county of Greeley agreed to operate as a unified government. The 2010 census indicates the city has a total area of 0.74 square miles and a population of 741. Tribune is the county seat of Greeley County.

Hamilton County

Coolidge, established in 1881 and named after railway company president of Thomas Jefferson Coolidge, is located near the western border of the county along U.S. Highway 50/400. The 2010 census indicates the city has a total area of 0.46 square miles and a population of 95.

Syracuse, founded in 1873 and named after Syracuse, New York, is located near the center of the county at the intersection of U.S. Highway 50/400 and K-27. The 2010 census indicates the city has a total area of 4.10 square miles and a population of 1,812. Syracuse is the county seat of Hamilton County.

Kearny County

Deerfield, settled in 1885 and incorporated in 1907, is located near the eastern edge of the county along U.S. Highway 50/400. The 2010 census indicates the city has a total area of 0.47 square miles and a population of 700.

Lakin, founded in 1874 and named for David Lakin, Treasurer of the Atchison, Topeka and Santa Fe Railway, is located near the center of the county at the intersection of U.S. Highway 50/400 and K-25. The 2010 census indicates the city has a total area of 0.98 square miles, with 0.01 square miles of water, and a population of 2,216. Lakin is the county seat of Kearny County.

Morton County

Elkhart, founded in 1913 and named after the city of Elkhart, Indiana, is located on the Oklahoma/Kansas state line at the intersection of U.S. Highway 56 and K-27. The 2010 census indicates the city has a total area of 2.11 square miles and a population of 2,205. Elkhart is the county seat of Morton County.

Rolla, laid out in 1907 and named after Sir Walter Raleigh, is located near the southeast corner of the county along U.S. Highway 56/K-51. The 2010 census indicates the city has a total area of 0.37 square miles and a population of 442.

Scott County

Scott City, founded in 1885 and named after General Winfield Scott, is located near the center of the county at the intersection of U.S. Highway 83 and K-96. The 2010 census indicates the city has a total area of 2.63 square miles and a population of 3,816. Scott City is the county seat of Scott County.

Stanton County

Johnson City, established in 1885 was originally named Veteran due to the large number of civil war veterans who were town founders. The name was changed to Johnson City on 1886 in honor of A.S. Johnson, a railroad official. Johnson City is located near the center of the county at the intersection of U.S. Highway 160 and K-27. The 2010 census indicates the city has a total area of 2.01 square mile and a population of 1,495. Johnson City is the county seat of Stanton County.

Manter, established with a post office in 1923, is located in the southwest corner of the county along U.S. Highway 160. The 2010 census indicates the city has a total area of 0.24 square miles and a population of 171.

Stevens County

Hugoton, founded in 1885 and named in honor of author Victor Hugo, is located in the center of the county at the intersection of U.S. Highway 56, K-51 and K-25. The 2010 census indicates the city has a total area of 1.75 square miles and a population of 3,904. Hugoton is the county seat of Stevens County.

Moscow, established with a post office in 1888, is located near the northeast corner of the county along U.S. Highway 56. The 2010 census indicates the city has a total area of 0.18 square mile, and a population of 310.

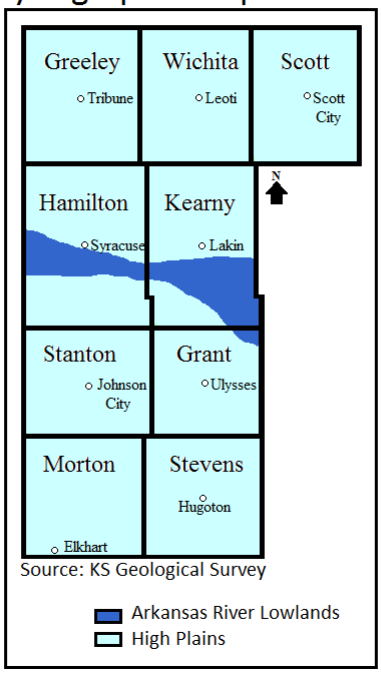
Wichita County

Leoti, founded in 1885, is located near the center of the county at the intersection of K-25 and K-96. The 2010 census indicates the city has a total area of 1.31 square miles and a population of 1,534. Leoti is the county seat of Wichita County.

2.4 REGIONAL GEOLOGY AND HYDROLOGY

The Kansas landscape was formed by alternating periods of deposition and erosion. The southwest region contains two distinct physiographic regions. Each region is differentiated by underlying rock formations, overlying soil types, and land use suitability. The following physiographic regions are found within southwest Kansas.

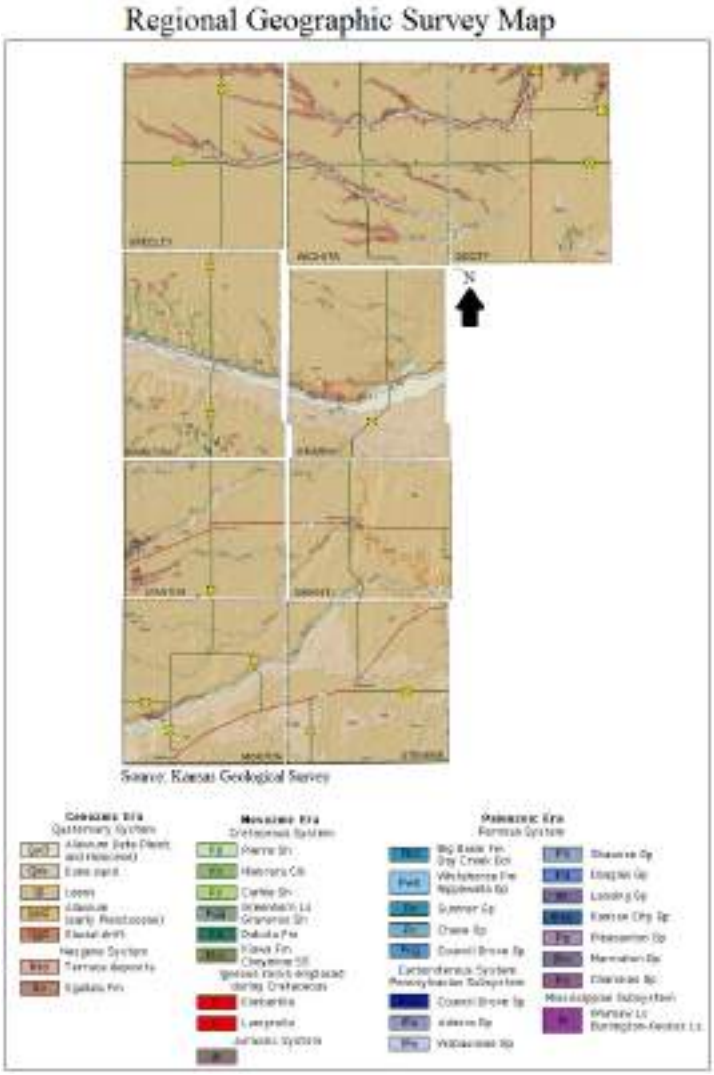
Kansas Geological Survey Generalized Physiographic Map of Kansas



The **Arkansas River Lowlands** follows the course of the Arkansas River through south-central Kansas. The broad floodplain contains large quantities of sand and silt carried from the Rocky Mountains by the river. A significant area of sand dunes occur on the south side of the plain formed by the prevailing winds from the glaciers to the north during the Pleistocene.

The **High Plains** area physiographic region is a result of the uplift of the Rocky Mountains during the Tertiary period. This event resulted in erosion and deposition of vast quantities of non-marine sediments eastward across the High Plains. The Ogallala Formation consists of a large wedge of unconsolidated sands and silts that is a significant aquifer under the plains. The Ogallala contains a sandstone layer cemented with opal.

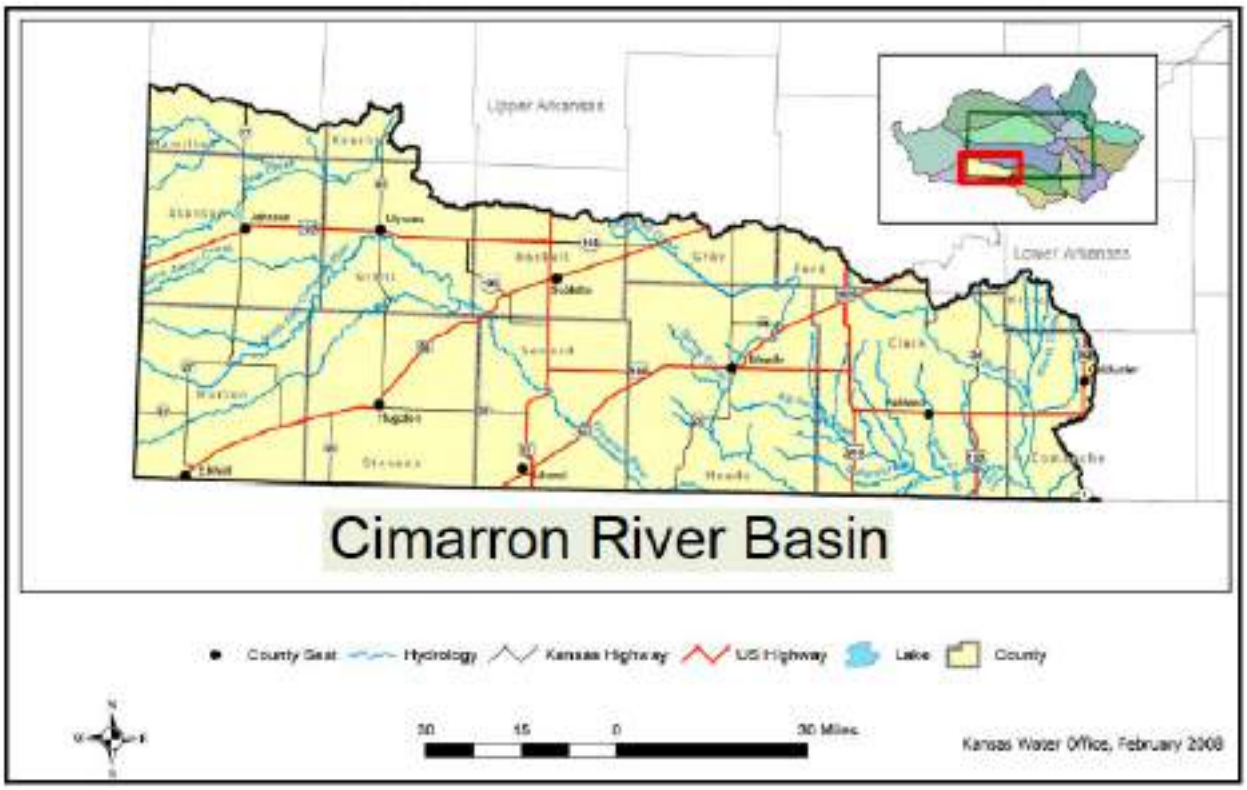
The soils of Kansas are very diverse, with over 300 different soil types across 52 million-acres. In general, the soils of south-central Kansas are weathered, shallow clay-pan soils. The following map shows the predominant soils types identified in southwest Kansas.



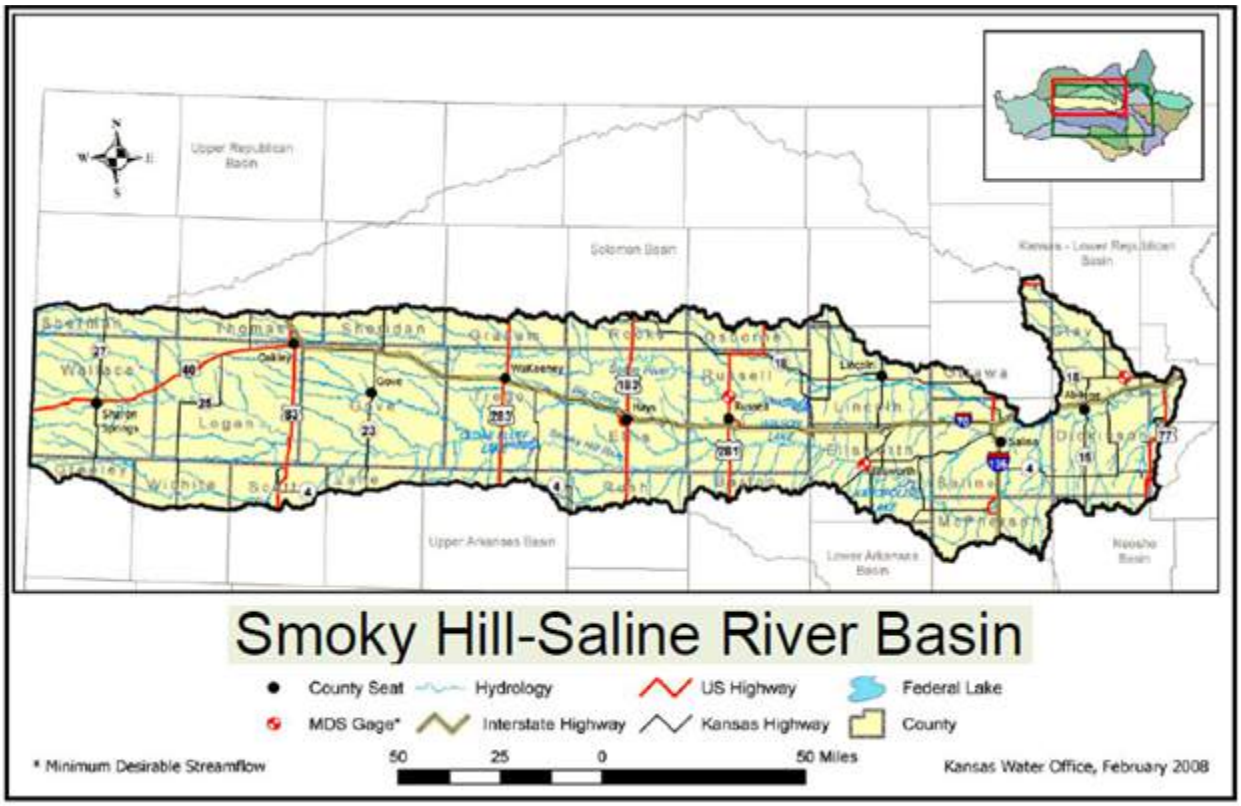
Kansas soils are known around the world for their exceptional qualities. But even though Kansas has abundant and productive soils, erosion by wind and water continue to diminish this resource.

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service about 190 million tons of topsoil are degraded each year through human activities. Unfortunately, soils are not easily renewed and it takes about 500 years for an inch of topsoil to develop under prairie grasses.

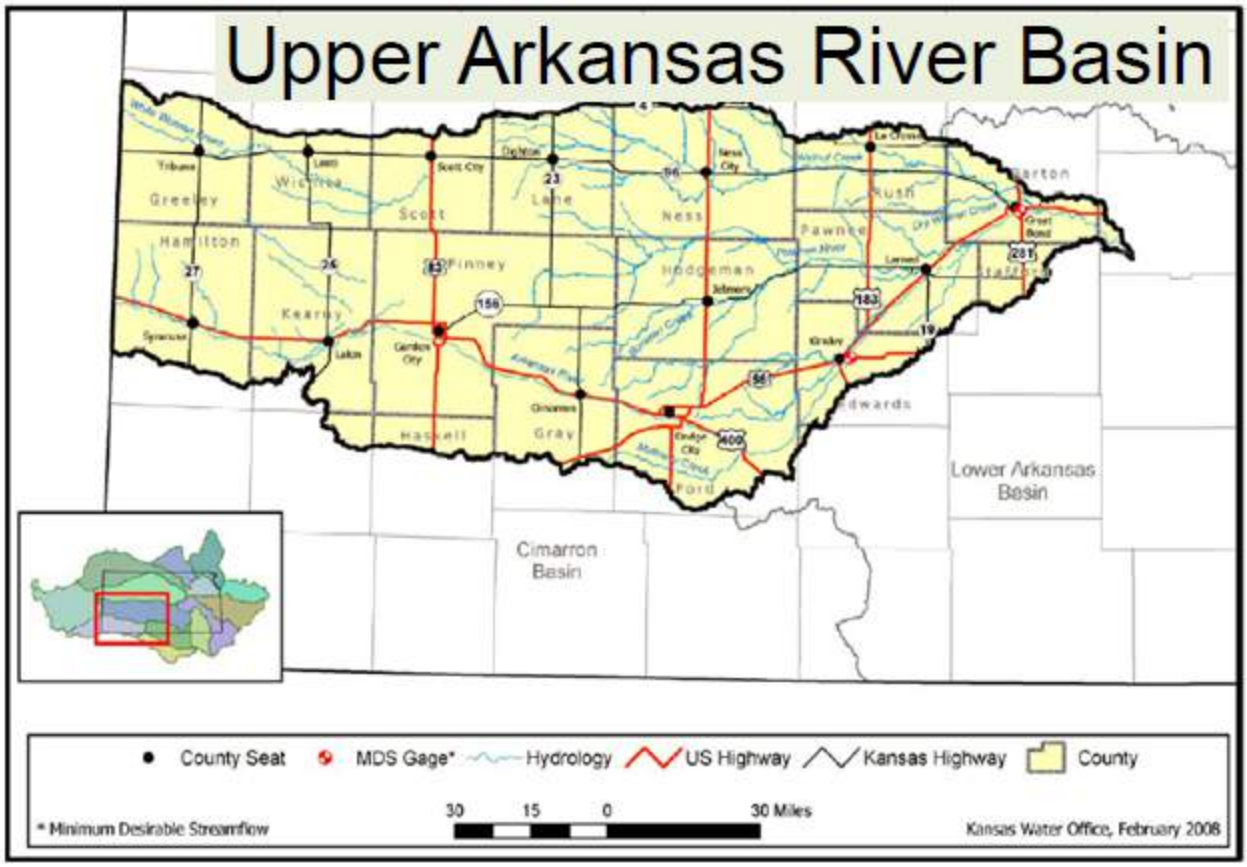
Three river basins cover southwest Kansas, the Cimarron River, Smoky Hills - Saline River, and Upper Arkansas Basins. Brief descriptions of each of these basins are presented below.



The **Cimarron Basin** covers nearly 6,800 square miles of the southwest corner of Kansas. The Cimarron basin contains 6,421 miles of intermittent and 432 miles of perennial streams for a total of 6,853 stream miles. The major river in the basin is the Cimarron, with principal tributaries including the North Fork Cimarron, Crooked Creek, Bluff Creek and, on occasions of high runoff, Bear Creek. The Cimarron River has its source in Union County, New Mexico. It flows across the Oklahoma panhandle and the southeast corner of Colorado and enters Kansas nine miles northwest of Elkhart in Morton County. The Cimarron River leaves the state in the south-central portion of Meade County and reenters 30 miles east in Clark County. The river leaves the state for the last time in Comanche County and eventually joins the Arkansas River near Tulsa, Oklahoma. There are no major federal reservoirs in the basin. The basin had an estimated 54,300 residents in the year 2000.



The **Smoky Hill-Saline River Basin** is an elongated drainage area, which extends eastward from the Colorado border approximately 250 miles to the vicinity of Junction City. The entire Smoky Hill-Saline basin in Kansas has a drainage area of about 12,229 square miles. Topography within the basin is flat to gently rolling, with narrow, shallow valleys and low relief.



The **Upper Arkansas Basin** covers nearly 10,300 square miles of west central Kansas. The Upper Arkansas basin contains 13,165 miles of intermittent and 843 miles of perennial streams for a total of 14,008 stream miles. The Arkansas River is the dominant river. It receives water from snow and rain runoff resulting in periodic high flows with the Pawnee River, Walnut Creek and Coon Creek as major tributaries. There are no major federal reservoirs in the basin. The basin had an estimated 128,500 residents in the year 2000.

2.5 REGIONAL CLIMATE

The Midwest climate region is known for extremes in both temperature and precipitation. In particular, 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. In the summer the jet stream migrates north, resulting in the collision of air masses with differing temperatures and moisture levels. The result if this is often severe thunderstorms, high winds and tornados, with peak severe weather season from May to June.

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. In general, summer also tends to have the most rain. Historically, precipitation has been reasonably predicable and adequate, however the region is noted for severe droughts such as is occurring

now. Winter months can bring severe weather in the form of snow and ice storms. All seasons are noted for damaging high winds.

Data from the following High Plains Regional Climate Center weather stations from the first available date (in parenthesis) to 2013 was obtained to create a regional average:

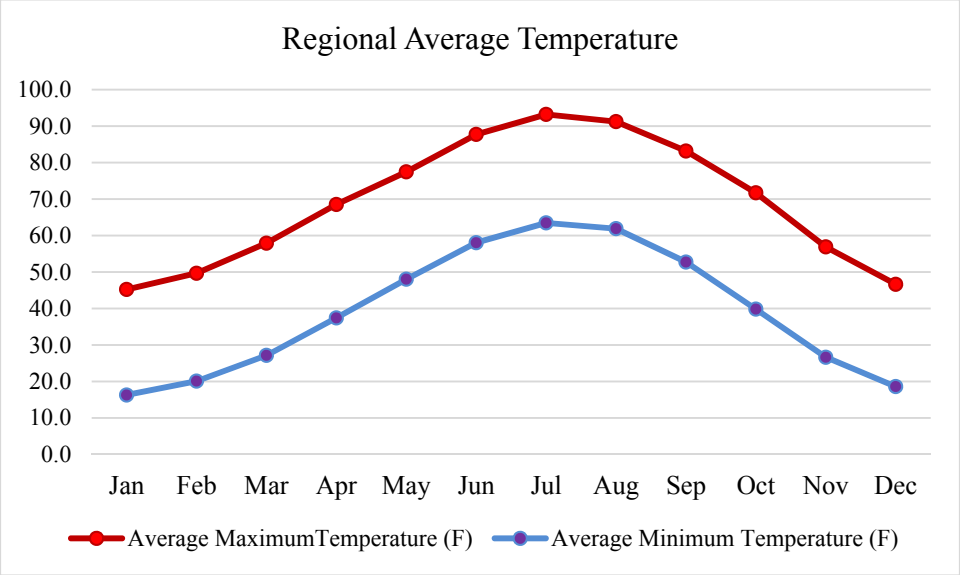
- Ulysses, Grant County (1893)
- Tribune, Greeley County (1893)
- Syracuse, Hamilton County (1893)
- Lakin, Kearny County (1893)
- Elkhart, Morton County (1900)
- Scott City, Scott County (1895)
- Big Bow, Stanton County (1981)
- Hugoton, Stevens County (1904)
- Leoti, Wichita County (1893)

The following tables and charts present average climate data for southwest Kansas.

Regional Average Temperatures

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Minimum Temperature (F)	16.3	20.1	27.2	37.5	48.0	58.1	63.5	61.9	52.7	39.8	26.7	18.6	39.2
Average Maximum Temperature (F)	45.2	49.7	57.9	68.5	77.5	87.7	93.2	91.2	83.2	71.7	56.9	46.7	69.1

Source: High Plains Regional Climate Center

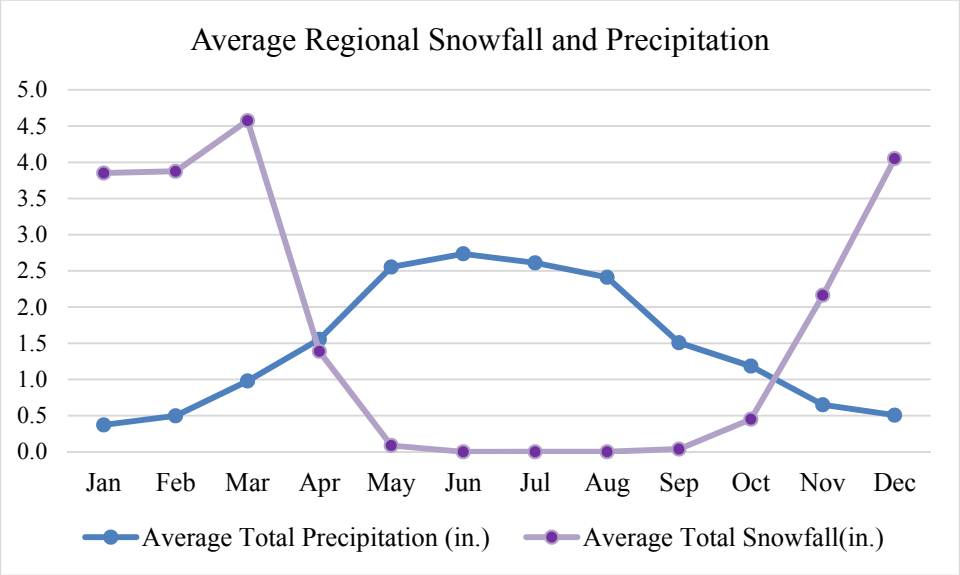


Source: High Plains Regional Climate Center

Regional Average Snowfall and Precipitation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Total Snowfall (in.)	3.9	3.9	4.6	1.4	0.1	0.0	0.0	0.0	0.0	0.5	2.2	4.1	20.5
Average Total Precipitation (in.)	0.4	0.5	1.0	1.6	2.6	2.7	2.6	2.4	1.5	1.2	0.7	0.5	17.6

Source: High Plains Regional Climate Center



Source: High Plains Regional Climate Center

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. 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 southwest Kansas communities.

2.6 REGIONAL POPULATION AND DEMOGRAPHICS

In general, southwest Kansas is a rural area with small urban areas. According to the United States Census Bureau, the estimated regional population for 2013 is 34,152 persons. This represents a 4.23% regional decrease from the 2000 census of 35,660. The region accounts for approximately 1.18% of the State of Kansas' 2013 estimated population of 2,893,957. Additionally, the region occupies approximately 6,796 square miles (representing 8.3% of the

total land area of the state, at 81,759 square miles). The 2013 regional population density is calculated at 5 people per square mile.

Regional Population Data

County	Population (2000)	Population (2013 Estimate)	Percentage Change (2000-2013)	Population (2040 Projection)
Grant	7,909	7,950	Unchanged	5,372
Greeley	1,534	1,290	-15.9%	447
Hamilton	2,670	2,609	-2.3%	2,911
Kearny	4,531	3,923	-13.4%	2,870
Morton	3,496	3,143	-10.1%	1,441
Scott	5,120	5,035	-1.7%	2,646
Stanton	2,406	2,194	-8.8%	1,162
Stevens	5,463	5,816	6.5%	4,129
Wichita	2,531	2,192	-13.4%	1,259
Kansas	2,688,418	2,893,957	+7.65%	3,238,356

Source: United States Census Bureau and Wichita State University

The following table indicates the levels of education for citizens of the region.

Regional Educational Data

County	High school graduate or higher, age 25+ (2008-2012)	Bachelor's degree or higher, age 25+ (2008-2012)
Grant	78.10%	16.80%
Greeley	89.00%	18.20%
Hamilton	77.70%	13.90%
Kearny	77.10%	14.90%
Morton	81.80%	19.00%
Scott	86.00%	24.90%
Stanton	73.60%	18.30%
Stevens	82.43%	15.00%
Wichita	78.30%	15.10%
Kansas	89.70%	30.00%

Source: United States Census Bureau

The following information provides a snapshot of regional housing trends. In general, the region enjoys a high percentage of home ownership. Additionally, available data indicates a small proportion of available housing units are in the form of multi-unit spaces.

Regional Housing Data

County	Housing Units (2000)	Housing Units (2012)	Multi-Unit Percentage (2008-2012)	Homeownership Rate (2008-2012)	Households (2008-2012)	Persons per Household (2008-2012)	Issued Building Permits, All Categories (2012)
Grant	3,027	2,907	3.00%	76.40%	2,820	2.74	0
Greeley	629	621	1.30%	78.10%	493	2.45	0
Hamilton	1,236	1,221	8.90%	75.70%	1,105	2.38	2
Kearny	1,556	1,539	4.50%	75.50%	1,384	2.79	1
Morton	1,467	1,448	7.30%	72.40%	1,219	2.56	0
Scott	2,193	2,187	4.80%	76.50%	2,065	2.31	4
Stanton	990	975	4.30%	77.70%	757	2.84	0
Stevens	2,306	2,272	4.70%	75.20%	1,984	2.79	2
Wichita	1,054	1,041	4.60%	76.70%	908	2.44	0
Kansas	1,131,200	1,238,719	17.60%	68.20%	1,109,391	2.50	6,252

Source: United States Census Bureau

2.7 REGIONAL ECONOMY

Data from the University of Kansas Institute for Policy and Social Research Kansas County Profile reports indicate that in general, the number of business establishments in southwest region are decreasing on a yearly basis. From 2000 to 2010 the average rate of decrease for the region was -12.8%. Major sources of employment include farming, manufacturing, retail, transportation, and utilities. The average regional unemployment rate of 4.74% in 2011 was lower than the average State of Kansas unemployment rate of 6.5%.

Regional Business and Unemployment Data

County	Total Number of Business (2000)	Total Number of Business (2010)	01 - 19 Staff (2010)	20 - 99 Staff (2010)	100+ Staff (2010)	Average Wage (2010)	Unemployment Rate (2011)
Grant	254	212	189	19	4	$39,912	4.20%
Greeley	60	41	38	2	1	$30,430	3.50%
Hamilton	84	72	68	3	1	$33,186	4.00%
Kearny	86	83	78	3	2	$30,248	4.30%
Morton	121	103	89	13	1	$34,202	3.90%
Scott	214	193	180	11	2	$33,496	3.50%
Stanton	73	69	66	3	0	$35,778	3.60%
Stevens	170	135	127	7	1	$34,128	5.00%
Wichita	90	97	94	3	0	$35,544	4.10%
Regional Total	1,152	1,005	929	64	12	$38,366	4.01%

Source: University of Kansas Institute for Policy and Social Research Kansas County Profile

2.8 REGIONAL AGRICULTURE AND LIVESTOCK

Agriculture is a major component of the economy of southwest Kansas. According to the Kansas Department of Agriculture:

- Kansas farmers typically produce more wheat than any other state in the nation
- Kansas ranks first in grain sorghum produced
- Kansas ranks second in cropland
- Kansas ranks sixth in hay produced
- One in five Kansans work in jobs related to agriculture and food production

The following tables present information from the USDA National Agricultural Statistics Service relating to farm totals, agricultural acreage and farm size for southwest Kansas.

Regional Farm Data, 2002 to 2012

County	Number of Farms, 2002	Number of Farms, 2007	Number of Farms, 2012	Percent Change	Farm Acreage, 2002	Farm Acreage, 2007	Farm Acreage, 2012	Percentage Change
Grant	304	326	329	8.2%	301,833	337,320	363,512	20.4%
Greeley	303	303	262	-13.5%	456,359	492,945	497,397	9.0%
Hamilton	393	431	397	1.0%	535,755	610,864	635,157	18.6%
Kearny	347	337	343	-1.2%	557,734	519,424	546,828	-2.0%
Morton	309	353	323	4.5%	352,563	441,926	456,844	29.6%
Scott	327	277	269	-17.7%	495,358	453,296	453,429	-8.5%
Stanton	313	328	278	-11.2%	438,022	414,184	429,179	-2.0%
Stevens	401	425	315	-21.4%	490,607	503,439	455,566	-7.1%
Wichita	326	323	265	-18.7%	470,799	519,858	463,779	-1.5%
Regional	3,023	3,103	2,781	-8.0%	4,099,030	4,293,256	4,301,691	4.9%

Source: United States Department of Agriculture National Agricultural Statistics Service

Regional Farm Size, 2012

County	1 to 9 acres	10 to 49 acres	50 to 179 acres	180 to 499 acres	500 to 999 acres	1,000 or more acres
Grant	8	27	87	73	34	100
Greeley	4	9	56	52	32	109
Hamilton	0	70	93	70	52	164
Kearny	7	9	74	79	56	118
Morton	6	6	80	70	51	110
Scott	20	19	44	47	40	99
Stanton	0	2	62	64	32	118
Stevens	10	9	90	77	35	94
Wichita	9	12	43	42	44	115
Regional	64	163	629	574	376	1,027

Source: United States Department of Agriculture National Agricultural Statistics Service

Regional Cropland and Pastureland Information

County	Percentage Cropland	Cropland Acreage	Percentage Pastureland	Pasture Acres
Grant	80.6%	292,991	16.1%	58,525
Greeley	90.3%	449,149	8.0%	39,792
Hamilton	74.5%	473,192	23.6%	149,897
Kearny	69.1%	377,858	29.3%	160,221
Morton	82.8%	378,267	13.8%	63,044
Scott	72.0%	326,469	25.7%	116,531
Stanton	86.5%	371,240	9.7%	41,630
Stevens	79.9%	363,997	17.9%	81,546
Wichita	76.6%	355,255	20.2%	93,683
Regional	79.1%	3,388,418	18.3%	804,871

Source: United States Department of Agriculture National Agricultural Statistics Service

The rearing of livestock plays a major role in the regional economy. According to the Kansas Department of Agriculture (KDA):

- Kansas produces more than 19 percent of all U.S. beef
- Kansas ranks third in cattle and calves on farms and third in cattle and calves on grain feed
- Kansas ranks 16th in milk produced

Additionally, major production crops include corn, forage, soybeans, wheat, and sorghum.

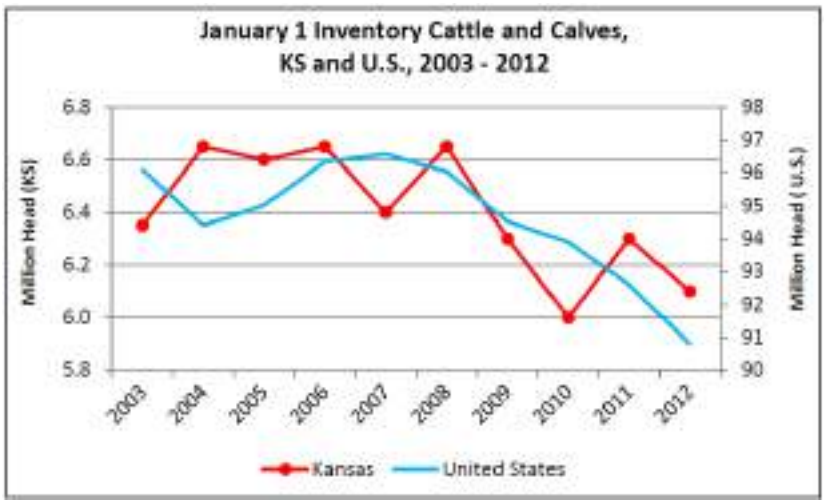
The following table presents information relating to livestock and crop production in southwest Kansas. Information was obtained from the USDA National Agricultural Statistics Service for 2012, the latest year for which this data was available on a county basis.

Top Livestock and Crop Items , 2012

County	Cattle and Calves (number of head)	Hogs and Pigs (number of head)	Sheep and Lambs (number of head)	Corn for Grain (acres)	Corn for Silage (acres)	Wheat (acres)
Grant	216,959	-	300	47,834	6,547	105,557
Greeley	36,586	-	54	31,939	3,196	170,557
Hamilton	120,981	76	166	10,780	78,835	147,852
Kearny	74,039	-	52	22,959	2,935	130,786
Morton	20,603	-	-	28,394	-	134,488
Scott	223,521	69,063	120	34,315	10,626	129,420
Stanton	20,481	-	-	57,241	2,827	119,380
Stevens	37,666	-	-	115,242	4,167	75,044
Wichita	138,561	-	-	40,630	8,320	135,947
Regional	889,397	69,139	692	389,334	117,453	1,149,031

Source: United States Department of Agriculture National Agricultural Statistics Service
-: Data not reported

Regional data indicate that the number of cattle has been falling over the past five years, from 906,502 in 2007 to 889,397 in 2102, -1.9% decrease. In general, this follows a trend in the State of Kansas and the United States as a whole. The following chart from the USDA National Agricultural Statistics Service Kansas Field Office produced in 2012 indicates this trend.



Source: US Department of Agriculture National Agricultural Statistics Service, Kansas Field Office, 2012

Regional data indicate that the number market value of agricultural products sold has increased dramatically over the past five years, following a trend in the State of Kansas. The following data from the USDA National Agricultural Statistics Service Kansas Field Office produced in 2012 indicates this trend.

Market Value of Agricultural Products Sold

County	Market Value of Products Sold (2002)	Market Value of Products Sold (2007)	Market Value of Products Sold (2012)	Percentage Change
Grant	$315,510,000	$576,908,000	$918,193,000	191.0%
Greeley	$52,027,000	$115,410,000	$123,148,000	136.7%
Hamilton	$267,025,000	$175,298,000	$367,238,000	37.5%
Kearny	$189,695,000	$221,068,000	$337,388,000	77.9%
Morton	$41,323,000	$119,145,000	$169,729,000	310.7%
Scott	$335,400,000	$762,693,000	$978,844,000	191.8%
Stanton	$105,487,000	$181,750,000	$163,738,000	55.2%
Stevens	$151,871,000	$232,916,000	$328,454,000	116.3%
Wichita	$314,459,000	$448,731,000	$624,800,000	98.7%
Regional	$1,772,797,000	$2,833,919,000	$4,011,532,000	126.3%

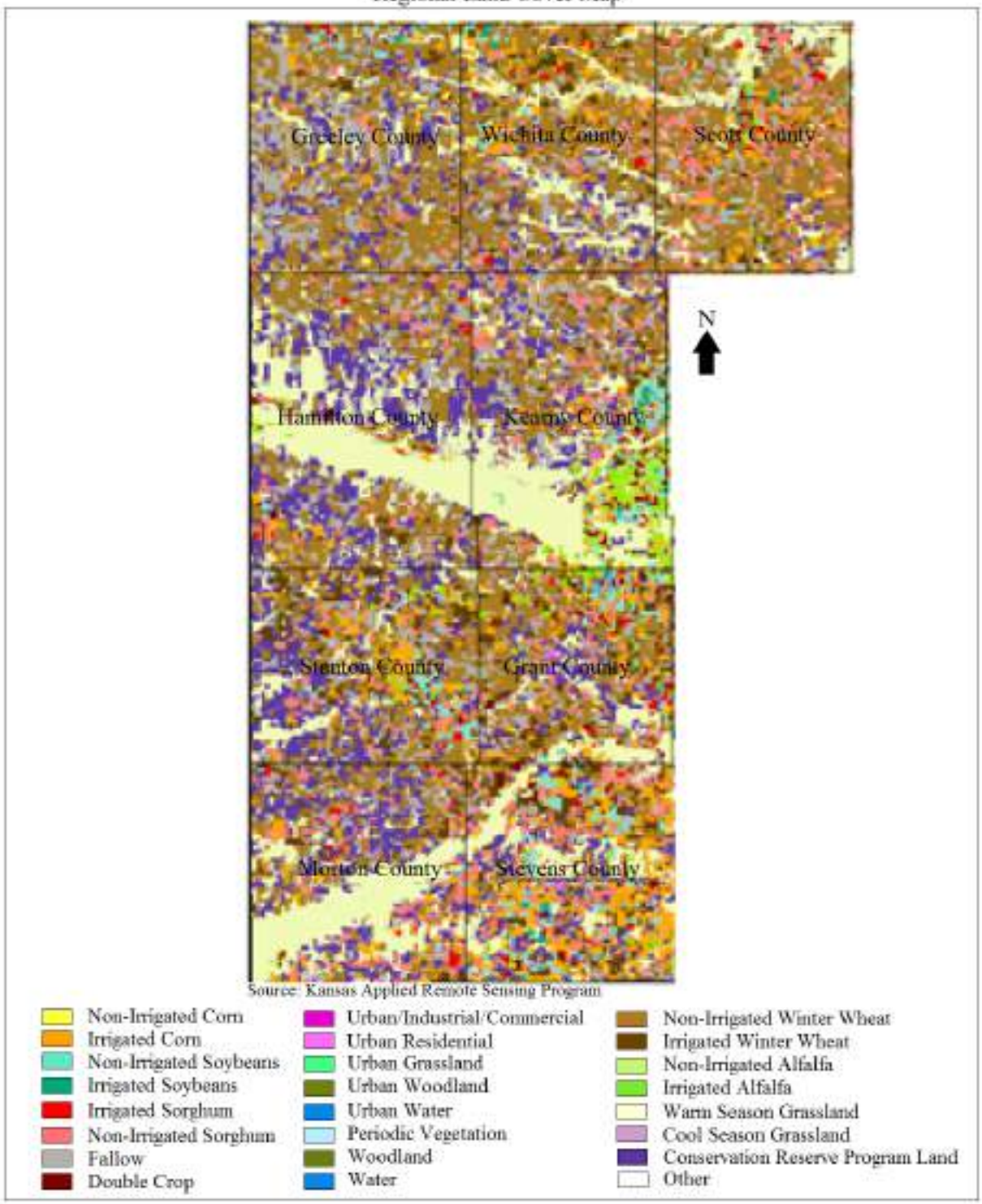
Source: USDA National Agricultural Statistics Service

2.9 REGIONAL LAND USE AND DEVELOPMENT TRENDS

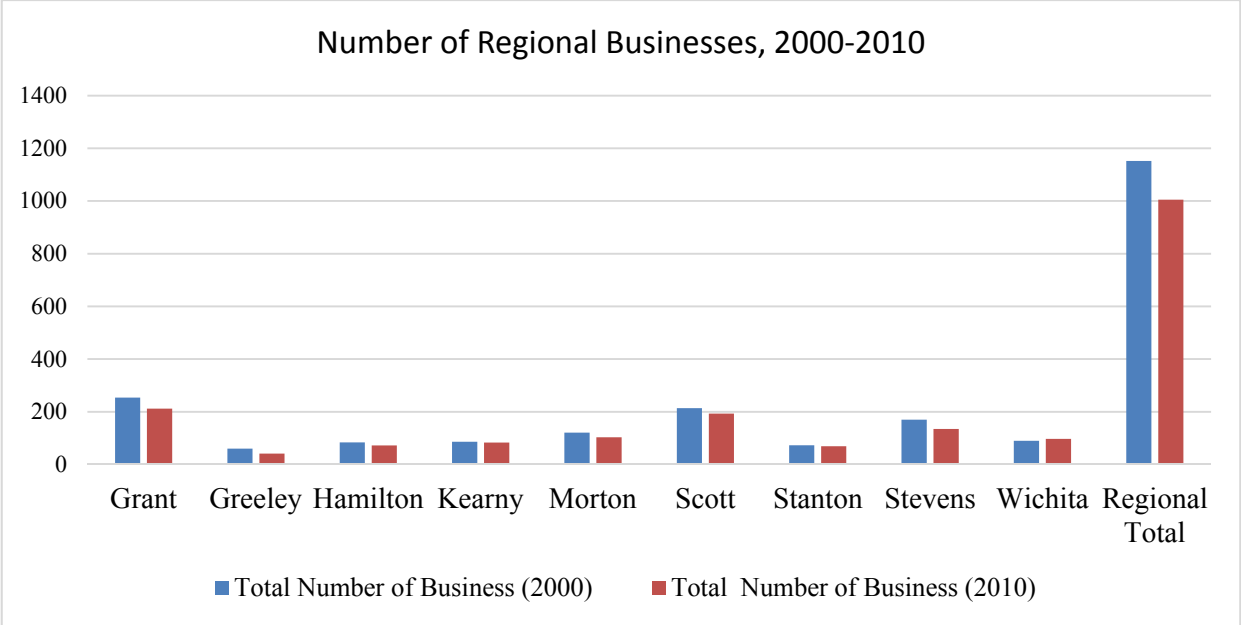
44 CFR 201.6 (C) Plan Content. The plan shall include the following: (2)(ii)(C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Land use patterns in southwest Kansas have remained relatively stable over many years. The 2005 Kansas Applied Remote Sensing Kansas Land Cover Patterns map shows the majority of the region is covered by cropland and grassland. Urban, residential, commercial and industrial uses comprise a small percentage of the land cover and are primarily found around the major towns and cities. In general, most development is regulated by local entities. However, it should be noted that large sections of the region are unregulated as to building and development.

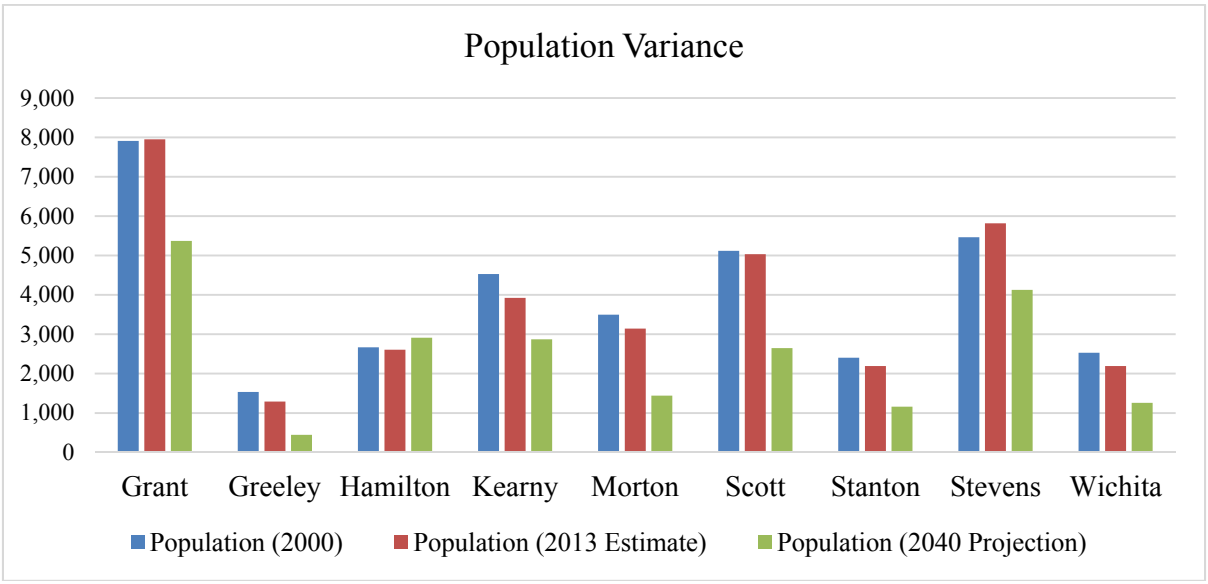
Regional Land Cover Map



The region has seen the number of businesses decline from 2000 to 2010, as indicated by the following table.



Southwest Kansas has experienced an overall decrease in population, with a 4.23% regional decrease from the 2000 to estimated 2013 census. While forecasting future population movement and growth is challenging, past trends can be used to assist in predicting future development. The following table indicates trends in regional population using data from the above referenced tables.



Based on these historical rates, it is possible that that minor land use changes and minor land development initiatives will be completed.

Data was obtained from the Office of Local Government, Kansas State Research and Extension office concerning capital expenditures on infrastructure. Counties that have an increase in

infrastructure spending are generally spending the increased funding on maintenance of aging infrastructure rather than new construction.

Regional Capital Infrastructure Expenditures, 2001 to 2011

County	Road & Bridge Expenditure (2001)	Road & Bridge Expenditure (2011)	Percent Change
Grant	$3,475,584	$1,995,204	-43%
Greeley	$664,485	$677,246	2%
Hamilton	$1,052,350	$944,143	-10%
Kearny	$2,353,172	$2,830,554	20%
Morton	$1,766,231	$692,683	-61%
Scott	$1,257,442	$1,211,768	-4%
Stanton	$1,403,319	$2,094,143	49%
Stevens	$3,954,576	$3,893,846	-2%
Wichita	$1,146,791	$1,338,840	17%

Source: Office of Local Government, Kansas State Research and Extension

2.10 STRUCTURES EXPOSED TO POTENTIAL HAZARDS

This section quantifies the buildings exposed to potential hazards in southwest Kansas. The following tables provide the value of the region's built environment and contents, which in addition to the population information presented above, 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-MH 2.1 (February 2012). HAZUS-MH 2.1 classifies building stock types into seven categories: residential, commercial, industrial, agriculture, religion, government, and education. Values associated with each of these categories reflect 2006 valuations, published by R.S. Means Company (Means Square foot Costs", 2006) with replacement costs. According to the HAZUS-MH 2.1 inventory, the total estimated replacement value of buildings within the southwest Kansas region is $2,382,234,000 and the total buildings content's estimated value within the southwest Kansas region is $1,615,650,000. The exposure value of buildings is incorporated as a factor in vulnerability assessments for hailstorm, tornado, windstorm, and winter storm hazards that are profiled later in this plan.

Estimated Replacement Value of Buildings by Category (2006 Valuations)

County	Residential ($1,000s)	Commercial ($1,000s)	Industrial ($1,000s)	Agriculture ($1,000s)	Religion ($1,000s)	Government ($1,000s)	Education ($1,000s)
Grant	$296,646	$107,493	$23,136	$16,008	$12,507	$3,786	$10,273
Greeley	$92,970	$21,763	$2,857	$7,276	$2,648	$857	$3,295
Hamilton	$127,214	$32,434	$2,669	$14,454	$5,106	$3,206	$2,786
Kearny	$172,175	$26,119	$4,082	$11,821	$4,854	$2,898	$6,774
Morton	$161,922	$35,720	$5,309	$8,167	$9,536	$3,565	$5,933
Scott	$244,650	$59,907	$7,995	$23,265	$11,356	$2,350	$991
Stanton	$103,798	$25,539	$2,546	$9,933	$3,634	$3,753	$2,455
Stevens	$226,033	$36,862	$6,874	$6,260	$10,432	$1,822	$5,479
Wichita	$118,412	$22,470	$2,182	$12,613	$12,724	$3,479	$3,799
Regional Total	$1,658,953	$395,153	$59,200	$119,298	$75,879	$28,300	$45,451

Estimated Replacement Value of Building's Contents by Category (2006 Valuations)

County	Residential ($1,000s)	Commercial ($1,000s)	Industrial ($1,000s)	Agriculture ($1,000s)	Religion ($1,000s)	Government ($1,000s)	Education ($1,000s)
Grant	$148,657	$119,357	$31,474	$16,008	$12,507	$4,166	$10,273
Greeley	$46,586	$26,152	$3,749	$7,276	$2,648	$1,100	$3,295
Hamilton	$63,920	$34,515	$3,507	$14,454	$5,106	$3,877	$2,786
Kearny	$86,579	$27,026	$5,840	$11,821	$4,854	$3,228	$6,774
Morton	$81,306	$40,877	$7,411	$8,167	$9,536	$3,899	$5,933
Scott	$122,536	$60,527	$10,491	$23,265	$11,356	$2,350	$991
Stanton	$52,029	$28,879	$3,338	$9,933	$3,634	$3,753	$2,455
Stevens	$113,476	$37,963	$8,867	$6,260	$10,432	$1,822	$5,479
Wichita	$59,367	$24,688	$2,965	$12,613	$12,724	$4,606	$3,799
Regional Total	$832,190	$431,412	$79,833	$119,298	$75,879	$31,587	$45,451

2.11 REGIONAL CRITICAL FACILITIES

This section details the critical facilities and assets that may be at risk by county and available jurisdiction for the region. A critical facility is essential in providing utility or direction either during the response to an emergency or during the recovery operation. Facilities were determined from jurisdictional feedback, historic research, available data from the State of Kansas and HAZUS-MH 2.1. Critical assets are equipment or systems that may be needed during a response or recovery effort and may be at risk of damage or destruction from a hazard. In addition, jurisdictions considered facilities that, if damaged or destroyed, would result in a high economic, human, or societal losses. Finally, jurisdictions also considered transportation facilities and corridors that would provide critical lifelines in the event of a hazard event. The following are examples of critical facilities and assets:

- Hospitals and other medical facilities
- Police stations

- Fire stations
- Emergency operations centers
- Power plants
- Dams and levees
- Military installations
- Hazardous material sites
- Schools
- Shelters
- Day care centers
- Nursing homes
- Highways, bridges, and tunnels
- Railroads and facilities
- Airports
- Water treatment facilities
- Natural gas and oil facilities and pipelines
- Communications facilities
- Community facilities

Participating jurisdictions were given the option to supply as much information as possible relating to critical facilities, however they were not compelled to provide any information, up to and including name, address, replacement value and occupancy. A detailed list of critical facilities may be found in Appendix D. Appendix D has been deemed sensitive information, and as such is restricted and unavailable to the public.

2.12 HISTORICALLY SIGNIFICANT STRUCTURES AND LOCATIONS

The following sections detail structures that have local historical significance. Historic structure means any structure that is:

- Listed in the National Register of Historic Places or preliminarily determined as meeting the requirements for listing
- Certified as contributing to the historical significance of a registered historic district
- Listed on a state inventory of historic places
- Listed on a local inventory of historic places
- Deemed by the community as a locally historic structure

These structures may warrant a greater degree of protection due to their unique and irreplaceable nature. Additionally, the rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.

2.12.1 GRANT COUNTY

Name of Historic Property	Address or Location	City
Grant County Courthouse District	108 South Glenn Street	Ulysses
Grant County Shop	-	-
Lower Cimarron Spring	12 miles South of Ulysses on U.S. Highway 270	Ulysses
Santa Fe Trail	-	-

2.12.2 GREELEY COUNTY

None listed.

2.12.3 HAMILTON COUNTY

Name of Historic Property	Address or Location	City
Menno Community Hall	Kendall, Kansas	Kendall
Fort Aubrey Site	Address Restricted	Syracuse
Northup Theater	116 North Main Street	Syracuse

2.12.4 KEARNY COUNTY

Name of Historic Property	Address or Location	City
Deerfield Texaco Service Station	105 West 6th	Deerfield

2.12.5 MORTON COUNTY

Name of Historic Property	Address or Location	City
Morton County WPA Bridge	6 miles West and 4 miles North of Richfield	Richfield

2.12.6 SCOTT COUNTY

Name of Historic Property	Address or Location	City
Battle of Punished Woman's Fork	Address Restricted	Scott City
El Cuartelejo	Address Restricted	Scott City
Shallow Water School	180 Barclay Avenue	Shallow Water

2.12.7 STANTON COUNTY

None listed.

2.12.8 STEVENS COUNTY

None listed.

2.12.9 WICHITA COUNTY

None listed.

2.13 REGIONAL AT RISK POPULATIONS

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

The following tables present information on potential at risk populations within southwest Kansas.

Potential At Risk Population Data

County	2013 Population	Population 5 and Under (2013)	Population 18 and Under (2013)	Population 65+ (2013)	Population 85+ (2010)	Food Stamp Beneficiaries (2011)	Estimated People in Poverty (2013)	Person Speaking Language Other Than English At Home (2013)
Grant	7,950	716	2,576	851	83	660	922	2,639
Greeley	1,290	97	292	279	47	43	137	95
Hamilton	2,609	237	749	324	62	186	253	676
Kearny	3,923	318	1,153	553	90	307	381	922
Morton	3,143	204	820	572	118	231	314	569
Scott	5,035	347	1,314	856	168	340	337	1,138
Stanton	2,194	180	617	349	60	168	112	748
Stevens	5,816	454	1,774	768	144	335	698	1,727
Wichita	2,192	153	566	399	69	120	206	441

Source: University of Kansas Institute for Policy and Social Research Kansas County Profile and the United States Census Bureau

Potential At Risk Population Data, Care Facilities

County	Number of Hospitals (2011)	Number of Hospital Beds (2011)	Adult Care Homes (2011)	Adult Care Beds (2011)	Assisted Living Homes (2011)	Assisted Living Beds (2011)	Child Care Facilities (2011)
Grant	1	26	1	60	1	24	34
Greeley	1	50	0	0	0	0	3
Hamilton	1	73	0	0	0	0	5
Kearny	1	100	0	0	0	0	12
Morton	1	120	0	0	1	23	9
Scott	1	25	1	63	0	0	16
Stanton	1	29	0	0	1	15	8
Stevens	1	83	0	0	0	0	14
Wichita	1	37	0	0	0	0	10

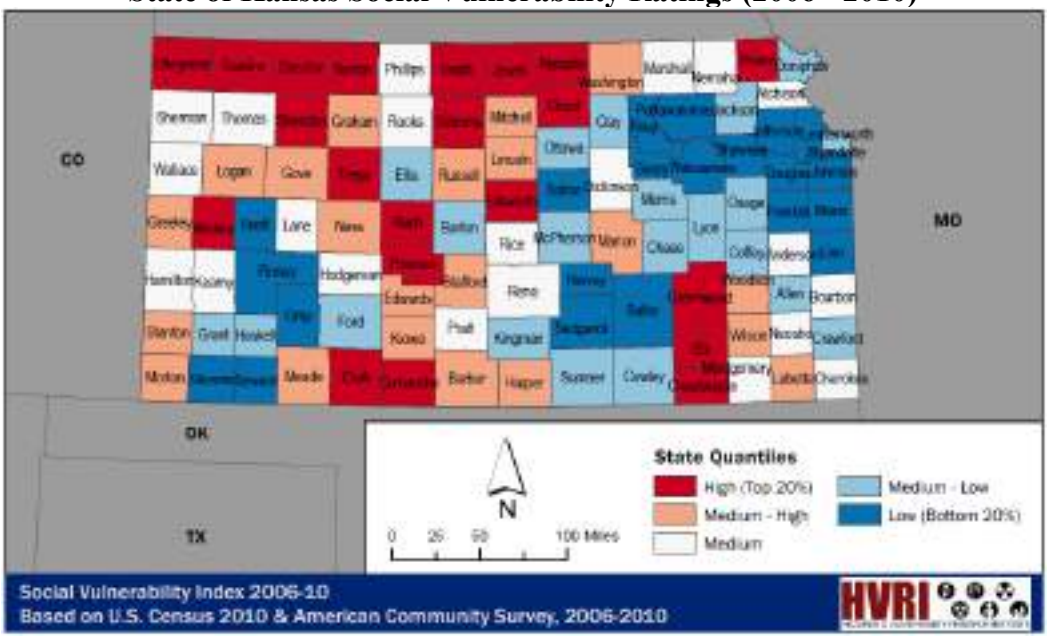
Source: University of Kansas Institute for Policy and Social Research Kansas County Profile and the United States Census Bureau

The Social Vulnerability Index (SoVI) 2006 - 2010 compiled by the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina measures the social vulnerability of counties to environmental hazards. The index synthesizes 30 socioeconomic variables, including social, economic, demographic, and housing characteristics, which may contribute to reduction in a community's ability to prepare, respond and recover from a hazard. The major data source for this index is primarily the United States Census Bureau.

After obtaining the relevant data, a principle components analysis is used to reduce the data into set of components. All components are added together to determine a numerical value that represents the social vulnerability for each county. Scores in the top 20% of the United States are more vulnerable counties (red) and scores in the bottom 20% of the United States indicate the least vulnerable counties (blue).

The following map illustrates social vulnerability ratings for Kansas counties.

State of Kansas Social Vulnerability Ratings (2006 - 2010)



The following table presents the SoVi rating and national percentile for each county. In general, the higher the national percentile the higher the vulnerability.

County Social Vulnerability Ratings

County	SoVI Score (2006 - 2010)	National Percentile (2006 - 2010)
Grant	-0.386983	44.07 %
Greeley	1.878669	79.83 %
Hamilton	0.795165	66.40 %
Kearny	0.661375	63.98 %
Morton	1.155956	71.27 %
Scott	-1.156293	30.93 %
Stanton	1.59603	76.74 %
Stevens	-0.840915	35.92 %
Wichita	2.51234	85.05 %

Source: Hazards and Vulnerability Research Institute, University of South Carolina

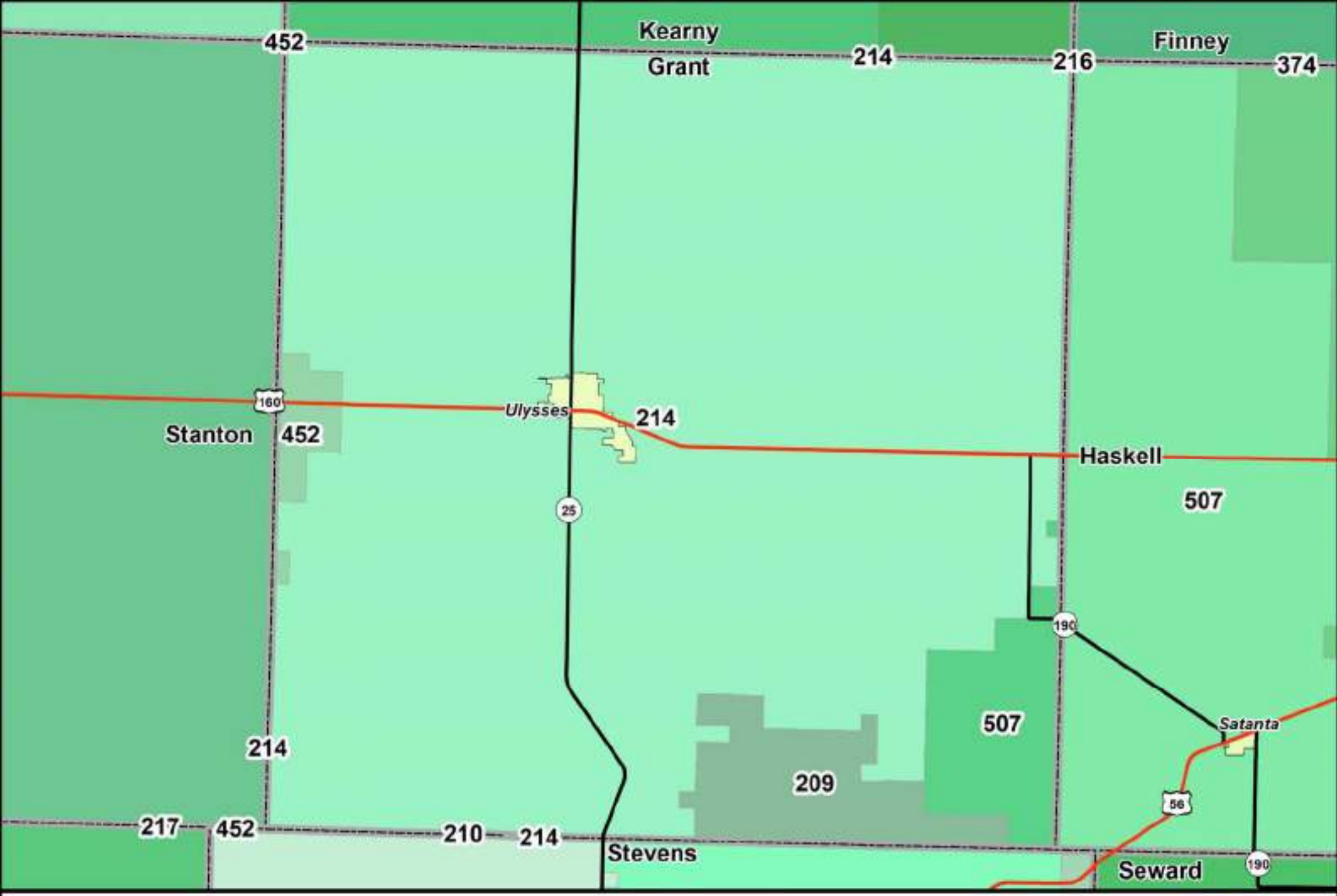
2.14 SCHOOL DISTRICT INFORMATION AND BOUNDARIES

The following tables present participating USD enrollment information, the number of staff and faculty, and the number of offices and schools.

Participating USD Information

School , College or University	Total Enrollment (2013-2014)	Staff and Faculty (2013-2014)	Number of Offices and Schools (2013)
Grant County			
USD #214 - Ulysses	1,797	123	11
Greeley County			
USD #200 – Greeley County	247	26	6
Hamilton County			
USD #494 - Syracuse	512	47	7
Kearny County			
USD #215 - Lakin	690	69	8
USD #216 - Deerfield	267	31	8
Morton County			
USD #217 - Rolla	194	21	6
USD #218 - Elkhart	1,236	54	10
Scott County			
USD #466 – Scott County	978	78	11
Stanton County			
USD #452 – Stanton County	458	40	7
Stevens County			
USD #209 - Moscow	208	22	7
USD #210 - Hugoton	1,176	110	14
Wichita County			
USD #467 - Leoti	438	42	7

The following maps present regional school district boundaries by county. Capability information for each participating district is presented Section 4.



School Districts
Grant County, KS

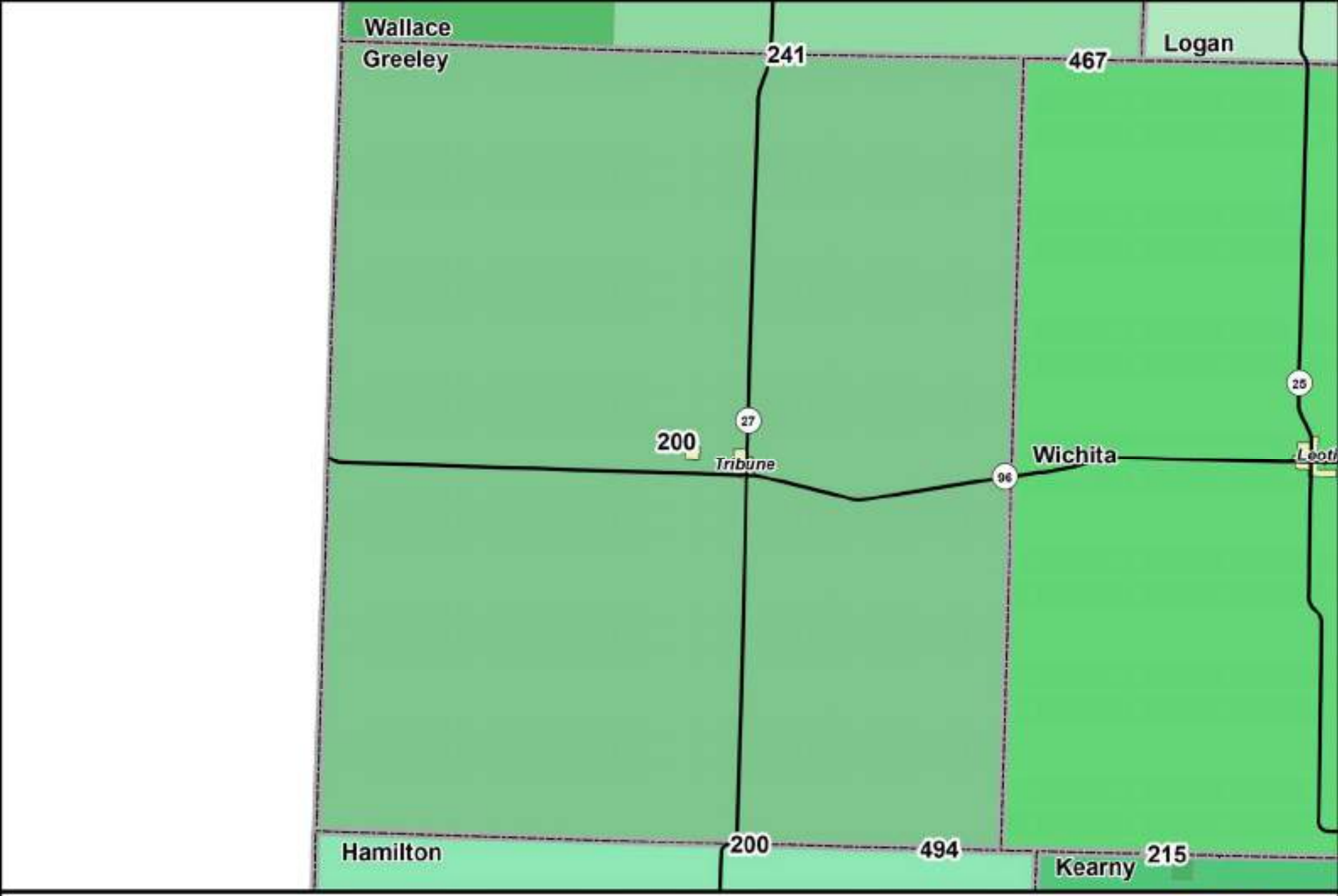
Interstates
US Highways
Kansas Highways
County Boudaries
City Boundaries

N

0 2 4 8 Miles

Data Sources: KS Adjutant General, US Census Bureau, KS Dept. of Transportation, KS Dept. of Education
Date Created: 5/30/2014

Kansas
Adjutant General
Division of Emergency Management



School Districts
Greeley County, KS

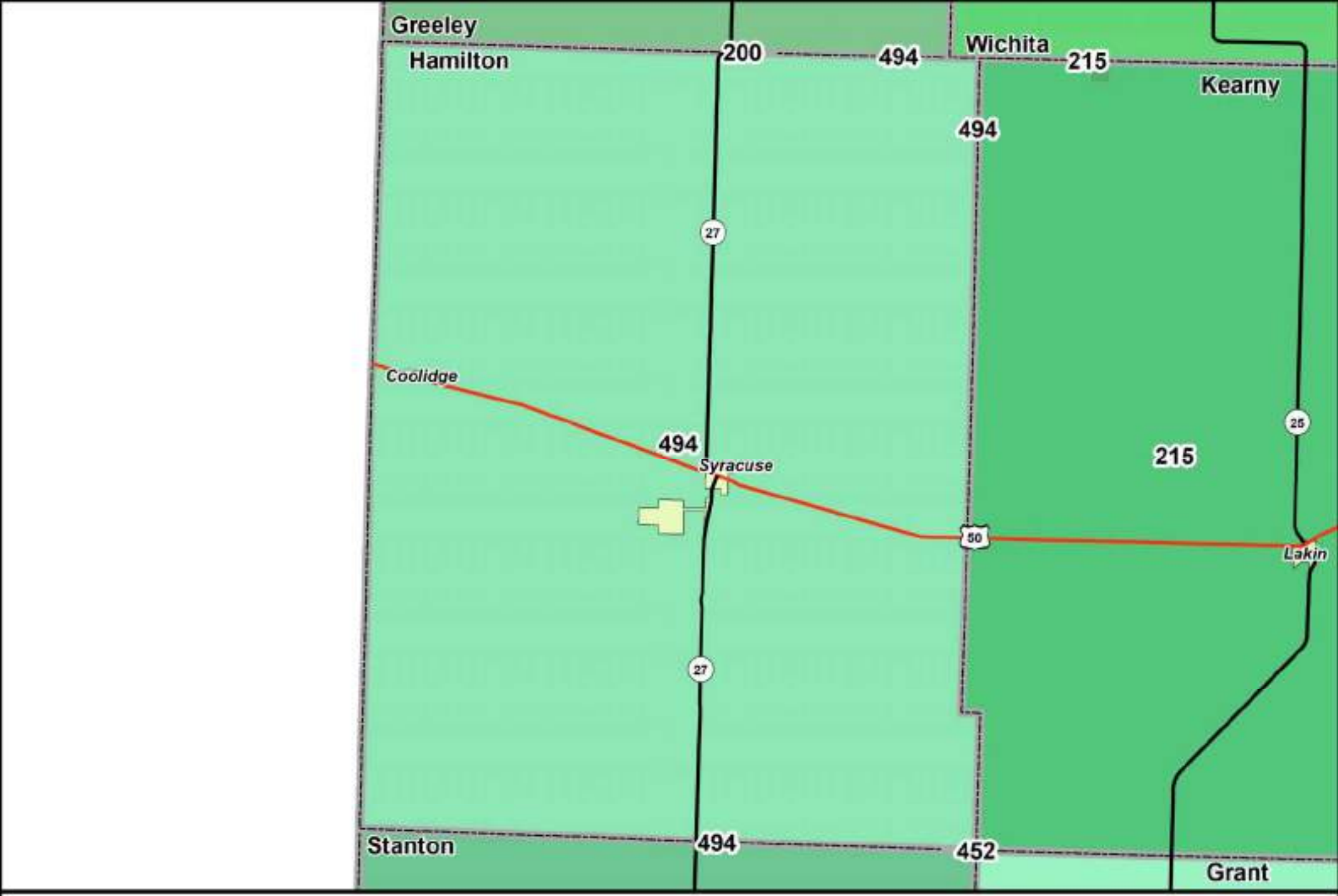
Interstates
US Highways
Kansas Highways
County Boudaries
City Boundaries

N

0 2.5 5 10 Miles

Data Sources: KS Adjutant General, US Census Bureau, KS Dept. of Transportation, KS Dept. of Education
Date Created: 5/30/2014

Kansas
Adjutant General
Division of Emergency Management



School Districts
Hamilton County, KS

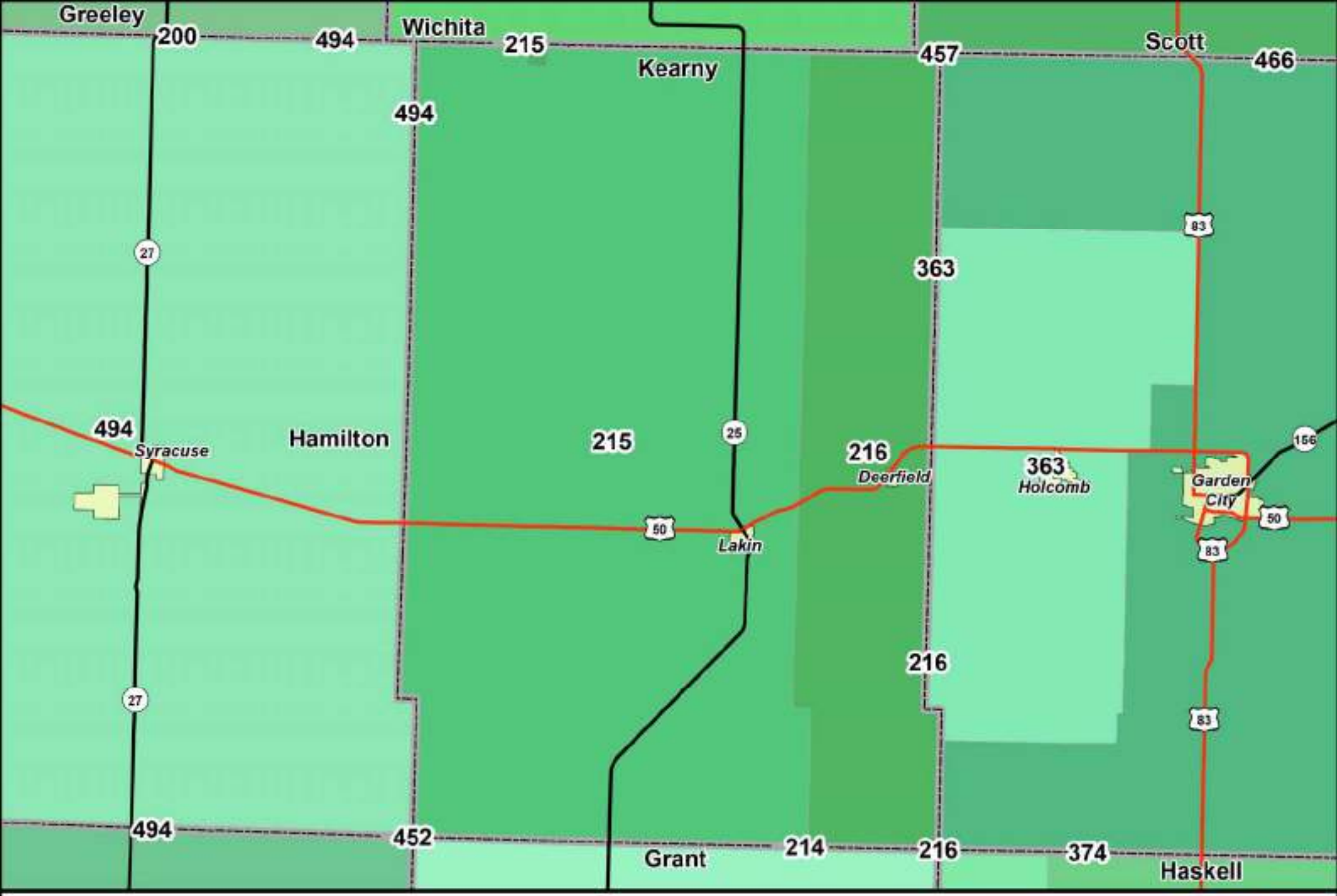
Interstates
US Highways
Kansas Highways
County Boudaries
City Boundaries

N

0 3 6 12 Miles

Data Sources: KS Adjutant General, US Census Bureau, KS Dept. of Transportation, KS Dept. of Education
Date Created: 5/30/2014

Kansas
Adjutant General
Division of Emergency Management



School Districts
Kearny County, KS

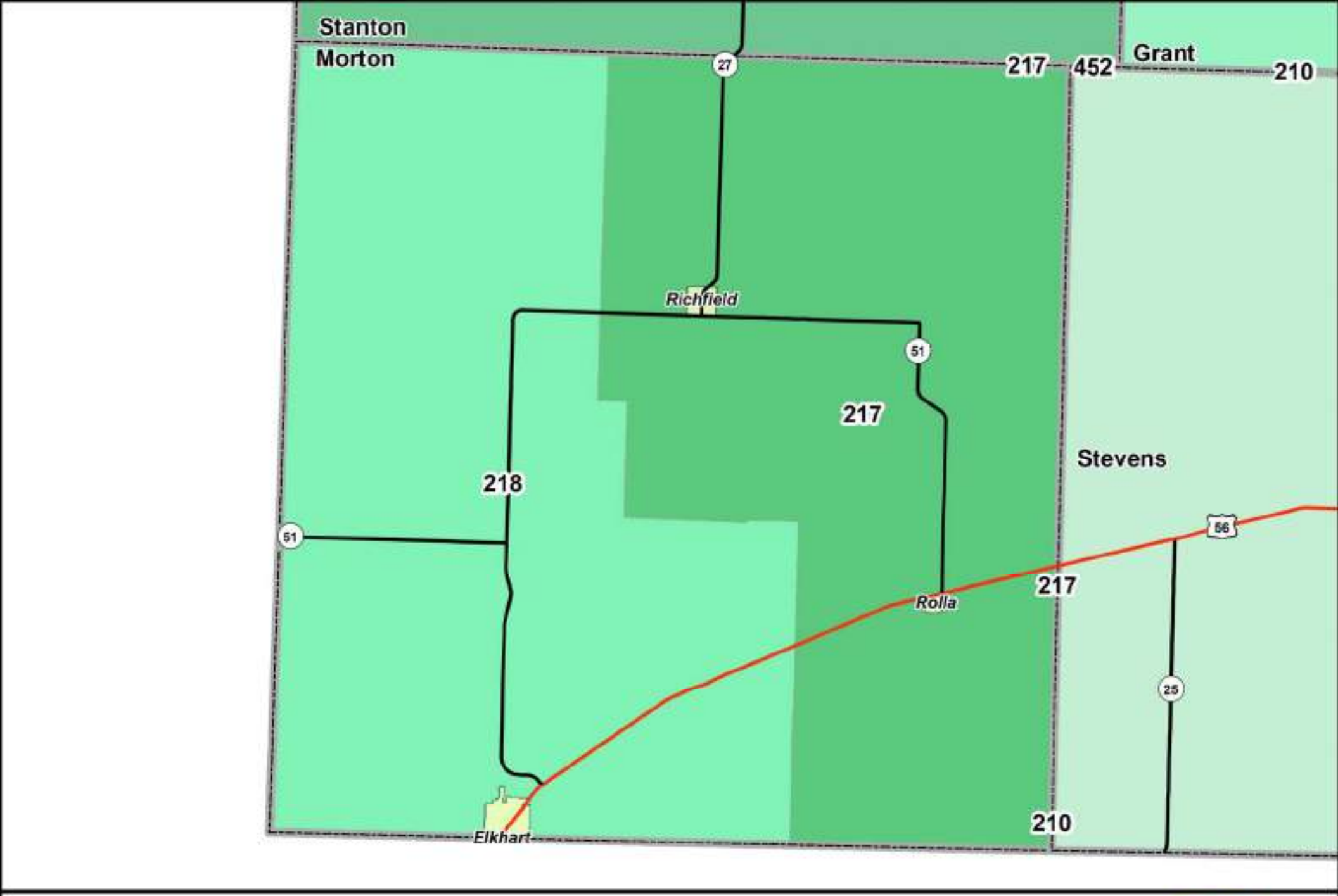
Interstates
US Highways
Kansas Highways
County Boudaries
City Boundaries

N

0 3 6 12 Miles

Data Sources: KS Adjutant General, US Census Bureau, KS Dept. of Transportation, KS Dept. of Education
Date Created: 5/30/2014

Kansas
Adjutant General
Division of Emergency Management



School Districts

Morton County, KS

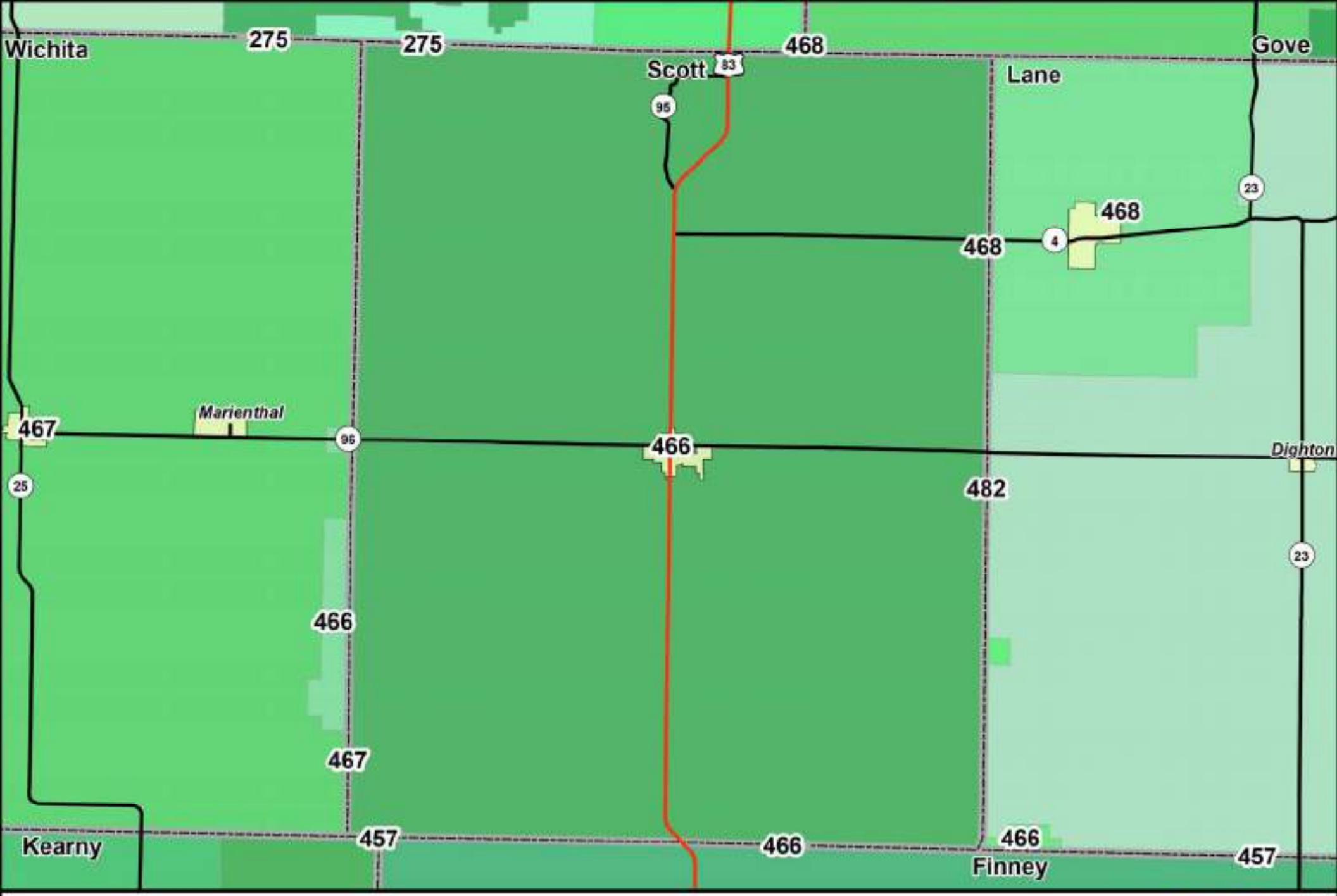
Interstates
US Highways
Kansas Highways
County Boudaries
City Boundaries

N

0 2.25 4.5 8 Miles

Data Sources: KS Adjutant General, US Census Bureau, KS Dept. of Transportation, KS Dept. of Education
Date Created: 5/30/2014

Kansas
Adjutant General
Division of Emergency Management



School Districts
Scott County, KS

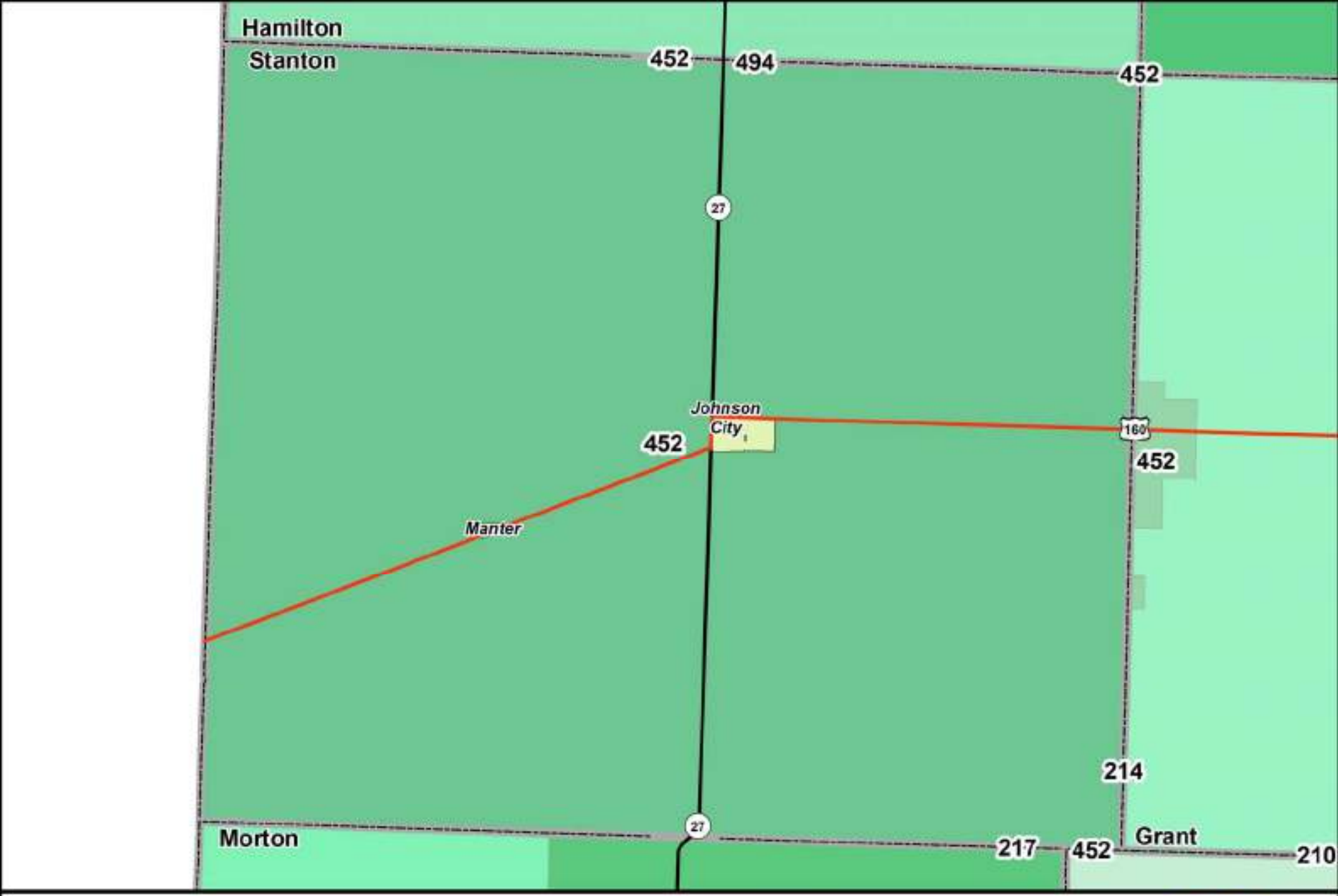
Interstates
US Highways
Kansas Highways
County Boudaries
City Boundaries

N

0 2.5 5 10 Miles

Data Sources: KS Adjutant General, US Census Bureau, KS Dept. of Transportation, KS Dept. of Education
Date Created: 5/30/2014

Kansas
Adjutant General
Division of Emergency Management



School Districts
Stanton County, KS

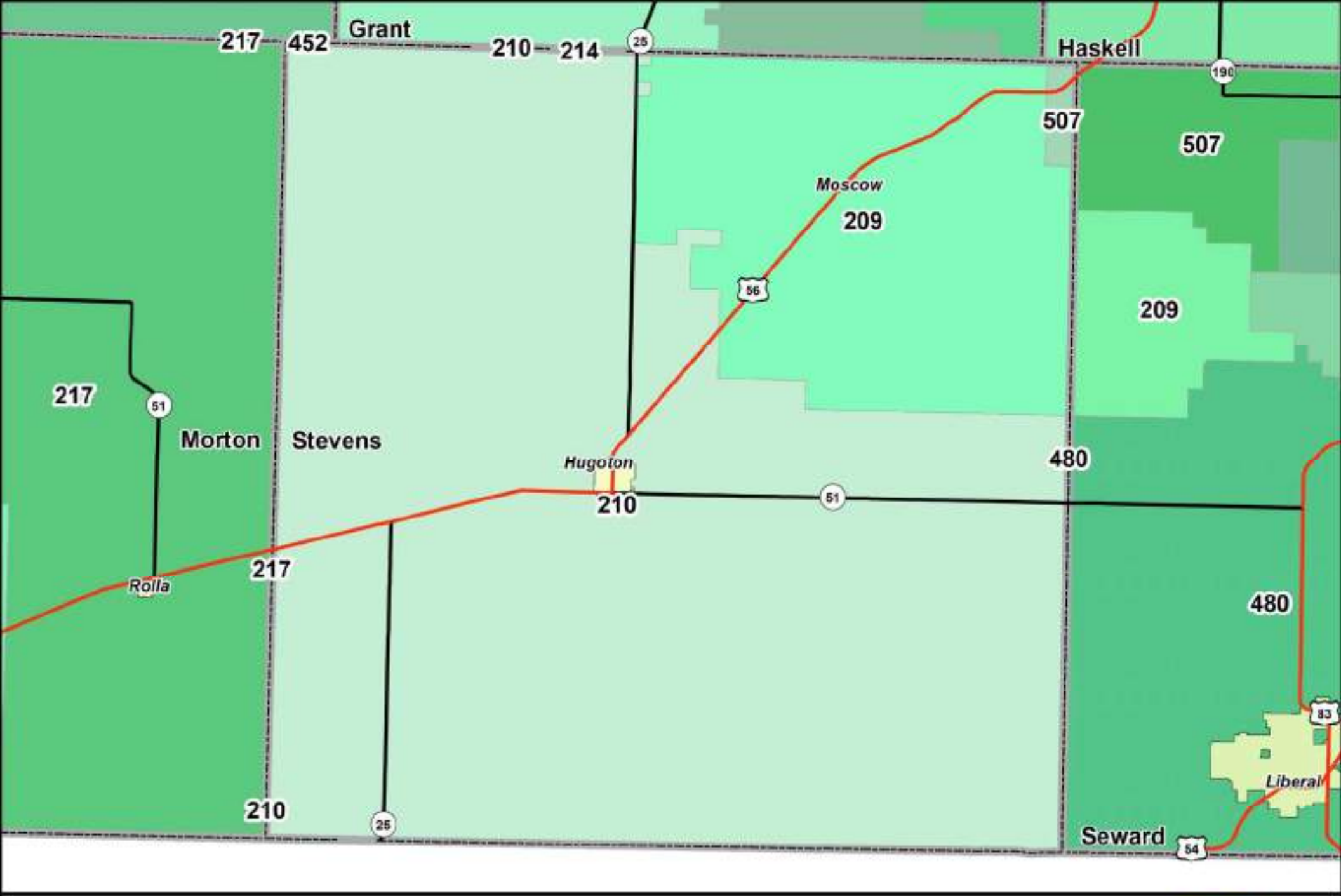
Interstates
US Highways
Kansas Highways
County Boudaries
City Boundaries

N

0 2 4 8 Miles

Data Sources: KS Adjutant General, US Census Bureau, KS Dept. of Transportation, KS Dept. of Education
Date Created: 5/30/2014

Kansas
Adjutant General
Division of Emergency Management



School Districts
Stevens County, KS

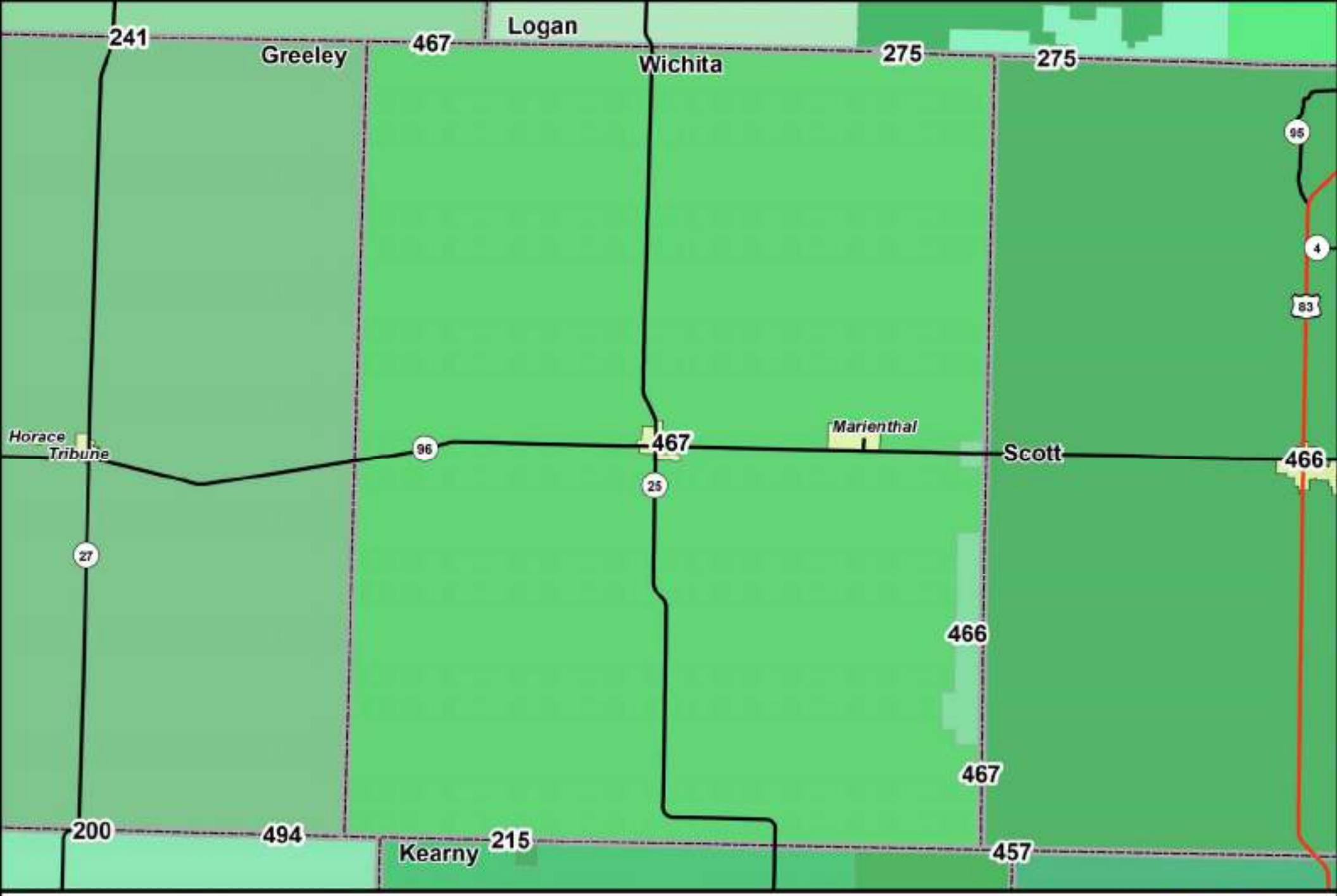
Interstates
US Highways
Kansas Highways
County Boudaries
City Boundaries

N

0 2.25 4.5 9 Miles

Data Sources: KS Adjutant General, US Census Bureau, KS Dept. of Transportation, KS Dept. of Education
Date Created: 5/30/2014

Kansas
Adjutant General
Division of Emergency Management



School Districts
Wichita County, KS

Interstates
US Highways
Kansas Highways
County Boudaries
City Boundaries

N

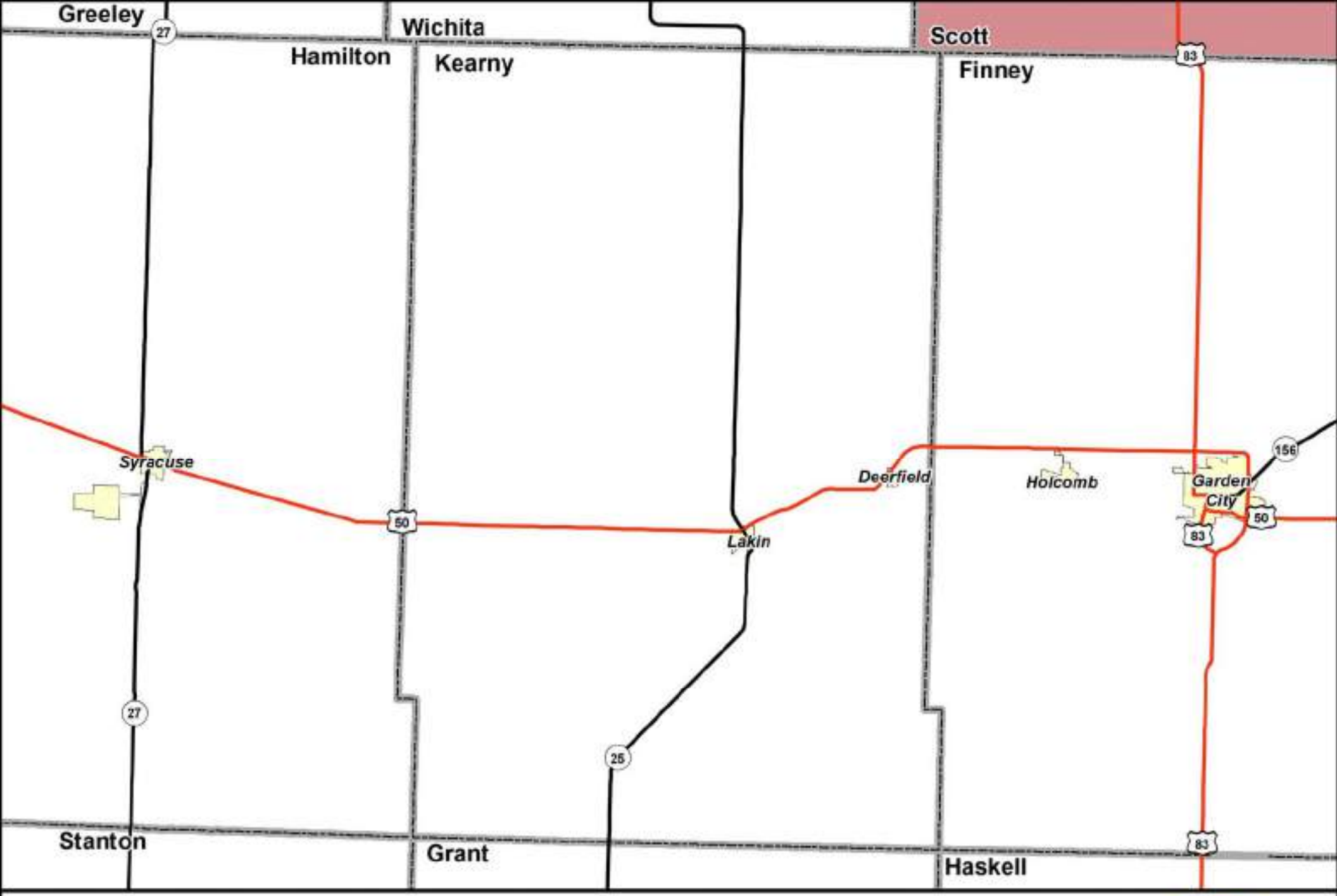
0 2.5 5 10 Miles

Data Sources: KS Adjutant General, US Census Bureau, KS Dept. of Transportation, KS Dept. of Education
Date Created: 5/30/2014

Kansas
Adjutant General
Division of Emergency Management

2.15 FIRE DISTRICT BOUNDARIES

The following maps present regional fire district boundaries by county. Note that not all participating counties and jurisdictions had this information available for use.



Fire Districts

Kearny County, KS

Interstates
US Highways
Kansas Highways
County Boudaries
City Boundaries

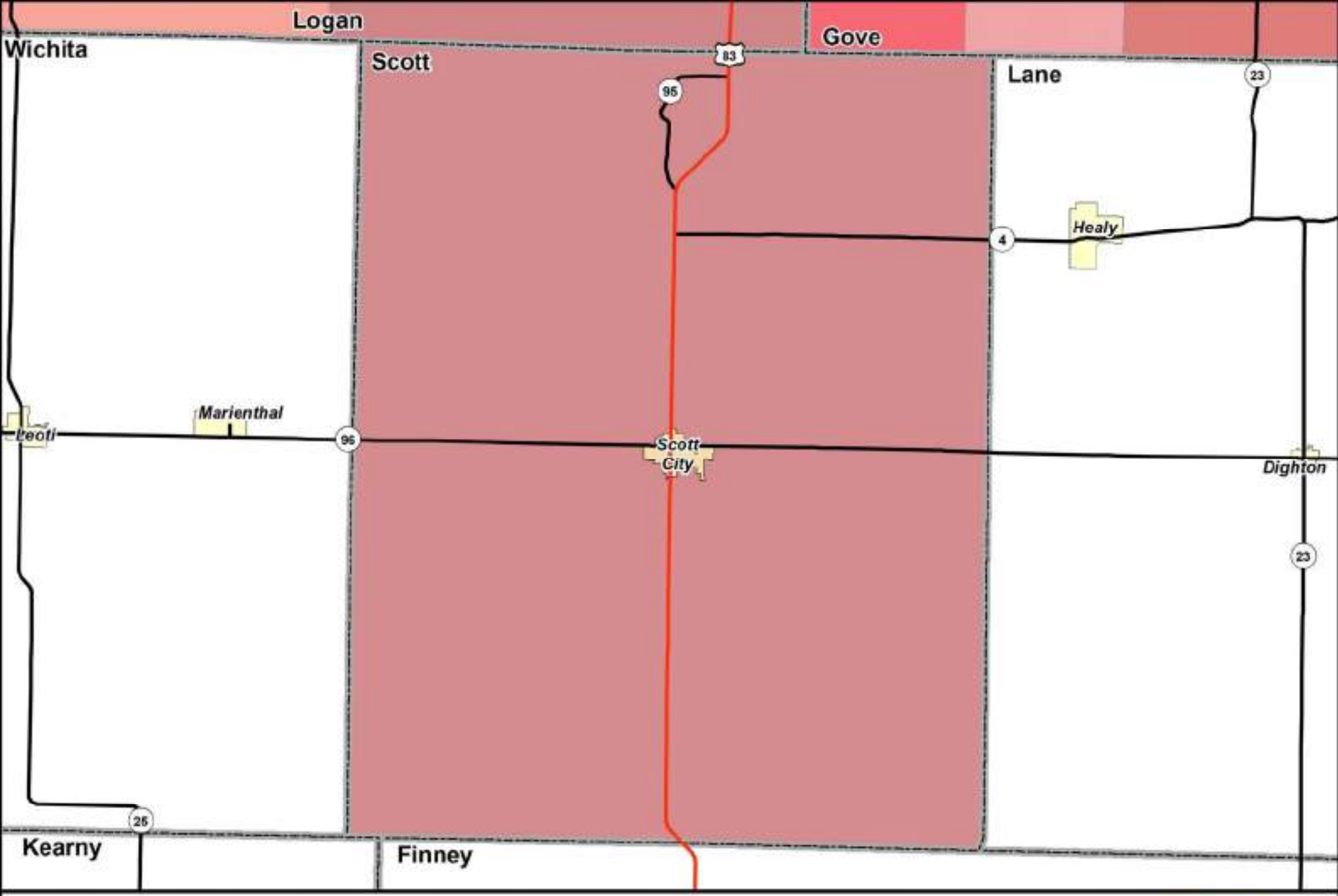
N

0 3 6 12 Miles

Data Sources: KS Adjutant General, US Census Bureau, KS Dept. of Transportation

Date Created: 6/9/2014

Kansas
Adjutant General
Division of Emergency Management


Logan
Wichita
Scott
Gove
Lane
83
95
23
Healy
4
Marienthal
Leoti
96
Scott City
Dighton
23
25
Kearny
Finney
Fire Districts
Scott County, KS
Interstates
US Highways
Kansas Highways
County Boudaries
City Boundaries
N
0 2.5 5 10 Miles
Data Sources: KS Adjutant General, US Census Bureau, KS Dept. of Transportation
Date Created: 6/9/2014
Kansas
Adjutant General
Division of Emergency Management

2.16 WATER DISTRICT BOUNDARIES

The following maps present regional water district boundaries by county.

Rural Water Districts
Grant County, KS

Interstates
US Highways
Kansas Highways
County Boudaries
Cities (Census 2010)

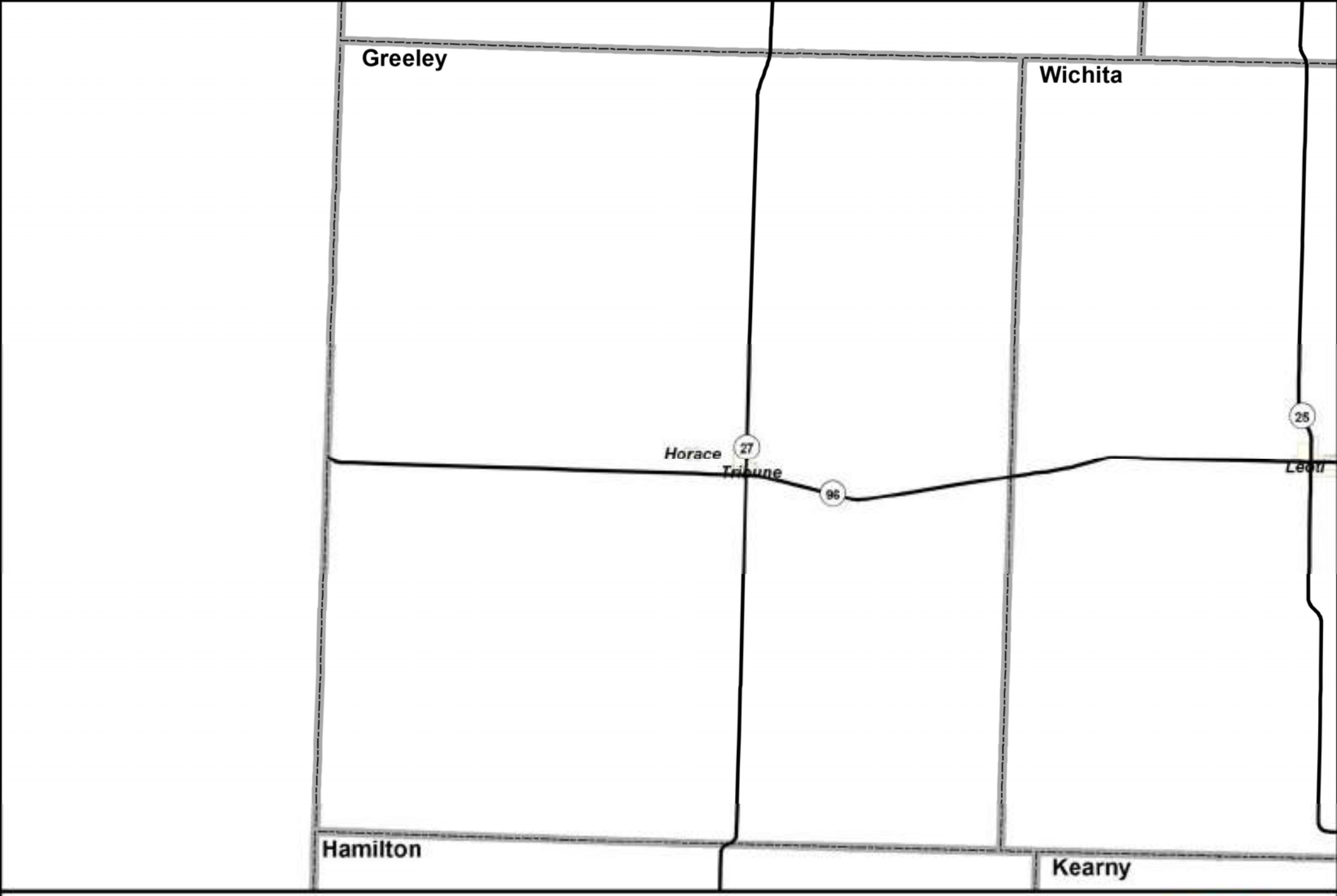
N

0 0.75 1.5 3 4.5 6 Miles

Data Sources: US Census Bureau, KS Adjutant General, Kansas Rural Water Association

Date: 1/8/2014

Kansas
Adjutant General
Division of Emergency Management



Rural Water Districts
Greeley County, KS

Interstates
US Highways
Kansas Highways
County Boudaries
Cities (Census 2010)

N

0 1 2 4 6 8 Miles

Data Sources: US Census Bureau, KS Adjutant General, Kansas Rural Water Association

Date: 1/8/2014

Kansas
Adjutant General
Division of Emergency Management

Rural Water Districts
Hamilton County, KS

Interstates
US Highways
Kansas Highways
County Boudaries
Cities (Census 2010)

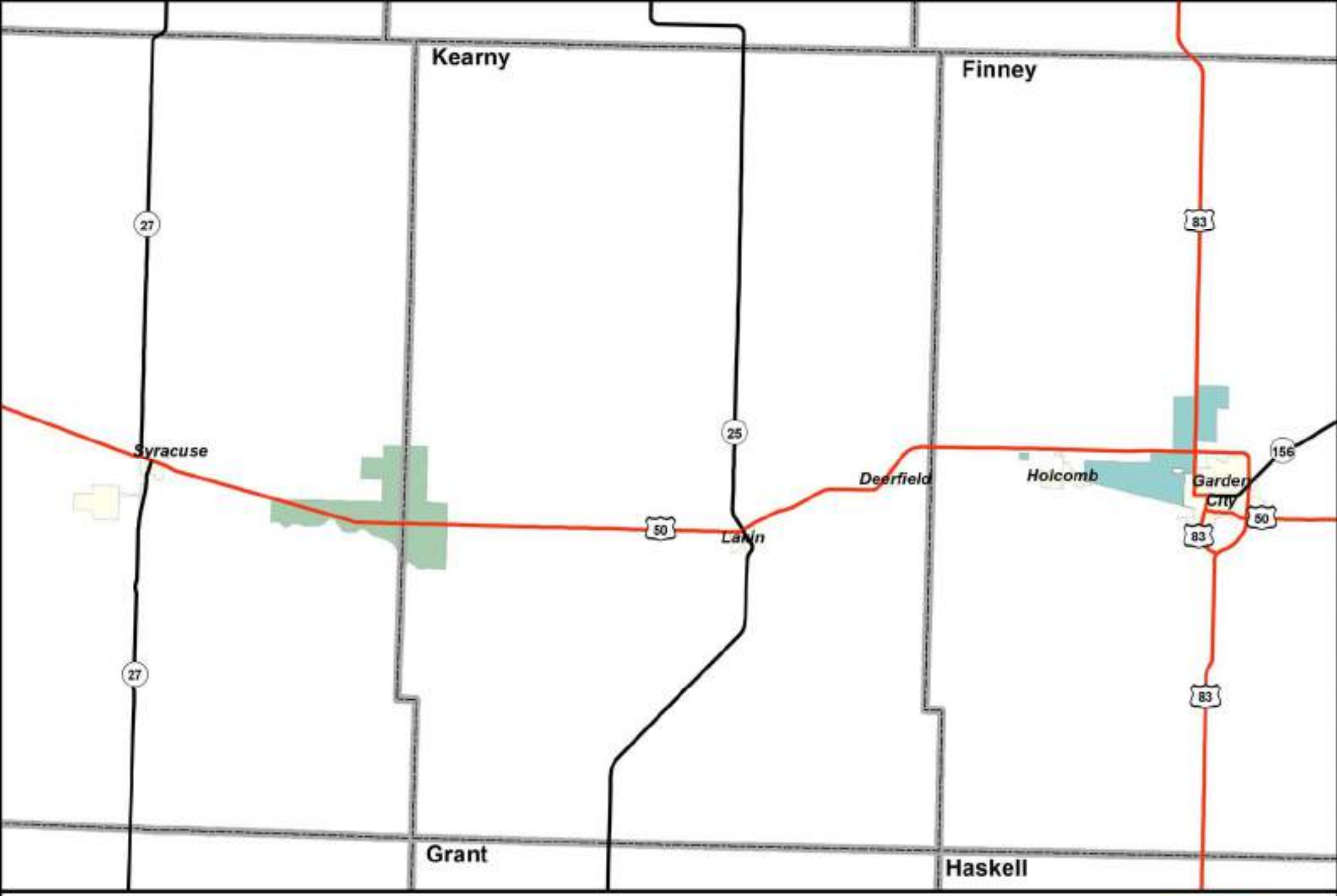
N

0 1.25 2.5 0 7.5 10 Miles

Data Sources: US Census Bureau, KS Adjutant General, Kansas Rural Water Association

Date: 1/8/2014

Kansas
Adjutant General
Division of Emergency Management



Rural Water Districts
Kearny County, KS

Interstates
US Highways
Kansas Highways
County Boudaries
Cities (Census 2010)

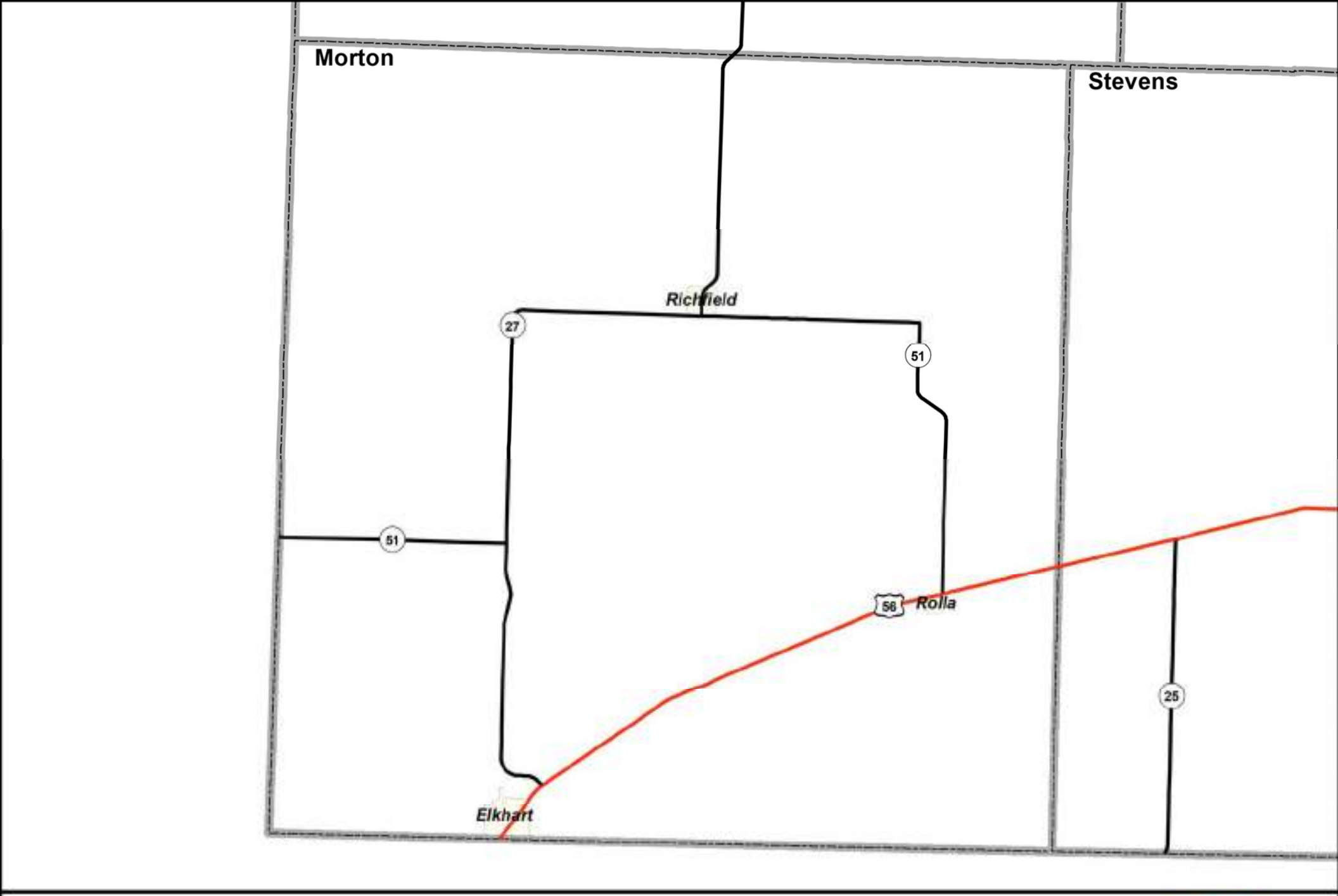
N

0 1.25 2.5 5 7.5 10 Miles

Data Sources: US Census Bureau, KS Adjutant General, Kansas Rural Water Association

Date: 1/8/2014

Kansas
Adjutant General
Division of Emergency Management



Rural Water Districts
Morton County, KS

Interstates
US Highways
Kansas Highways
County Boudaries
Cities (Census 2010)

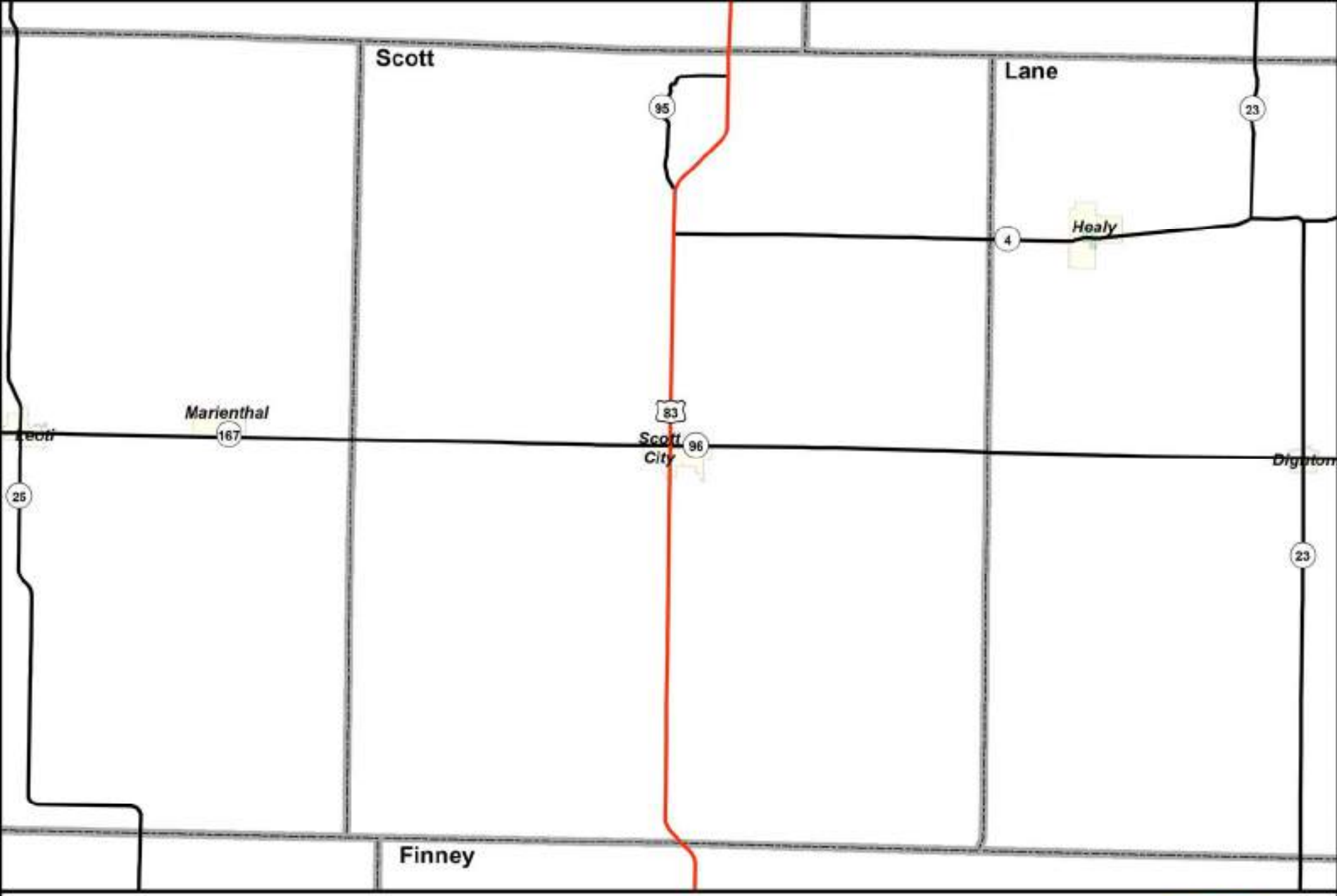
N

0 1 2 4 6 8 Miles

Data Sources: US Census Bureau,
KS Adjutant General,
Kansas Rural Water Association

Date: 1/8/2014

Kansas
Adjutant General
Division of Emergency Management



Rural Water Districts
Scott County, KS

Interstates
US Highways
Kansas Highways
County Boudaries
Cities (Census 2010)

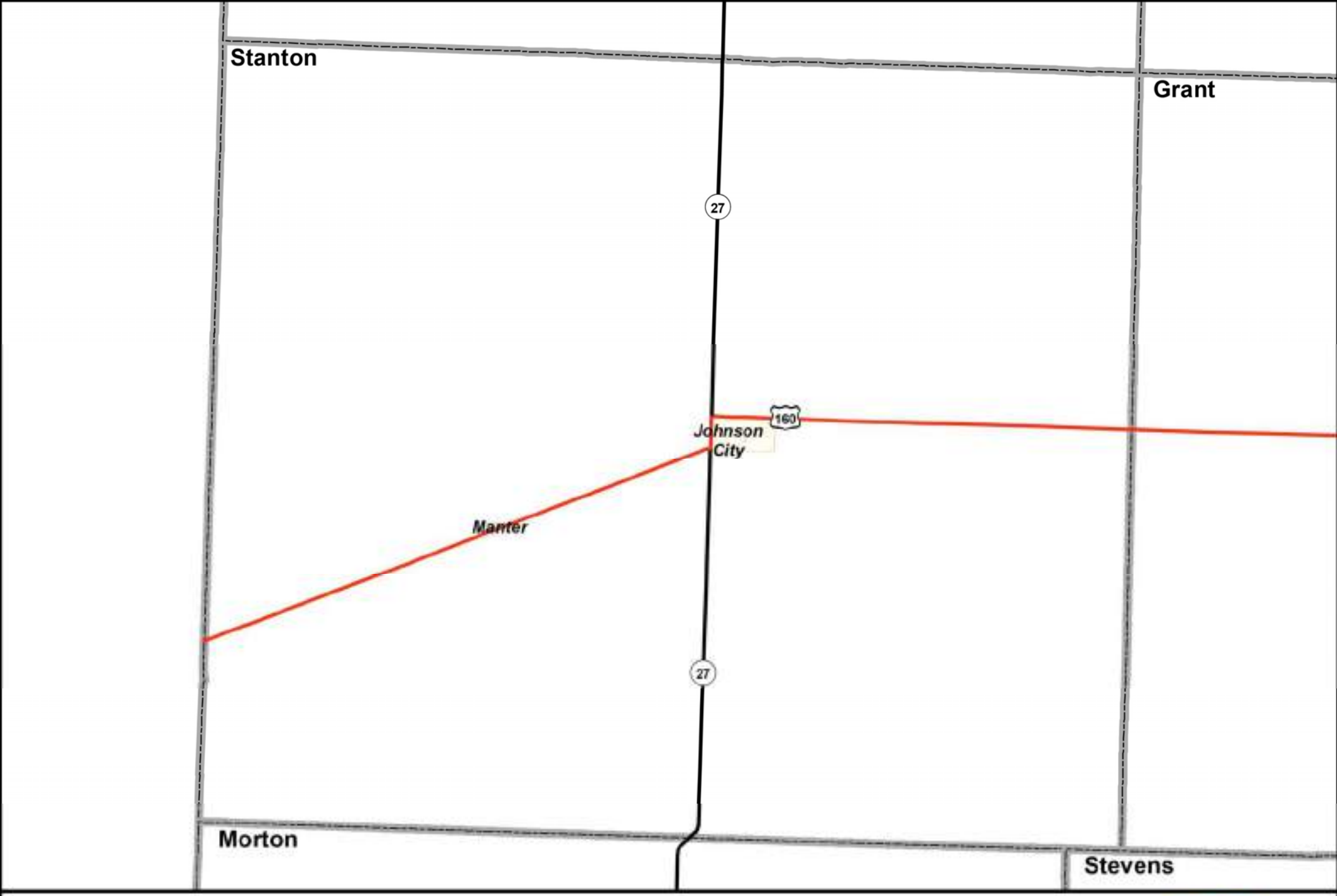
N

0 1 2 4 6 8 Miles

Data Sources: US Census Bureau,
KS Adjutant General,
Kansas Rural Water Association

Date: 1/8/2014

Kansas
Adjutant General
Division of Emergency Management



Rural Water Districts
Stanton County, KS

Interstates
US Highways
Kansas Highways
County Boudaries
Cities (Census 2010)

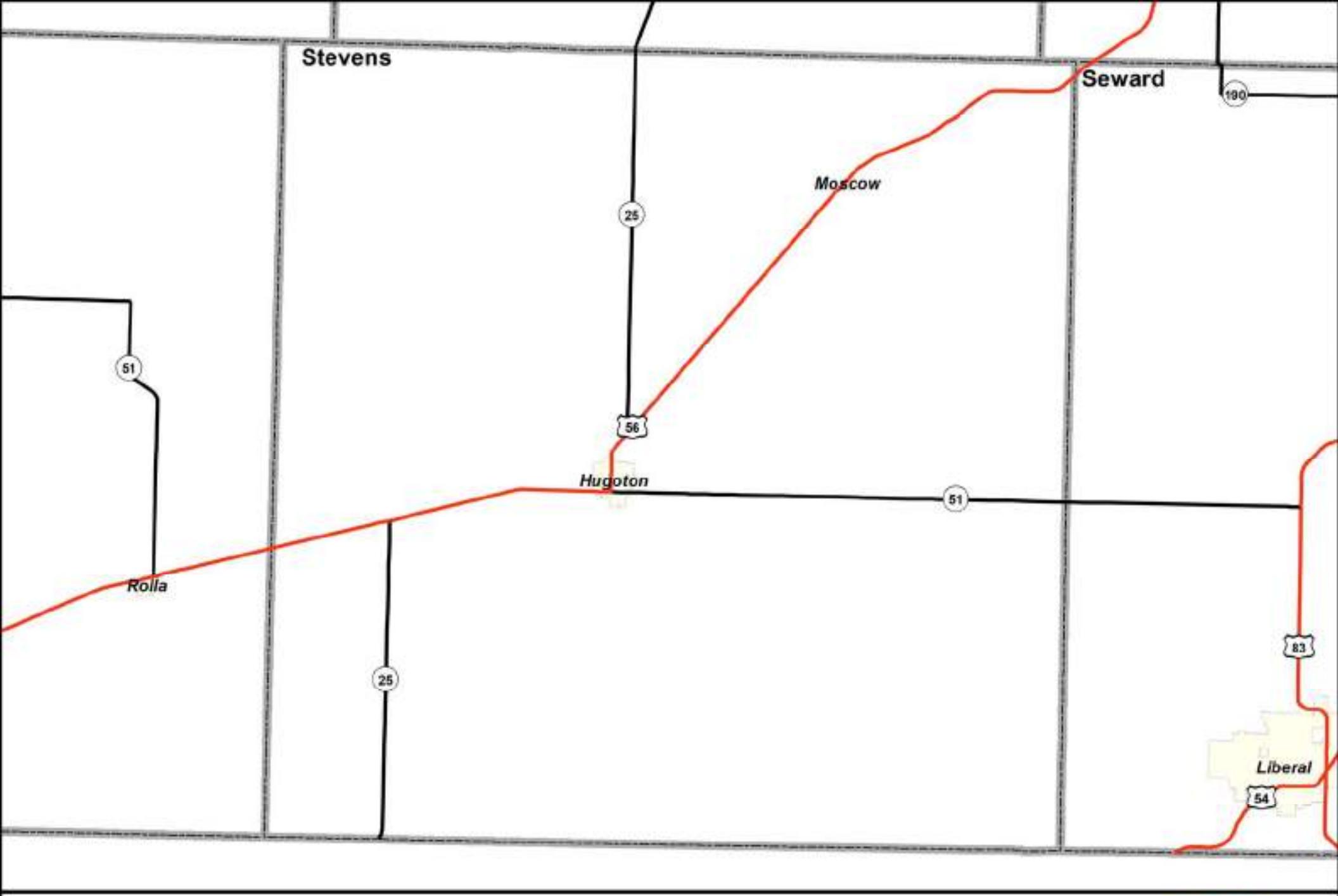
N

0 0.75 1.5 3 4.5 6 Miles

Data Sources: US Census Bureau, KS Adjutant General, Kansas Rural Water Association

Date: 1/8/2014

Kansas
Adjutant General
Division of Emergency Management



Rural Water Districts
Stevens County, KS

Interstates
US Highways
Kansas Highways
County Boudaries
Cities (Census 2010)

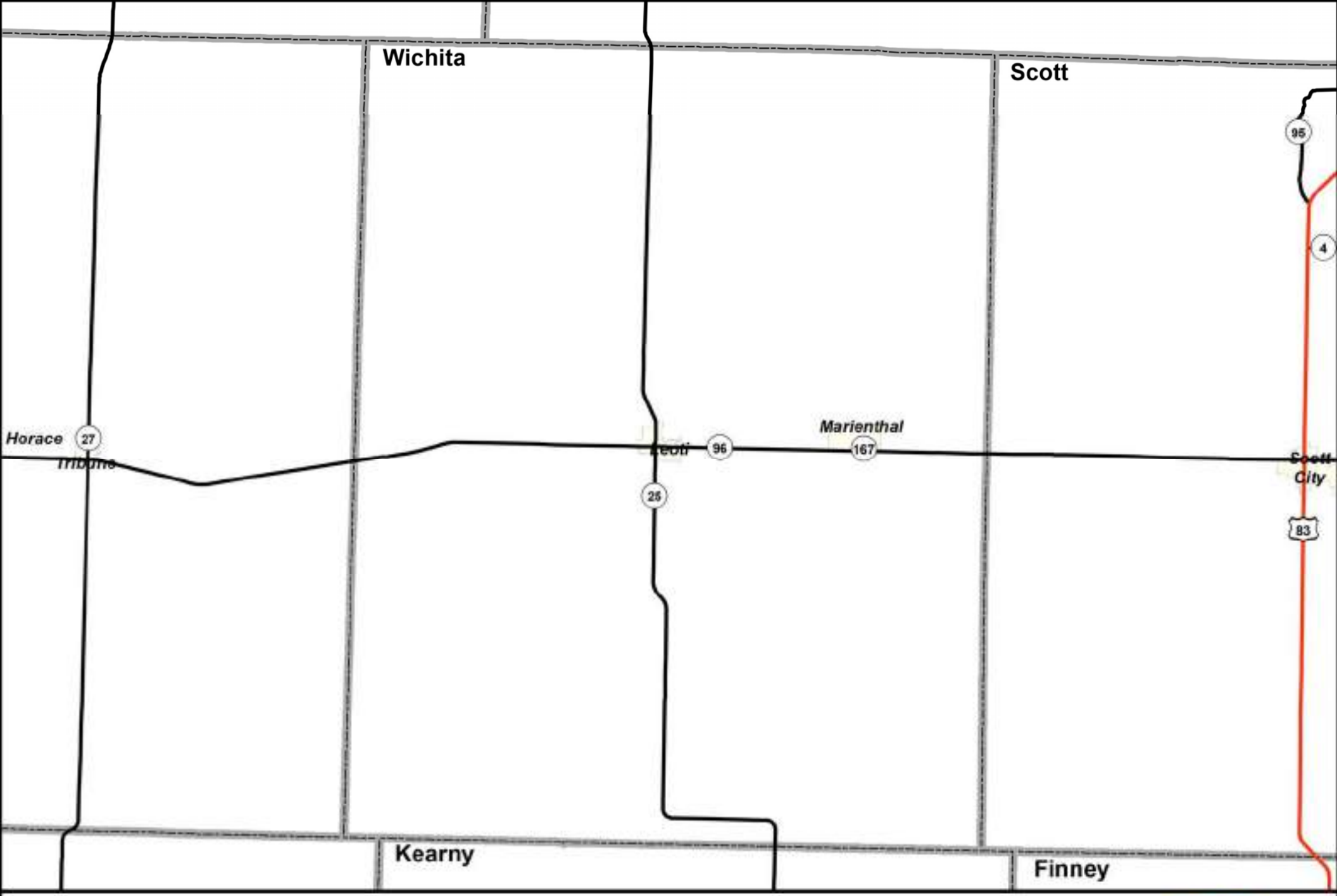
N

0 1 2 4 6 8 Miles

Data Sources: US Census Bureau, KS Adjutant General, Kansas Rural Water Association

Date: 1/8/2014

Kansas
Adjutant General
Division of Emergency Management



Rural Water Districts
Wichita County, KS

Interstates
US Highways
Kansas Highways
County Boudaries
Cities (Census 2010)

N

0 1 2 4 6 8 Miles

Data Sources: US Census Bureau, KS Adjutant General, Kansas Rural Water Association

Date: 1/8/2014

Kansas
Adjutant General
Division of Emergency Management

2.17 REGIONAL THREATENED AND ENDANGERED SPECIES

The Endangered Species Act (ESA) established a Federal program to conserve, protect, and restore threatened or endangered plants and animals, as well as their habitats. ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened or endangered species. Jurisdictions using funding from the Federal government cannot authorize any actions that jeopardize the existence of an endangered or threatened species, or result in the destruction of habitats for these species. The following provide definitions for endangered and threatened species:

- **Endangered species:** any species of wildlife whose continued existence as a viable component of the state's wild fauna is determined to be in jeopardy. That term shall also include any species of wildlife determined to be an endangered species pursuant to Pub. L. No. 93-205 (December 28, 1973), the Endangered Species Act of 1973, and amendments thereto

- **Threatened species:** any species of wildlife which appears likely, within the foreseeable future, to become an endangered species. That term shall also include any species of wildlife determined to be a threatened species pursuant to Pub. L. No. 93-205 (December 28, 1973), the Endangered Species Act of 1973, and amendments thereto.

The following table is a list of the endangered or threatened species for the region.

- Arkansas Darter (Etheostoma cragini)
- Least Tern (Sterna antillarum)
- Lesser Prairie Chicken (Tympanuchus pallidicinctus)
- Whooping Crane (Grus americana)

3.0 RISK ASSESSMENT

3.1 INTRODUCTION

44 CFR 201.6(C) Plan content. The plan shall include the following: (2) risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

The ultimate purpose of this Hazard Mitigation Plan is to minimize the loss of life and property in the planning region. In order to accomplish this all relevant hazards, potential vulnerabilities and exposures for the region have been identified. Once potential hazards, vulnerabilities and exposure have been identified communities within the region are able to conceptualize their potential risks as part of a risk assessment process. Based on this understanding of risk, communities can then develop a strategy to identify and prioritize mitigation action to defend against these potential risks. The following table presents a definition of terms used within this section.

Definition of Terms

Term	Definition
Hazard	A potential source of injury, death or damage
Vulnerability	Susceptibility to injury, death or damage
Exposure	People and property within the area the potential hazard could affect
Risk	Function of potential hazard, vulnerability and exposure, it is the likelihood of a hazard event resulting in injury, death or damage
Risk Mitigation	A systematic reduction in the exposure and vulnerability to a potential hazard

3.2 METHODOLOGY

The risk assessment for southwest Kansas followed the methodology described in the FEMA "Local Mitigation Planning Handbook" (March 2013). FEMA recommends the following steps be taken, with each step described in further detail in the following sections:

Each step is described in detail in the following sections, with Inventory Assets and Estimate Losses being combined into Hazard Vulnerability and Impact.

3.3 IDENTIFY POTENTIAL HAZARDS

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.

The hazard identification was compiled by investigating the various hazard occurrences within the southwest Kansas region. The HMPC identified 21 natural hazards that may affect the planning area and organized these hazards to be consistent with the Kansas Hazard Mitigation Plan (2013). These hazards are listed below and profiled in further detail in the next sections.

- Agricultural Infestation
- Civil Disorder
- Dam/Levee Failure
- Drought
- Earthquake
- Expansive Soils
- Extreme Temperatures
- Flood
- Hailstorm
- Hazardous Materials
- Land Subsidence
- Landslide
- Lightning
- Major Disease Outbreak
- Radiological
- Soil Erosion and Dust
- Terrorism/Agri-terrorism
- Tornado
- Utility/Infrastructure Failure
- Wildfire
- Wind Storm
- Winter Storm

For purposes of this multi-jurisdictional plan, hazards were identified initially by county to include all participating jurisdictions within that county, and then expanded to a regional basis.

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

3.4 PROFILE HAZARD EVENTS

Based on the identification of potential hazards, each hazard is profiled to provide data concerning previous occurrences, the probability of future occurrence and the threat to the planning area. As southwest Kansas is generally uniform in terms of climate, topography, building characteristics and development trends, overall hazards and vulnerability do not vary greatly across the planning area. Weather-related hazards such as drought, extreme temperatures, hail, tornados, windstorms and winter storms affect the entire planning area. As such, one general profile will be created for these hazards. However, some hazards such as dam and levee failure, flood and landslide may have local variances and multiple profiles may be developed if the risk does not match with the entire planning area.

For each identified hazard the following information is provided:

- Hazard Description: a general discussion of the hazard and includes information on potential warning time, the potential duration of the event, and potential impacts
- Hazard Location: the geographic extent or location of the hazard in the planning area
- Previous Occurrences and Extent: information on historic incidents and their impacts
- Hazard Vulnerability and Impact: discussion of the vulnerability of the region, or specific jurisdiction as appropriate, and potential impacts of identified hazards
- Future Development: potential results of future development related to hazards
- Probability of Future Occurrence: frequency of past events used to gauge the likelihood of future occurrences
- Consequence Analysis: analysis the potential impacts using set criteria

Calculated Priority Risk Index

The southwest Kansas HMPC used the calculated priority risk index (CPRI) methodology to prioritize each of the identified hazards. CPRI prioritization considers the following four elements of risk:

- Probability
- Magnitude/Severity
- Warning Time
- Duration

The following tables provide a summary for each of the risk elements, including a rationale behind each numerical rating.

	Rating	Rating Parameters
Probability	**4** Highly Likely	Event is probable within the calendar year
		Event has up to 1 in 1 year chance of occurring (1/1=100%)
		History of events is greater than 33% likely per year
		Event is "Highly Likely" to occur
	3 Likely	Event is probable within the next three years
		Event has up to 1 in 3 years chance of occurring (1/3=33%)
		History of events is greater than 20% but less than or equal to 33% likely per year
		Event is "Likely" to occur
	2 Occasional	Event is probable within the next five years
		Event has up to 1 in 5 years chance of occurring (1/5=20%)
		History of events is greater than 10% but less than or equal to 20% likely per year
		Event could "Possibly" occur
	1 Unlikely	Event is possible within the next 10 years
		Event has up to 1 in 10 years chance of occurring (1/10=10%)
		History of events is less than or equal to 10% likely per year
		Event is "Unlikely" but is possible of occurring

	Rating	Rating Parameters
Magnitude /Severity	**4** Catastrophic	Multiple deaths
		Complete shutdown of facilities for 30 or more days
		More than 50 percent of property is severely damaged
	3 Critical	Injuries and/or illnesses result in permanent disability
		Complete shutdown of critical facilities for at least two weeks
		25–50 percent of property is severely damaged
	2 Limited	Injuries and/or illnesses do not result in permanent disability
		Complete shutdown of critical facilities for more than one week
		10–25 percent of property is severely damaged
	1 Negligible	Injuries and/or illnesses are treatable with first aid
		Minor quality of life lost
		Shutdown of critical facilities and services for 24 hours or less
		Less than 10 percent of property is severely damaged

	Rating	Rating Parameters
Warning Time	**4**	Less than 6 hours
	3	6-12 hours
	2	12-24 hours
	1	24+ hours

	Rating	Rating Parameters
Duration	**4**	More than 1 week
	3	Less than 1 week
	2	Less than 1 day
	1	Less than 6 hours

Using the rankings described in the tables above, the following weighted formula was used to determine each hazard's CPRI:

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

When discussing probability for each of the identified hazards it is important to note that while many events occur frequently they often result in little measurable impact. For example, data suggests that on average lighting strikes the earth 2,000,000 times a year, however a majority of these strikes cause little impact. As such, when discussing the probability for each hazard the discussion will be framed by the probability of an event that has a measurable, large scale or detrimental impact, as appropriate for each hazard. In addition, it is important to note that the occurrence of many, if not all, of the hazard events cannot be predicted with certainty.

Based on their CPRI, each hazard was assigned a planning significance category. 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 Range Planning Significance

	CPRI Range	
Planning Significance	**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 prioritization of planning effort 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 previous CPRI ratings for each county. Based on discussions with the HMPC, the CPRIs were reviewed and approved or modified as required.

County Specific Hazard CPRI Planning Significance

	Grant	Greeley	Hamilton	Kearny	Morton	Scott	Stanton	Stevens	Wichita
Agricultural Infestation	1.60	1.60	2.50	1.60	1.60	1.60	2.80	1.75	3.10
Civil Disorder	1.45	1.75	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Dam and Levee Failure	2.05	1.40	2.13	2.20	2.05	2.05	1.75	2.20	1.45
Drought	2.50	3.25	2.80	2.50	2.50	2.50	3.25	2.50	2.80
Earthquake	1.45	1.45	1.75	1.75	1.75	1.45	1.45	1.45	1.45
Expansive Soils	1.30	1.30	1.75	1.30	1.30	1.30	1.30	1.30	1.30
Extreme Temperature	2.55	2.65	1.95	2.40	1.65	1.65	2.50	1.65	2.50
Flood	1.65	2.35	2.10	2.85	2.85	2.85	1.55	2.10	1.65
Hailstorm	3.25	3.70	2.80	3.10	3.10	3.25	3.40	3.40	3.25
Hazardous Materials	1.85	1.75	1.85	1.90	1.90	1.90	1.85	1.85	1.85
Land Subsidence	1.45	1.45	1.60	1.45	1.45	1.45	1.45	1.45	1.45
Landslide	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.30	1.45
Lightning	1.45	1.90	1.45	1.45	1.45	1.45	1.90	1.90	1.90
Major Disease Outbreak	1.60	2.65	1.60	1.60	1.60	1.60	1.90	1.90	1.90
Radiological	1.75	1.85	1.75	1.75	1.75	1.75	1.75	1.75	1.75
Soil Erosion & Dust	1.75	2.45	1.75	1.75	1.75	1.75	2.80	1.75	1.75
Terrorism, Agri-Terrorism	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
Tornado	2.95	3.25	2.95	2.65	2.95	2.95	2.65	2.65	3.10
Utility / Infrastructure Failure	2.60	2.75	2.00	2.00	2.00	2.60	3.60	2.40	3.15
Wildfire	3.05	2.40	3.20	2.75	2.30	2.75	2.90	2.35	3.50
Windstorm	3.20	3.20	2.90	3.10	3.20	3.20	3.20	2.90	3.20
Winter Storm	3.30	3.25	3.30	3.20	3.20	2.85	3.40	2.55	3.30

Based on the above noted county specific CPRIs, a regional CPRI was calculated for the region. The following table summarizes CPRI rating for each identified hazard.

Hazard CPRI Planning Significance

Hazard	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Agricultural Infestation	1.89	2.22	1.11	4.00	2.02
Civil Disorder	1.00	1.00	4.00	1.00	1.48
Dam and Levee Failure	1.28	2.33	2.00	3.44	1.92
Drought	3.11	2.56	1.11	4.00	2.73
Earthquake	1.00	1.33	4.00	1.00	1.55
Expansive Soils	1.11	1.00	1.00	4.00	1.35
Extreme Temperature	2.67	1.56	1.11	3.33	2.17
Flood	2.22	2.11	2.11	2.67	2.22
Hailstorm	4.00	3.00	3.00	1.00	3.25
Hazardous Materials Event	1.33	1.67	4.00	1.56	1.86
Land Subsidence	1.00	1.11	1.89	4.00	1.47
Landslide	1.00	1.00	3.89	1.00	1.43
Lightning	1.44	1.00	4.00	1.00	1.65
Major Disease Outbreak	1.33	2.22	1.00	4.00	1.82
Radiological Event	1.00	1.11	4.00	3.78	1.76
Soil Erosion & Dust	2.22	1.33	1.11	3.78	1.94
Terrorism, Agri-Terrorism	1.00	2.00	4.00	1.00	1.75
Tornado	3.22	2.67	3.67	1.00	2.90
Utility / Infrastructure Failure	2.44	2.11	4.00	2.33	2.57
Wildfire	3.11	2.00	4.00	2.00	2.80
Windstorm	4.00	2.56	2.44	1.89	3.12
Winter Storm	3.78	2.78	2.11	3.00	3.15

In general, the average CPRI for each identified hazard remained similar to the calculated CPRI for each participating county, both for their previous planning effort and this plan update. Notable changes for calculated CPRIs include the Terrorism/Agri-Terrorism CPRI being lowered for each county due to no historical events and the addition of Civil Disorder to all counties.

Emergency Management Accreditation Program Consequence Analysis

The Emergency Management Accreditation Program (EMAP) is a voluntary review process for local emergency management program. EMAP accreditation is a means of demonstrating that a program meets national standards for emergency management programs. In an effort to foster EMAP accreditation, a consequence analysis of the potential for detrimental impacts of hazard was conducted. In this analysis the potential impacts of all 21 of the above referenced hazards have been addressed in regards to:

- Health and safety of persons in the area of the incident
- Responders

- Continuity of Operations
- Property, Facilities, and Infrastructure
- Delivery of Services
- Environment
- Economic Conditions
- Public Confidence in Governance

Available data and estimations of potential future events for each of the identified hazards was used to provide guidance for a consequence analysis. The ranking elements are categorized as Minimal, Moderate, or Severe, with a methodology for the rankings provided in the following table.

EMAP Ranking Methodology

Impact On	Minimal	Moderate	Severe
Public	Less than 5 people	Between 5 to 14 people	15 people or greater
Responders	Less than 5 people	Between 5 to 14 people	15 people or greater
Continuity of Operations	0 days	1 to 7 days	8 or greater days
Delivery of Services	Less than 1 day	1 to 7 days	8 or greater days
Property, Facilities, & Infrastructure	Less than $1.37 per capita	$1.37 to $10.00 per capita	Greater than $10.01 per capita
Environment	Less than 10%	10% to 20%	Greater than 20.01%
Economy	Less than 8% unemployment	8% to 15% unemployment	Greater than 15% unemployment
Public Confidence	Less than 1%	1.0% to 10%	Greater than 10.01%

The ratings are meant to be only a guide due to the variances that could apply such as population, location, time, hazard type, and the amount of jurisdictions within the hazard area. The results of the EMAP consequence analysis are presented in each hazard profile's Consequence Analysis Section.

3.5 REGIONAL VULNERABILITY ASSESSMENT

(ii) A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:

(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;

(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate;

(C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

(iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

Each identified hazard is detailed to meet the above stated criteria, including potential regional variances. For these variances, where the risk may vary on a local basis, a discussion is included identifying the unique risk or concern under the relevant hazard. In addition, a complete discussion of regional population, business, land use, special needs and development trends as part of the regional vulnerability assessment is presented in Section 2.

3.6 HISTORICAL DISASTER DECLARATIONS

The HMPC reviewed federal and state disaster declarations to assist in hazard identification. Federal and state declarations may be enacted when local governments are unable to cope with the magnitude of an event. In those cases a state disaster declaration may be issued, allowing for state assistance. In more extreme cases, when both the local and state governments' abilities are inadequate; a federal disaster declaration may be issued allowing federal assistance. These federal disaster declarations may be issued through a variety of agencies based on the scale and sectors affected.

The following ten year information on past declared disasters is presented to provide a historical perspective on potential hazards that could impact southwest Kansas. The information was obtained from the FEMA and KDEM. Many of the disaster events reported in the following tables were multi-regional or statewide. As a result, the reported costs do not solely reflect losses to southwest Kansas. Further discussion of disasters and events may be found under the relevant hazard in the following sections.

Major Disaster Declarations

Declaration Number	Declaration Date*	Disaster Description	Regional Counties Involved	Disaster Cost**
4150	10/22/2013 (7/22/2013 - 08/16/2013)	Severe Storms, Winds, Tornados and Flooding	Hamilton	$11,412,827
4010	07/29/2011 (05/19-06/04/2011)	Severe Storms, Strat-Line Winds, Tornados and Flooding	Hamilton, Morton and Stanton	$8,259,620
1675	01/07/2007 (4/14-4/15/2012)	Severe Winter Storm	Grant, Greeley, Hamilton, Kearny, Morton, Scott, Stanton, Stevens and Wichita	$315,201,639

Sources: FEMA and Kansas Division of Emergency Management

* Incident dates are in parentheses.

** Disaster costs include Public Assistance and Individual Assistance for all affected counties, including those not listed

In addition, the following table presents Emergency Declarations for regional counties.

Emergency Declarations

Declaration Number	Declaration Date	Disaster Description	Regional Counties Involved	Disaster Cost
3282	12/12/2007	Severe Winter Storms	All	N/A
3236	9/1/0/2005	Hurricane Katrina Evacuation	All	N/A

Sources: FEMA and Kansas Division of Emergency Management

3.7 HAZARD PROFILES

Each identified hazard is profiled in this section, with the level of detail varying based on available information. Sources of information have been generally cited in the above sections and are specifically cited in the detailed hazard profiles below.

Each profile describes the hazard and its location, previous occurrences, potential impact, and its probability of future hazard events. Additionally, the profiles explore regional vulnerability analysis, estimates of potential losses, development in hazard prone areas and the hazard impact overview. The magnitude of the impact caused by a hazard event (actual and perceived) is related directly to the vulnerability of the people, property, and the environment. This is a function of when the event occurs, the jurisdictions and community sectors affected, the resilience of the community, and the effectiveness of the emergency response and disaster recovery efforts.

As this is an update and consolidation of previous planning efforts, for this 2014 Hazard Mitigation update each hazard from each participating jurisdiction was reviewed and updated as indicated and required. For the update, each profile was updated with additional historical impact information, where available. The vulnerability assessment and estimates of potential losses have been expanded for all hazards addressed in the plan where sufficient data is available. In addition, statewide flood and earthquake losses have been quantified using HAZUS- MH 2.1.
With each update of this plan, new information will be incorporated to provide for better evaluation and prioritization of the hazards that affect southwest Kansas.

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

3.7.1 AGRICULTURAL INFESTATION

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Agricultural Infestation	1.89	2.22	1.44	4.00	**2.02**

Description

Agricultural infestation is a naturally occurring infection of crops or livestock that may cause them to be unusable. Numerous factors influence the severity and longevity of agricultural infestations, including rainfall amount, drought conditions, seasonal patterns, and movement of materials. Typical causes can include:

- Fungus
- Insects
- Rodents and vermin
- Transmissible animal diseases

A reasonable level of agricultural infestation is expected by regional farmers and ranchers who have readily available methods to mitigate against the impact. However, if levels of routine infestation rapidly increase, or a novel form of infestation were to appear, normal methods of mitigation may fail to control the outbreak.

The onset of agricultural infestation can be rapid and controlling the rate of spread is important to limiting impacts. Methods to limit the rate of spread include:

- Early harvest
- Crop destruction
- Culling of a herd
- Quarantine

The duration of an infestation depends on the degree to which the infestation is controlled from the onset, but is generally over a period of weeks and months. The warning time of an infestation is affected by the timely monitoring and reporting of potential outbreaks by both the community, industry groups and governmental agencies.

Animal Disease

The southwest region has a high number of cattle, 889,397 as of 2012 according to the USDA National Agricultural Statistics Service. Because cattle are both raised locally and imported into the region from other localities within Kansas and other states the potential for highly contagious diseases poses a threat to the regional economy. Currently the southwest region, and the state of Kansas, is Brucellosis, Tuberculosis and Pseudorabies free. However, of concern are two economically devastating animal diseases, foot and mouth disease and bovine spongiform encephalopathy (BSE). Infection with these, and other animal diseases, could result in a decline in milk production, spontaneous abortion, and animal death. It would not only affect farmer and

ranchers, but support and related industries as well. With a medium sized agricultural industry throughout the region, the potential for infestation of livestock poses a moderate risk to the regional economy.

According to the Kansas Department of Health & Environment, Bureau of Water, Livestock Waste Management the southwest region has 148 confined animal feeding operation (CAFOs) facilities with 300 or more animal units. There have been substantial changes in the animal production industry over the past several decades, with the total number of CAFOs decreasing through consolidation resulting in operations of increasing size. This is a potential concern as high concentration of animals in proximity enhances potential transmission of disease among members of the group. Many experts fear that intentional, criminal introduction of a disease such as foot and mouth would result in very rapid spread of the disease throughout the nation and could have very severe economic consequences to the industry. The following is a list of the number of CAFOs per county in the region:

- Grant: 12
- Greeley: 11
- Hamilton: 11
- Kearny: 12
- Morton:8
- Scott: 40
- Stanton: 13
- Stevens: 10
- Wichita: 15

Knowing where diseased and at-risk animals are, where they've been and when, is important to ensuring a rapid response when animal disease events take place. The Kansas Department of Agriculture (KDA), Division of Animal Health monitors and reports on animal reportable diseases. Producers are required by state law to report any of the reportable animal diseases. Additionally, the USDA and the KDA, Division of Animal Health have implemented the Animal Disease Traceability system. In order to aid in rapid reporting and identification of animal borne disease, this system establishes minimum national official identification and documentation requirements for the traceability of livestock. Animals moved interstate, unless otherwise exempt, must be officially identified and accompanied by an interstate certificate of veterinary inspection.

There are also several fatal diseases that can affect the deer or captive elk population in Kansas. These disease include Chronic Wasting Disease and Hemorrhagic Disease. There have been 48 positive cases of Chronic Wasting Disease found in Kansas since surveillance started in 1996. The exact number of deaths caused by Hemorrhagic Disease is not known, but generally 25 percent of the deer population affected with this disease die. There are no wildlife management tools or strategies available to prevent or control of these diseases other than the prevention of transport of infected deer.

Other diseases such as bovine tuberculosis and a host of detrimental parasites such as exotic lice, meningeal worms, flukes, and stomach worms are fatal to deer and are transmitted more efficiently

when deer are concentrated in a small area. 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 hunting economy in Kansas.

Crop Disease and Insect Infestation

The USDA 2012 Agricultural Census reports that the market value of agricultural products sold in in the region averaged approximately $4,011,532,000 for the year 2012. This accounts for approximately 21.7% of the state of Kansas average of $18,460,564,000 for the same year.

Field crops can be subject to infestation, including leaf rust, wheat streak mosaic, barley yellow dwarf virus, strawbreaker, and tan spot. According to the KDA, Plant Protection and Weed Control Division, the following are the highest risk crop pests to Kansas:

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

Additionally, both crops in the field and harvested crops may be subject to insect infestation. The estimated damage to stored grain from the lesser grain borer, rice weevil, red flour beetle, and rusty grain beetle in the United States is approximately $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:

- Ash Trees – Emerald Ash Borer
- Maple, Birch, Willow, Mimosa, Ash, Sycamore & Poplar Trees – Asian Longhorned Beetle
- Walnut Trees – Thousand Cankers

The Emerald Ash Borer, an emerald green beetle that is ½ inch long, is a pest of ash trees. This pest is responsible for the destruction of approximately 20 million ash trees in the United States and Canada. In 2012 the pest was confirmed at the Wyandotte County Lake in Wyandotte County, Kansas. Immediately after confirmation by USDA, the Kansas Secretary of Agriculture implemented an emergency intrastate quarantine for Wyandotte County. Financially, the United States risks an economic loss of $20 billion to $60 billion because of this pest. According to the 2011 Kansas Forest Action Plan ash trees are the third most common species of trees, with 56.1 million (60.8 million cubic feet) green and white ash found in Kansas.

The Asian Longhorned Beetle is an exotic insect that threatens a wide variety of hardwood trees. It has not been detected in Kansas yet.

The Thousand Cankers is newly recognized disease in 2008 and first noticed in the western U.S. Currently it is located in both the east and western parts of the United States. It has not been detected in Kansas. This disease is caused by a combination of a fungus and the walnut twig beetle. There are an estimated 26.2 million (35.3 million cubic feet) black walnut trees in Kansas.

Wildlife Pests

Kansas 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. Wildlife pests can include:

- Birds
- Deer
- Hogs
- Rodents

Many of these wildlife pests can be controlled through simple measures including fencing, netting, baiting, and herd management through culling. According to the USDA, a particular success story has been the control of feral hogs. Feral hogs caused an estimated $1.6 billion in damage to crops, lawns, wildlife habitat and by introducing diseases to domestic animals in 2011. It is estimated that in 2006, there were 2,500 feral hogs in Kansas. As of 2012 that figure has dropped to 1,000.

	Warning Time
Agricultural Infestation	1.11

	Duration
Agricultural Infestation	4.00

Hazard Location

The entire planning area may be affected by agricultural infestation. The following table presents regional information on farms, agricultural acreage and cattle.

Regional Farm Data, 2012

County	Number of Farms	Farm Acreage	Cropland Acreage	Pasture Acres
Grant	329	363,512	292,991	58,525
Greeley	262	497,397	449,149	39,792
Hamilton	397	635,157	473,192	149,897
Kearny	343	546,828	377,858	160,221
Morton	323	456,844	378,267	63,044
Scott	269	453,429	326,469	116,531
Stanton	278	429,179	371,240	41,630
Stevens	315	455,566	363,997	81,546
Wichita	265	463,779	355,255	93,683
Regional	2,781	4,301,691	3,388,418	804,871

Source: United States Department of Agriculture National Agricultural Statistics Service

Cattle and Crop Information, 2012

County	Cattle (number of head)	Corn for Grain (acres)	Corn for Silage (acres)	Wheat (acres)
Grant	216,959	47,834	6,547	105,557
Greeley	36,586	31,939	3,196	170,557
Hamilton	120,981	10,780	78,835	147,852
Kearny	74,039	22,959	2,935	130,786
Morton	20,603	28,394	-	134,488
Scott	223,521	34,315	10,626	129,420
Stanton	20,481	57,241	2,827	119,380
Stevens	37,666	115,242	4,167	75,044
Wichita	138,561	40,630	8,320	135,947
Regional	889,397	389,334	117,453	1,149,031

Source: United States Department of Agriculture National Agricultural Statistics Service
-: Data not reported

While rural areas within the region are more susceptible to crop and livestock infestation, urban and suburban areas are also at risk. Agricultural infestation does not cause damage to buildings or critical facilities.

Previous Occurrences and Extent

The following is a list of notable agricultural infestation events in southwest Kansas.

Summer 2012: Scrapie was found in two sheep at a regulatory slaughter test in Kansas. The sheep were from two unrelated flocks. There had not been any cases in Kansas for more than two years.

December 2009: Kansas State University Extension Office reported that mites were found in the wheat in Clark County to the immediate east of the region.

1989: Gray leaf spot of corn was first identified in the State in the Republican River Valley. The disease reached economic threshold levels by 1992 and has caused economic damages somewhere in the State every year from 1992 to 1998. In 1998, it was the most severe in northeast Kansas and in the irrigated areas of south central and southwest Kansas.

Hazard Vulnerability and Impact

The following table provides an indication of the potential magnitude of agricultural infestation, including disease and wildlife damage, to southwest Kansas.

Agricultural Infestation, Disease and Wildlife Crop Insurance Paid per County from 2010-2013

County	Annualized Crop Insurance Paid for Infestation Damages
Grant	$32,329
Greeley	$193,429
Hamilton	$76,861
Kearny	$18,460
Morton	$139,913
Scott	$53,297
Stanton	$122,492
Stevens	$595,441
Wichita	$65,851
Regional	$1,298,073

Source: USDA Risk Management Agency, 2012; and USDA National Agricultural Statistics Service, 2012

This table only reflects insured losses that were claimed. According to the 2011 Kansas Crop Insurance profile Report issued by the USDA Risk Management Agency, 82 percent of Kansas row crops were insured in 2011 (there is no information available for the 18 percent of uninsured crop losses). 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.

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.
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.

	Magnitude/Severity
Agricultural Infestation	2.22

Future Development

Data suggests that the acres of land in farms is slightly increasing in southwest Kansas, with a 4.9% increase from 2002 to 2012. However, the amount of land in the region is a fixed amount, and already a large percentage is used for agricultural purposes. As such, it is believed that the increase in farm acreage will slow over the coming years and the potential for this hazard to impact the region will be static.

Probability of Future Occurrences

The region experiences smaller scale agricultural losses every year as a result of naturally-occurring diseases that impact animals/livestock and crops. However, the occurrence of large scale, economically impactful infestations have not been recently documented in the region. Regionally $324,518 in insured losses are paid annually, a small percentage of $4,011,532,000 of agricultural products sold in 2012. However, due to the large agricultural base of the region it is

possible that occasional larger scale events that impact either a large area or result in much higher losses could occur.

	Probability
Agricultural Infestation	1.89

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Agricultural Infestation Consequence Analysis

Subject	Ranking	Impacts of Agricultural Infestation
Health and Safety of Persons in the Area of the Incident	Minimal	Impact for this incidence on the Health and Safety of Persons in the area would be minimal. If the infestation is unrecognized, then there is the potential for the food supply to be contaminated.
Responders	Minimal	Impact to responders would be minimal with protective clothing, gloves, etc as these diseases cause no risk to humans.
Continuity of Operations	Minimal	Minimal expectation of execution of the COOP.
Property, Facilities, and Infrastructure	Minimal	Localized impact to facilities and infrastructure in the incident area is minimal to non-existent.
Delivery of Services	Minimal	Impacts to the delivery of services would be non-existent to minimal. Impact could be larger depending on the extent of the contaminated crop/crop loss.
Environment	Minimal to Severe	Impact could be severe to the incident area, specifically, plants, trees, bushes, and crops.
Economic Conditions	Minimal to Severe	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 Governance	Minimal to Severe	Confidence could be in question depending on timeliness and steps taken to warn the producers and public, and treat/eradicate the infestation.

3.7.2 CIVIL DISORDER

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Civil Disorder	1.00	1.00	4.00	1.00	1.48

Description

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.

Civil disorder can take many shapes, including demonstrations, civil unrest, public disorder, and riots. These events may happen for a number of reasons, including:

- Economic hardships
- Social injustices
- Objections to organizations or governments
- Political grievances
- Ideological grievances

An event can be triggered by a single or combination of causes, with demonstrations ranging from simple, nonviolent protests to events that turn into full-scale riots. Most protesters are law-abiding citizens who intend that their protests be nonviolent, but some individuals or groups within an organized demonstration may have the intent to cause disruption, incite violence, destroy property, and/or provoke the authorities. Violence is often the result of demonstrators beginning to conduct unlawful or criminal acts and authorities enforcing the laws of the municipality, state, or nation.

A crowd is defined as a large number of persons gathered temporarily together. There are many types of crowds which are based on their reasons for getting together

- **Causal crowds**: This type has no common bond other than the immediate reason for being present. An example would be a football game or a symphony orchestra performance where the only bond is enjoyment.
- **Planned crowds**: Planned crowds are likely to be more organized. A leader will call a meeting to establish a goal in which members have a common interest.
- **Mob**: The extreme crowd behavior is a mob. A mob is a crowd whose members have lost their concern for law and authority and follow their leaders into unlawful and disruptive acts.

Normally, when a crowd is orderly, not violating any laws and not causing a threat to life or property it does not represent a problem. Crowds, however, are subject to control by skillful troublemakers and therefore capable of violence and disregard for law and order. If problems exist, they usually fall into the following 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.

In general, civil disorder has some important similarities. Most disturbances start from minor incidents and can spread quickly and gain in strength and force. Any crowd, regardless of its purpose, is a potentially violent group. As such, there is very little warning time for a crowd to turn violent. However, with effective law enforcement the duration of a civil unrest event would likely be very short.

	Warning Time
Civil Disorder	4.00

	Duration
Civil Disorder	1.00

Hazard Location

In the United States, 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.

With human-caused hazards such as this that can have multiple variables involved, increases in development and increases in the replacement cost of the built environment can be factors that increase the cost of the event. The cost for such an event is largely related to the location and the level of violence the crowd chooses.

Previous Occurrences and Extent

There have been no notable previous occurrences in southwest Kansas which could be described as Civil Disorder.

Hazard Vulnerability and Impact

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, the loss estimates will take into account a hypothetical scenario. **Please note that the 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. Temporary fences and gates were set up to provide checkpoints where police could control access to the area and check for alcohol. Crowds, estimated to be at 5,000 people, had been generally well-behaved in the fan zone, however people found ways to enter the zone without being checked for alcohol. Planned corridors to allow movement of emergency vehicles became impassable.
>
> **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:** Ten people required hospitalization for non-life threatening injuries. Numerous rioters had injuries that did not require hospitalization. The Police Department made 30 arrests during the riot. The majority were arrested for disturbing the peace, with additional arrests for public intoxication, breaking and entering, assault and theft. In total, three cars were burned. Windows were smashed in local businesses along the fan zone corridor, some of which were also looted. After event estimates suggested the losses due to vandalism, theft, and damage to property to be nearly $1 million.

	Magnitude/Severity
Civil Disorder	1.00

Future Development

Future development and population increases would tend to increase the likelihood of a civil disorder event, especially in larger cities regional. However, in general, the majority of the region is experiencing a population decline which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

While civil disorder is a fairly rare event, when they do occur they are extremely disruptive and difficult to control. However, it is considered unlikely that southwest Kansas will experience marches, protests, demonstrations, and gatherings in various cities and communities that could lead to some type of civil disorder. This assessment is based on the region's general lack of history of civil disturbance and the various human factors noted above.

	Probability
Civil Disorder	1.00

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Consequence Analysis of Civil Disorder

Subject	Ranking	Impacts of Civil Disorder
Health and Safety of Persons in the Area of the Incident	Severe	Impact could be severe for persons in the incident area.
Responders	Minimal to Severe	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	Minimal to Severe	Depending on damage to facilities/personnel in the incident area, re-location may be necessary and lines of succession execution.
Property, Facilities, and Infrastructure	Severe	Impact within the incident area could be severe for explosion, moderate to low for Hazmat.
Delivery of Services	Minimal to Severe	Delivery of services could be affected within and around the affected area especially if communications, road and railways, and facilities incur damage.
Environment	Minimal to Severe	Localized impact within the incident area could be severe depending on the type of human caused incident.
Economic Conditions	Minimal to Severe	Economic conditions could be adversely affected and dependent upon time and length of clean up and investigation.
Public Confidence in Governance	Minimal to Severe	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.

3.7.3 DAM AND LEVEE FAILURE

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Dam and Levee Failure	1.28	2.33	2.00	3.44	1.92

Description

A dam is defined by the National Dam Safety Act as an artificial barrier that impounds or diverts water and is more than 6 feet high and stores 50 acre feet or more or is 25 feet or more high and stores more than 15 acre feet. Dams are usually engineered to withstand a flood with a computed risk of occurrence. If a larger flood occurs, then that structure will likely be overtopped. If during the overtopping the dam fails or is washed out, the water behind it is released as a flash flood. Failed dams can create floods that are catastrophic to life and property because of the tremendous energy of the released water. However, dams are complicated structures, and it can be difficult to predict how a structure will respond to distress. Dams can fail for one or a combination of the following reasons:

- Overtopping caused by floods that exceed the capacity of the dam.
- Deliberate acts of sabotage.
- Structural failure of materials used in dam construction.
- Movement and/or failure of the foundation supporting the dam.
- Settlement and cracking of concrete or embankment dams.
- Piping and internal erosion of soil in embankment dams.
- Inadequate maintenance and upkeep.

There are two categories to describe dam failure.

- **Rainy day failure** involves periods of excessive precipitation leading to an unusually high runoff. This high runoff increases the reservoir of the dam and if not controlled, the overtopping of the dam or excessive water pressure can lead to dam failure. Normal storm events can also lead to rainy day failures if water outlets are plugged with debris or otherwise made inoperable.

- **Sunny day failures** occur due to poor dam maintenance, damage/obstruction of outlet systems, or vandalism. This is the worst type of failure and can be catastrophic because the breach is unexpected and there may be insufficient time to properly warn downstream residents.

Even though both types of failures can be disastrous, it can be assumed that a sunny day failure would be more catastrophic due to its unanticipated occurrence and the lack of time to warn residents downstream.

Over 95 percent of dams are non-federal, with most being owned by state governments, municipalities, watershed districts, industries, lake associations, land developers, and private citizens. Dam owners have primary responsibility for the safe design, operation, and maintenance

of their dams. They also have responsibility for providing early warning of problems at the dam, for developing an effective emergency action plan, and for coordinating that plan with local officials.

State-Regulated Dams

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 Division of Water Resources, 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, and monitoring dams that, if they failed, could cause loss of life, or interrupt public utilities or services

Dam classifications have been developed to describe the level of risk associated with dam failure. These classifications do not reflect the physical condition of the dams, but rather describe areas downstream of the dams that could be impacted in the event of failure, which is generally unlikely. The KDA-DWR classifies jurisdictional dams as follows:

- **Class A (low hazard**): A dam located in an area 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.

- **Class B (significant hazard)**: A "hazard class B dam" means a dam located in an area 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.

- **Class C (high hazard)**: A "hazard class C dam" shall mean a dam located in an area 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.

Levees

A levee is an artificial barrier, usually an earthen embankment, constructed along rivers to protect adjacent lands from flooding. Generally, a levee is subjected to water loading (a high water event) only a few days or weeks each year, unlike a dam that is retaining water most of the year. Floodwalls are concrete structures, often components of levee systems, designed for urban areas where there is insufficient room for earthen levees.

Levees are usually engineered to withstand a flood with a computed risk of occurrence. When a larger flood occurs and/or levees and floodwalls and their structures are stressed beyond their capabilities to withstand floods, levee failure can result in loss of life and injuries as well as damages to property, the environment, and the economy.

A levee breach results when a portion of the levee breaks away, providing an opening for water to flood the landward side of the structure. Such breaches can be caused by surface erosion due to water velocities, or they can be the result of subsurface actions. Levee overtopping is similar to dam overtopping in that the flood waters simply exceed the design capacity of the structure. Such overtopping can lead to erosion on the land side which can lead to breaching. In order to prevent this type land side erosion, many levees are reinforced with rocks or concrete.

For purposes of the levee failure hazard profile and risk assessment in this hazard mitigation plan, levees in Kansas will be discussed in four categories:

1. Levees in the United States Army Corps of Engineers (USACE) Levee Safety Program
2. FEMA Accredited Levees
3. Levees that are both in the USACE Levee Safety Program and Accredited by FEMA
4. All other levees

In terms of assessing risk, levees in categories 1, 2, and 3 all undergo or have undergone some sort of inspection, certification, or accreditation that indicates the level of protection and/or structural integrity of the levee system. However, the levees in the category 4 may not be regularly monitored or inspected.

Levees in the USACE Levee Safety Program

The USACE created the Levee Safety Program (LSP) in 2006 to assess the integrity and viability of levees and to make sure that levee systems do not present unacceptable risks to the public, property, and environment. Under the Levee Safety Program, USACE conducts levee inspections (routine, periodic and special event). During these inspections, deficiencies may be identified such as unsatisfactory culverts, non-compliant vegetation, encroachments, and animal burrows. USACE uses inspection findings to "rate" levee systems to determine compliance with operation

and maintenance requirements, understand the overall levee condition, and determine eligibility for federal rehabilitation assistance under P.L. 84-99.

According to the National Levee Database (NLD) managed by USACE, there are currently no identified levees in southwest Kansas.

FEMA Accredited Levees

Many levees shown on effective Flood Insurance Rate Maps (FIRM) were mapped in the 1970s and 1980s and have never been remapped by FEMA. Prior to 1986, levees were shown on FIRMs as providing protection from the base flood when they were designed and constructed in accordance with sound engineering practices. Since 1986, levees have been shown as accredited on FIRMs only when they meet the requirements of 44 CFR 65.10 "Mapping Areas Protected by Levee Systems", including certification by a registered professional engineer or a Federal agency with responsibility for levee design.

Levees that do not meet the requirements of 44 CFR 65.10 cannot be shown as accredited on a FIRM. Furthermore, floodplain areas behind the levee are at risk to base flood inundation and are mapped as high risk areas subject to FEMA's minimum floodplain management regulations and mandatory flood insurance purchase requirement.

In 2004, as it initiated work under the Flood Map Modernization Initiative (Map Mod), FEMA determined that analysis of the role of levees in flood risk reduction would be an important part of the mapping efforts. A report issued in 2005 noted that the status of the nation's levees was not well understood and the condition of many levees and floodwalls had not been assessed since their original inclusion in the NFIP. As a result, FEMA established policies to address existing levees.

FEMA Accredited levees generally fall into two types:

- Levees mapped on Digital Flood Insurance Rate Maps (DFIRM) since the Flood Map Modernization Initiative
- Levees, mapped prior to the Flood Map Modernization Initiative and are not mapped on DFIRMs.

As DFIRMs are developed, levees fall under one of the three following categories:

- **Accredited Levee** : With the exception of areas of residual flooding (interior drainage), if the data and documentation specified in 44 CFR 65.10 is readily available and provided to FEMA, the area behind the levee will be mapped as a moderate-risk area. There is no mandatory flood insurance purchase requirement in a moderate-risk area, but flood insurance is strongly recommended.

- **Provisionally Accredited Levee (PAL)**: If data and documentation is not readily available, and no known deficiency precludes meeting requirements of 44 CFR 65.10, FEMA can allow the party seeking recognition up to two years to compile and submit full documentation to show compliance with 44 CFR 65.10. During this two-year period of

provisional accreditation, the area behind the levee will be mapped as moderate-risk with no mandatory flood insurance purchase requirement.

- **De-Accredited Levees**: If the information established under 44 CFR 65.10 is not readily available and provided to FEMA, and the levee is not eligible for the PAL designation, the levee will be de-accredited by FEMA. If a levee is de-accredited, FEMA will evaluate the level of risk associated with each non-accredited levee through their Levee Analysis Mapping Procedures (LAMP) criteria to consider how to map the floodplain and which areas on the dry side of the levee will be shown as high risk. The mapping will then be updated to reflect this risk...

According to the Mid-Term Levee Inventory, regionally there are no counties with accredited levees in DFIRM.

FEMA Accredited Levees not Mapped on DFIRMs

Throughout the early days of the National Flood Insurance Program (NFIP), little guidance was available associated with the inclusion of existing levees. Decisions were made on whether to accredit hundreds of levees across Kansas. Because there were no levee standards and accreditation of a levee was left largely to the judgments of the study contractors, many levees were accredited as providing flood protection even though they would not meet the current NFIP levee standards as stated in 44 CFR 65.10.

During subsequent re-mapping, many of these levees were re-evaluated and accredited as providing flood protection, but do not meet the standards of 44 CFR 65.10. Additionally, some levees, originally indicated as accredited have never been re-evaluated. If levees are depicted on the paper FIRMS in counties that have not been re-mapped on DFIRMs, their protection level has not been re-evaluated. Until re-evaluation occurs, these levees are considered accredited.

This information was obtained by comparing the levees in the Mid-term Levee Inventory indicated as showing protection on the FIRM against the list of counties that have effective DFIRMs.

All Other Levees

There are also levees throughout the State that are intended to mitigate low-level flooding and/or protect agricultural land that are not in the USACE Levee Safety program. Additionally, since these levees are not intended to protect populations or development from flooding from the 1% annual chance flood, they are not, nor seek to be accredited by FEMA for flood insurance purposes. These levees may provide a false sense of security to residents behind these levees. Additionally, these levees may not be routinely inspected by levee owners. There is no agency with regulatory authority over these levees.

According to comparative analysis of the MLI and NLD, there are currently 39 levees that are not accredited by FEMA or in the USACE Levee Safety Program, none of which are located within the region. There are also likely many more levees, such as agricultural levees that have not been inventoried. Populations and development behind these levees could be considered to be at a

higher risk since there are no requirements for these levees to be routinely inspected and/or certified.

The inventory of levees has been compiled from the USACE NLD as well as the FEMA MLI. Please note that there may be some duplication as the names of the levees as well as the segmentation of the levees is not consistent in both inventories.

In general, dam and levee failures occur with some warning, with the exception of sunny day failures. Additionally, while the effects can be catastrophic, the duration is generally short.

	Warning Time
Dam and Levee Failure	2.00

	Duration
Dam and Levee Failure	3.00

Hazard Location

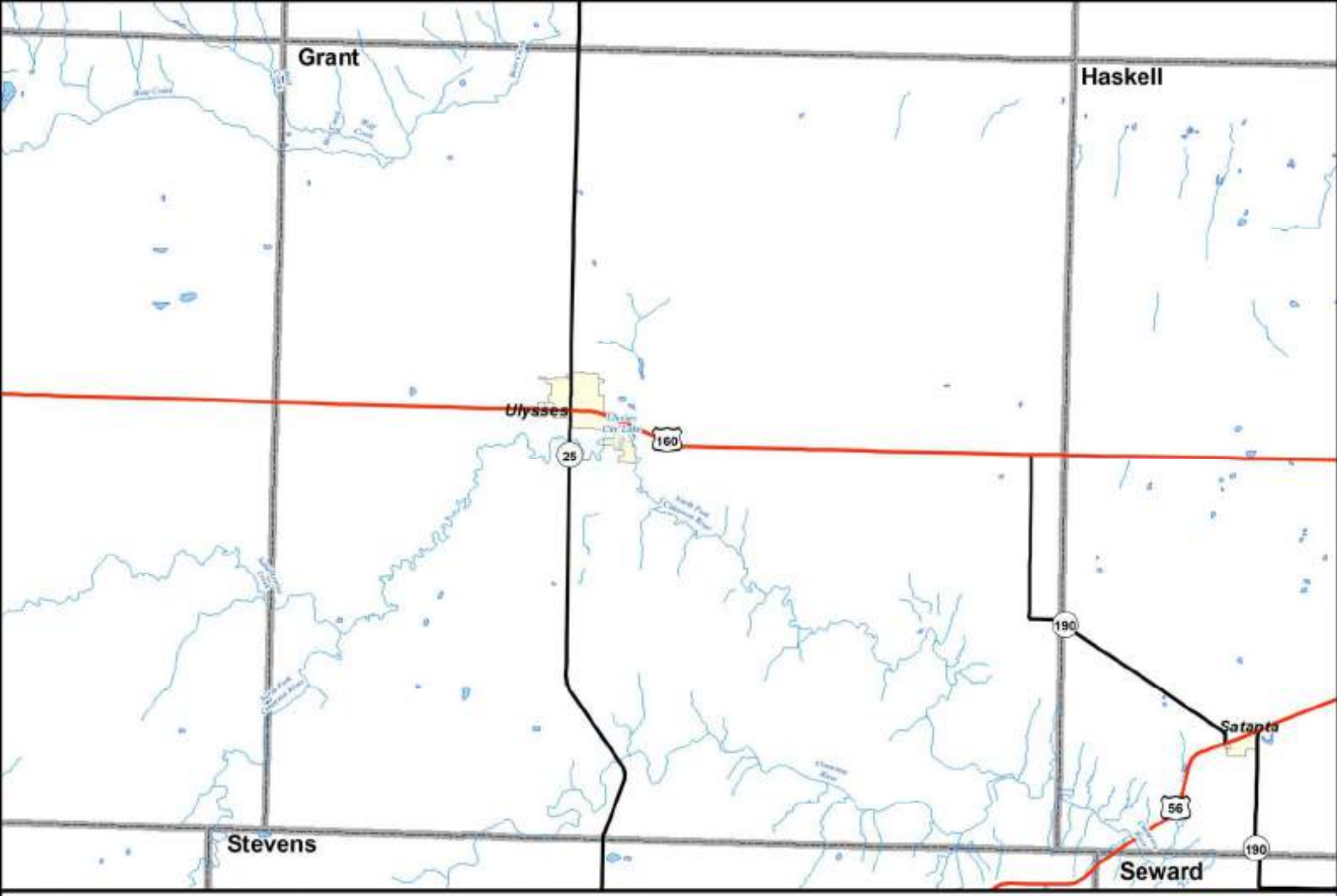
At the time this plan was developed there were 108 state-regulated jurisdictional dams in southwest Kansas. Of those, 2 were Class C (High Hazard Dams), 5 were Class B (Significant Hazard Dams), and 101 were Class A (Low Hazard Dams).

Number of State Regulated Dams by Hazard Class in Region

County	Low Hazard Dams	Significant Hazard Dams	High Hazard Dams	High Hazard Dams Without Emergency Action Plan	Total Dams
Grant	7	0	0	0	7
Greeley	4	0	0	0	4
Hamilton	31	1	0	0	32
Kearny	20	3	2	2	25
Morton	0	0	0	0	0
Scott	7	1	0	0	8
Stanton	12	0	0	0	12
Stevens	8	0	0	0	8
Wichita	12	0	0	0	12
Regional Total	101	5	2	2	108

Source: Kansas Department of Agriculture, Division of Water Resources, Water Structures Program, 2012

The following maps shows dam locations in participating counties and, if available, potentially impacted cities within southwest Kansas. In addition, available inundation maps for high hazard dams within the region have been included where available.



KS Department of Agriculture - High and Significant Hazard Dams

Grant County, KS

Hazard Class
Dams: Hazard Class
High
Significant

Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
Cities (Census 2010)

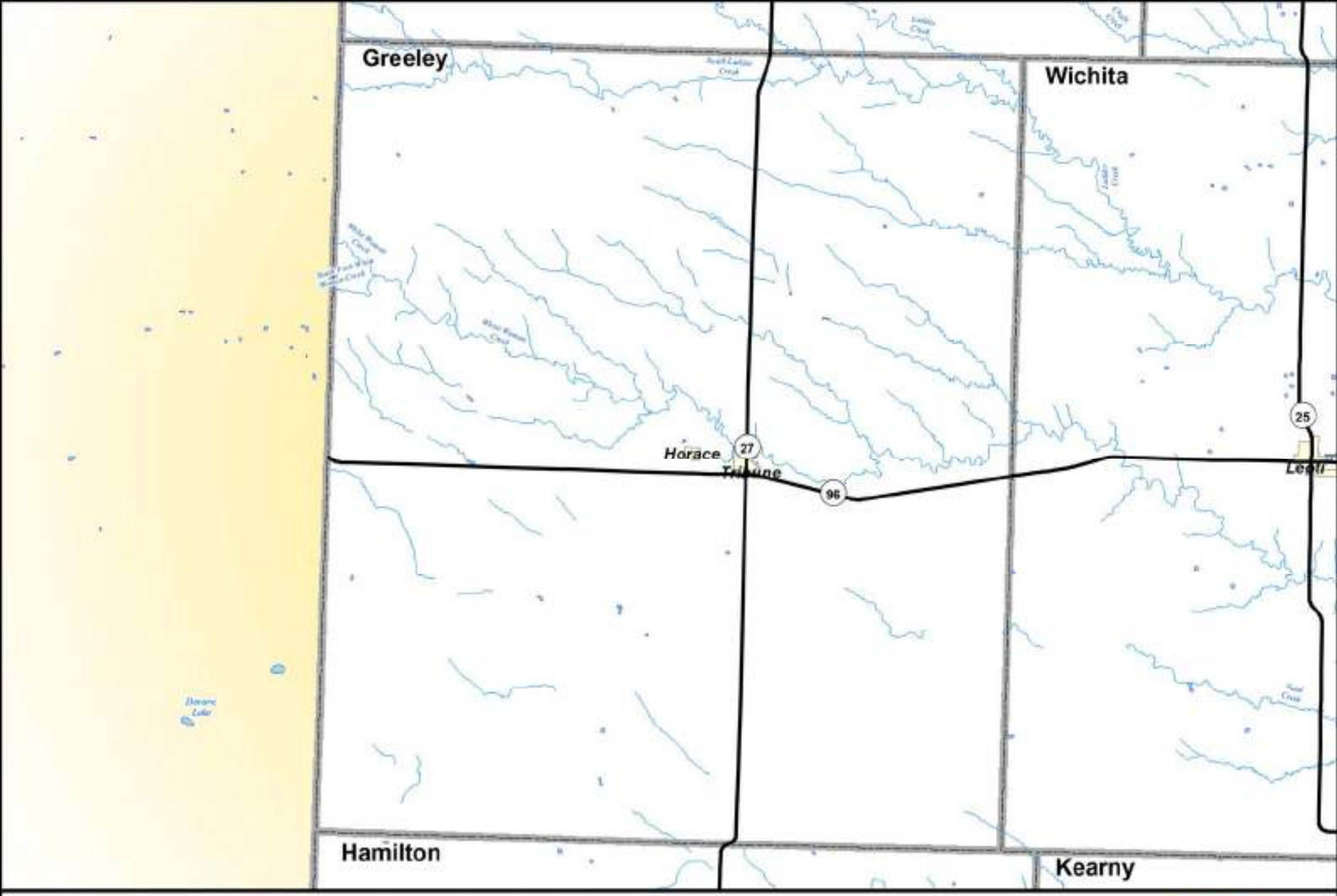
N

0 0.75 1.5 3 4.5 6 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General

Date: 10/9/2013

Kansas
Adjutant General
Division of Emergency Management



KS Department of Agriculture - High and Significant Hazard Dams

Greeley County, KS

Hazard Class
Dams: Hazard Class
High
Significant
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
Cities (Census 2010)

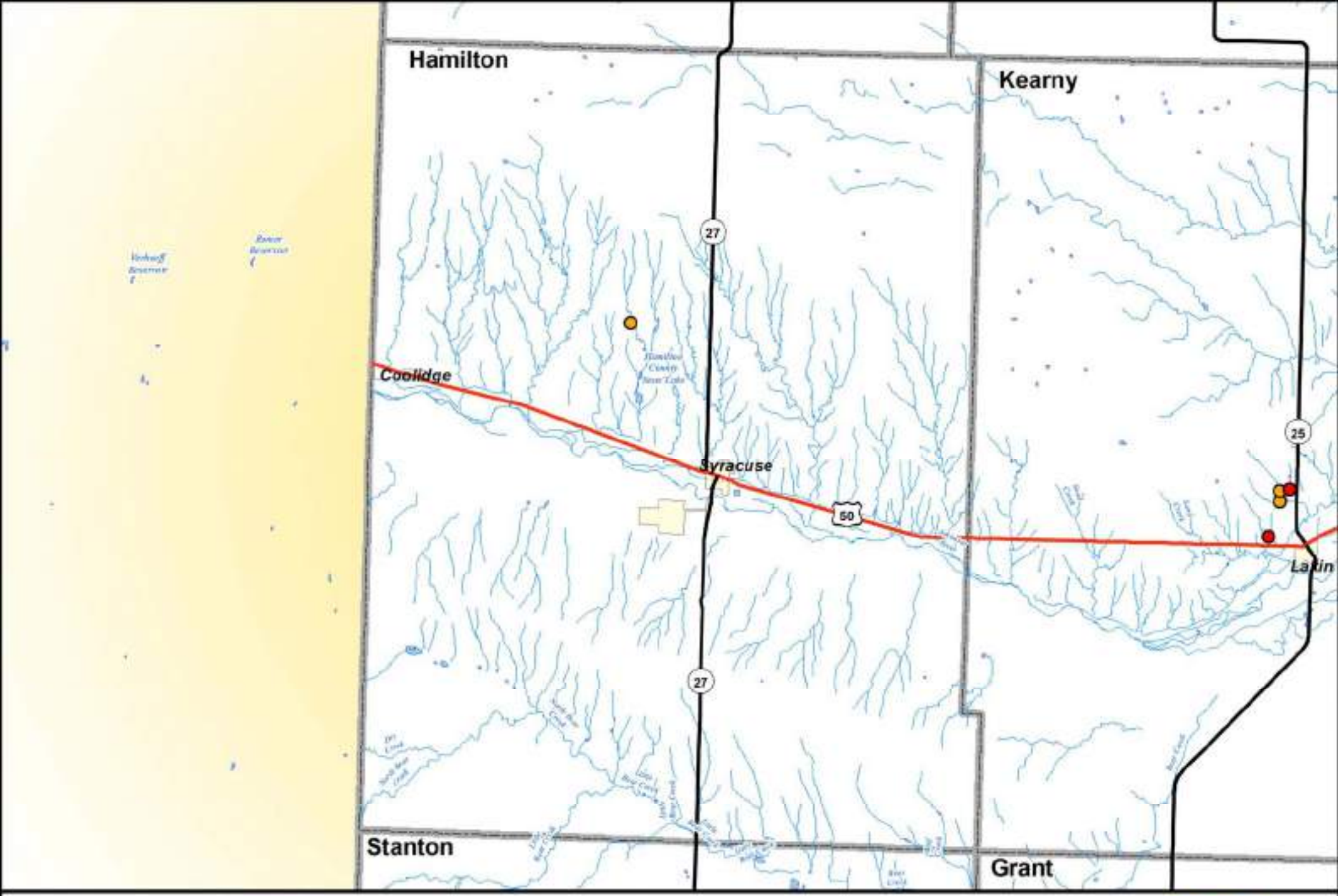
N

0 1 2 4 6 8 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General

Date: 10/9/2013

Kansas
Adjutant General
Division of Emergency Management



KS Department of Agriculture - High and Significant Hazard Dams

Hamilton County, KS

Hazard Class
Dams: Hazard Class
High
Significant

Interstates
US Highways
Kansas Highways
Lake
Streams
County Boundaries
Cities (Census 2010)

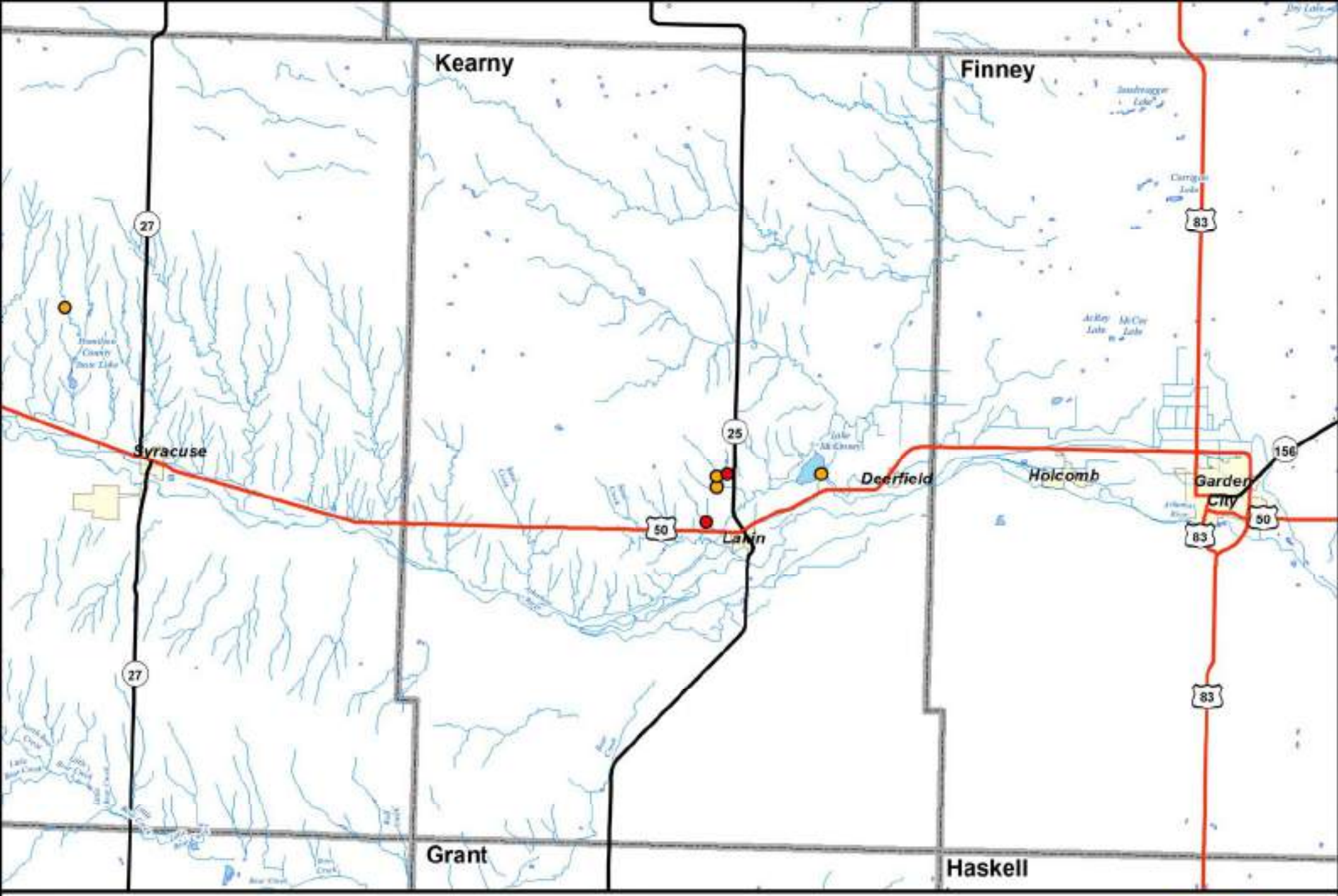
N

0 1.25 2.5 5 7.5 10 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General

Date: 10/9/2013

Kansas
Adjutant General
Division of Emergency Management



KS Department of Agriculture - High and Significant Hazard Dams

Kearny County, KS

Hazard Class
Dams: Hazard Class
- High
- Significant

Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
Cities (Census 2010)

N

0 1.25 2.5 5 7.5 10 Miles

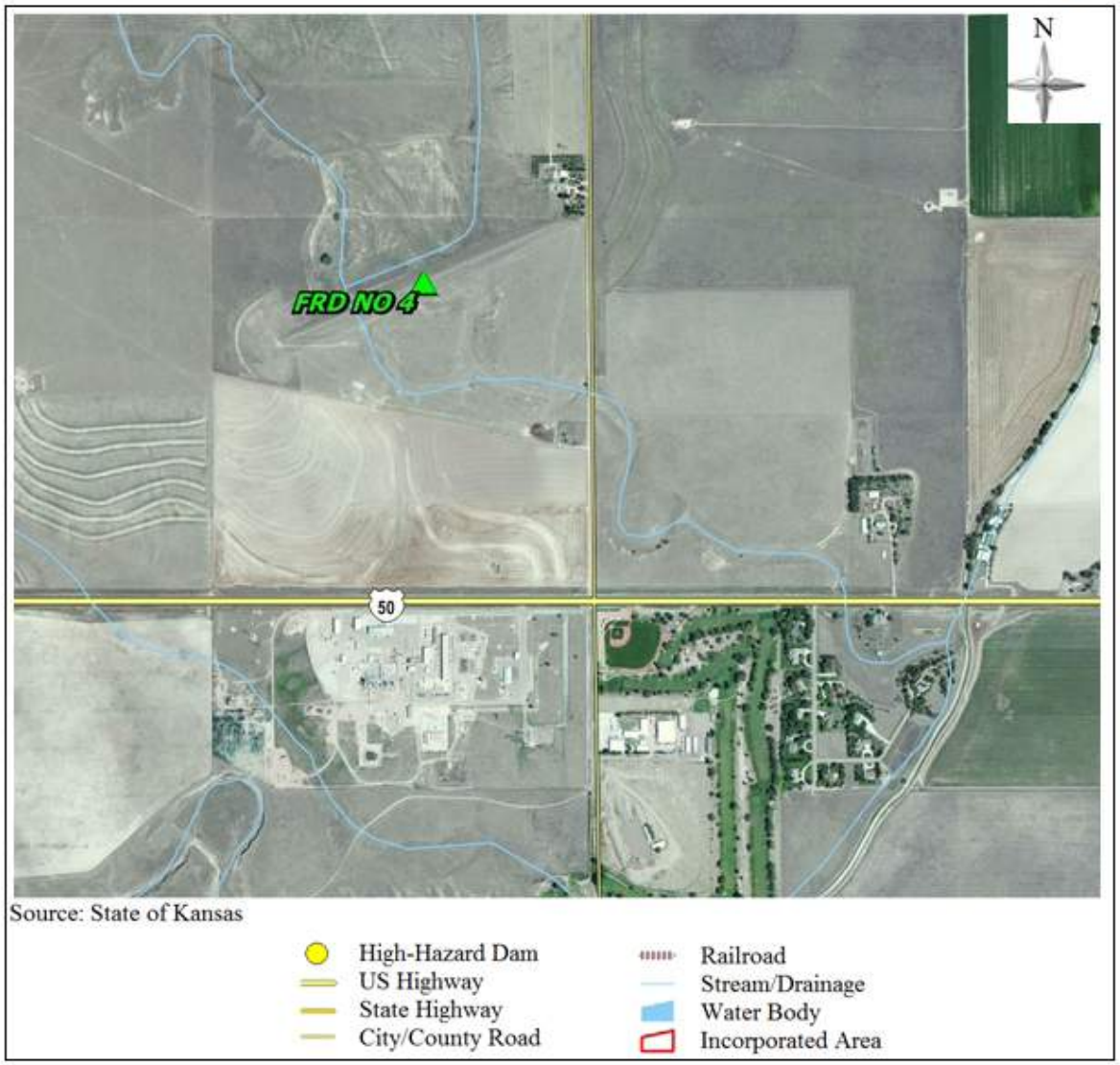
Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General

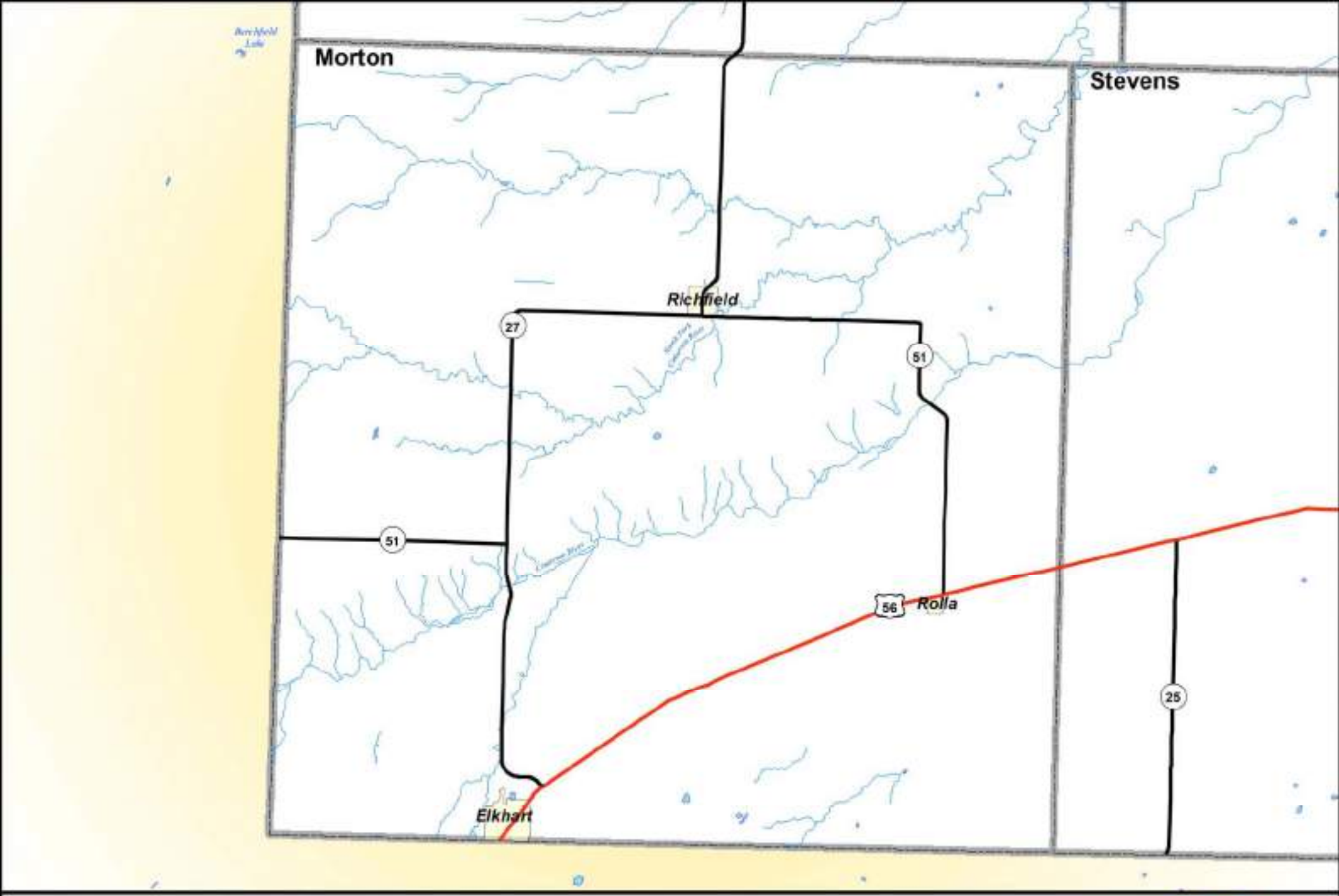
Date: 10/9/2013

Kansas
Adjutant General
Division of Emergency Management

FRD No. 3 High Hazard Dam, Kearny County

FRD No. 4 High Hazard Dam, Kearny County





KS Department of Agriculture - High and Significant Hazard Dams

Morton County, KS

Hazard Class
Dams: Hazard Class
High
Significant

Interstates
US Highways
Kansas Highways

Lake
Streams
County Boudaries
Cities (Census 2010)

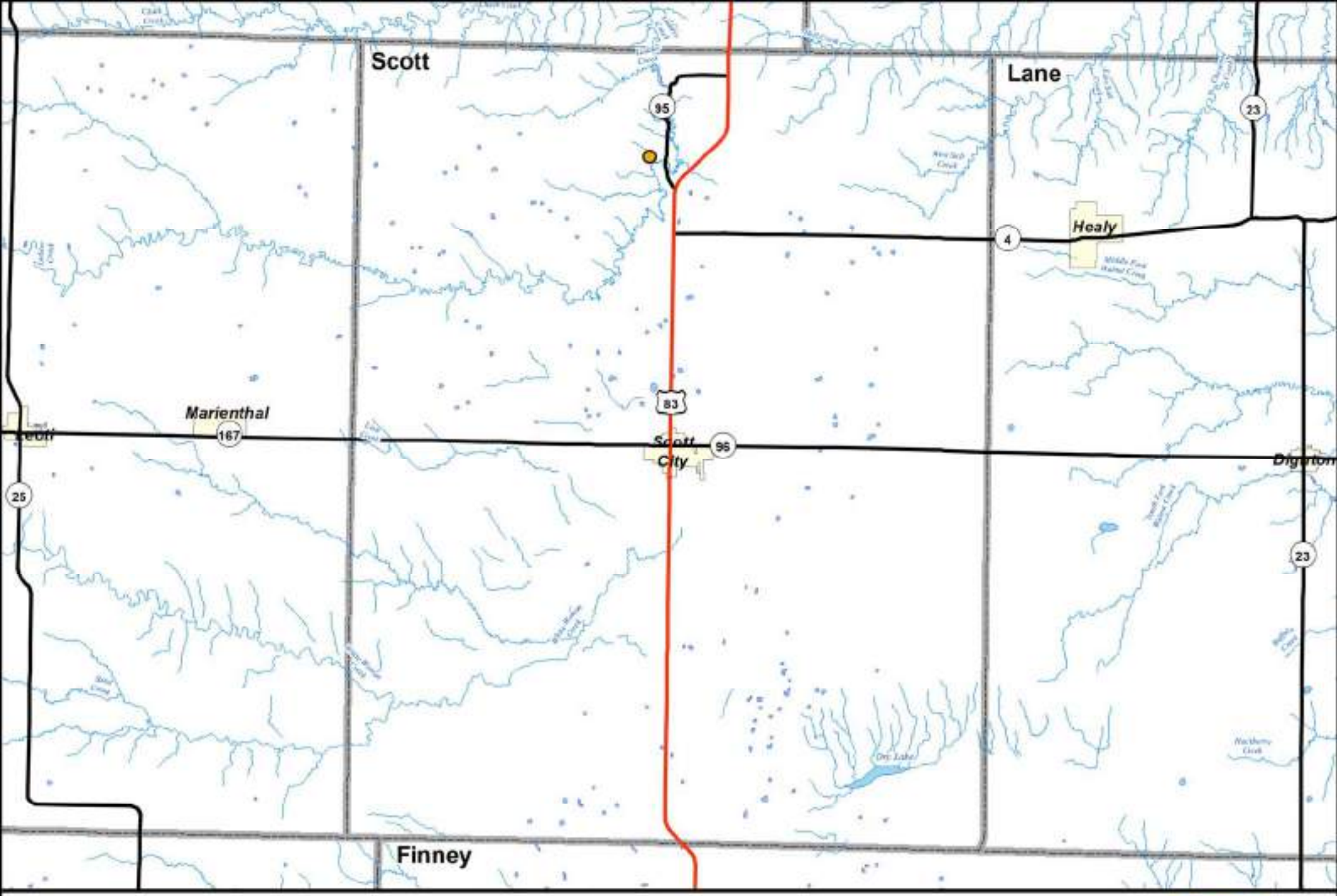
N

0 1 2 4 6 8 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General

Date: 10/9/2013

Kansas
Adjutant General
Division of Emergency Management



KS Department of Agriculture - High and Significant Hazard Dams

Scott County, KS

Hazard Class
Dams: Hazard Class
High
Significant

Interstates
US Highways
Kansas Highways
Lake
Streams
County Boundaries
Cities (Census 2010)

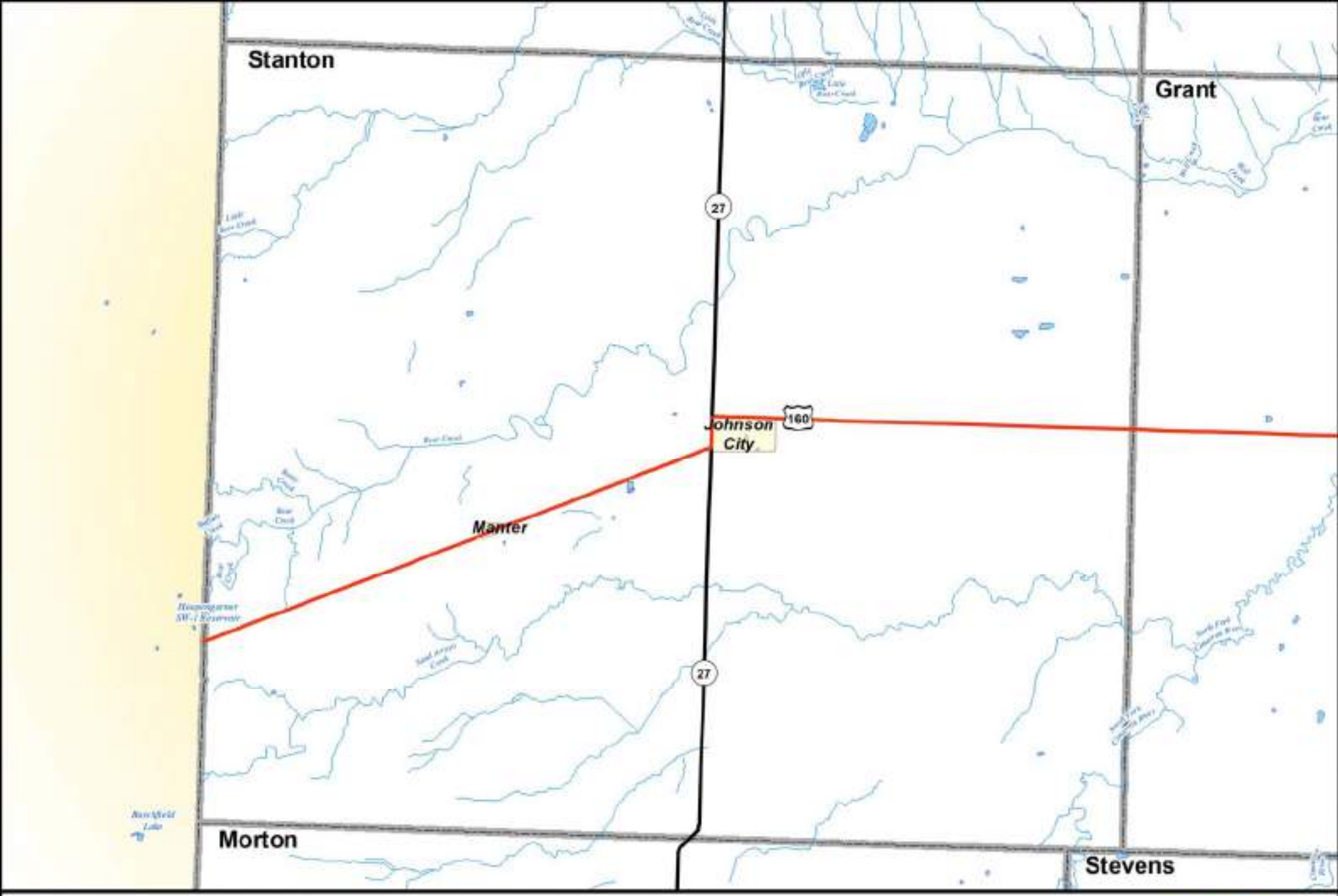
N

0 1 2 4 6 8 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General

Date: 10/9/2013

Kansas
Adjutant General
Division of Emergency Management



KS Department of Agriculture - High and Significant Hazard Dams

Stanton County, KS

Hazard Class
Dams: Hazard Class
High
Significant

Interstates
US Highways
Kansas Highways
Lake
Streams
County Boundaries
Cities (Census 2010)

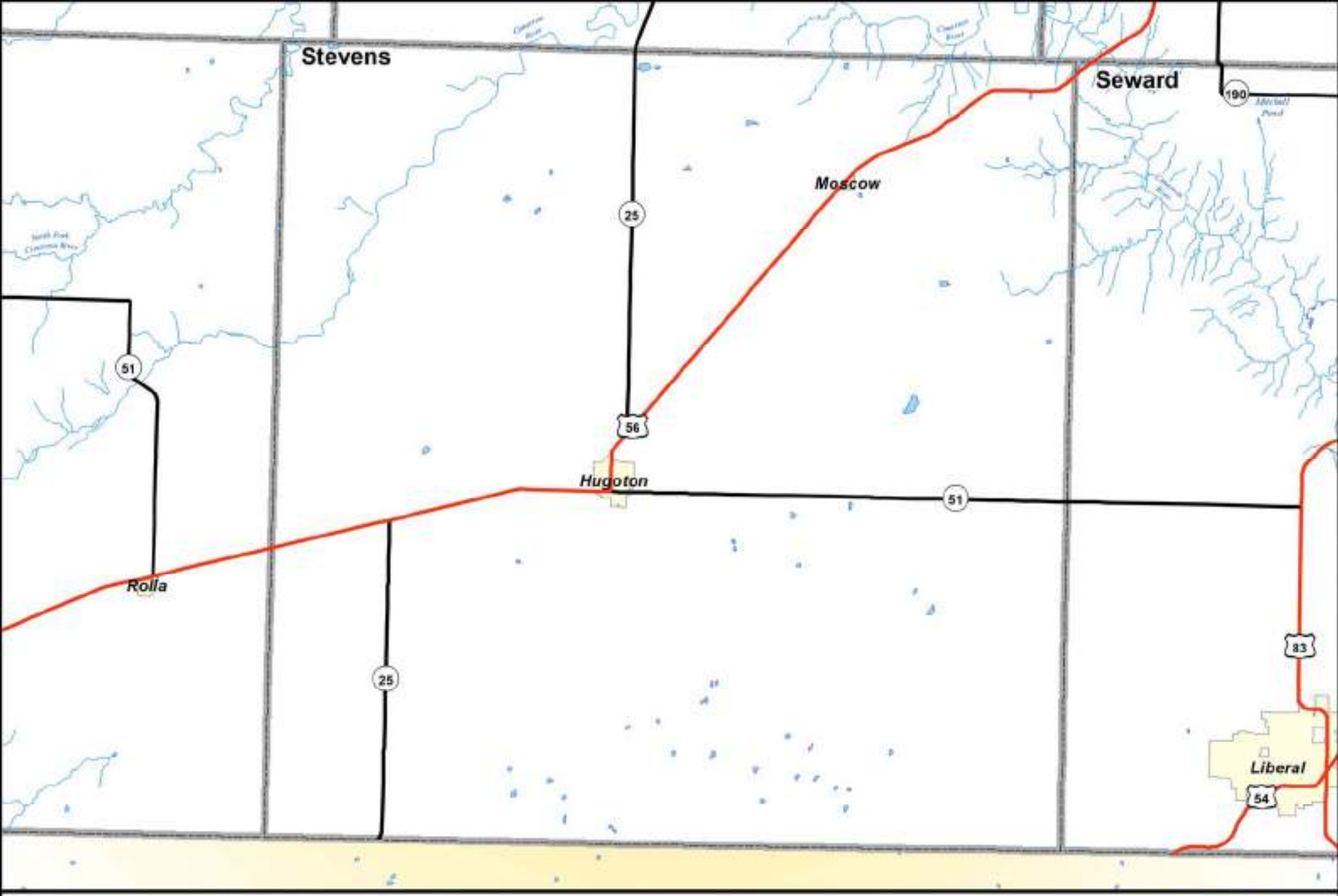
N

0 0.75 1.5 3 4.5 6 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General

Date: 10/9/2013

Kansas
Adjutant General
Division of Emergency Management



KS Department of Agriculture - High and Significant Hazard Dams

Stevens County, KS

Hazard Class
Dams: Hazard Class
High
Significant

Interstates
US Highways
Kansas Highways

Lake
Streams
County Boundaries
Cities (Census 2010)

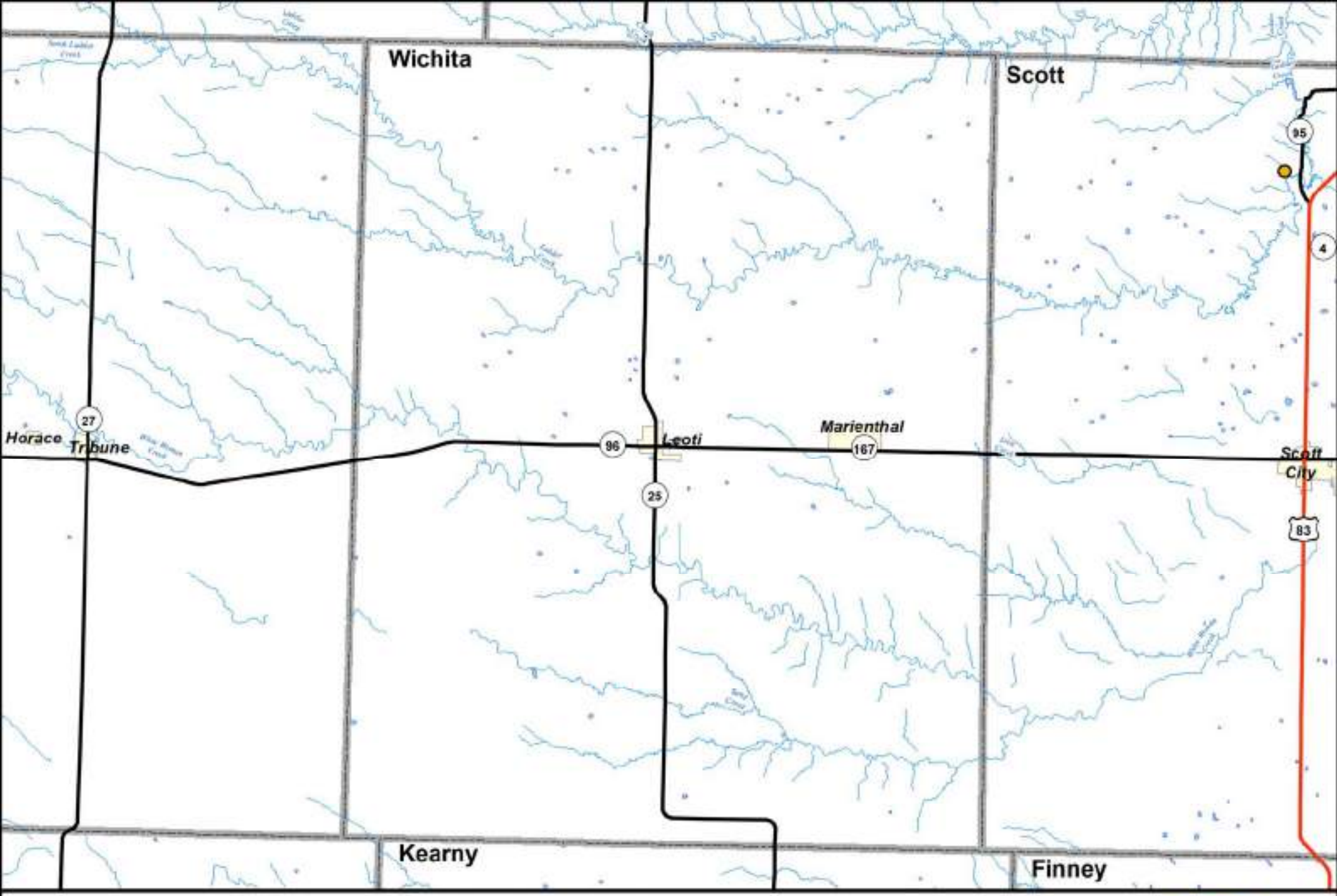
N

0 1 2 4 6 8 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General

Date: 10/9/2013

Kansas
Adjutant General
Division of Emergency Management



KS Department of Agriculture - High and Significant Hazard Dams

Wichita County, KS

Hazard Class
Dams: Hazard Class
High
Significant
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
Cities (Census 2010)

N

0 1 2 4 6 8 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General

Date: 10/9/2013

Kansas
Adjutant General
Division of Emergency Management

Federal Dams and Reservoirs

There are no federally operated dams in southwest Kansas maintained and operated by the federal government.

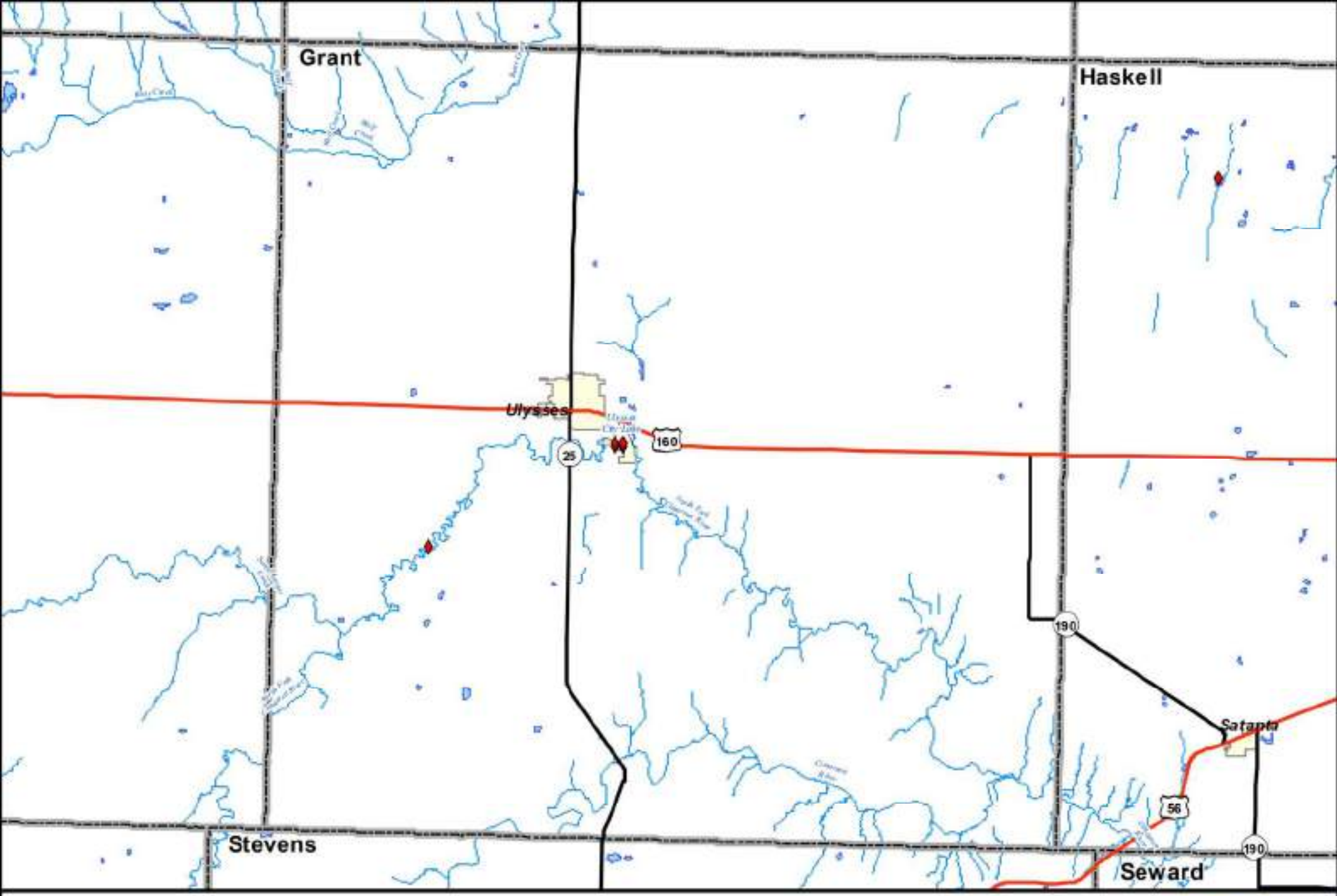
Dams in Adjacent Regions and States

To the west of the region, there is one dam located in Colorado that could potentially present flooding consequences in the event of failure, the John Martin Dam on the Arkansas River. This dam is federally owned and regulated. No other dams in adjacent regions were identified that would cause major impacts to the planning region in the event of a catastrophic failure.

Levees

In Kansas, there are hundreds of levees ranging in size from small agricultural levees that were constructed primarily to protect farmland from high frequency flooding to large urban levees that were constructed to protect people and property from larger, less frequent flooding events, such as the 100-year and 500-year flood events. Levees have been constructed across the State by public and private entities with varying levels of protection, inspection oversight, and maintenance. Currently there is no one comprehensive database of all levees in the State. However, significant strides have been made toward compiling such an inventory. In 2010, FEMA published the MLI database of levees. The MLI contains levee data gathered primarily for structures that were designed to provide protection from at least the base (1-percent-annual-chance) flood. Levees that provide protection for less than the base flood event are included, but only where data was readily available. The MLI was developed to complement the USACE NLD. During development of this plan update, USACE was in the process of integrating the MLI with the NLD to provide a more comprehensive database of levees. Every effort was made during development of this plan to consider all known levees from both databases.

The following maps show identified levees within the southwest Kansas region. There were no regional levees listed in either the USACE NLD or MLI data sets.



Levees

Grant County, KS

Interstates
US Highways
Kansas Highways
KS Dept. of Ag. - Levees
County Boudaries
Cities (Census 2010)
Lake
Streams

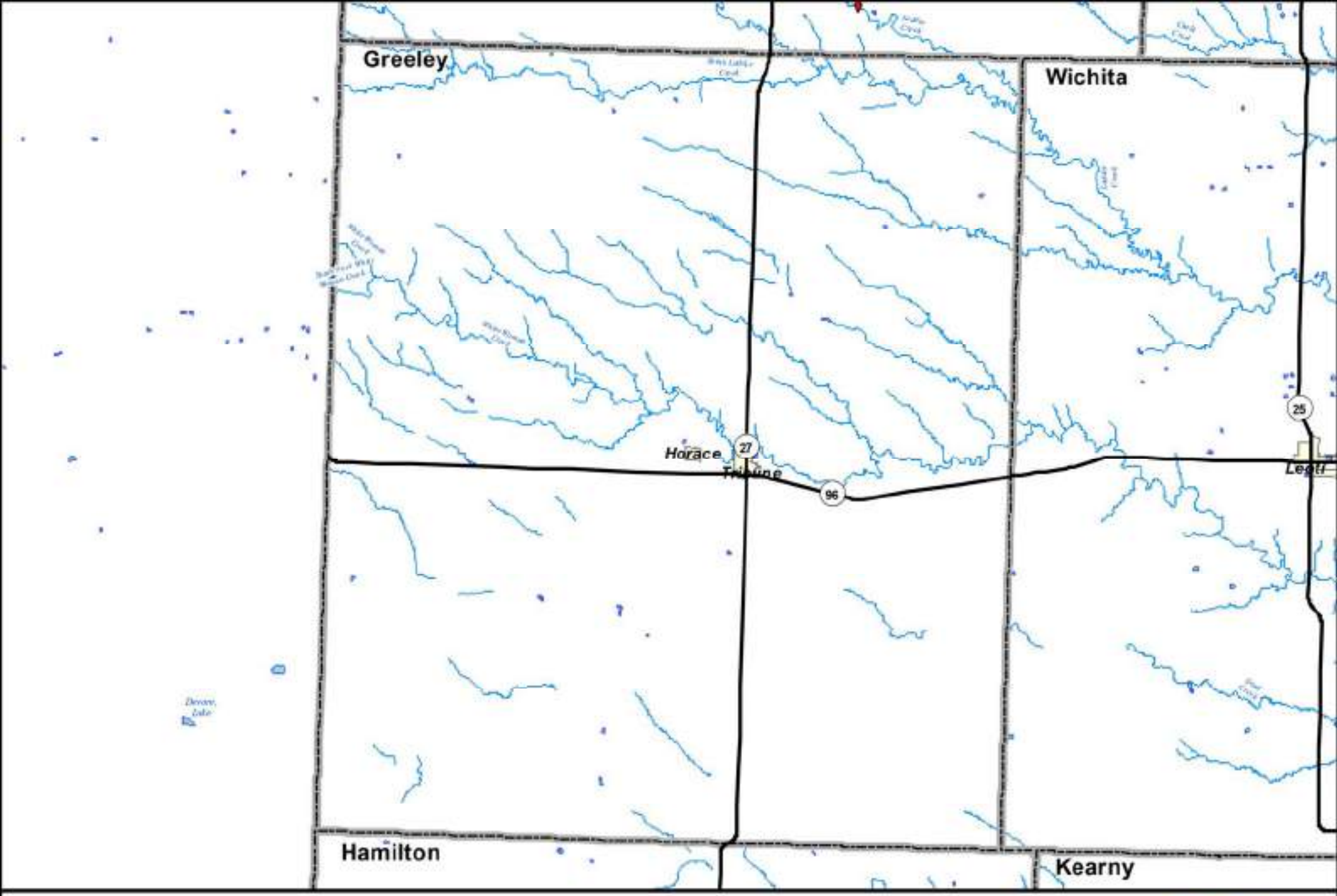
N

0 0.75 1.5 3 4.5 6 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General, USGS

Date: 2/28/2014

Kansas
Adjutant General
Division of Emergency Management



Levees

Greeley County, KS

Interstates
US Highways
Kansas Highways
KS Dept. of Ag. - Levees
County Boudaries
Cities (Census 2010)
Lake
Streams

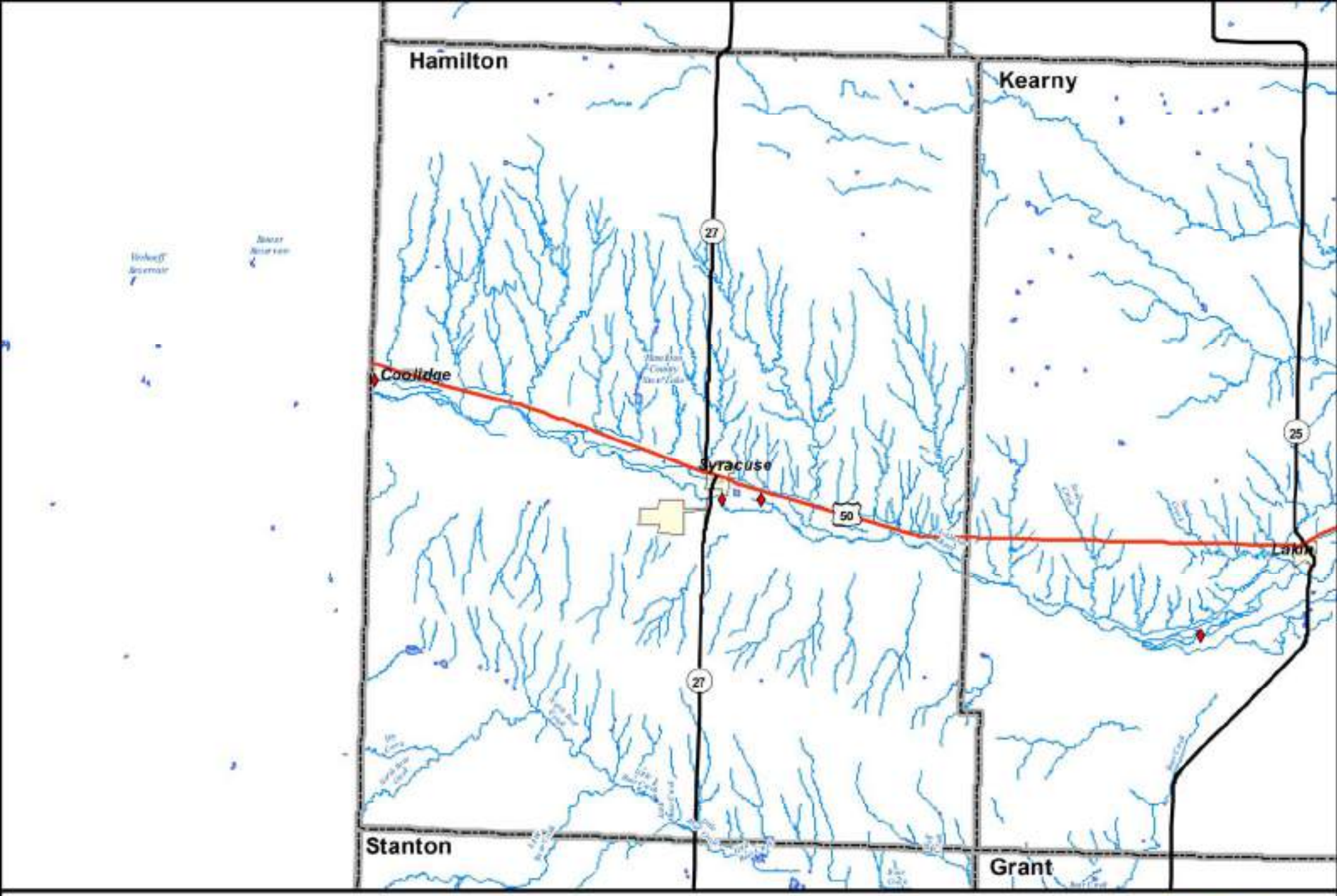
N

0 1 2 4 6 8 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General, USGS

Date: 2/28/2014

Kansas
Adjutant General
Division of Emergency Management



Levees

Hamilton County, KS

Interstates
US Highways
Kansas Highways
KS Dept. of Ag. - Levees
County Boudaries
Cities (Census 2010)
Lake
Streams

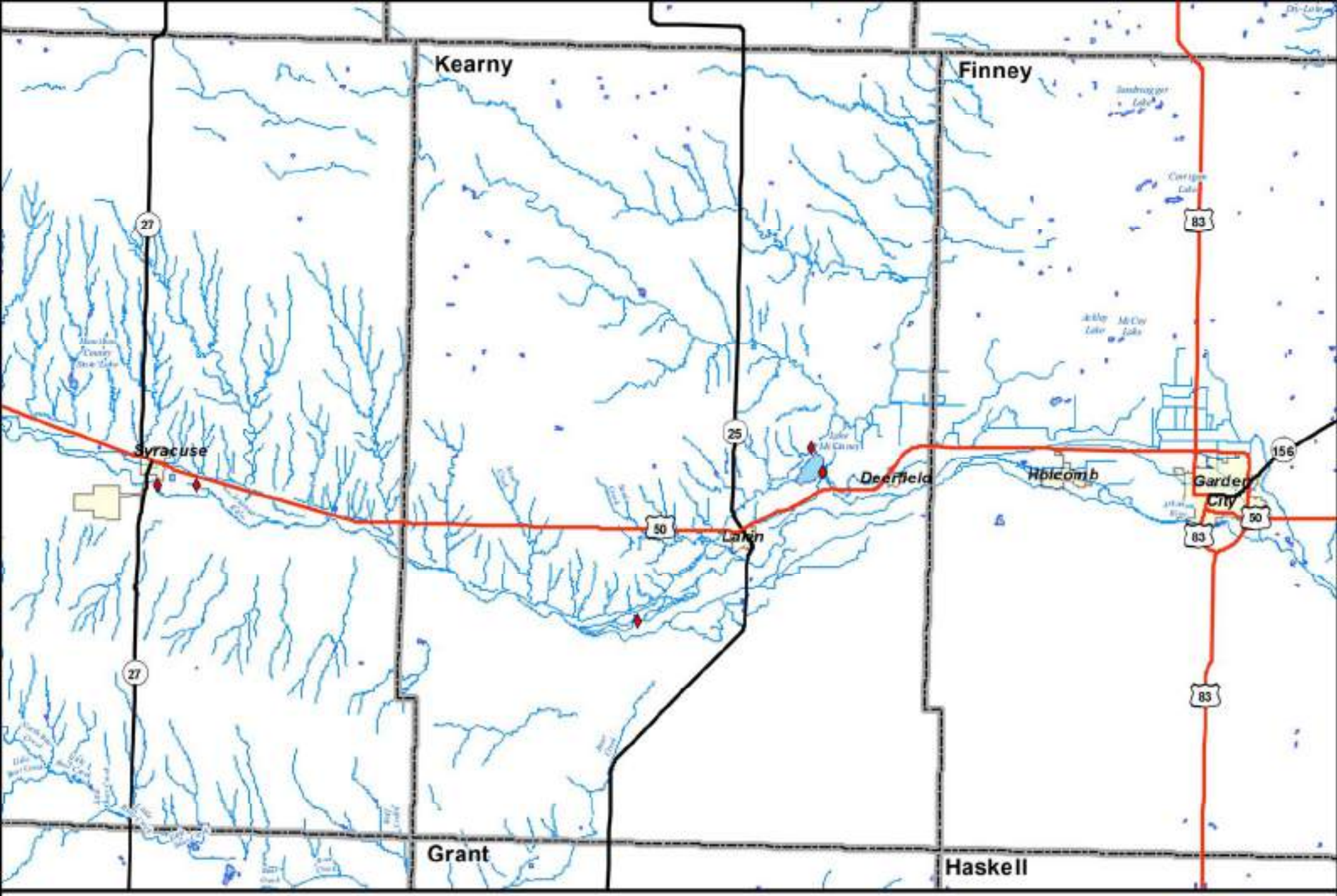
N

0 1.25 2.5 5 7.5 10 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General, USGS

Date: 2/28/2014

Kansas
Adjutant General
Division of Emergency Management



Levees

Kearny County, KS

Interstates
US Highways
Kansas Highways
KS Dept. of Ag. - Levees
County Boudaries
Cities (Census 2010)
Lake
Streams

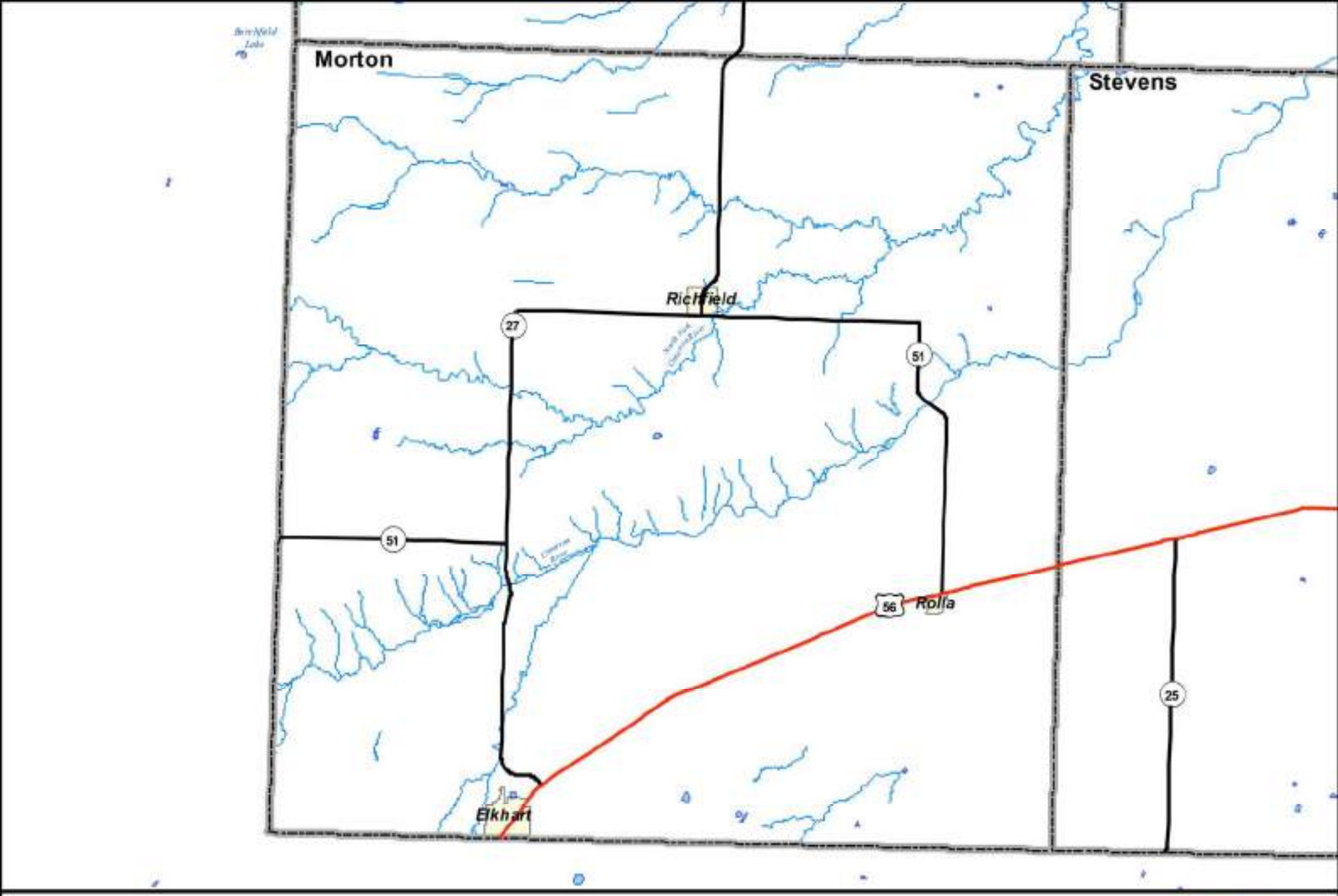
N

0 1.25 2.5 5 7.5 10 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General, USGS

Date: 2/28/2014

Kansas
Adjutant General
Division of Emergency Management



Levees

Morton County, KS

Interstates
US Highways
Kansas Highways
KS Dept. of Ag. - Levees
County Boudaries
Cities (Census 2010)
Lake
Streams

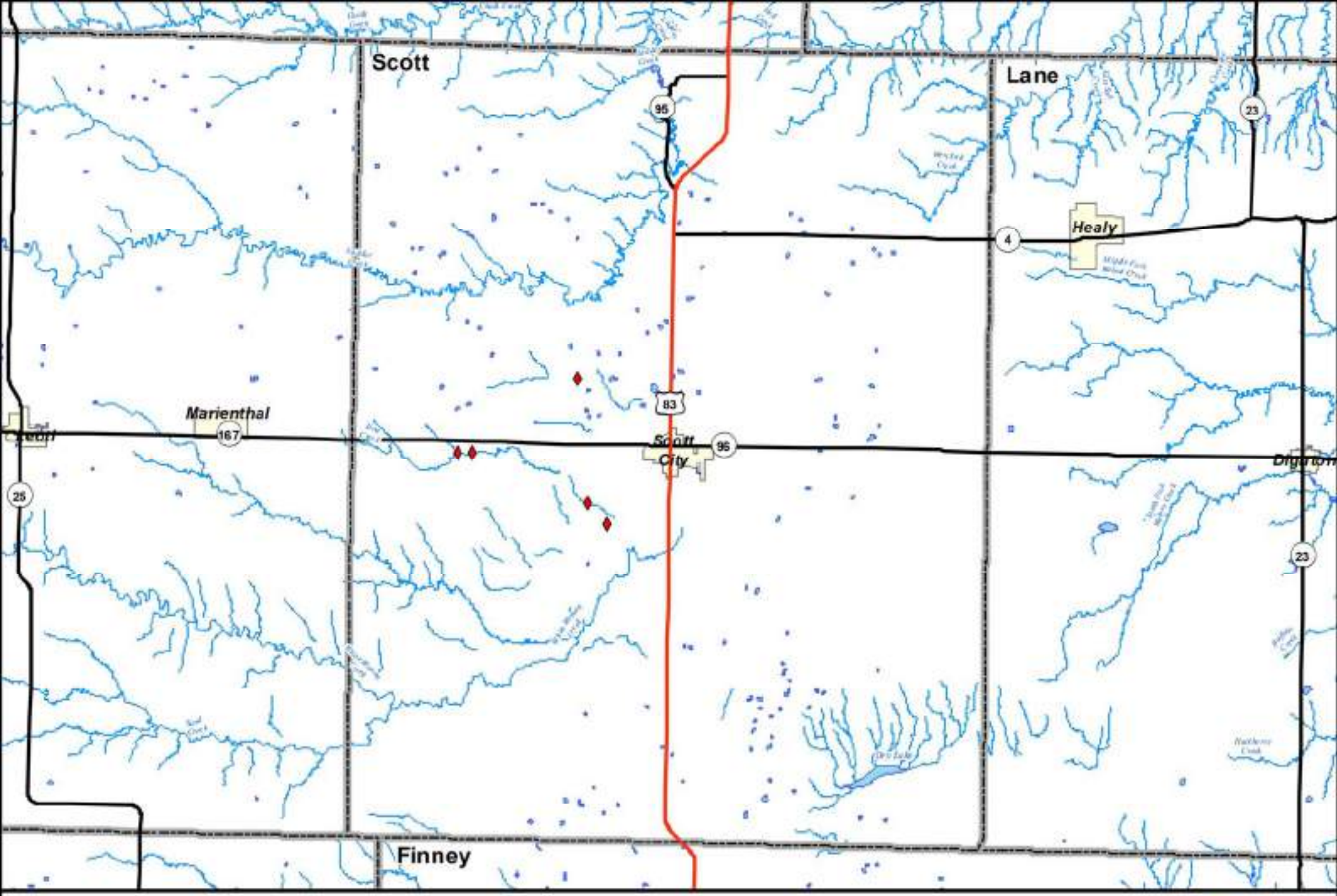
N

0 1 2 4 6 8 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General, USGS

Date: 2/28/2014

Kansas
Adjutant General
Division of Emergency Management



Levees

Scott County, KS

Interstates
US Highways
Kansas Highways
KS Dept. of Ag. - Levees
County Boudaries
Cities (Census 2010)
Lake
Streams

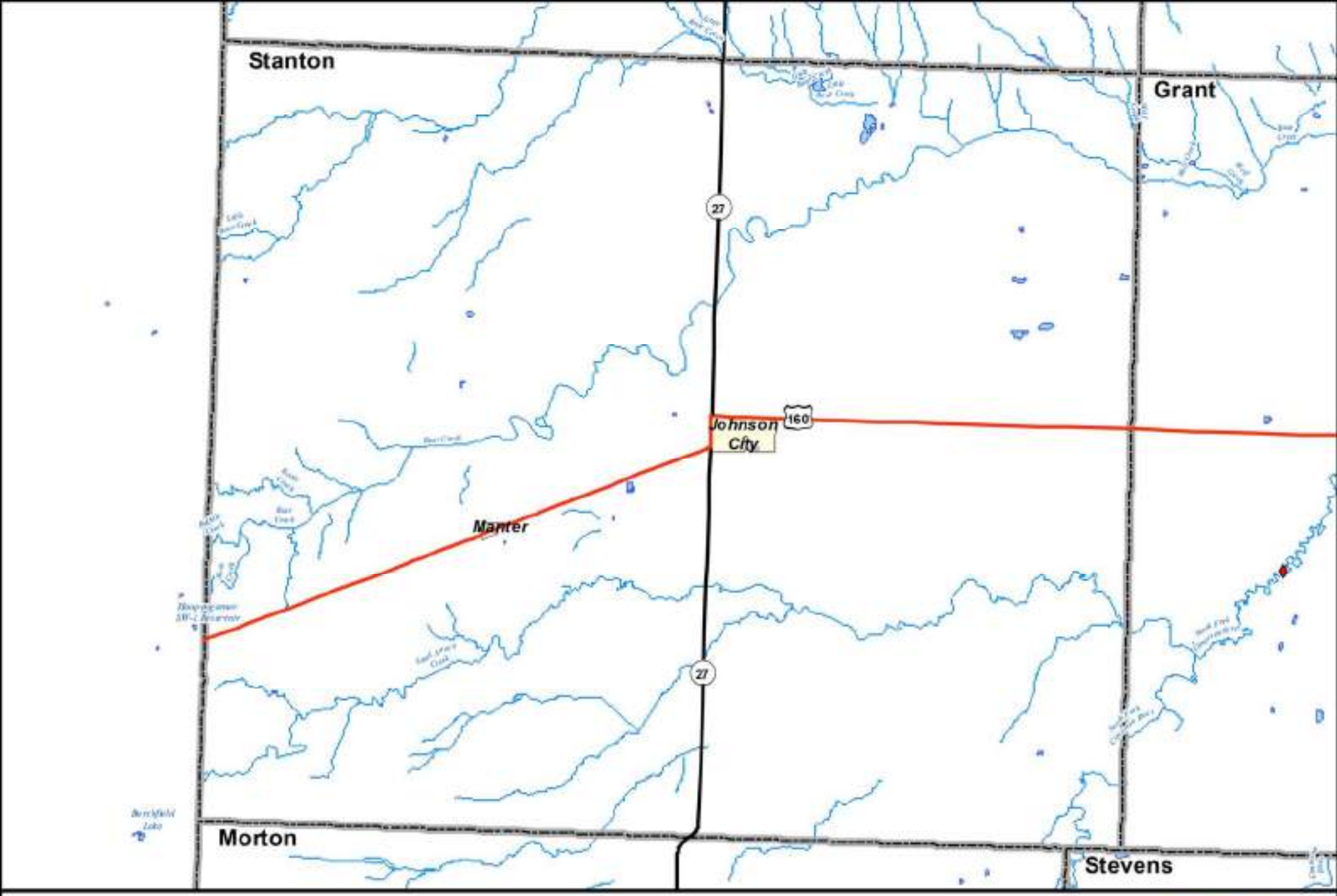
N

0 1 2 4 6 8 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General, USGS

Date: 2/28/2014

Kansas
Adjutant General
Division of Emergency Management



Levees

Stanton County, KS

Interstates
US Highways
Kansas Highways
KS Dept. of Ag. - Levees
County Boudaries
Cities (Census 2010)
Lake
Streams

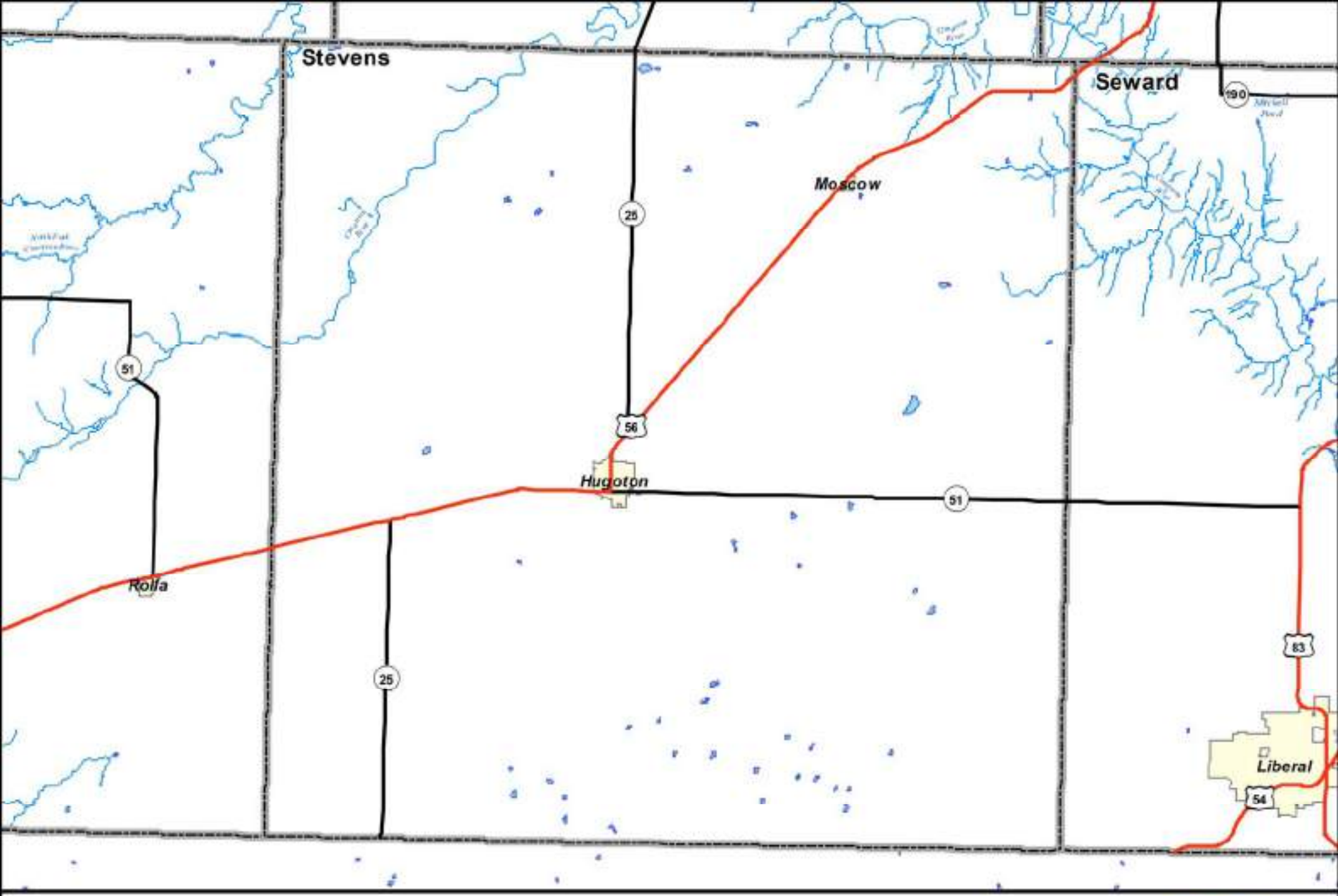
N

0 0.75 1.5 3 4.5 6 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General, USGS

Date: 2/28/2014

Kansas
Adjutant General
Division of Emergency Management



Levees

Stevens County, KS

Interstates
US Highways
Kansas Highways
KS Dept. of Ag. - Levees
County Boudaries
Cities (Census 2010)
Lake
Streams

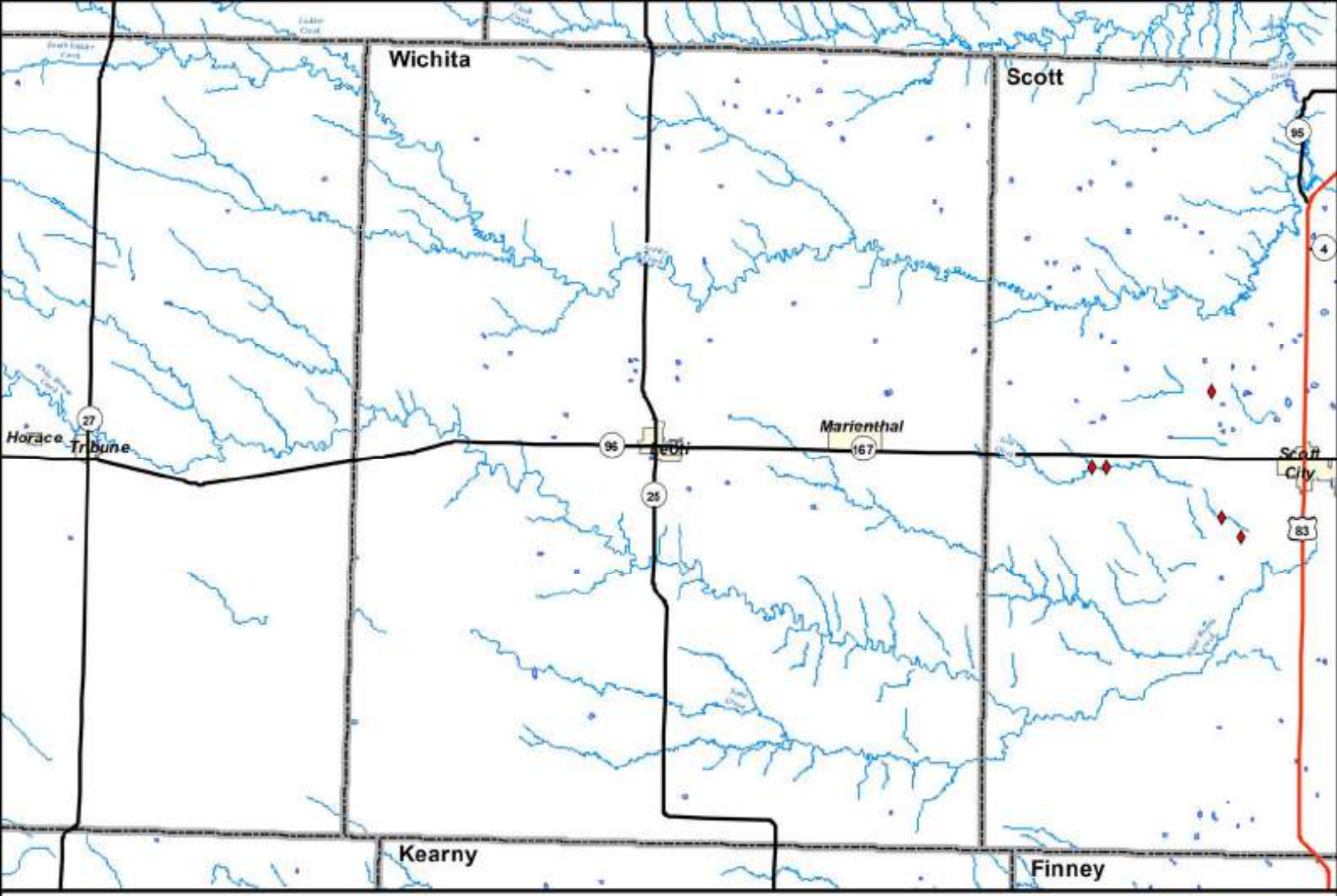
N

0 1 2 4 6 8 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General, USGS

Date: 2/28/2014

Kansas
Adjutant General
Division of Emergency Management



Levees

Wichita County, KS

Interstates
US Highways
Kansas Highways
KS Dept. of Ag. - Levees
County Boudaries
Cities (Census 2010)
Lake
Streams

N

0 1 2 4 6 8 Miles

Data Sources: KS Department of Agriculture, US Census Bureau, KS Adjutant General, USGS

Date: 2/28/2014

Kansas
Adjutant General
Division of Emergency Management

Previous Occurrences and Extent

There have been no major dam or levee failures in southwest Kansas.

Hazard Vulnerability and Impact

Dam Failure

The 2009 Kansas Water Plan states that some dams are exhibiting structural deficiencies because of age, while post-construction development downstream of others has raised their hazard class. Common problems with older dams include:

- Deteriorating metal pipes and structural components,
- Inadequate hydrologic capacity,
- Increased runoff because of upstream development, and
- Increased failure hazard because of downstream development.

To complete an analysis of vulnerability to dam failure as well as attempt to describe vulnerability in terms of the jurisdictions most threatened by dam failure, points were assigned to each type of dam and then aggregated for a total point score for each county. Points were assigned as follows for each dam: Low Hazard Dams, 1 point, Significant Hazard Dams, 2 points, High Hazard Dams, 3 points, High Hazard Dams without an Emergency Action Plan (EAP), an additional 2 points, Federal Reservoir Dams, 3 points. This analysis does not intend to demonstrate vulnerability in terms of 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. The following table shows the results of this analysis.

Dam Failure Vulnerability Analysis

County	Low Hazard Dams	Significant Hazard Dams	High Hazard Dams	High Hazard Dams Without EAP	Federal Reservoirs	Vulnerability Rating	Vulnerability Level
Grant	7	0	0	0	0	7	Low
Greeley	4	0	0	0	0	4	Low
Hamilton	31	1	0	0	0	33	Medium-Low
Kearny	20	3	2	2	0	36	Medium-Low
Morton	0	0	0	0	0	0	Low
Scott	7	1	0	0	0	9	Low
Stanton	12	0	0	0	0	12	Low
Stevens	8	0	0	0	0	8	Low
Wichita	12	0	0	0	0	12	Low
Regional Total	101	5	2	2	0	-	-

Source: 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

None of the regional counties are on the top 10 list for the State of Kansas for vulnerability to dam failure.

During the development of this plan, the Kansas Department of Agriculture, Division of Water Resources was working on a project to complete dam inundation mapping for High and Significant hazard dams. This project is ongoing due to funding issues. A statewide dam inundation map does not exist at this time.

Levee Failure

To complete an analysis of vulnerability to levee failure as well as attempt to describe vulnerability in terms of the jurisdictions most threatened by levee failure, the MLI geodatabase along with census block data available in HAZUS MH 2.1 is used to determine the number of people and the value of development in these identified levee protected areas. This analysis does not attempt to evaluate which levees are more prone to overtopping or failure, but rather provide a general picture of those counties that have more people and property protected by levees and therefore the potential for more damage if failure or overtopping were to occur. Data indicates the calculated value of structures and the contents of the structures protected by levees within the region is currently $0. This data is to be used only for general determination of those areas of the region that could suffer the greatest losses in the event of levee failure events. Data limitations prevent a more accurate analysis including: lack of delineation of protected areas for all levees and, lack of region-wide parcel-type data which would provide more accurate results in determining structures and values within levee protected areas.

Economic impacts and human injury or death are the primary concern with dam and levee failure. The future construction of dams and levees within the region and/or the development of additional structures or infrastructure within areas with dams or protected by levees would likely increase the impact of an event. The following items are of additional concern:

- Private levees and dams are a consideration when the risk of failure is analyzed. These levees and dams are normally maintained by their owners, which can often cost a great deal of money.
- The USACE maintains many levees in and around the planning area, however, there are also levees that are not federally maintained, so local jurisdictions or private property owners are responsible for maintaining the structures. As the levees age, the costs to repair and rebuild them will increase.

	Magnitude/Severity
Dam and Levee Failure	2.33

Local Concerns

The following detail specific local concerns as related to dam and levee failure:

- In Kearny County there are approximately 321 buildings, including many smaller farm buildings that could be damaged if a breach were to occur on either identified high hazard dam within the county.

Future Development

Future development and population increase would tend to increase the likelihood of the population being impacted by a dam or levee failure event. However, regional population totals are estimated to decrease from an estimated 2013 population of 34,152 to an estimated 2040 population of 22,237. These decreases may be further offset as many of the flood prone cities have enacted floodplain ordinances limiting development in hazardous areas and/or are members of the NFIP.

Probability of Future Occurrences

The variability of the size and construction of the dams in southwest Kansas makes estimating the probability of dam failure difficult on any scale less than a case-by-case basis. The limited data on previous occurrences indicates that in the last 87 years, there has been seven recorded dam failure events in all of Kansas, which is less than 1 event in 10 years.

Although both federal and nonfederal levees in the State of Kansas have been damaged in flood events, the damage has not resulted in catastrophic failure and/or damages. Levees in Kansas that have been constructed to protect development and populations from the 1-percent annual chance flood are routinely inspected and maintained. Based on current historical data pertaining to damaging/significant levee failure incidents in the State of Kansas, this hazard's probability is unlikely.

	Probability
Dam and Levee Failure	1.28

Consequence Analysis

When a dam fails, the stored water can be suddenly released and have catastrophic effects on life and property downstream. Homes, bridges, and roads can be demolished in minutes. Emergency plans written for dams include procedures for notification and coordination with law enforcement and other governmental agencies, information on the potential inundation area, plans for warning and evacuation, and procedures for making emergency repairs.

The impact of levee failure during a flooding event can be very similar to a dam failure in that the velocity of the water caused by sudden release as a result of levee breach can result in a flood surge or flood wave that can cause catastrophic damages. If the levee is overtopped as a result of flood waters in excess of the levee design, impacts are similar to flood impacts. The information in the following table provides the Consequence Analysis.

Dam Failure Consequence Analysis

Subject	Ranking	Impacts of Dam and Levee Failure
Health and Safety of Persons in the Area of the Incident	Severe	Localized impact expected to be severe for the inundation area and moderate to minimal for other affected areas.
Responders	Minimal	Impact to responders is expected to be minimal with proper training. Impact could be severe if there is lack of training.
Continuity of Operations	Minimal	Temporary relocation may be necessary.
Property, Facilities, and Infrastructure	Minimal to Severe	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.
Delivery of Services	Minimal to Severe	Delivery of services could be affected if there is any disruption to the roads and/or utilities. Minimal to severe depending on area size and location affected.
Environment	Severe	Impact will be severe for the immediate impacted area. Impact will lessen as distance increases.
Economic Conditions	Minimal to Severe	Impacts to the economy will depend on the scope of the inundation and the time it takes for the water to recede.
Public Confidence Governance	Minimal to Severe	Perception of whether the failure could have been prevented, warning time, and response and recovery time will greatly impact the public's confidence.

3.7.4 DROUGHT

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Drought	3.11	2.56	1.11	4.00	2.73

Description

In general, drought can be defined as a condition of moisture levels significantly below normal for an extended period of time over a large area that adversely affects plants, animal life, and humans. Because these dry conditions develop gradually, and impact regions differently, there is no standard way to determine when a drought begins or ends, or to objectively determine its severity.

Drought can also be defined in terms of meteorology, agricultural, hydrological and socio-economic. The first three definitions apply to ways to measure drought as a physical phenomenon. The last deals with drought in terms of supply and demand, tracking the effects on socioeconomic systems

- **Meteorological Drought:** The degree of dryness as related to an average amount of moisture, and the duration of the dry period. Definitions of meteorological drought must be considered as region specific since the atmospheric conditions that result in deficiencies of precipitation are highly variable.
- **Hydrological Drought:** The effects of periods of precipitation shortfalls on surface or subsurface water supply. The frequency and severity of hydrological drought is often defined on a watershed or river basin scale. Hydrological droughts are usually out of phase with or lag the occurrence of meteorological and agricultural droughts. It takes longer for precipitation deficiencies to show up in components of the hydrological system such as soil moisture, streamflow, and groundwater and reservoir levels.
- **Agricultural Drought:** Links the characteristics of meteorological and/or hydrological drought to agricultural impacts, focusing on precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, reduced groundwater or reservoir levels, and so forth.
- **Socioeconomic Drought:** The lack of available water has a direct effect on the population. In general, this results in the demand for an economic good exceeding the supply as a result of a weather-related shortfall in water supply.

The impacts of drought can be categorized as economic, environmental, or social. Many economic impacts occur in agriculture and related sectors, including increasing food prices globally. In addition to obvious losses in yields in both crop and livestock production, drought is associated with increases in insect infestations, plant disease, and wind erosion. Droughts also bring increased problems with insects and disease to forests and reduce growth. The incidence of wildfires increases substantially during extended droughts, which in turn places both human and wildlife populations at higher levels of risk. Income loss is another indicator used in assessing the impacts of drought because so many sectors are affected.

Although environmental losses are difficult to quantify, increasing public awareness and concern for environmental quality has forced public officials to focus greater attention and resources on

these effects. Environmental losses are the result of damages to plant and animal species, wildlife habitat, and air and water quality, wildfires, degradation of landscape quality, loss of biodiversity, and soil erosion. Some of the effects are short-term and conditions quickly return to normal following the end of the drought. Other environmental effects linger for some time or may even become permanent. Wildlife habitat, for example may be degraded through the loss of wetlands, lakes, and vegetation. However, many species will eventually recover from this temporary aberration. The degradation of landscape quality, with increased soil erosion, may lead to a more permanent loss of biological productivity of the landscape.

Periods of drought are normal occurrences in southwest Kansas. Drought in southwest Kansas is caused by severely inadequate amounts of precipitation that adversely affect farming and ranching, surface and ground water supplies, and uses of surface waters for navigation and recreation.

The most widely used tool to measure and report drought conditions is the Palmer Drought Severity Index (PDSI). The PDSI combines temperature, precipitation, evaporation, transpiration, soil runoff and soil recharge data for a given region to produce a single negative number representing conditions there. This index serves as an estimate of soil moisture deficiency, which roughly correlates with a drought's severity, and thus, its impacts.

The U.S. Drought Monitor, an organization run by government and academic partners that maintains a nationwide drought map, uses the PDSI to categorize dry weather into five levels of severity:

U.S. Drought Monitor Severity Rating

Designation	Category	PDSI Rating
Abnormally Dry	D0	-1.0 to -1.9
Moderate Drought	D1	-2.0 to -2.9
Severe Drought	D2	-3.0 to -3.9
Extreme Drought	D3	-4.0 to -4.9
Exceptional Drought	D4	-5.0 to -5.9

The effects range from slow crop and pasture growth to widespread crop failure and water emergencies. Additionally, the Drought Monitor defines droughts as either short-term, if they have lasted less than six months, and long-term for prolonged events.

The State of Kansas Operations Plan (June 30, 2012) utilizes a phased response to drought and identifies specific program actions related to each drought stage. The following provides a brief summary of this phased response approach.

- **Drought Watch** – Impacts include some damage to crops and pastures, high rangeland fire danger and a growing threat of public water supply shortages. The Governor is notified and the Governor's Drought Response Team assembled. Open outdoor burning bans may be imposed. Public water systems may ask for voluntary water use restrictions.

- **Drought Warning** – Crop and pasture losses are likely with some stock water shortages and very high rangeland fire danger. Public water supply shortages are present and some stream flow targets are not being met. Public water systems may impose mandatory water use restrictions. Urgent Kansas Water Marketing Program surplus water supply contracts can be authorized for municipal and industrial users. The Governor may request emergency haying and grazing authorization for Conservation Reserve Program acres.

- **Drought Emergency** – Widespread major crop and pasture losses are accompanied by stock water shortages and extreme rangeland fire danger. Severe public water supply shortages are widespread with many stream flow targets not met. The Governor may declare an outdoor burning ban. Public water systems may impose additional mandatory water use restrictions. Emergency Kansas Water Marketing Program surplus water supply contracts can be authorized for municipal and industrial users. Emergency water withdrawals from Corps of Engineers reservoirs and state fishing lakes can be authorized. Corps of Engineers emergency water assistance to municipalities is available if needed. The Governor may request a USDA Secretarial disaster designation for drought.

	Warning Time
Drought	1.11

	Duration
Drought	4.00

Hazard Location

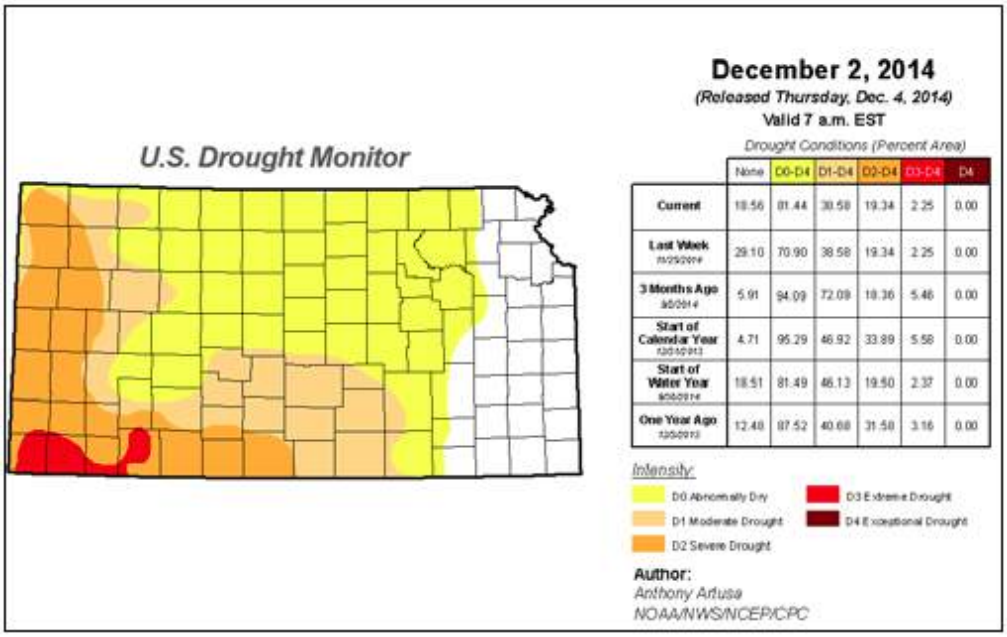
Drought tends to affect broad regions and the entire planning area is subject to drought occurrence at roughly equal probability. The impacts of prolonged drought are most significant in agricultural areas of the region. In addition to impacts on the region's agricultural areas, drought can affect cities by severely limiting public water supplies due to depletion of natural water sources and greatly increased demand.

The passage by Congress of the farm bill in 2014 allows drought affected producers in affected counties, if qualified, eligible for low interest emergency loans from USDA's Farm Service Agency. Farmers in eligible counties have eight months from the date of the declaration to apply for loans to help cover part of their actual losses.

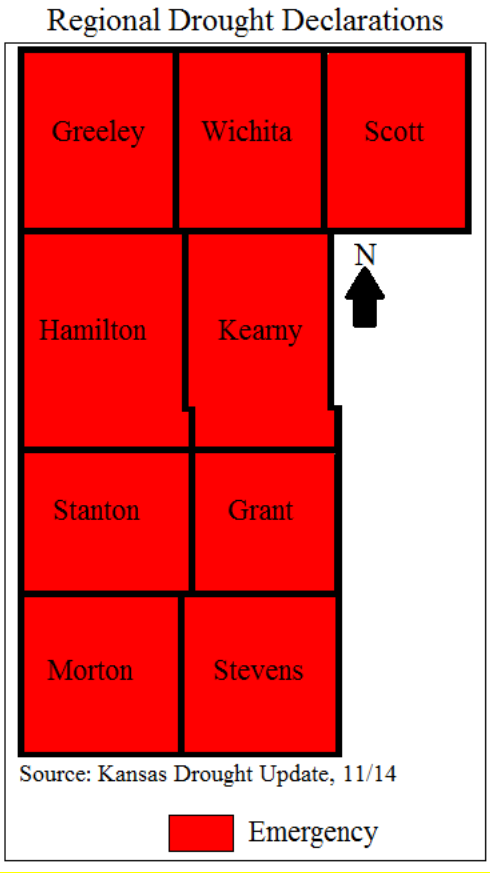
As of November 2014, the Kansas Water Office (KWO) has indicated the following drought conditions and advisories for the entire planning region.

- Executive Order 14-04 is in effect with all regional counties remaining under a Drought Emergency.
- The US Drought Monitor indicates drought conditions persist across 43% the state.
- The Monthly Drought Outlook for December and seasonal outlook through February, 2015 indicates drought conditions to persist or intensify for western Kansas

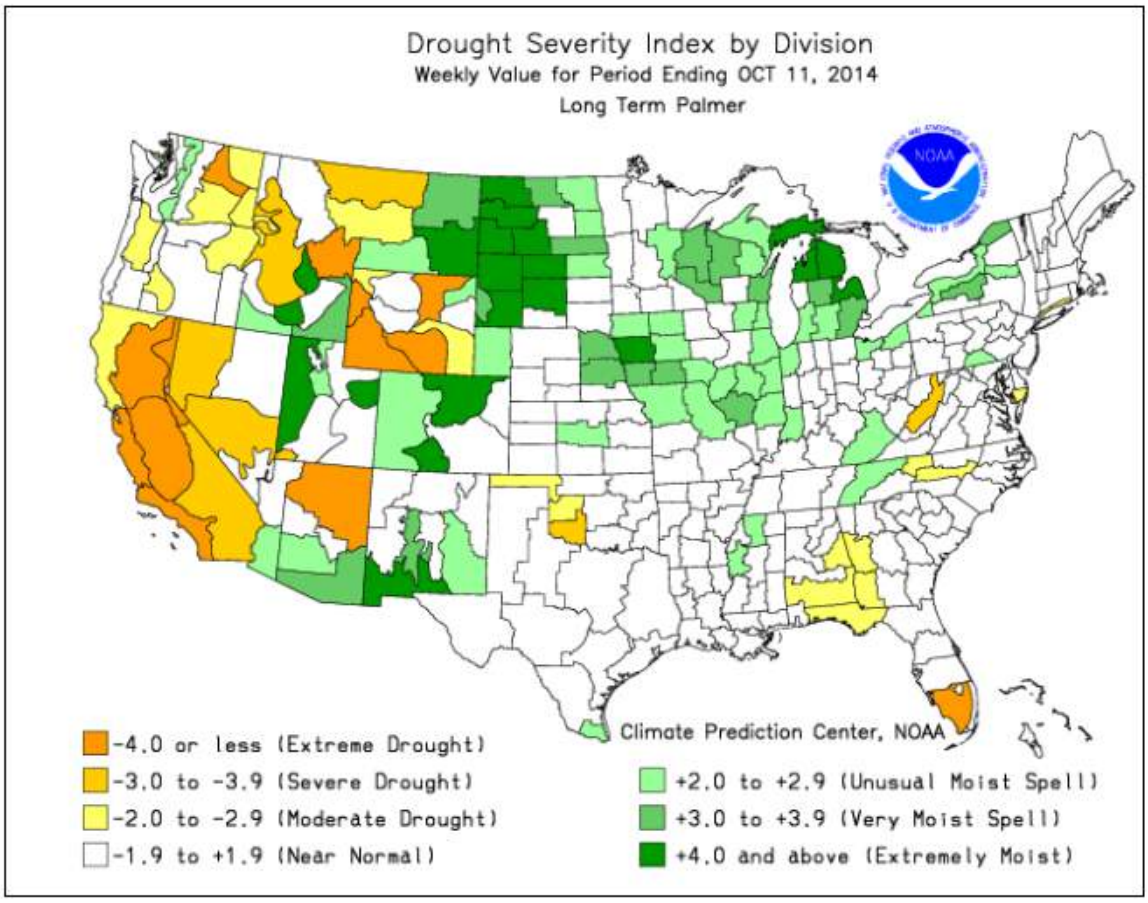
The following U.S. Drought Monitor map from December 2, 2014 shows that all of southwest Kansas is currently in drought conditions, classified as extreme to exceptional.



The following map from May 21, 2014 from the KWO shows that all of southwest Kansas is under a Drought Emergency.



The following map from October 11, 2014 shows PSDI information and designations for the region.



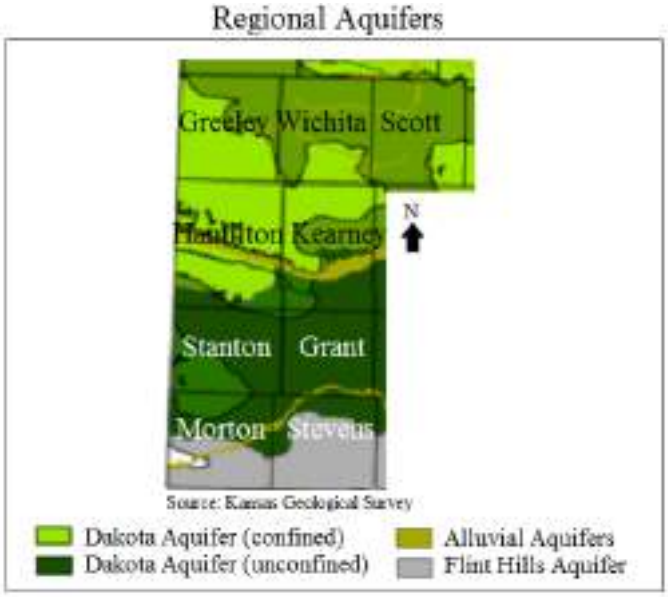
The following table provides the latest drought designations and seasonal outlooks for the region.

Regional Drought Designations and Outlooks

County	KWO Drought Designation	Kansas 2014 Secretarial Designations for Drought	U.S. Drought Monitor	NWS Climate Prediction Center Seasonal Outlook through February 28, 2015
Grant	Emergency	Primary	D2-D3 (severe to extreme)	Drought persists or intensifies
Greeley	Emergency	Primary	D2 (severe)	Drought persists or intensifies
Hamilton	Emergency	Primary	D2 (severe)	Drought persists or intensifies
Kearny	Emergency	Primary	D2 (severe)	Drought persists or intensifies
Morton	Emergency	Primary	D2-D3 (severe to extreme)	Drought persists or intensifies
Scott	Emergency	Primary	D1-D2 (moderate to severe)	Drought persists or intensifies
Stanton	Emergency	Primary	D2-D3 (severe to extreme)	Drought persists or intensifies
Stevens	Emergency	Primary	D2-D3 (severe to extreme)	Drought persists or intensifies
Wichita	Emergency	Primary	D2 (severe)	Drought persists or intensifies

Source: KWO

In southwest Kansas, the primary sources of water are surface water, including rivers, federal reservoirs, multipurpose small lakes, and municipal lakes and subsurface aquifers. The following map shows the aquifers in southwest Kansas and adjacent counties.



Drought can severely challenge a public water supplier through depletion of the raw water supply and greatly increased customer water demand. Even if the raw water supply remains adequate, problems due to limited treatment capacity or limited distribution system capacity may be encountered. A 2007 assessment of 800 city or rural water district drinking water systems by the KWO found 132 to be drought vulnerable. The following are potential limiting factors:

- **Basic Source Limitation** - The supplier's primary raw water source is particularly sensitive to drought as evidenced by depleted streamflow, depleted reservoir inflow and storage, or by declining water levels in wells. Restrictions imposed due to inability to use a well(s) because water quality problems were considered indicative of a basic source limitation.
- **Contractual Limitation** - The supplier's sole water source is purchased from another system that is drought vulnerable and there is a drought-cut-off clause in their water purchase contract. In such situations where there is not a drought cut-off clause, the purchaser is considered drought vulnerable under the same limitation category as the seller.
- **Distribution System Limitation** - The supplier has difficulty or is unable to meet drought-induced customer demand for water due to inadequate finished water storage capacity, inadequate pumping capacity, or inadequate transmission line sizes.
- **Minimum Desirable Streamflow** - The supplier reported imposing restrictions because of minimum desirable streamflow administration. Water rights junior to those granted for maintenance of established minimum desirable flows are subject to such administration.
- **Single Well Source** - The supplier relies upon a single well as its sole source for raw water. Suppliers with one active well and one emergency well were considered drought vulnerable because emergency wells are not a dependable long-term water source. Excessive hours of operation to meet drought-induced customer demand for water will result in the increased likelihood of mechanical breakdown with no alternative water supply source available.
- **Treatment Capacity Limitation** - The supplier has difficulty or is unable to meet drought-induced customer demand for water due to inadequate raw water treatment capacity.

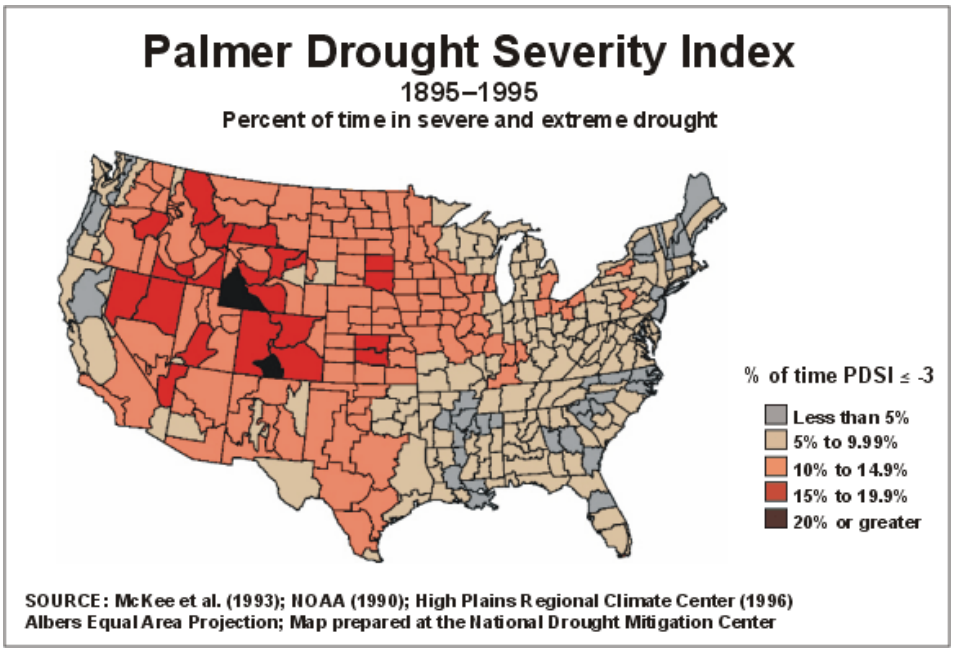
- **Water Right Limitation** - The supplier reported imposing restrictions because the quantity of water they are authorized to divert under their water right(s) was insufficient to meet customer demands.

The KWO September, 2014 Drought Update indicates in Scott County, the Scott City public water supply is under a water warning.

Areas that appear to be the most vulnerable to drought are the focus of the Governor's Drought Response Team for planning, management and mitigation activities. While drought does not usually cause damage to buildings and critical facilities, work and living locations do affect people. However, as regional counties experience decreases and agricultural activities it could potentially create lower demands on public water suppliers.

Previous Occurrences and Extent

As is indicated in the following PDSI map, droughts are common throughout the southwest Kansas planning region. For the period of 1895 to 1995, southwest Kansas has had a PDSI rating of less than -3 (Severe Drought) 10% to 14.95% of the time.



The following are notable instances of drought in the planning region:

2014: Executive Order 14-04 supersedes Executive Order 13-02, with all regional counties remaining under a Drought Emergency, Warning or Watch.

2014: The 2014 Farm Bill makes the Livestock Forage Disaster Program a permanent program. The program provides compensation to eligible livestock producers who have suffered grazing losses due to drought, equal to 60 percent of the monthly feed cost for up to five months. An eligible livestock producer that owns or leases grazing land or

pastureland physically located in a county rated by the U.S. Drought Monitor as D2 (severe drought) for eight consecutive weeks or more during the normal grazing period: assistance equals one monthly payment; D3 (extreme drought) anytime during the normal grazing period: assistance equals three monthly payments; D3 (extreme drought) for four weeks or more during the normal grazing period or D4 (exceptional drought) anytime during the normal grazing period: assistance equals four monthly payments; D4 (exceptional drought for four weeks (consecutive weeks unnecessary) during the normal grazing period: assistance equals five monthly payments.

2013: Executive Order 13-02 indicates all local counties are under a Drought Emergency.

2012: The Governor signed three executive orders this year for drought with all southwest Kansas counties being declared in emergency drought status with the last order. The Governor approved the June 2012 Operations Plan for the Governor's Drought Response Team which updated activities and responses. The Kansas Water Office increased the frequency of the Drought/Climate report to weekly for much of the year due to intensity of conditions.

2012: USDA agricultural disaster due to drought was declared for all 105 counties in Kansas based on crop losses through a series of six designations in July and August 2012. This makes producers eligible for certain emergency funding. The crop losses were estimated at $1.5 billion for the State. At least 197 communities and rural water districts in Kansas had voluntary or mandatory restrictions on water use as drought and high demand depleted public water supplies and challenged treatment and distribution. Mandatory restrictions were placed on water right holders junior to minimum desirable streamflow in as many as 17 locations affecting 540 water appropriations. Livestock ponds, feed and pasture were insufficient to meet needs. Contingencies for feed and water were made available to producers through hay networks, motor carrier authorities and emergency water from state fishing lakes and federal reservoirs. Despite these efforts, livestock numbers in June marked the lowest cattle inventory since 1973. The risk of wildfires was high throughout the State with as many as 78 counties issuing burn bans over some period of 2012. At least 41,000 acres burned. Dry conditions in the fall of 2012 resulted in dust storms visible by satellite.

2011: Precipitation for 2011 was -8.92 inches below normal for the year statewide, with climatic divisions varying from -3.51 to -14.36 inches below normal. The Governor signed six executive orders between April and November for various drought stages over the year, increasing the number of counties to 100 in the November order including 40 counties in emergency stage. The year began with extraordinarily low winter moisture and the very little precipitation continued throughout the year. Throughout the year the severity and area affected varied. Conditions improved slightly through the end of the year. USDA agricultural disaster due to drought was declared for 70 counties in Kansas based on crop losses. Kansas agricultural losses were estimated by the Kansas Department of Agriculture at over $1.77 billion due to drought. Statewide, soil moisture was around 50 percent adequate as 2011 began but never exceeded 55 percent for topsoil moisture until November. Significant portions of southern Kansas had below normal monthly-average

stream flows begin to occur in April, increasing in area and or severity each month until peaking in July.

October 2006: Kansas also experienced drought conditions in 2006. In October 2006, the U.S. Department of Agriculture designated 57 Kansas counties primary natural disaster areas because of losses caused by the combined effects of various disasters that occurred during the past year, including a late spring freeze, drought, high winds, and extreme temperatures. Provisional stream flow data from the U.S. Geological Survey indicated that several long-term low stream flow records were broken in July.

May 4, 2002–October 1, 2003: Grazing was prohibited on government lands to protect the drought-stressed grass, affecting thousands of cattle. Emergency haying and grazing was allowed by the USDA on Conservation Reserve Program lands. All 105 counties were eligible for federal assistance through the USDA. The drought had a $1.1 billion impact on crop production.

1988–1992: The severity of this drought varied across the state. It was most severe in the southwestern, central, and northeastern parts of the state but minimal in the northwestern and southeastern parts. Surface-water supplies were sufficient to meet demands through the end of water year 1988, but rainfall during this period was less than 50% of the long-term average, so quantities were insufficient to maintain soil moisture or contribute to ground-water supplies. Estimated drought-related losses to 1988 crops were $1 billion. Water levels in shallow aquifers declined rapidly and led to the abandonment of many domestic water wells. The drought of 1988 continued into the 1990s, but at a reduced level.

1974–1982: This appeared to be a series of relatively short droughts at some stream gauging stations, but longer droughts at others (similar to the 1962–1972 droughts). The recurrence interval of this drought was greater than 25 years in the southwest Kansas and southeastern parts but was between 10 and 25 years across the remaining eastern two-thirds of the state. The severity of this drought could not be determined for the western third of the state.

1962–1972: The duration of this regional drought varied considerably across Kansas. Many of the streamflow records indicated alternating less than average and greater-than-average flows, while others indicated less than average flows for the entire period. The recurrence interval was generally greater than 25 years but was between 10 and 25 years in parts of the northwestern, northeastern, southern, and southeastern areas of the state.

1952–1957: This regional drought had a recurrence interval greater than 25 years statewide. One exception was in the Big Blue River Basin, where the recurrence interval was 10-25 years. Because of its severity and areal extent, this drought is used as the base period for studies of reservoir yields in Kansas. In 1954, 41 counties were declared eligible for aid under the Emergency Feed program. During this period, 175 cities reported water shortages, most of which restricted water use.

1929–1942: This drought, which includes the Dust Bowl of the 1930s, was regional in scale and affected many of the Midwestern and western states. Nevertheless, it ranks among the most significant national events of the twentieth century. The recurrence interval was greater than 25 years throughout Kansas. Drought, wind, and poor agricultural practices combined to result in enormous soil erosion. Agricultural losses were extreme, and many farms were abandoned. Effects of the drought sent economic and social ripples throughout the country, contributing to the economic, physical, and emotional hardships of the Great Depression.

In addition, the following are USDA disaster declarations related to drought for 2014.

USDA Drought Related Disaster Declarations, 2014

Declaration Number	Declaration Date	Disaster Description	Regional Counties Involved
S3627	01/15/2014	Drought-Fast Track	Primary: Hamilton, Morton and Stanton
S3629	01/15/2014	Drought-Fast Track	Primary: Grant, Greeley, Hamilton, Kearny, Morton, Scott, Stanton, Stevens and Wichita
S3632	01/15/2014	Drought-Fast Track	Primary: Morton and Stevens

Source: USDA

Hazard Vulnerability and Impact

Droughts have historically had the greatest impact on the largest number of people of all weather phenomenon, according to the National Climatic Data Center (NCDC). Recent droughts, have had serious economic impacts. Between 1980 and today, 16 identified drought events within the United States have cost a combined $210 billion.

As of October, 2014, drought conditions persist across the state with some areas of improvement. At the start of September only two percent of the state was considered drought free. At the end of September, the portion of the state that was drought free increased to almost 19 percent. However, in western Kansas severe drought continues to dominate a large portion of the region.

The following statistical analysis uses two significant factors in determining the drought vulnerability for southwest Kansas. One is the USDA Risk Management Agency's annualized insured crop losses as a result of drought conditions during the ten-year period of 2002-2011, with the ratio being all sums paid as indemnities under any eligible crop insurance policy to that portion of the premium designated for anticipated losses and a reasonable reserve, other than that portion of the premium designated for operating and administrative expenses, and the number of drought vulnerable public water suppliers in Kansas from the information provided above. It was determined that all counties in southwest Kansas have either insured crop loss and/or drought vulnerable public water suppliers thus all counties are rated at least at a medium vulnerability rating since agriculture is a major economic factor in most southwest Kansas counties and public water supply is an essential service to all south Kansans.

The rating values of the two factors were divided by 50 percent to determine the total drought vulnerability rating. The total drought vulnerability rating put all counties in either the medium,

medium-high or high category. The following table provides the factors considered and the rating values assigned.

Ranges for Drought Vulnerability Factor Ratings

Factors Considered	Low (1)	Low-Medium (2)	Medium (3)	Medium-High (4)	High (5)
Crop Loss Ratio Rating	.599 to 2.817	2.818 to 4.595	4.596 to 6.373	6.374 to 8.151	8.152 +
Drought Vulnerable Public Water Supplies Ratio Rating	1	2	3-6	7-9	10-14
Total Drought Vulnerability Rating	n/a	n/a	1	2 to 3	4+

The following table shows the variance of drought conditions by county in southwest Kansas using the latest available data that allows for correlation.

Regional Drought Vulnerability Rating

County	Crop Exposure (2012 Census of Agriculture)	Annualized Crop Insurance Paid/Drought Damage (2010 - 2013)	Annual Crop Claims Ratio (2012)	Crop Loss Ratio Rating	Number of Drought Vulnerable Public Water Suppliers	Drought Vulnerable Public Water Supppliers Rating	Total Rating (Crops & Water Suppliers)	Vulnerability Rating
Grant	$86,023,000	$5,842,310	6.79%	5	0	0	5	High
Greeley	$58,936,000	$12,939,096	21.95%	5	0	0	5	High
Hamilton	$55,383,000	$11,217,555	20.25%	5	0	0	5	High
Kearny	$80,730,000	$8,082,189	10.01%	5	0	0	5	High
Morton	$58,361,000	$7,493,876	12.84%	5	0	0	5	High
Scott	$64,648,000	$15,990,675	24.73%	5	0	0	5	High
Stanton	$79,556,000	$8,654,897	10.88%	5	0	0	5	High
Stevens	$144,543,000	$6,417,222	4.44%	5	0	0	5	High
Wichita	Unavailable	$11,109,031	-	(5)	1	1	(6)	High

Source: USDA Risk Management Agency

A drought period can last for months, years, or even decades. It is rarely a direct cause of death, though the associated heat, dust, and stress can all contribute to increased mortality. Also, as counties experience decreases in population it will create lower demands on public water suppliers.

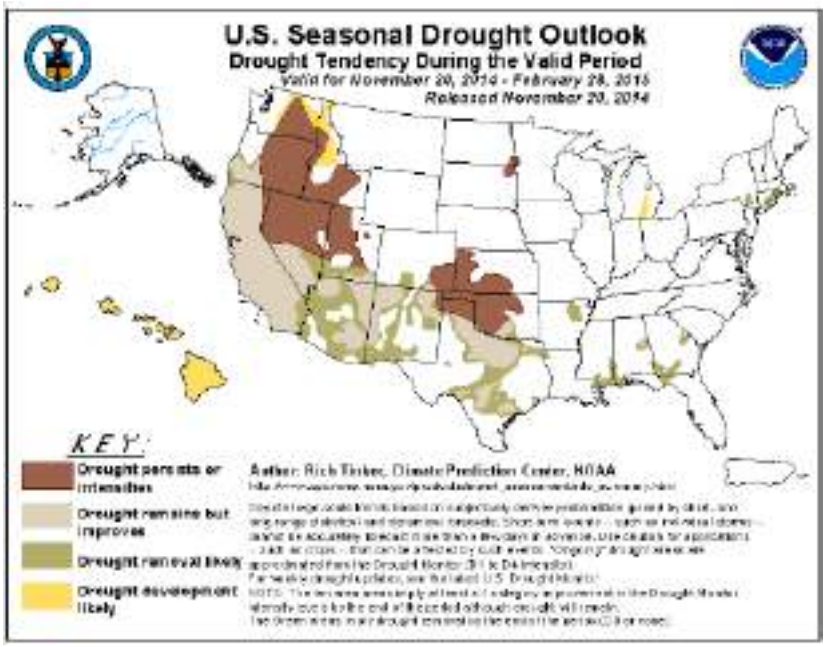
	Magnitude/Severity
Drought	2.56

Future Development

Future development of infrastructure and agricultural resources and/or increases in population would tend to increase the risk of this hazard. Increases in this type of development could potentially result in impacts on the growth and development of crops and livestock, on utility delivery due to either damage or increased demand, and on an individual basis due to foundation damages to homes. However, data indicate that regionally farmable acres have remained relatively static, and that the population is generally decreasing, which would tend to lessen the future impact of this hazard.

Probability of Future Occurrences

Although drought is not predictable, the National Oceanic and Atmospheric Administration (NOAA) long-range outlooks indicate regionally drought conditions are expected to improve.



In recent years, drought has affected regional counties on a reoccurring basis. With the possibility of climate change, this hazard may affect more areas of the region more often. Based on historical Drought Impact Reporter reporting, there were 575 drought impacts in Kansas between May 2004 and May 2014, southwest Kansas can expect frequent and likely drought occurrences.

	Probability
Drought	3.11

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Drought Consequence Analysis

Subject	Ranking	Impacts of Drought
Health and Safety of Persons in the Area of the Incident	Minimal - Moderate	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.
Responders	Minimal	Impact to responders is expected to be minimal.
Continuity of Operations	Minimal	Minimal expectation for utilization of the COOP.
Property, Facilities, and Infrastructure	Minimal to Severe	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.
Delivery of Services	Minimal	Impact on the delivery of services should be non-existent to minimal, unless transportation nodes are affected.
Environment	Minimal to Severe	The impact to the environment could be severe. Drought can severely affect farming, ranching, wildlife and plants due to the lack of precipitation.
Economic Conditions	Minimal to Moderate	Impacts to the economy will be dependent on how extreme the drought is and how long it lasts. Communities that depend on water recreation could be tested, as well as agricultural. Minimal to Moderate.
Public Confidence in Jurisdiction's Governance	Minimal	Confidence could be an issue during periods of extreme drought if planning is not in place to address intake needs and loss of crops.

3.7.5 EARTHQUAKE

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Earthquake	1.00	1.33	4.00	1.00	1.55

Description

An earthquake is the movement, shaking or trembling of the ground produced by sudden displacement of rock in the Earth's crust. Earthquakes may result from the sudden collapse of a void within the earth, landslides, or volcanic activity. However, most earthquakes are caused by the release of stresses accumulated as a result of the rupture of rocks along opposing fault planes in the Earth's outer crust. These fault planes are typically found along borders of the Earth's tectonic plates, which generally follow the outlines of the continents.

The areas of greatest tectonic instability occur at the perimeters of the slowly moving plates, as these locations are subjected to the greatest strains from plates traveling in opposite directions and at different speeds. Deformation along plate boundaries causes strain in the rock and the consequent buildup of stored energy. When the built-up stress exceeds the rocks' strength, a rupture occurs. The rock on both sides of the fracture is snapped, releasing the stored energy and producing seismic waves, generating an earthquake.

Concerns about induced seismicity, or earthquake activity related to hydraulic fracturing or fracking, have been raised in some areas. Fracking is a method of enhancing oil and gas recovery from wells by injecting water, sand, and chemicals into rock formations under very high pressure to fracture the rock and release trapped hydrocarbons. According to the Kansas Geological Survey, there is no evidence that hydraulic fracturing itself triggers earthquakes (Kansas Geological Survey, Public Information Circular 32).

Earthquakes can affect large areas, cause extensive damage to property, result in loss of life and injury to people within the area of the quake, and disrupt or destroy the areas infrastructure.

	Warning Time
Earthquake	4.00

	Duration
Earthquake	1.00

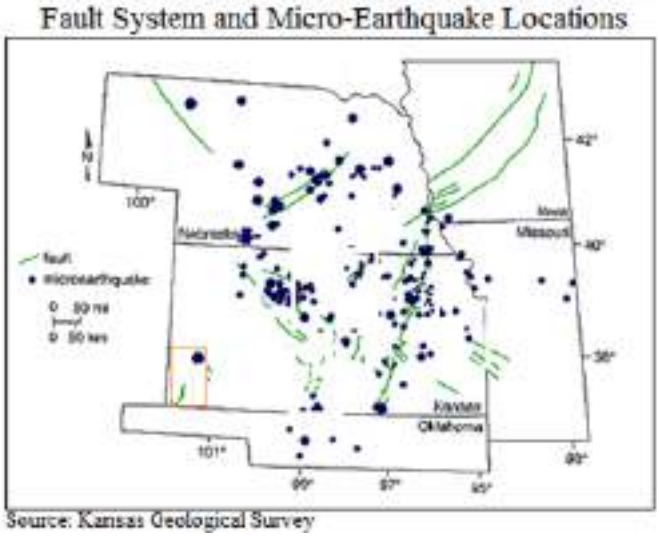
Hazard Location

Overall, southwest Kansas is in an area of relatively low seismic activity. Based on available data, the earthquake hazard is considered roughly the same across the southwest Kansas planning area.

The closest series of major faults is called the Humboldt Fault Zone. Also known as the Nemaha Uplift, the Humboldt Fault Zone runs to the east of the region.

Source: Kansas Geological Survey, Earthquakes in Kansas

The following figure from the Kansas Geological Survey shows the locations of fault systems and micro earthquakes across the Midwest.



Source: Kansas Geological Survey

Previous Occurrences and Extent

Southwest Kansas is in an area of relatively low seismic activity. According to a 2006 FEMA report, Kansas ranks 44th among the states in the amount of damage caused by earthquakes in an average year and 43rd in annualized earthquake loss per year. The following details known local earthquake events:

> **November 12, 2014:** A magnitude 4.5 quake occurred in Conway Springs, well east of the region and causing no reported regional damage.

August 17, 2009: A magnitude 3.9 earthquake occurred near Garden City causing no reported damage.

According to the United States Geological Survey (USGS) Earthquake Hazards Program, from 1974 to 2003 Kansas has had four earthquakes of a 3.5 or greater magnitude. This represents approximately 0.02% out of 21.080 earthquakes recorded throughout the United States during the same period.

Hazard Vulnerability and Impact

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and finally total destruction. The Modified Mercalli Intensity Scale is currently used in the United States. It was developed in 1931 by the American seismologists Harry Wood and Frank Neumann. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects.

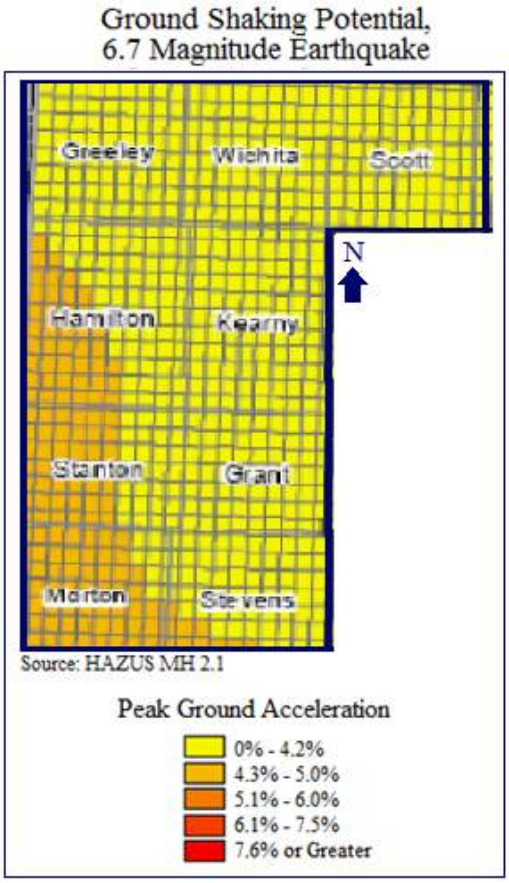
Modified Mercalli Intensity Scale

Mercalli Rating	General Effects
I. Instrumental	Generally not felt by people unless in favorable conditions.
II. Weak	Felt only by a couple people that are sensitive, especially on the upper floors of buildings. Delicately suspended objects (including chandeliers) may swing slightly.
III. Slight	Felt quite noticeably by people indoors, especially on the upper floors of buildings. Many do not recognize it as an earthquake. Standing automobiles may rock slightly. Vibration similar to the passing of a truck. Duration can be estimated. Indoor objects (including chandeliers) may shake.
IV. Moderate	Felt indoors by many to all people, and outdoors by few people. Some awakened. Dishes, windows, and doors disturbed, and walls make cracking sounds. Chandeliers and indoor objects shake noticeably. The sensation is more like a heavy truck striking building. Standing automobiles rock noticeably. Dishes and windows rattle alarmingly. Damage none.
V. Rather Strong	Felt inside by most or all, and outside. Dishes and windows may break and bells will ring. Vibrations are more like a large train passing close to a house. Possible slight damage to buildings. Liquids may spill out of glasses or open containers. None to a few people are frightened and run outdoors.
VI. Strong	Felt by everyone, outside or inside; many frightened and run outdoors, walk unsteadily. Windows, dishes, glassware broken; books fall off shelves; some heavy furniture moved or overturned; a few instances of fallen plaster. Damage slight to moderate to poorly designed buildings, all others receive none to slight damage.

Modified Mercalli Intensity Scale Continued

Mercalli Rating	General Effects
VII. Very Strong	Difficult to stand. Furniture broken. Damage light in building of good design and construction; slight to moderate in ordinarily built structures; considerable damage in poorly built or badly designed structures; some chimneys broken or heavily damaged. Noticed by people driving automobiles.
VIII. Destructive	Damage slight in structures of good design, considerable in normal buildings with a possible partial collapse. Damage great in poorly built structures. Brick buildings easily receive moderate to extremely heavy damage. Possible fall of chimneys, factory stacks, columns, monuments, walls, etc. Heavy furniture moved.
IX. Violent	General panic. Damage slight to moderate (possibly heavy) in well-designed structures. Well-designed structures thrown out of plumb. Damage moderate to great in substantial buildings, with a possible partial collapse. Some buildings may be shifted off foundations. Walls can fall down or collapse.
X. Intense	Many well-built structures destroyed, collapsed, or moderately to severely damaged. Most other structures destroyed, possibly shifted off foundation. Large landslides.
XI. Extreme	Few, if any structures remain standing. Numerous landslides, cracks and deformation of the ground.
XII. Catastrophic	Total destruction – everything is destroyed. Lines of sight and level distorted. Objects thrown into the air. The ground moves in waves or ripples. Large amounts of rock move position. Landscape altered, or leveled by several meters. Even the routes of rivers can be changed.

The following map demonstrates the ground shaking potential of a worst-case scenario 2,500-year 6.7 Magnitude earthquake. It is important to note that ground shaking potential is not only related to proximity to the fault, but also the geology involved. For example areas with high sand content are subject to higher shaking than areas with high rock content.



The following table provides estimated building losses and displaced households for all counties in southwest Kansas as a result of a 2,500 year probabilistic 6.7 Magnitude earthquake. It should be noted that these losses are for an absolute worst-case scenario event.

Estimated Building Losses and Displaced Households due to Magnitude 6.7 Earthquake

County	Total Earthquake Losses	Displaced Households
Grant	$3,258	<1
Greeley	$772	<1
Hamilton	$1,258	<1
Kearny	$1,307	<1
Morton	$1,789	<1
Scott	$1,806	<1
Stanton	$1,142	<1
Stevens	$1,876	<1
Wichita	$941	<1
Regional Total	$14,149	<9

Source: HAZUS MH 2.1

Although the probability of a significant damaging earthquake is unlikely, the presence of the Humboldt Fault to the east, and historical occurrences along this fault, indicate that the potential does exist.

	Magnitude/Severity
Earthquake	1.33

Future Development

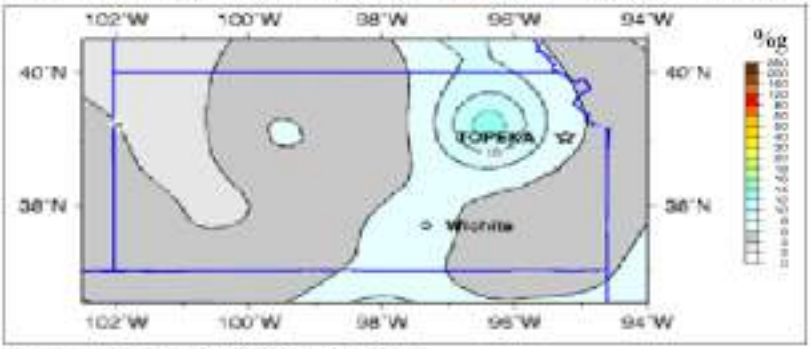
Future development and population increase would tend to increase the likelihood of the population being impacted by an earthquake. In addition, demographic movement to major population centers with high density development would tend to increase the likelihood of the population being impacted by an earthquake. Areas with major dams or levee systems may have additional vulnerabilities. However, in general, the region is experiencing a population decline which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

The following is a probabilistic seismic hazard map of Kansas from the USGS that depict the probability that ground motion will reach a certain level during an earthquake. The data shows peak horizontal ground acceleration (the fastest measured change in speed for a particle at ground level that is moving horizontally because of an earthquake) and shows that the shaking level that has a 10 percent chance of being exceeded over a period of 50 years.

The following figure presents a worst-case scenario, depicting the shaking level that has a 2 percent chance of being exceeded over a period of 50 years. Typically, significant earthquake damage occurs when accelerations are greater than 30% of gravity.

Peak Acceleration (%g) with 2% Probability of Exceedance in 50 Years



Source: National Seismic Hazard Mapping Project

Based on available data, the probability of an earthquake occurring within the southwest Kansas region is unlikely.

	Probability
Earthquake	1.00

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Earthquake Consequence Analysis

Subject	Ranking	Impacts of Earthquake
Health and Safety of Persons in the Area of the Incident	Minimal	Impact in the incident area expected to be minimal in the State of Kansas.
Responders	Minimal	With proper preparedness and protection, impact is expected to be minimal.
Continuity of Operations	Minimal	COOP is not expected to be activated.
Property, Facilities, and Infrastructure	Minimal	Impact to property, facilities, and infrastructure could be minimal.
Delivery of Services	Minimal	No expectation of impact on services.
Environment	Minimal	No expectation of environmental impact.
Economic Conditions	Minimal	No expected impacted.
Public Confidence in Governance	Minimal	No change in confidence

3.7.6 EXPANSIVE SOILS

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Expansive Soils	1.11	1.00	1.00	4.00	1.35

Description

A relatively widespread geologic hazard for southwest Kansas is the presence of soils that expand and shrink in relation to their water content. Expansive soils can cause physical damage to building foundations, roadways, and other components of the infrastructure when clay soils swell and shrink as a result of changes in moisture content. For southwest Kansas, the vulnerability to this hazard most frequently is associated with soils shrinking during periods of drought.

Highways, airport runways, streets, walkways and parking lots with layers of concrete and asphalt throughout southwest Kansas are damaged every year by the effects of expansive soils. The frequency of damage from expansive soils can be associated with the cycles of drought and heavy rainfall, which reflect changes in moisture content. Building settlements associated with drought have been noted in southwest Kansas for many years, particularly in buildings located on high ground, further from the water table.

	Warning Time
Expansive Soils	1.00

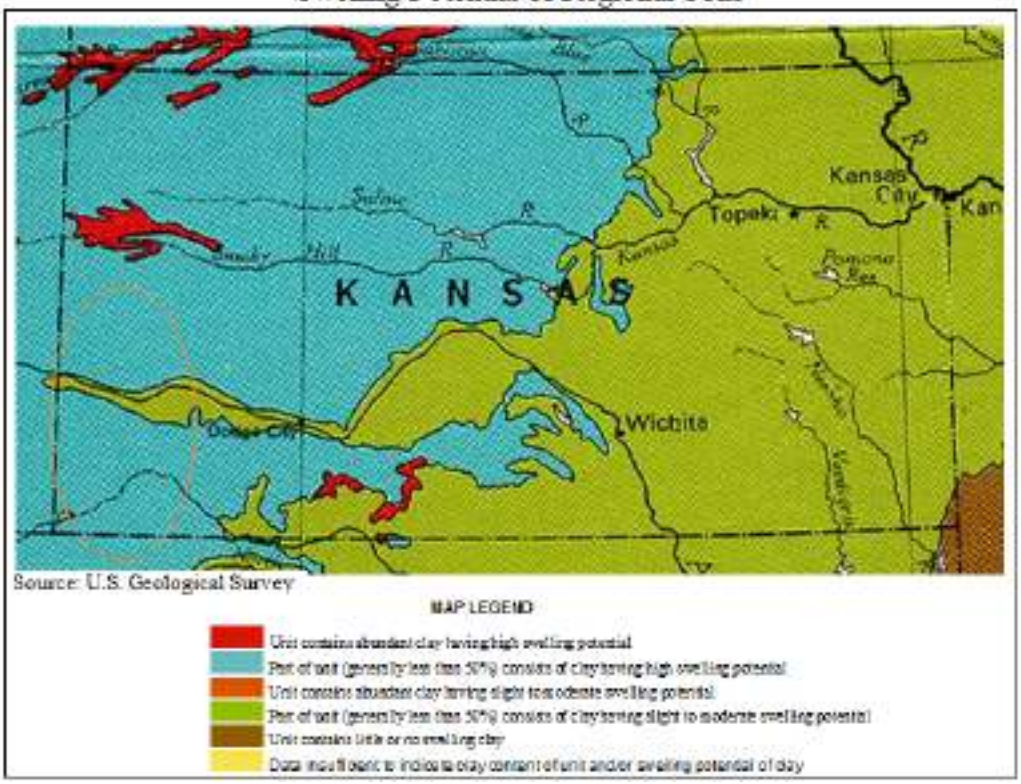
	Duration
Expansive Soils	4.00

Hazard Location

Southwest Kansas 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 southwest Kansas. All of southwest Kansas is located in an area where large parts of the soil unit consist of clay having high swelling potential.

Swelling Potential of Regional Soils



Previous Occurrences and Extent

There have been no reported major regional or local expansive soil events.

Hazard Vulnerability and Impact

Expansive soils are so extensive within parts of the United States that alteration of the highway routes to avoid expansive soils is virtually impossible. The Midwest is particularly problematic for construction because of the varied mixture of clay soils. Each year in the United States, expansive soils cause billions of dollars in damage to buildings, roads, pipelines, and other structures. This is more damage than typically caused by floods, hurricanes, tornados, and earthquakes combined. It is estimated that approximately 10 percent of the homes built on expansive soils experience significant damage. There is limited available data on this hazard and no reported occurrences.

	Magnitude/Severity
Expansive Soils	1.00

Future Development

Future development and population increase would tend to increase the likelihood of the population being impacted by expansive soil. However, damage from expansive soil to new construction is often mitigated with modern construction practices. Soil engineers and engineering geologists test soils for swell potential when designing a building's foundation. Simple observation

often can reveal the presence of expansive soils and can make recommendations for septic systems, grading, earth support, drainage, foundation design, concrete slab on grade construction and site remediation. In addition, the region is experiencing a population decline which could potentially lessen the potential impact of a future event due to decreased physical development.

Probability of Future Hazard Events

Based on the lack of recorded or reported historical events, the probability of future hazard events is unlikely.

	Probability
Expansive Soils	1.11

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Expansive Soils Consequence Analysis

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

3.7.7 EXTREME TEMPERATURE

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Extreme Temperature	2.67	1.56	1.11	3.33	2.17

Description

Extreme temperature events, both hot and cold, can have severe impacts on human health and mortality, natural ecosystems, agriculture, and other economic sectors.

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.

	Warning Time
Extreme Temperature	1.11

	Duration
Extreme Temperature	3.33

Hazard Location

The entire planning area is subject to extreme heat events and all participating jurisdictions can be affected. Regional climate data is fully discussed in Section 2.5.

Previous Occurrences and Extent

Since 1980, there have been a number of major extreme temperature events that have caused death and damage in Kansas. The following are notable heat related events for southwest Kansas.

> **Summer, 2012:** A strong ridge of high pressure settled over the central portions of the U.S. beginning in June and became the dominant weather pattern for much of the summer of 2012. This weather pattern finally broke down after the first week of August and temperatures became more seasonable. The hottest temperatures occurred on August 2nd and 4th at 107° Fahrenheit (°F). There were 6 days where the maximum temperature

reached 100°F or higher and this occurred during the first week of the month. There were 20 days where the maximum temperatures reached 90°F degrees or above. Heat advisories and warnings were issued for portions of the area for the early portion of August.

January 7, 2010: An unusually cold Arctic air mass covered large areas of the state January 6th and stayed through January 9th. In addition, this Arctic air mass brought in very strong winds creating dangerous wind chills.

April 2007: The U.S. Department of Agriculture designated 68 Kansas counties primary natural disaster areas because of losses caused by unseasonably warm temperatures followed by prolonged freezing weather that occurred from April 4-10, 2007.

July 2001: Several cities experienced many days in which temperatures exceeded 100 degrees Fahrenheit. There were difficulties meeting increased electrical demand because of the concurrent outage of a generating station.

The following tables present NCDC data relating to extreme temperature events for the region. Please note that not all events, including many of those detailed above, may be listed in the NCDC database.

NCDC Excessive Heat Events

County	Period	Event	Number of Events	Property Damage	Crop Damage	Number of Deaths
Grant	2010-2014	Excessive Heat	0	$0	$0	0
Greeley	2010-2014	Excessive Heat	0	$0	$0	0
Hamilton	2010-2014	Excessive Heat	0	$0	$0	0
Kearny	2010-2014	Excessive Heat	0	$0	$0	0
Morton	2010-2014	Excessive Heat	0	$0	$0	0
Scott	2010-2014	Excessive Heat	0	$0	$0	0
Stanton	2010-2014	Excessive Heat	0	$0	$0	0
Stevens	2010-2014	Excessive Heat	0	$0	$0	0
Wichita	2010-2014	Excessive Heat	0	$0	$0	0

Source: NCDC Storm Events Database

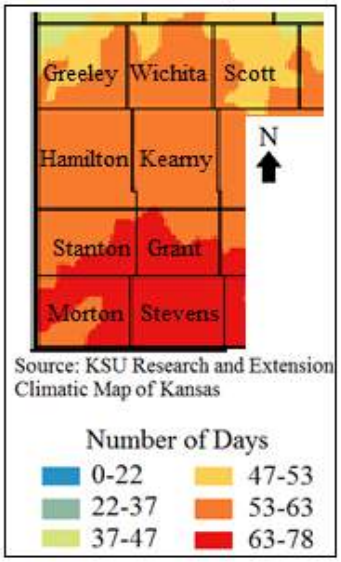
NCDC Extreme Cold Events

County	Period	Event	Number of Events	Property Damage	Crop Damage	Number of Deaths
Grant	2010-2014	Extreme Cold/ Wind Chill	0	$0	$0	0
Greeley	2010-2014	Extreme Cold/ Wind Chill	0	$0	$0	0
Hamilton	2010-2014	Extreme Cold/ Wind Chill	0	$0	$0	0
Kearny	2010-2014	Extreme Cold/ Wind Chill	0	$0	$0	0
Morton	2010-2014	Extreme Cold/ Wind Chill	0	$0	$0	0
Scott	2010-2014	Extreme Cold/ Wind Chill	0	$0	$0	0
Stanton	2010-2014	Extreme Cold/ Wind Chill	0	$0	$0	0
Stevens	2010-2014	Extreme Cold/ Wind Chill	0	$0	$0	0
Wichita	2010-2014	Extreme Cold/ Wind Chill	0	$0	$0	0

Source: NCDC Storm Events Database

The following map shows the average number of days the region experience temperatures over 90 degrees Fahrenheit from 1981 to 2010.

Average Number of Days with a High Temperature over 90° F, 1981 to 2010



For extreme heat, the KDHE's Environmental Public Health Tracking Program has kept records of the fatalities of Kansas residents since 2000. There have been at least 144 fatalities of Kansas residents since 2000 due to heat. The year of 2011 had the most recorded fatalities with 37. According to the Homeland Security Operations Bureau of Community Health Systems Kansas Department of Health and Environment there have been 35 heat related deaths and 37 cold related deaths in the region from the period 2000 to 2012.

Temperature Related Fatalities, Statewide

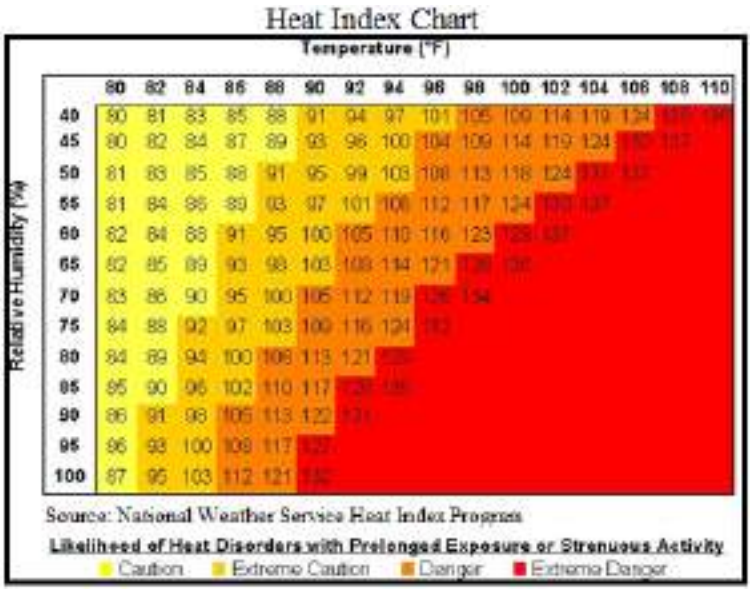
Year	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2002	3	2.21	18	13.24
2003	5	3.68	23	16.91
2004	4	2.94	27	19.85
2005	6	4.41	33	24.26
2006	21	15.44	54	39.71
2007	11	8.09	65	47.79
2008	9	6.62	74	54.41
2009	10	7.35	84	61.76
2010	5	3.68	89	65.44
2011	37	27.21	126	92.65
2012	10	7.35	136	100

Source: Department of Health and Environment's Kansas Environmental Public Health Tracking Program

Hazard Vulnerability and Impact

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.

The following Heat Index chart correlates both temperature and relative humidity to illustrate apparent, of felt, temperature.



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,

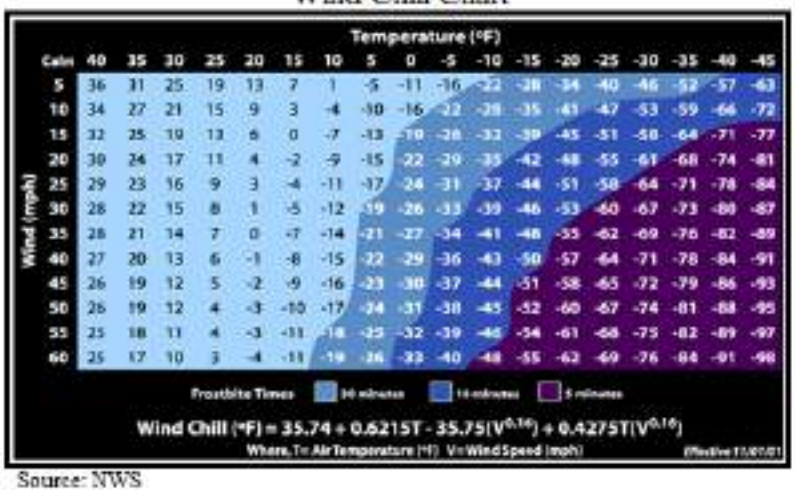
The National Weather Service (NWS) has a system in place to initiate alert procedures when the Heat Index is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. A common guideline for issuing excessive heat alerts is when the maximum daytime Heat Index is expected to equal or exceed 105°F and the night time minimum Heat Index is 80°F or above for two or more consecutive days.

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 southwest Kansas.

Wind can greatly amplify the impact of cold ambient air temperatures. The following figure, provided by the National Weather Service, shows the relationship of wind speed to apparent

temperature and typical time periods for the onset of frostbite. The combination of these elements affects the wind chill factor. The wind chill factor is the perceived temperature.

Wind Chill Chart



Source: NWS

In addition, extreme temperatures may exacerbate agricultural and economic losses. The following table presents agricultural loss data for the region for the period 2010 to 2013, the latest available data.

Total Insured Crop Insurance Paid per County from 2010-2013

County	Total Insured Crop Insurance Paid for Extreme Temperature Damages	Annualized Insured Crop Insurance Paid for Extreme Temperature Damages
Grant	$22,611,888	$5,652,972
Greeley	$3,870,004	$967,501
Hamilton	$5,307,903	$1,326,976
Kearny	$12,570,693	$3,142,673
Morton	$9,236,592	$2,309,148
Scott	$13,386,429	$3,346,607
Stanton	$18,211,162	$4,552,791
Stevens	$24,192,893	$6,048,223
Wichita	$19,102,804	$4,775,701

Source: USDA Risk Management Agency
Note: To include Heat, Hot Wind and Cold Winter

	Magnitude/Severity
Extreme Temperature	1.56

Future Development

Future development and population increase would tend to increase the likelihood of the population being impacted by extreme temperatures. Extreme temperatures tend to impact work and living conditions which may be affected due to increase demands, and potentially result in failures of, utility systems. However, in general, the region is experiencing a population decline

and a slight decline in agricultural acreage which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

Due to a large number of variables, predicting future climate conditions is difficult. Periods of extreme heat and cold occur on an annual basis, with data from the Kansas State University Research and Extension indicating that the region experiences more than 47 days per year on average with temperatures over 90 degrees Fahrenheit, with data reported from 1981 to 2010. In addition, the USDA reports and yearly regional average of $32,122,592 in crop insurance paid from 2010 to 2013. However, reporting from the NCDC indicates no extreme temperature events and no losses or damages from heat or cold related events. Further impacting any data analysis, the EPA has projected that with climate changes in the Great Plains, temperatures will continue to increase and affect all southwest Kansas communities. Despite the conflicting nature, an analysis of the data, where possible, indicates that extreme temperature events are considered likely.

	Probability
Extreme Temperature	2.67

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Extreme Temperature Consequence Analysis

Subject	Ranking	Impacts of Extreme Temperature
Health and Safety of Persons in the Area of the Incident	Minimal - Severe	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.
Responders	Minimal to Severe	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	Minimal expectation for utilization of the COOP.
Property, Facilities, and Infrastructure	Minimal to Severe	Impact to infrastructure could be minimal to severe depending on the temperature extremes.
Delivery of Services	Minimal	Impact should be non-existent to minimal.
Environment	Severe	The impact to the environment could be severe. Extreme heat and extreme cold could seriously damage wildlife and vegetation.
Economic Conditions	Minimal to Severe	Impacts to the economy will be dependent on how extreme the temperatures get, but only in the sense of whether people will venture out to spend money. Utility bills could increase causing more financial hardship.
Public Confidence in Governance	Minimal to Moderate	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.

3.7.8 FLOOD

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Flood	2.22	2.11	2.11	2.67	2.22

Description

Flooding is the most frequent and costly natural hazard in the United States. During the twentieth century, floods were the leading natural disaster in the United States, representing 40 percent of all natural disasters in terms of number of lives lost, estimated at more than 10,000 deaths since 1990, and property damaged. Nearly 90% of presidential disaster declarations result from natural events where flooding was a major component. The USGS reports that nationwide, floods kill an average of 140 people each year and cause $6,000,000,000 in property damage.

Floods that threaten southwest Kansas are generally the result of excessive precipitation, and can be classified under three 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
- **Urban Flood:** Occurs where man-made development has obstructed the natural flow of water and decreased the ability of natural groundcover to absorb and retain surface water runoff

The severity of a flooding event is generally determined by the following factors:

- The combination of stream and river basin topography and physiography
- Precipitation and weather patterns
- Soil moisture conditions
- Degree of vegetative clearing or impermeable ground cover

Riverine Floods

The NWS provides the following definitions of warnings for actual and potential flood conditions for Riverine and Urban 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.

Riverine flooding is defined as the overflow of rivers, streams, drains, and lakes due to excessive rainfall, rapid snowmelt or ice melt. The areas adjacent to rivers and stream banks that carry excess floodwater during rapid runoff are called floodplains. A floodplain is defined as the lowland and relatively flat area adjoining a river or stream. The terms "base flood" and "100-year flood" refer to the area in the floodplain that is subject to a one percent or greater chance of flooding in any given year. Floodplains are part of a larger entity called a basin, which is defined as all the land drained by a river and its branches. The surface waters of southwest Kansas flow through two river basins of the State as shown in the following figure.

Regional River Basins

Source: USGS Fact Sheet, Water Use in Kansas, 1990-2000

Flash Floods

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.

The onset of flooding varies depending on the cause and type, with flash flooding and dam/levee failure inundation occurring typically with little or no warning time, whereas flooding caused by

long periods of excessive rainfall tend to have longer durations but more gradual onset. Overall warning time is usually 6-12 hours. The duration of flood conditions is generally less than one week, but in exceptional cases can extend significantly longer.

A flash flood is an event that occurs with little or no warning where water levels rise at an extremely fast rate. Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area. Flash flooding results from intense rainfall over a brief period, sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil or impermeable surfaces. Flash flooding may also occur from the breaching or failure of a dam or levee.

Flash flooding is an extremely dangerous event which can reach full peak in only a few minutes and allows little or no time for protective measures to be taken by those in its path. Flash flood waters move at very high speeds with walls of water that can reach heights of 10 feet. Flash flood waters and the accompanying debris can uproot trees, roll boulders, and damage or destroy buildings, bridges, and roads. Flash flooding often results in higher loss of life, both human and animal, than slower developing river and stream flooding.

Although flash floods are somewhat unpredictable, there are factors that can point to the likelihood of flash floods occurring. Weather surveillance radar is being used to improve monitoring capabilities of intense rainfall. This, along with knowledge of the watershed characteristics, modeling techniques, monitoring, and advanced warning systems increases the warning time for flash floods.

Other Floods

In some cases, flooding may not be directly attributable to a river, stream, or lake overflowing its banks. Rather, it may simply be the combination of excessive rainfall or snowmelt, saturated ground, and inadequate drainage. With no place to go, the water will find the lowest elevations– areas that are often not in a floodplain. This type of flooding, often referred to as sheet flooding, is becoming increasingly prevalent as development outstrips the ability of the drainage infrastructure to properly carry and disperse the water flow.

In certain areas, aging storm sewer systems are not designed to carry the capacity currently needed to handle the increased storm runoff. Typically, the result is water backing into basements, which damages mechanical systems and can create serious public health and safety concerns. This, combined with rainfall trends and rainfall extremes, demonstrate the high probability, yet generally unpredictable nature of flash flooding in the planning area.

Generally, floods are long-term events that may last for several days.

	Warning Time
Flood	2.11

	Duration
Flood	2.67

Hazard Location

HAZUS-MH 2.1 was utilized to update the region's risk assessment for riverine flooding. Not all of the region's counties have available DFIRMS. As such, the Hazard Mitigation Planning Team decided to utilize the latest version of HAZUS, released in February 2012, as a GIS-based tool to update the Riverine Flooding Risk Assessment. HAZUS-MH 2.1 produces a flood polygon and flood depth grid that represents the base flood. While not as accurate as utilizing DFIRMs themselves, this approach ensures an "apples to apples" analysis to describe vulnerability in terms of the jurisdictions most threatened by riverine flooding, and most vulnerable to damage and loss associated with flooding events.

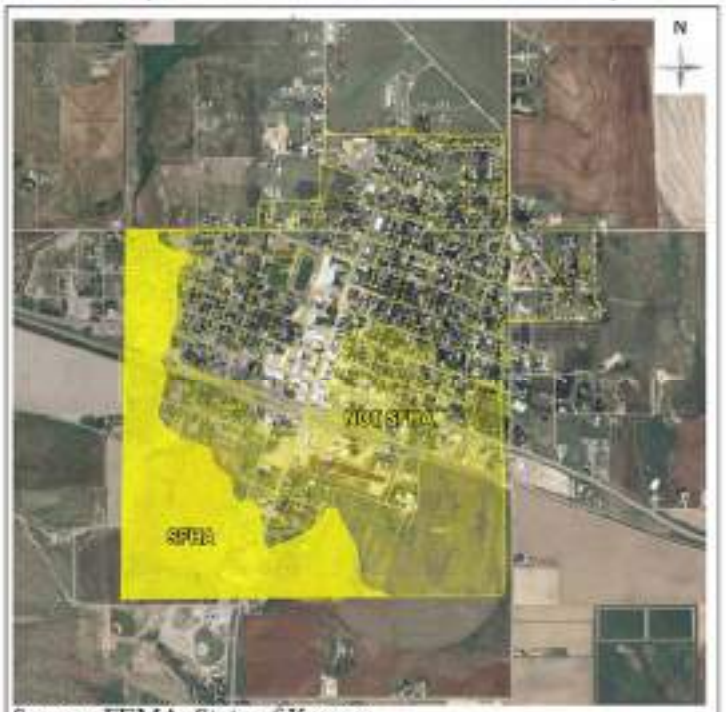
While riverine floods can and do occur at various levels, the one percent annual chance flood has been chosen as the basis for this risk assessment. This level is the accepted standard for flood insurance purposes.

Results from the HAZUS-MH 2.1 analysis will be provided throughout this section to depict floodplain areas as well as varied vulnerability and potential loss estimates. The following map provides a regional overview of the one percent annual chance floodplains in southwest Kansas, generated by HAZUS MH 2.1.

There are no available DFIRMs for counties within southwest Kansas as at the time of this plan none of the regional counties were fully mapped. If available, other available relevant maps indicating potential flooding zones have been included.

FEMA Special Flood Hazard Areas, Hamilton County

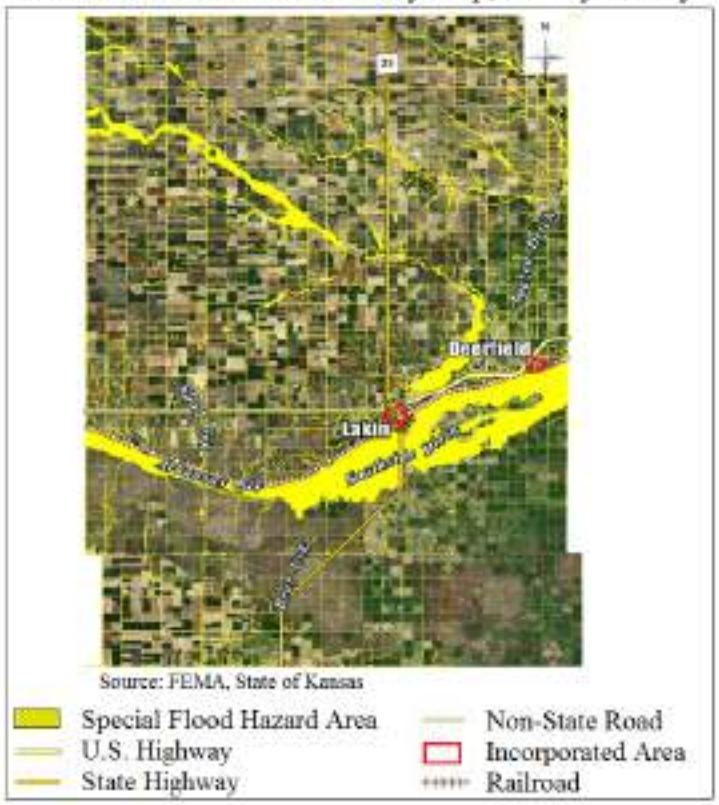
Syracuse FIRM, Hamilton County



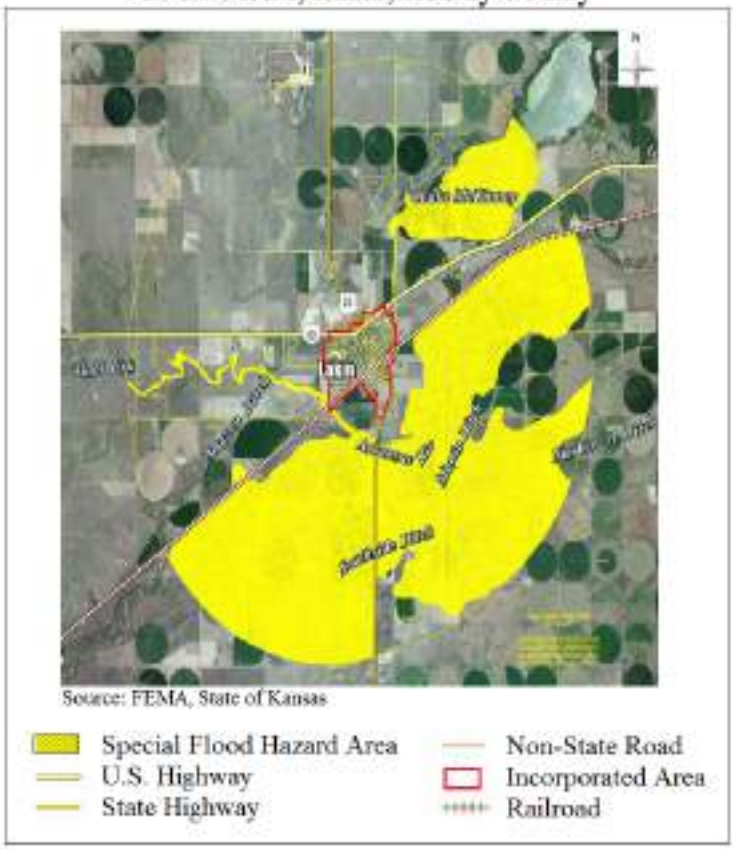
Source: FEMA, State of Kansas

Special Flood Hazard Area

FEMA Flood Hazard Boundary Map, Kearny County



FEMA FIRM, Lakin, Kearny County



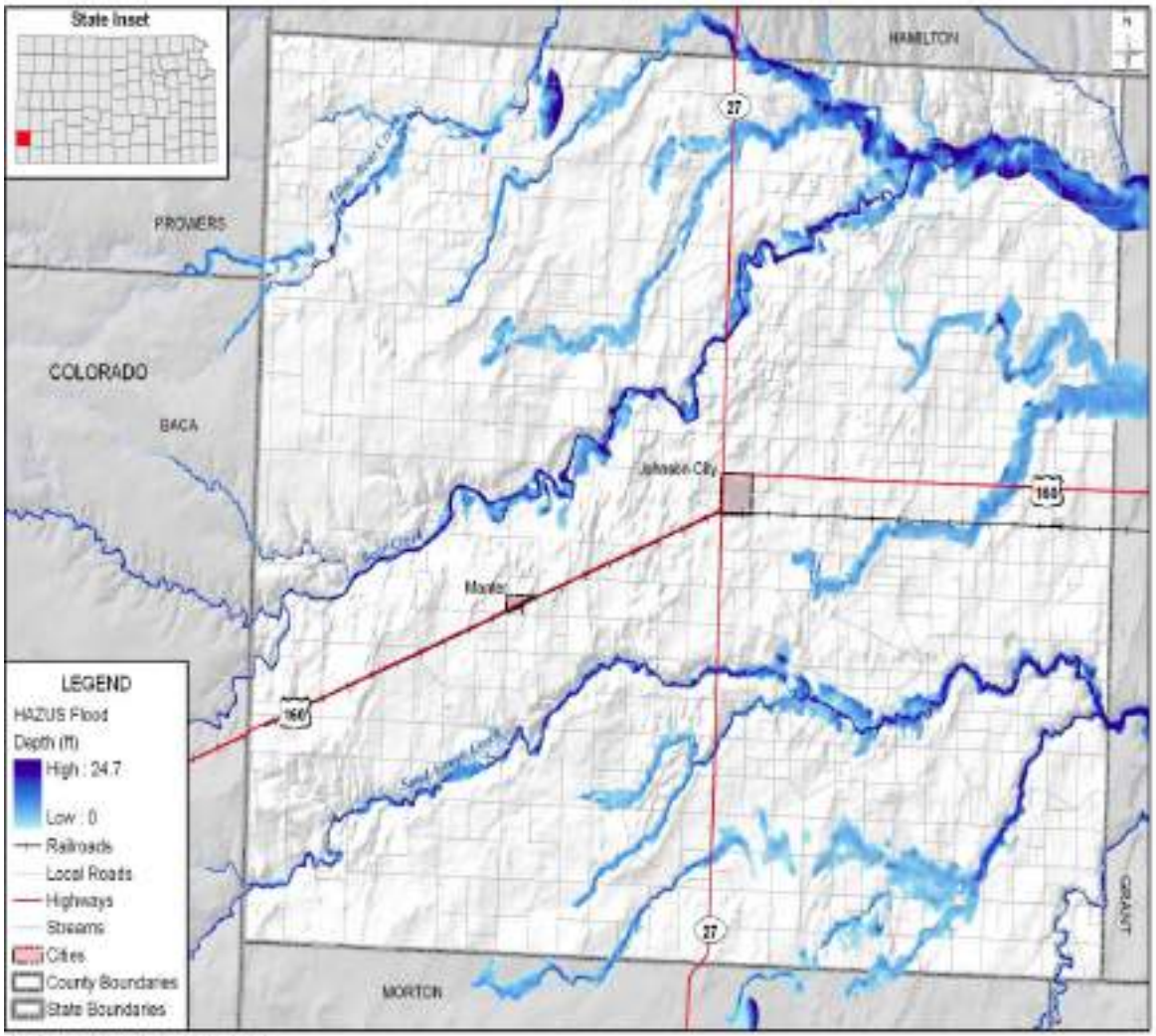
Source: FEMA, State of Kansas

FEMA Special Flood Hazard Areas, Elkhart, Morton County

Source: FEMA, State of Kansas

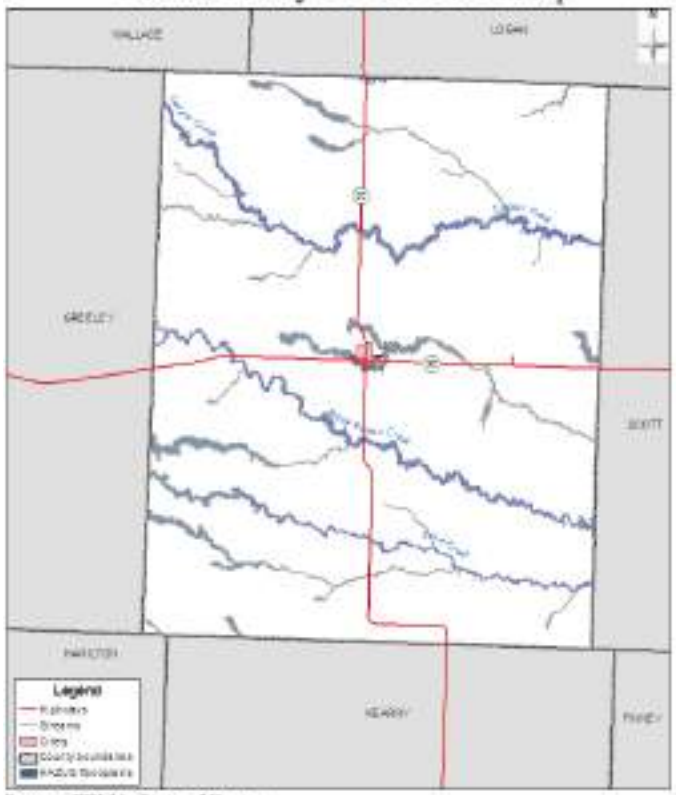
Special Flood Hazard Area

Stanton County HAZUS Flood Map



Source: FEMA, State of Kansas

Wichita County HAZUS Flood Map



Source: FEMA, State of Kansas

Previous Occurrences and Extent

In the past ten years, 11 Presidential Disaster Declarations for major floods have been declared for southwest Kansas. Details about some of these events can be found on the following pages. Please note that some of the Presidential Disaster Declarations included flooding (primarily flash flooding) as a secondary cause of damages**.**

Regional Presidential Declarations Involving Flooding

Declaration Number	Declaration Date*	Disaster Description	Regional Counties Involved	Disaster Cost**
4150	10/22/2013 (7/22/2013 - 08/16/2013)	Severe Storms, Winds, Tornados and **Flooding**	Hamilton	$11,412,827
4010	07/29/2011 (05/19-06/04/2011)	Severe Storms, Straight-Line Winds, Tornados and **Flooding**	Hamilton, Morton and Stanton	$8,259,620

Sources: FEMA and Kansas Division of Emergency Management

* Incident dates are in parentheses.

** Disaster costs include Public Assistance and Individual Assistance for all affected counties, including those not listed

The following provide brief discussions of the most recent Presidential Disaster Declarations for the region:

> **FEMA-4150-DR**: Severe Storms, Winds, Tornados and Flooding – November 22, 2013 - From July 22 to August 16, 2013 severe storms, winds, tornados, and flooding caused limited damages in Hamilton County. The primary impacts of this event were to public roads and bridges with an estimated $11,412,827 in damages.
>
> **FEMA-4010-DR**: Severe Storms, Winds, Tornados and Flooding – July 29, 2011 - From May 19 to June 4, 2011 severe storms, winds, tornados, and flooding caused damages in 25 Kansas Counties. The primary impacts of this event were to public roads and bridges with an estimated $9,800,000 in damages.

Further descriptions and other notable flooding events are detailed below

> **June 3-15, 2005:** Stanton County was designated as primary disaster area by the USDA because of losses caused by excessive rain, flash flooding, and flooding. Twenty-nine contiguous counties were also eligible for assistance.

The following table presents NCDC identified flood events and the resulting damage totals in the region from the period 2004 - 2014.

NCDC Flood Events, 2004 - 2014

County	Number of Flash Flood Events	Number of Flood Events	Property Damages	Crop Damage	Deaths
Grant	0	2	$0	$0	0
Greeley	6	2	$500	$0	0
Hamilton	1	2	$0	$0	0
Kearny	0	4	$1,000	$0	0
Morton	1	3	$0	$0	0
Scott	0	6	$0	$0	0
Stanton	1	5	$0	$0	0
Stevens	0	0	$0	$0	0
Wichita	3	3	$0	$0	0
Regional Total	12	27	$1,500	$0	0

Source: NCDC Storm Events Database

Local Events

June 13, 2007: Stanton County: Rainfall of 3.25 inches fell in a short time in the town of Manter. Moderate flooding was reported.

April 22, 2007: Wichita County: Slow-moving thunderstorms resulted in flooded county roads and fields.

February 20, 2007: Kearny County: Snow melt produced widespread flooding across the county. Many roads were covered with water and/or destroyed by the flooding.

February 20, 2007: Scott County: Snow melt produced widespread flooding across the county. Numerous roads were covered with water, and many county roads were damaged by the flooding.

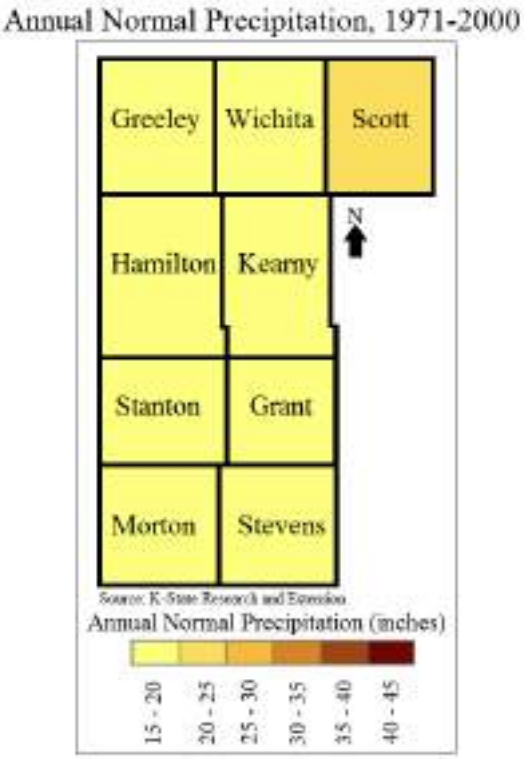
February 20, 2007: **Stanton County:** Snow melt produced widespread flooding, especially near and west of Johnson City. Many roads were covered with water and many county roads were damaged by the flooding.

August 31, 2006: Wichita County: A slow moving thunderstorm produced flash flooding on many rural roads in the northwest quarter of the county, generally north of highway 96 and west of highway 25. Measured rainfall amounts of 3-6 inches were reported.

August 15, 2006: Morton County, Rolla: Heavy rain was reported in Rolla over a 24-hour period with reports of up to 7.12 inches. Many stranded motorists were reported and many basements were flooded. Property damage was reported to be $250,000, with no injuries attributed to this event.

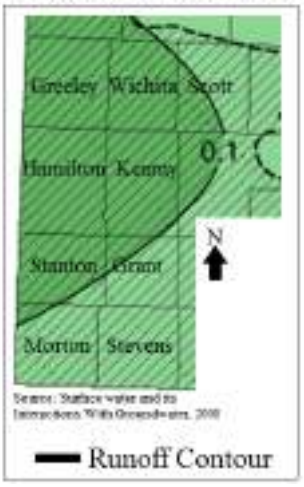
Hazard Vulnerability and Impact

Flash flooding occurs in those locations of the planning area that are low-lying and/or do not have adequate drainage to carry away the amount of water that falls during intense rainfall events. The average annual precipitation varies significantly across the region. Precipitation in the central part of the state averages approximately 35 inches. The following map shows how the annual normal precipitation varies across the region.



The following map shows the distribution of water runoff in southwest Kansas. This data indicates the approximate amount of water that does not infiltrate the ground and is potentially carried to streams and rivers. Although the climatically controlled rainfall variation is significant, average annual runoff across the state varies much more than the precipitation. The average runoff ranges from approximately one to two inches in the region. Both precipitation and runoff can impact flash flooding.

Regional Distribution of Water Runoff



The region acquired data from the USDA's Risk Management Agency to provide crop loss data based on crop insurance payments. Data was requested for the 10-year period from 2002 to 2011 for the State of Kansas. During this period, $321,995,951 in crop insurance payments was made to Kansas farmers as a result of flood, excess moisture/precipitation/rain, and hurricane/tropical depression. This translates to $32,199,595 annually. The following table provides the crop insurance payments by year for this ten-year period. Please note that this data only applies to insured crops and for the entire State. According to the *2011 Kansas Crop Insurance Profile Report* issued by the USDA Risk Management Agency 82 percent of Kansas' row crops were insured in 2011.

USDA Risk Management Agency Crop Insurance Payments Due to Flood Excess Moisture/Precipitation/Rain, and Hurricane/Tropical Depression

Year	Statewide Crop Insurance Paid
2011 Total	$16,554,331
2010 Total	$51,325,423
2009 Total	$69,363,919
2008 Total	$58,422,531
2007 Total	$86,141,405
2006 Total	$1,510,143
2005 Total	$15,082,104
2004 Total	$16,276,418
2003 Total	$4,944,342
2002 Total	$2,375,336
Statewide Total	**$321,995,951**

Source: USDA Risk Management Agency, 2012;

To determine vulnerability to flooding and the jurisdictions most threatened by flooding and most vulnerable to damage and losses, the region analyzed data from several sources including:

- NCDC Storm Events Database

- USDA Risk Management Agency Crop Loss Statistics
- HAZUS MH-2.1 100-year Flood Scenario
- NFIP Flood Insurance Claims
- Repetitive Loss Properties/Severe Repetitive Loss Properties

The NCDC Storm Events Database was the primary source of data to complete the vulnerability analysis of flash flood in the State; while the HAZUS-MH 2.1 analysis was utilized to describe vulnerability to riverine flooding. Flash flooding is not considered to be a geographic hazard. Due to the large number of variables that occur in rainfall amounts and intensity, it is not possible to predict all specific locations that are vulnerable to flash flooding. However, it is known that certain low-lying areas with poor drainage are more vulnerable than areas higher in elevation with good drainage. Additionally, historical statistics of areas that have been prone to flash flooding in the past can be utilized to determine potential vulnerability to future events.

The following table provides total crop insurance payments and annualized crop insurance payments for flood damage for each county over the 4-year period from 2010 to 2013. The USDA does not differentiate damages from riverine flooding and flash flooding. As such, these losses include combined losses for both types of flooding. The crop exposure value from the 2012 Census of Agriculture is provided to provide the basis for an annualized ratio of insurance payments to total value. Please note that this data only applies to insured crops.

Flood-Related Crop Insurance Payments Analysis, 2010-2013

County	Crop Exposure Value (2012 Census of Agriculture)	Flood-Related Crop Insurance Payments 2010-2013	Annualized Crop Insurance Payments	Annualized Flood-Related Crop Insurance Payment Ratio
Grant	$86,023,000	$0	$0	0.00%
Greeley	$58,936,000	$3,494	$873	0.00%
Hamilton	$55,383,000	$0	$0	0.00%
Kearny	$80,730,000	$0	$0	0.00%
Morton	$58,361,000	$0	$0	0.00%
Scott	$64,648,000	$0	$0	0.00%
Stanton	$79,556,000	$0	$0	0.00%
Stevens	$144,543,000	$0	$0	0.00%
Wichita	Unavailable	$0	$0	0.00%
Regional Total	$794,089,079	$3,494	$873	0.00%

Source: USDA Risk Management Agency; 2007 USDA Census of Agriculture

HAZUS-MH 2.1 One-Percent Annual Chance Food Scenario

According to the HAZUS-MH 2.1 one percent annual chance flood scenario results, there are 5,292 buildings and 19,979 people in the one percent annual chance floodplain. It is worth noting that the results for Stevens County are markedly higher than all other counties within the region, accounting for 73.1% of the vulnerable building and 57.7% of population vulnerable to displacement. The following table provides the HAZUS-MH 2.1 results for the number of vulnerable buildings and population vulnerable to displacement for each county in southwest Kansas.

Vulnerable Buildings and Population, HAZUS One Percent Annual Chance Flood Scenario

County	Vulnerable Buildings	Population Vulnerable to Displacement
Grant	11	172
Greeley	6	56
Hamilton	58	276
Kearny	0	76
Morton	0	62
Scott	39	199
Stanton	0	36
Stevens	324	1,261
Wichita	5	46
Regional Total	443	2,184

Source: HAZUS MH 2.1

NFIP Flood Insurance Claims Analysis

The region analyzed NFIP flood-loss data to determine areas of southwest Kansas with the greatest flood risk. Southwest Kansas NFIP participation and flood loss statistics were obtained from FEMA's Policy and Claim Statistics for Flood Insurance (which provides losses from 1978 to the present). As of October 2012, 10 communities (including the counties) were NFIP participants, including three that do not have a special flood hazard. The following table presents southwest Kansas NFIP communities.

Southwest Kansas NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
Hamilton County			
Hamilton County	-	01/02/2003	02/13/2003
Syracuse	01/09/1974	10/17/1986	01/02/2003
Kearny County			
Kearny County	07/12/1977	11/1/1989	11/01/1989(L)
Lakin	12/28/1973	06/18/1990	06/18/1990(M)
Morton County			
Elkhart	05/24/1974	-	12/5/1975
Scott County			
City of Scott	02/08/1974	-	(NSFHA)
Stanton County			
Stanton County	-	-	-
Johnson City	05/24/1974	-	(NSFHA)
Manter	-	-	-
Wichita County			
Leoti	11/5/1976	-	(NSFHA)

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
-: No Information Available

There are likely other communities in southwest Kansas that have flood hazard areas but have not yet been mapped by FEMA to show where those hazard areas are.

Kansas flood-loss information was pulled from FEMA's "Policy and Loss Data by Community with County and State Data," which documents losses from 1978 through August 31, 2012. 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 southwest Kansas. Loss statistics include losses through March 31, 2014.

Kansas NFIP Policy and Loss Statistics, As of March 31, 2014

	Number of Policies in Force	Insurance in Force	Number of Closed Losses	Total Payments
Hamilton County				
Hamilton County	15	$1,095,000	1	$700
Syracuse	10	$2,416,700	0	$0
Kearny County				
Kearny County	1	$1,045,900	0	$0
Lakin	13	$1,547,700	1	$0
Scott County				
City of Scott	1	$210,000	1	$31,884.48
Stanton County				
Johnson City	0	$0	1	$1,208.55

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

Repetitive Loss Analysis

A high priority in southwest Kansas and nationwide is the reduction of losses to repetitive loss structures. These structures strain the National Flood Insurance Fund. The NFIP defines a repetitive loss property as "any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978. At least two of the claims must be more than 10 days apart."

As of 2014 there are no properties in southwest Kansas that meet the above referenced qualifications for repetitive loss

Severe Repetitive Loss Analysis

The Flood Insurance Reform Act of 2004 identified another category of repetitive loss, categorized as Severe Repetitive Loss (SRL). 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.

As of 2014 there are no properties in southwest Kansas that meet the qualifications of SRL and the requirements to be considered for possible mitigation activities under FEMA's SRL criteria.

History of Severe Repetitive Loss

In addition to the verified residential, insured properties above, the NFIP tracks other categories of properties, including unverified properties, commercial properties, previously mitigated properties, and currently uninsured properties that meet the loss criteria.

As of 2014, there are no validated properties that have incurred flood-related damage for which four or more separate claims payments have been paid under flood insurance coverage with the amount of each claim payment exceeding $5,000 and with cumulative amounts of such claims payments exceeding $20,000; or for which at least two separate claims payments have been made with the cumulative amount of such claims exceeding the reported value of the property.

Riverine Flooding

The results of the HAZUS-MH2.1 analysis were utilized to estimate potential losses for riverine flooding. The intent of this analysis was to enable the region to estimate where flood losses could occur and the degree of severity using a consistent methodology. The HAZUS model helps quantify risk along known flood-hazard corridors as well as lesser streams and rivers that have a drainage area of ten square miles or more.

The HAZUS-MH 2.1 analysis provides the number of buildings impacted, estimates of the building repair costs, as well as the associated loss of building contents and business inventory. Building damage can also cause additional losses to a community as a whole 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-MH 2.1 using a methodology based on the building damage estimates.

Among other factors, flood damage is related to the depth of flooding. HAZUS-MH 2.1 takes into account flood depth when modeling damage (based on FEMA's depth-damage functions). The HAZUS-MH 2.1 reports capture damage by occupancy class (in terms of square footage impacted) by damage percent classes. Occupancy classes in HAZUS-MH 2.1 include agriculture, commercial, education, government, industrial, religion, and residential. Damage percent classes are grouped by 10 percent increments 1-10 percent, 11-20 percent, etc., up to 50 percent. Buildings that sustain more than 50 percent damage are considered to be "substantially" damaged.

The displaced population is based on the inundation area. 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. 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. HAZUS-MH 2.1 does not model flood casualties.

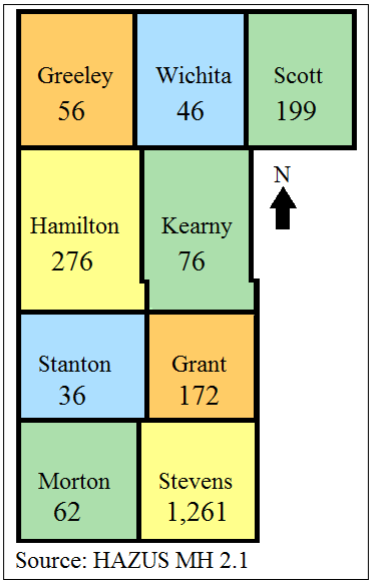
The following table provides the HAZUS-MH 2.1 results for vulnerable populations and the population estimated to seek short term shelter as well as the numbers of damaged and substantially damaged buildings for each southwest Kansas County.

HAZUS-MH 2.1 Flood Scenario Displaced Population and Number of Damaged Buildings

County	Population Vulnerable to Displacement (Number of People)	Short Term Shelter Needs (Number of People)	Vulnerable Buildings	Damaged Buildings	Substantially Damaged Buildings
Grant	172	9	11	0	0
Greeley	56	1	6	0	0
Hamilton	276	99	58	0	0
Kearny	76	1	0	0	0
Morton	62	0	0	0	0
Scott	199	24	39	0	0
Stanton	36	0	0	0	0
Stevens	1,261	622	324	3	0
Wichita	46	2	5	0	0
Regional Total	2,184	758	443	3	0

Source: HAZUS-MH 2.1

Population Vulnerable to Displacement



Source: HAZUS MH 2.1

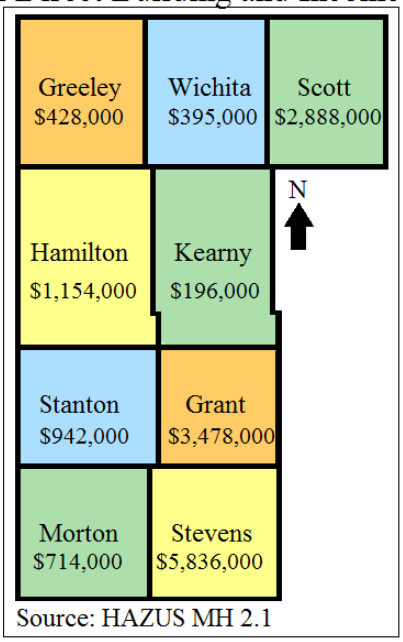
The following table provides total direct building loss and income loss for each southwest Kansas County.

HAZUS-MH 2.1 Flood Scenario Direct Building and Income Losses

County	Structural Damage	Contents Damage	Inventory Loss	Total Direct Loss	Total Income Loss	Total Direct Building and Income Loss	Structure and Contents Loss Ratio
Grant	$1,119,000	$2,105,000	$248,000	$3,472,000	$6,000	$3,478,000	0.26%
Greeley	$266,000	$161,000	$1,000	$428,000	$0	$428,000	0.07%
Hamilton	$452,000	$653,000	$35,000	$1,140,000	$14,000	$1,154,000	0.21%
Kearny	$108,000	$88,000	$0	$196,000	$0	$196,000	0.02%
Morton	$308,000	$381,000	$25,000	$714,000	$0	$714,000	0.10%
Scott	$968,000	$1,811,000	$98,000	$2,877,000	$11,000	$2,888,000	0.31%
Stanton	$262,000	$621,000	$39,000	$922,000	$20,000	$942,000	0.24%
Stevens	$2,080,000	$3,524,000	$198,000	$5,802,000	$34,000	$5,836,000	0.74%
Wichita	$269,000	$126,000	$0	$395,000	$0	$395,000	0.04%
Regional Total	$5,832,000	$9,470,000	$644,000	$15,946,000	$85,000	$16,031,000	-

Source: HAZUS-MH 2.1

Total Direct Building and Income Loss

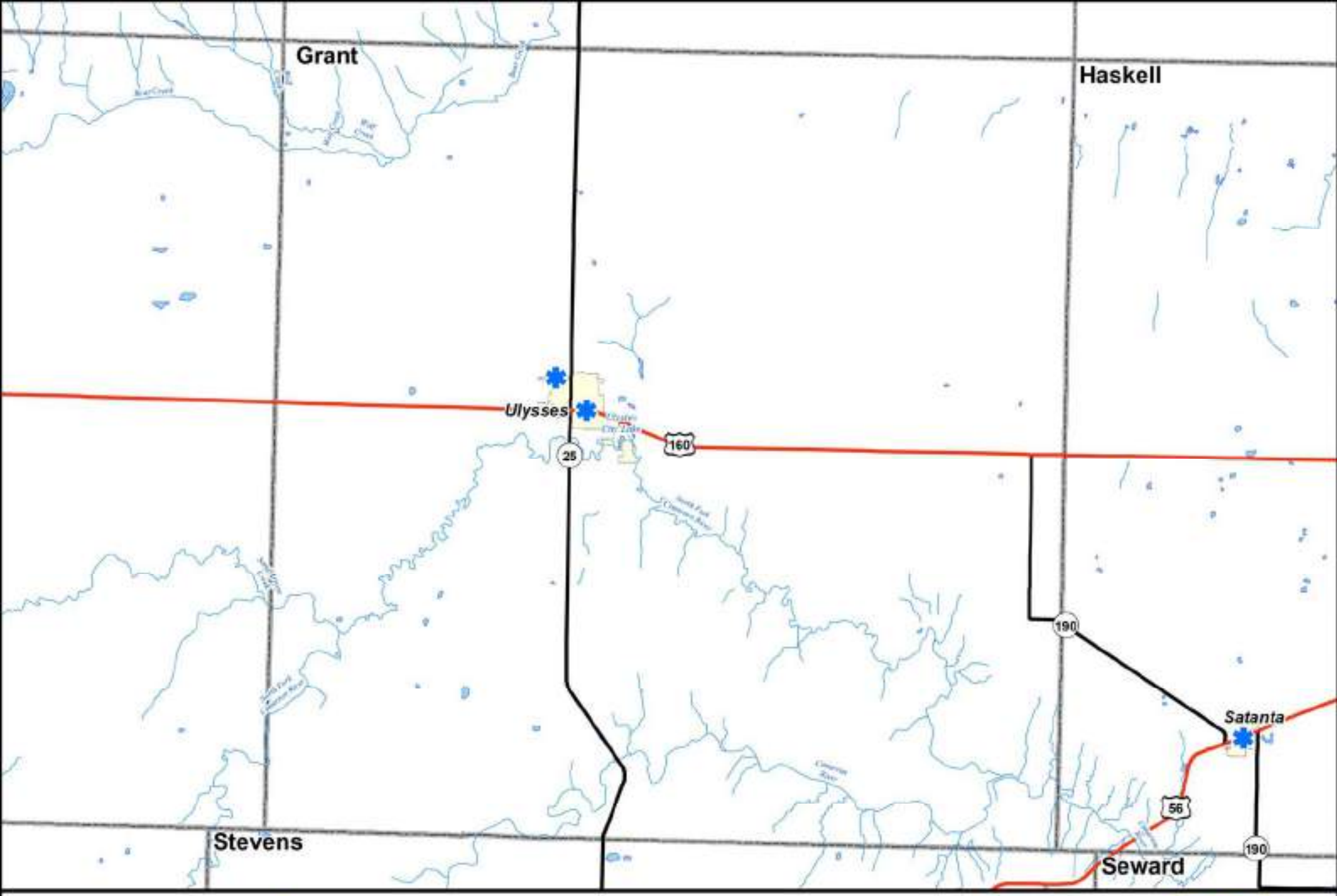


Critical Facilities in Flood Plains

The following county maps show critical facilities located in flood plains, if flood plain information was available for the county. If flood plain information was not available, the location of the facilities is shown in relation to streams and bodies of water. Identified critical facilities include:

- Schools
- Police Stations
- Fire Stations
- Hospitals (if information made available)
- Elderly care facilities (if information made available)

Please note that not all participating counties and/or jurisdictions had this data available.



EMS locations, and Floodplains
Grant County, KS

EMS
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

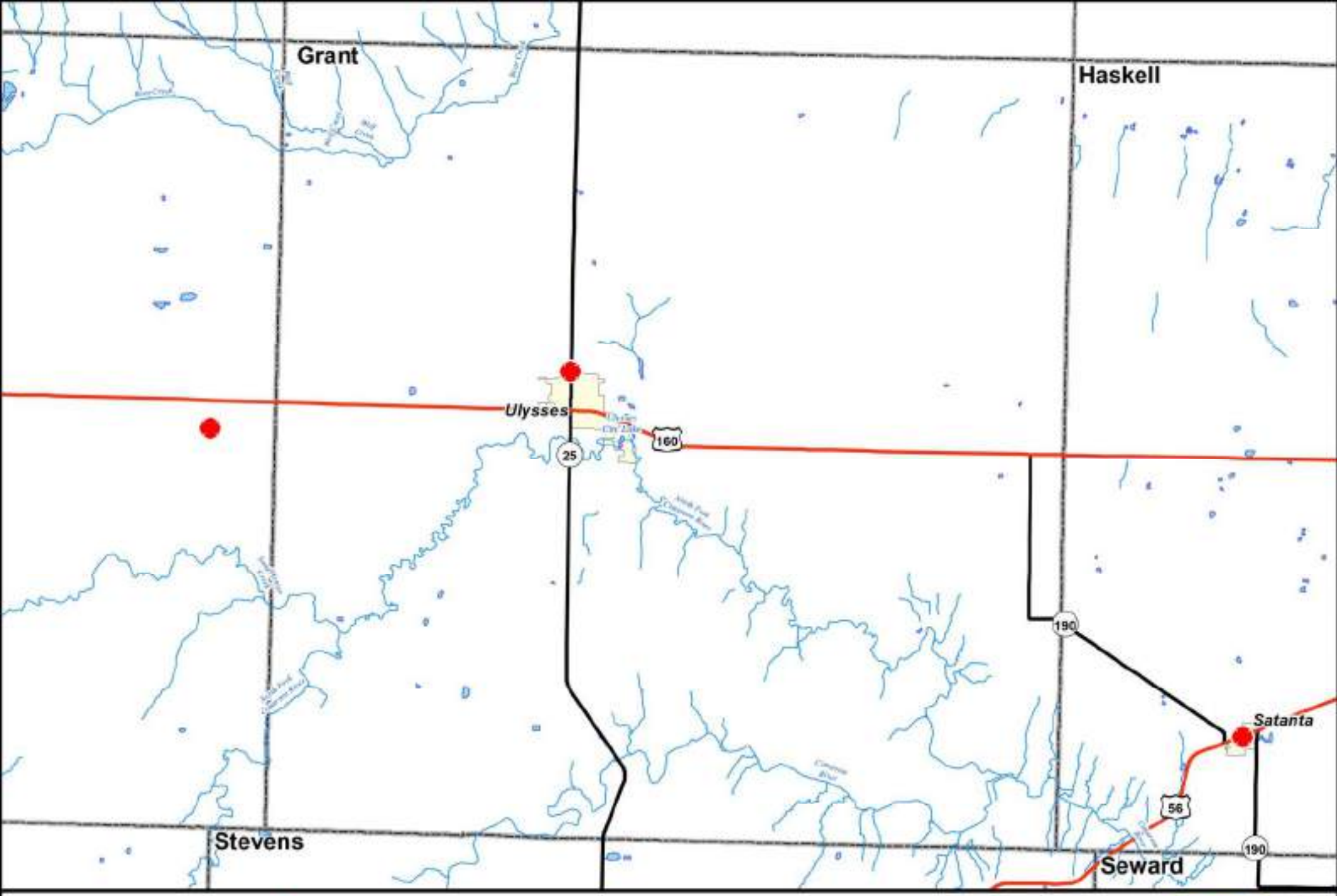
N

0 2 4 8 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Fire Stations and Floodplains Grant County, KS

Fire Station
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

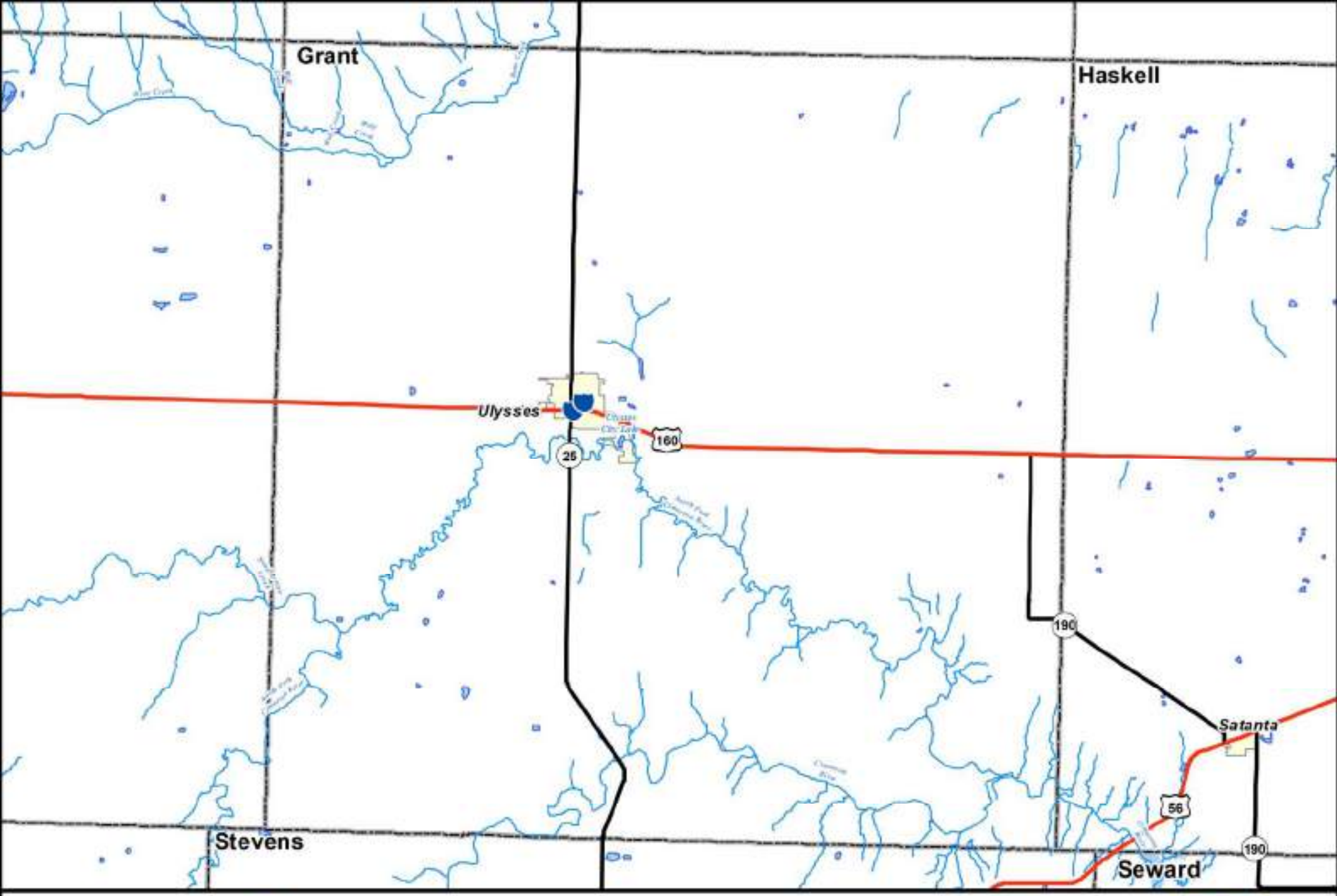
N

0 2 4 8 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Law Enforcement and Floodplains Grant County, KS

Law Enforcement
0.2% chance flood hazard
1% chance flood hazard
Interstates
US Highways
Kansas Highways
Streams
Lake
County Boundaries
City Boundaries

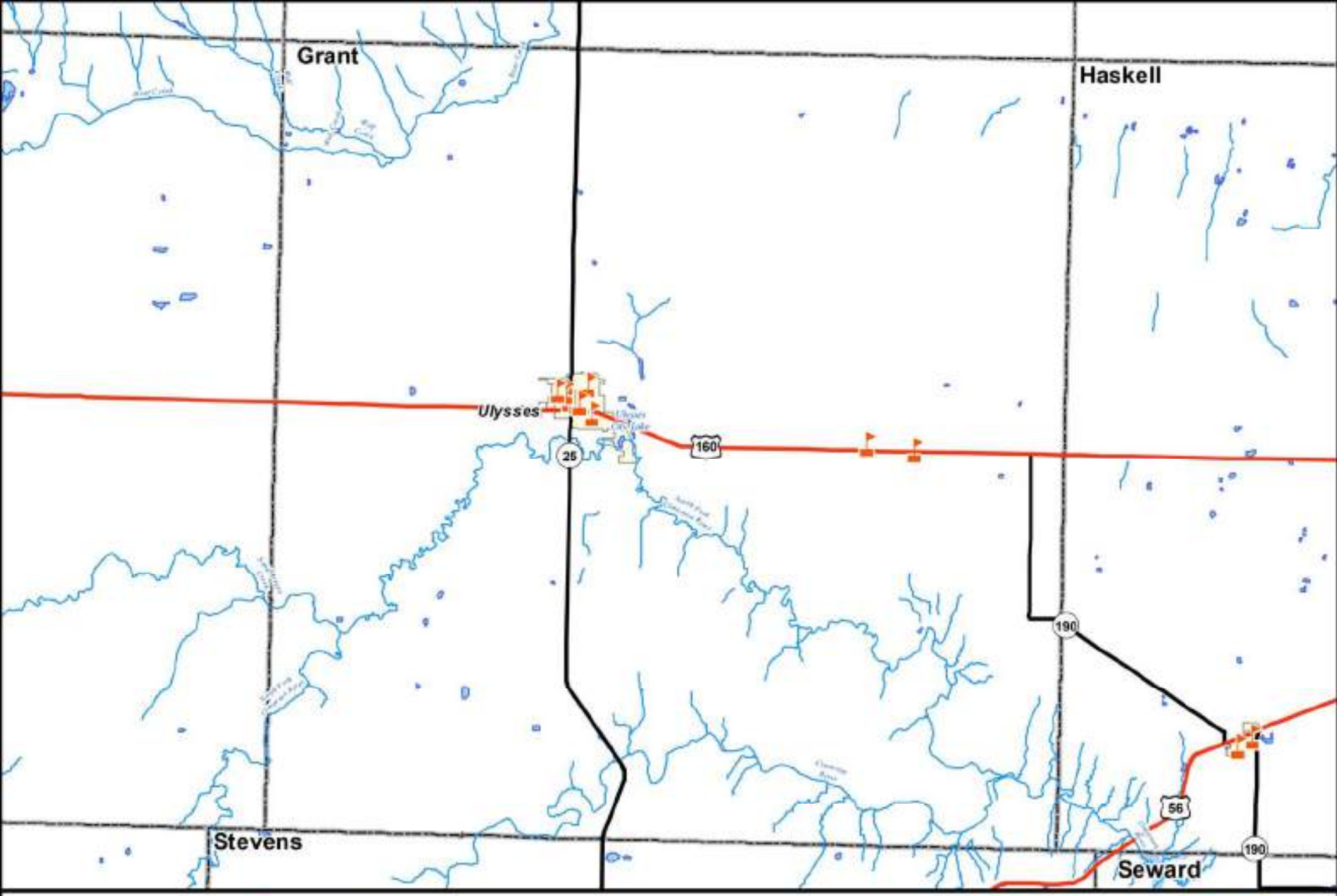
N

0 2 4 8 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 3/6/2014

Kansas
Adjutant General
Division of Emergency Management



Schools, Colleges and Floodplains Grant County, KS

School
College

Interstates
US Highways
Kansas Highways
Streams
Lake

County Boundaries
City Boundaries
0.2% chance flood hazard
1% chance flood hazard

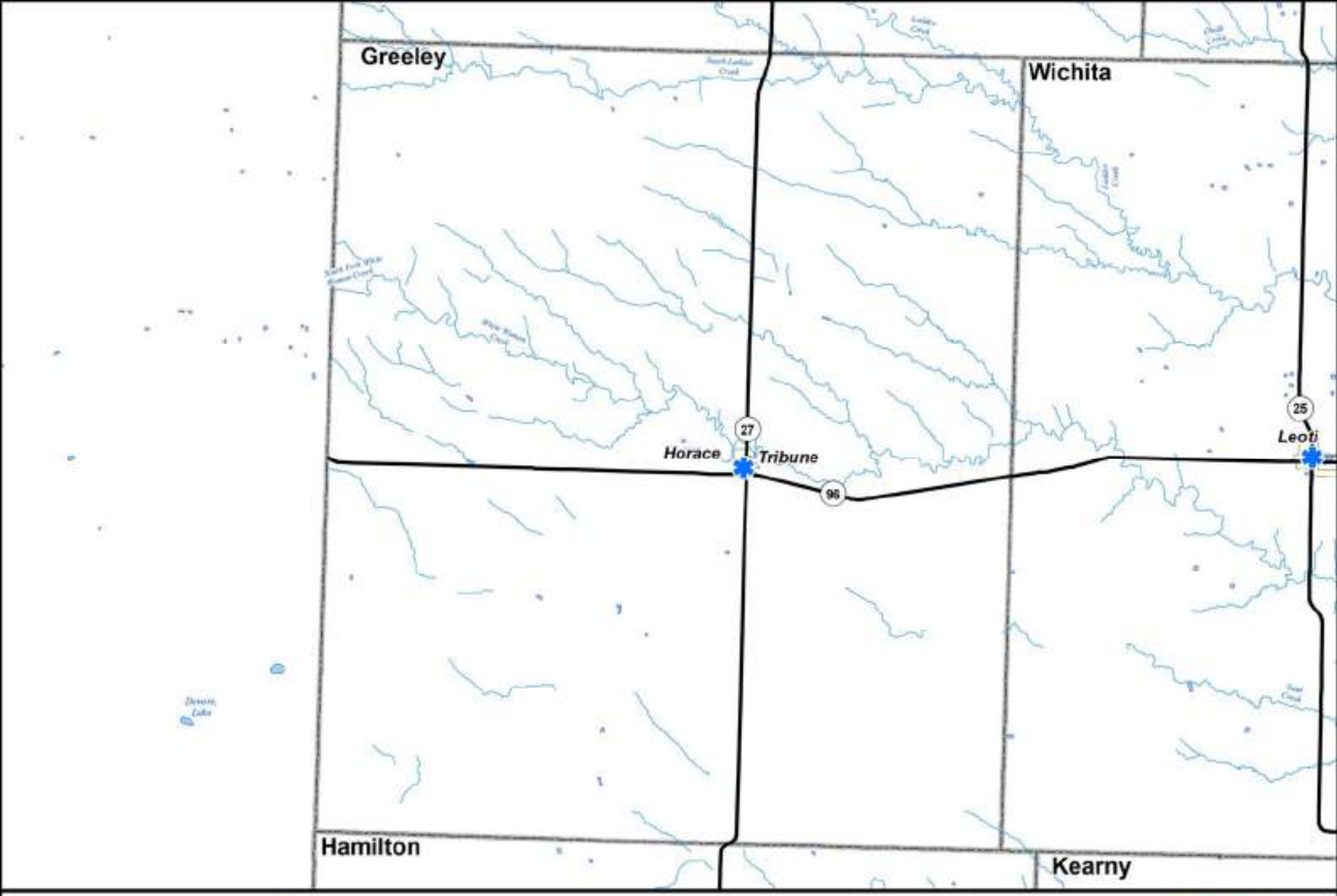
N

0 2 4 8 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 4/1/2014

Kansas
Adjutant General
Division of Emergency Management



EMS locations, and Floodplains
Greeley County, KS

EMS
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

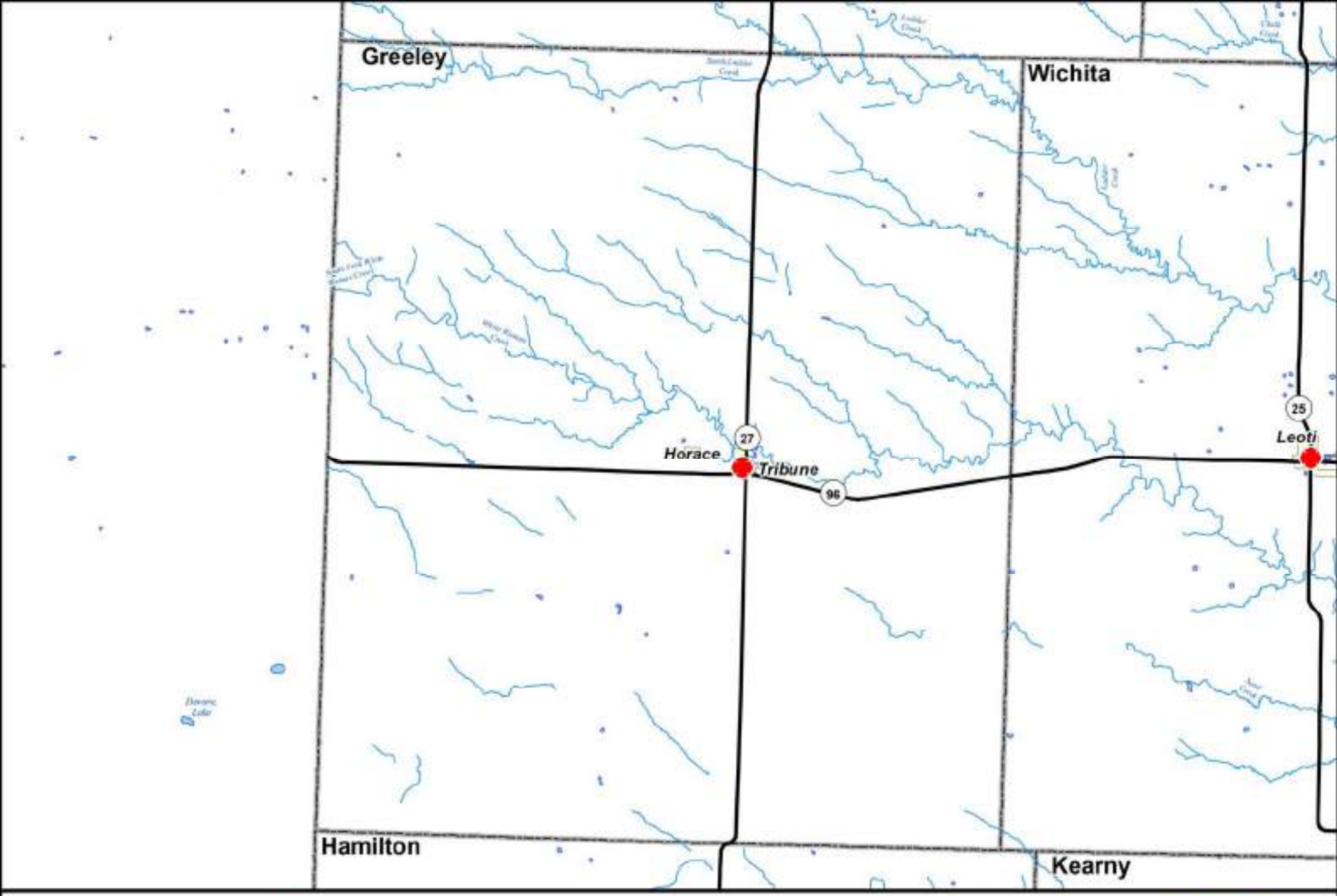
N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Fire Stations and Floodplains
Greeley County, KS

Fire Station
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

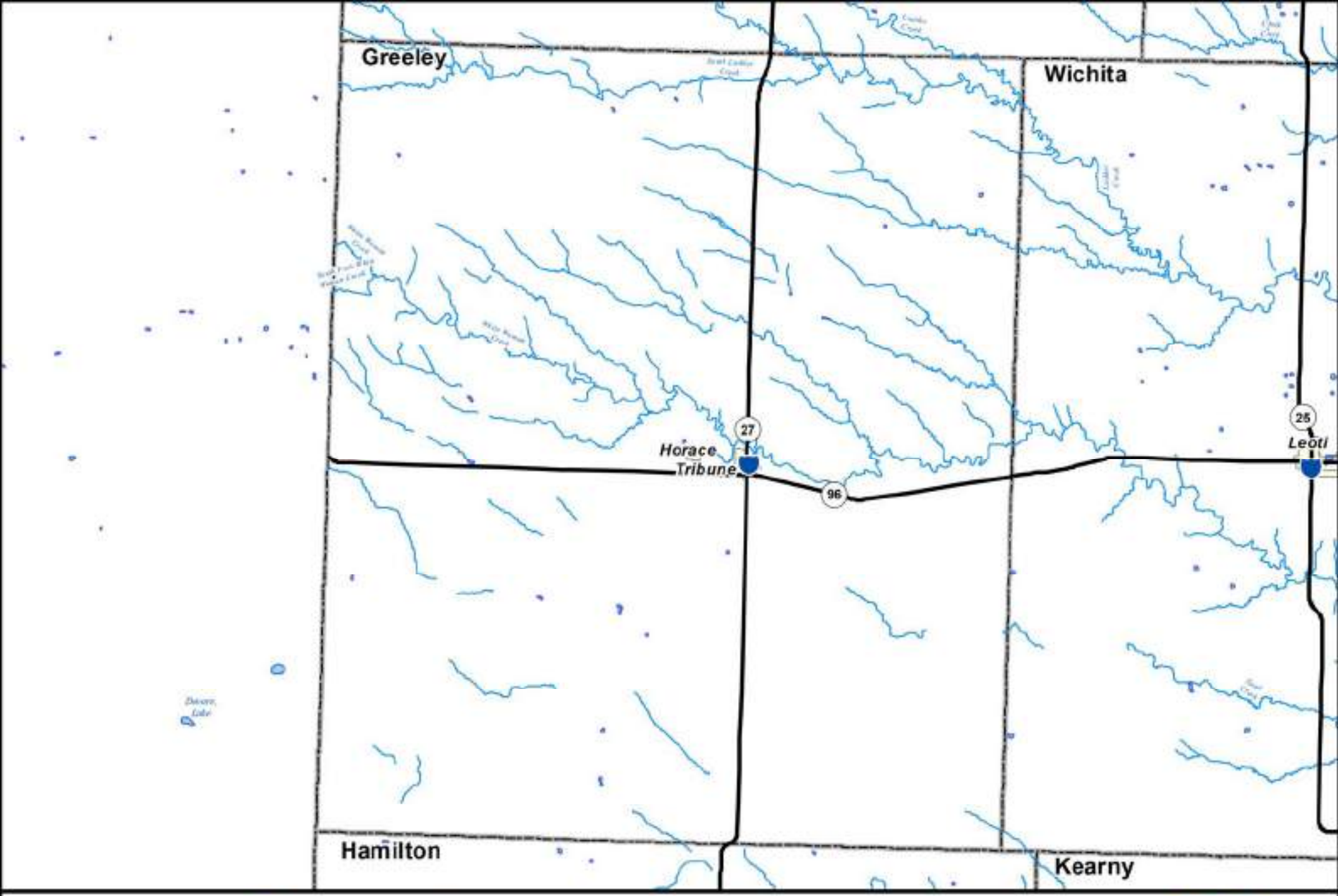
N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Law Enforcement and Floodplains Greeley County, KS

Law Enforcement
0.2% chance flood hazard
1% chance flood hazard
Interstates
US Highways
Kansas Highways
Streams
Lake
County Boundaries
City Boundaries

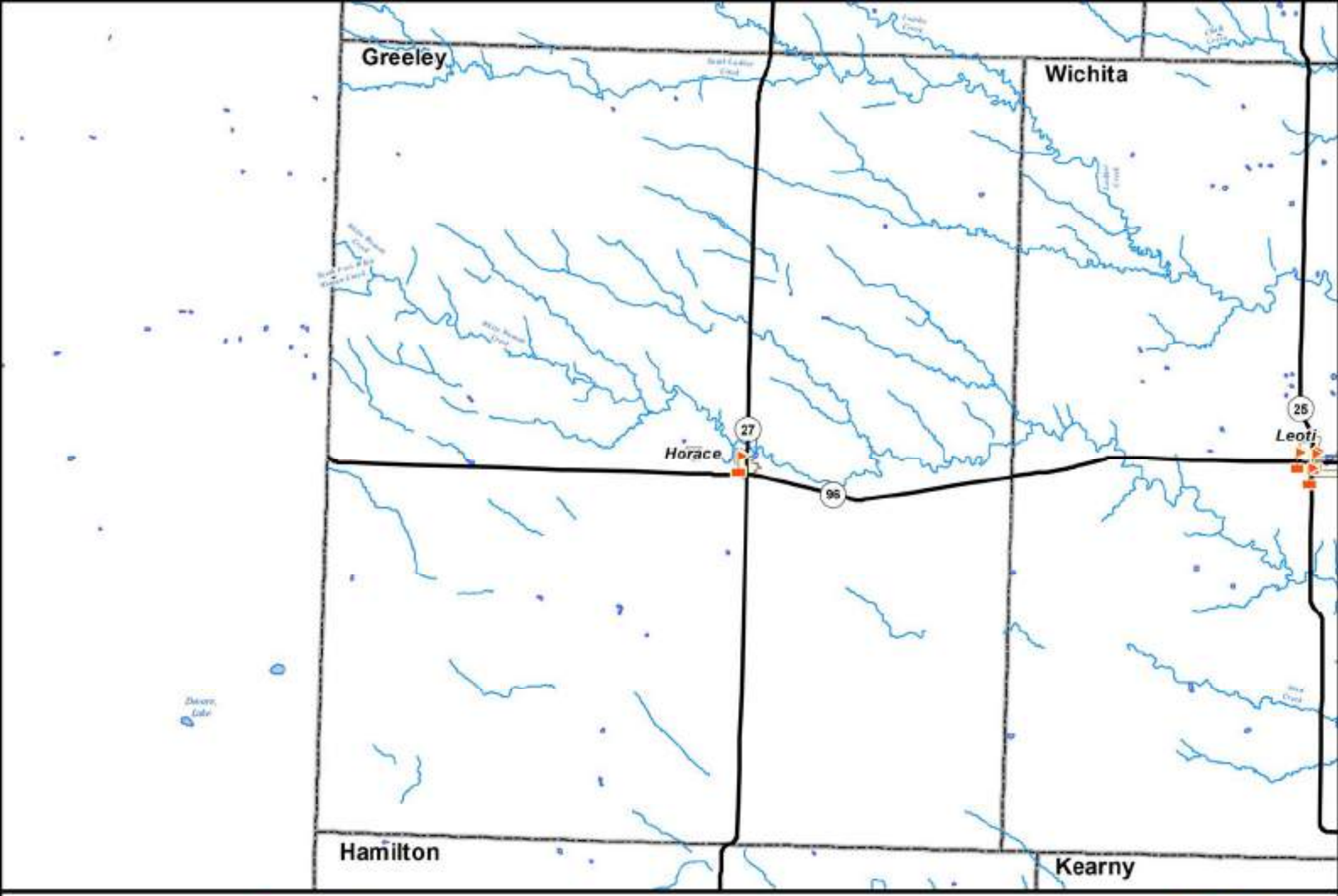
N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 3/6/2014

Kansas
Adjutant General
Division of Emergency Management



Schools, Colleges and Floodplains Greeley County, KS

School
College
Interstates
US Highways
Kansas Highways
Streams
Lake
County Boundaries
City Boundaries
0.2% chance flood hazard
1% chance flood hazard

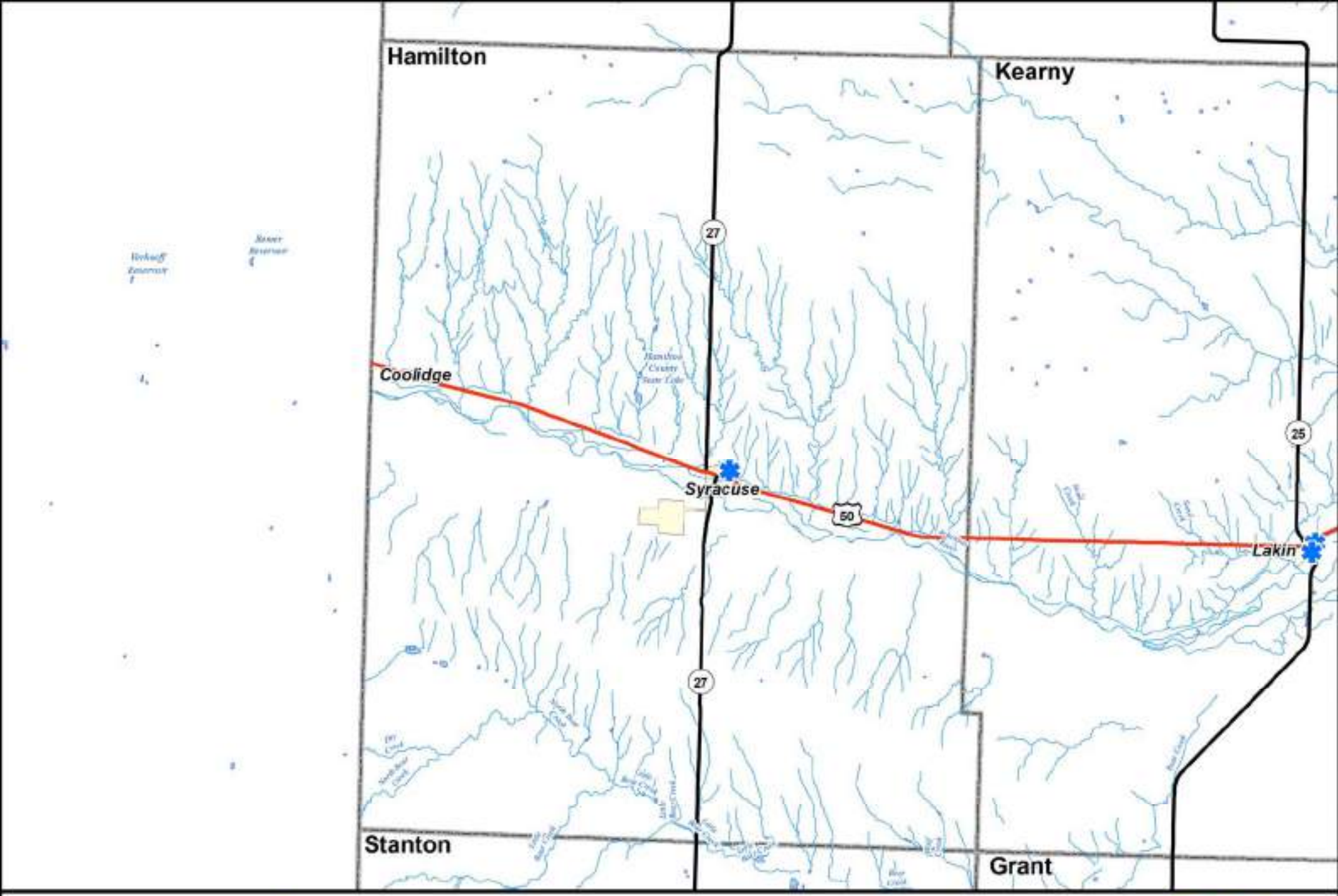
N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 4/1/2014

Kansas
Adjutant General
Division of Emergency Management



EMS locations, and Floodplains
Hamilton County, KS

EMS
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

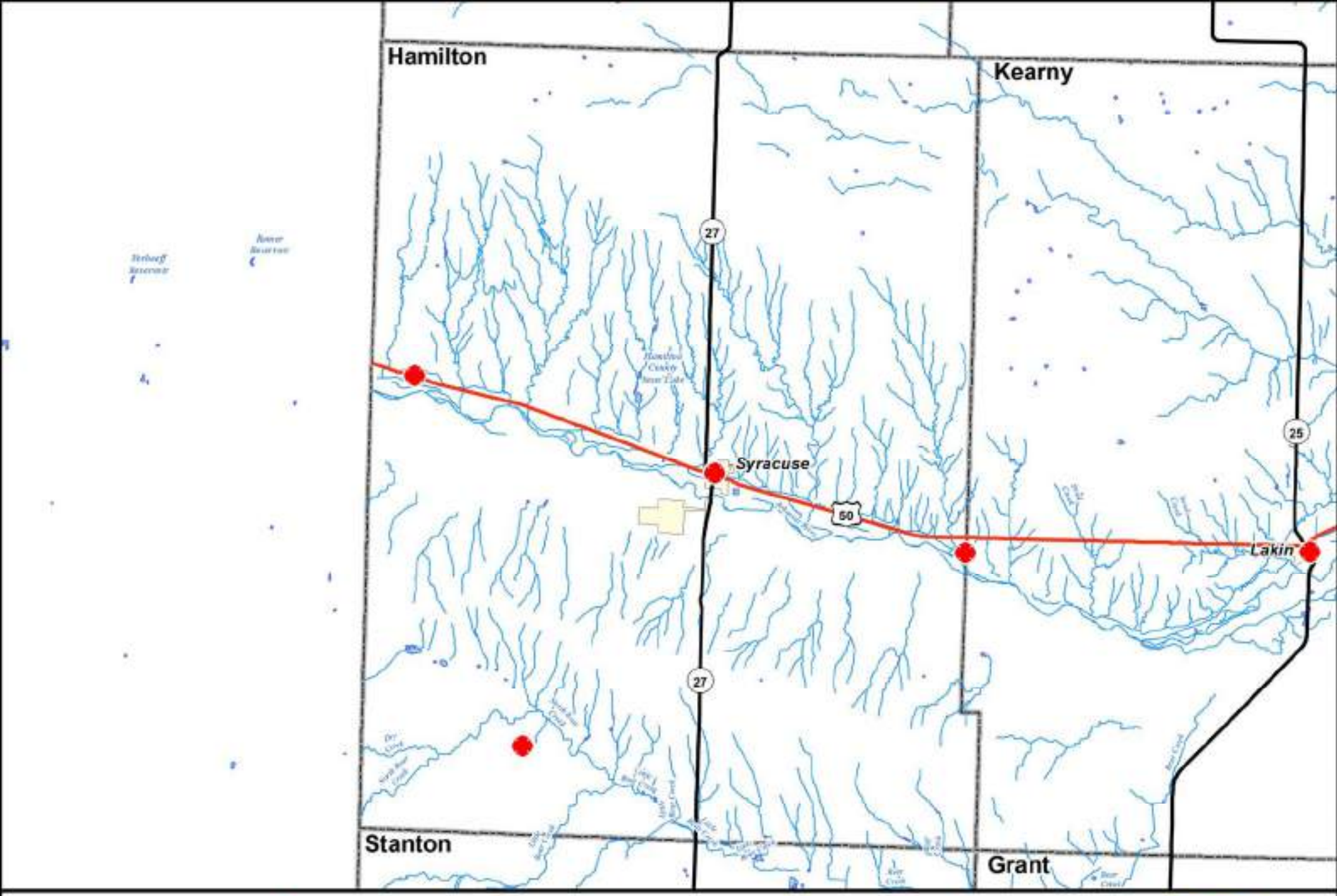
N

0 3 6 12 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Fire Stations and Floodplains
Hamilton County, KS

Fire Station
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

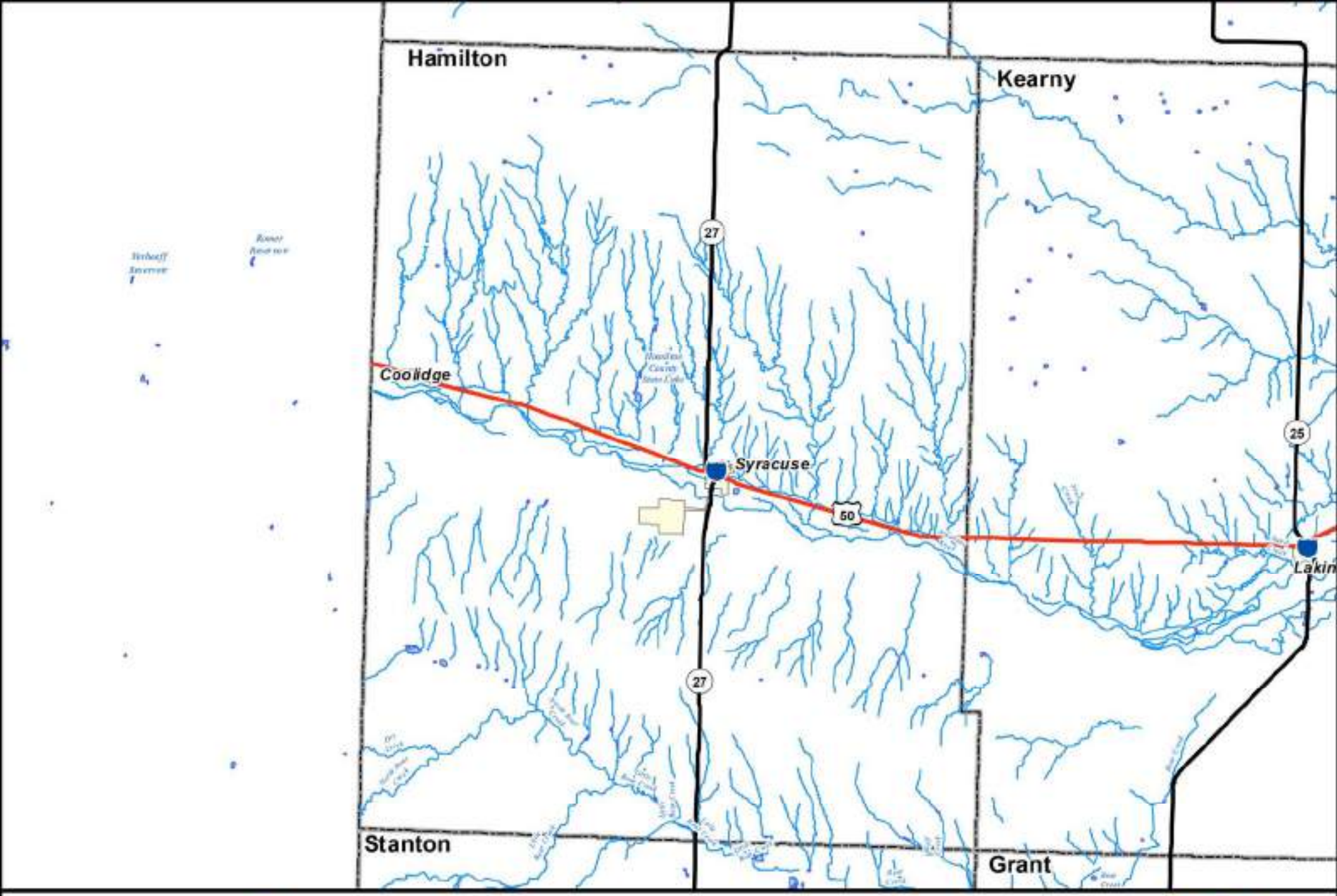
N

0 3 6 12 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Law Enforcement and Floodplains Hamilton County, KS

Law Enforcement
0.2% chance flood hazard
1% chance flood hazard
Interstates
US Highways
Kansas Highways
Streams
Lake
County Boundaries
City Boundaries

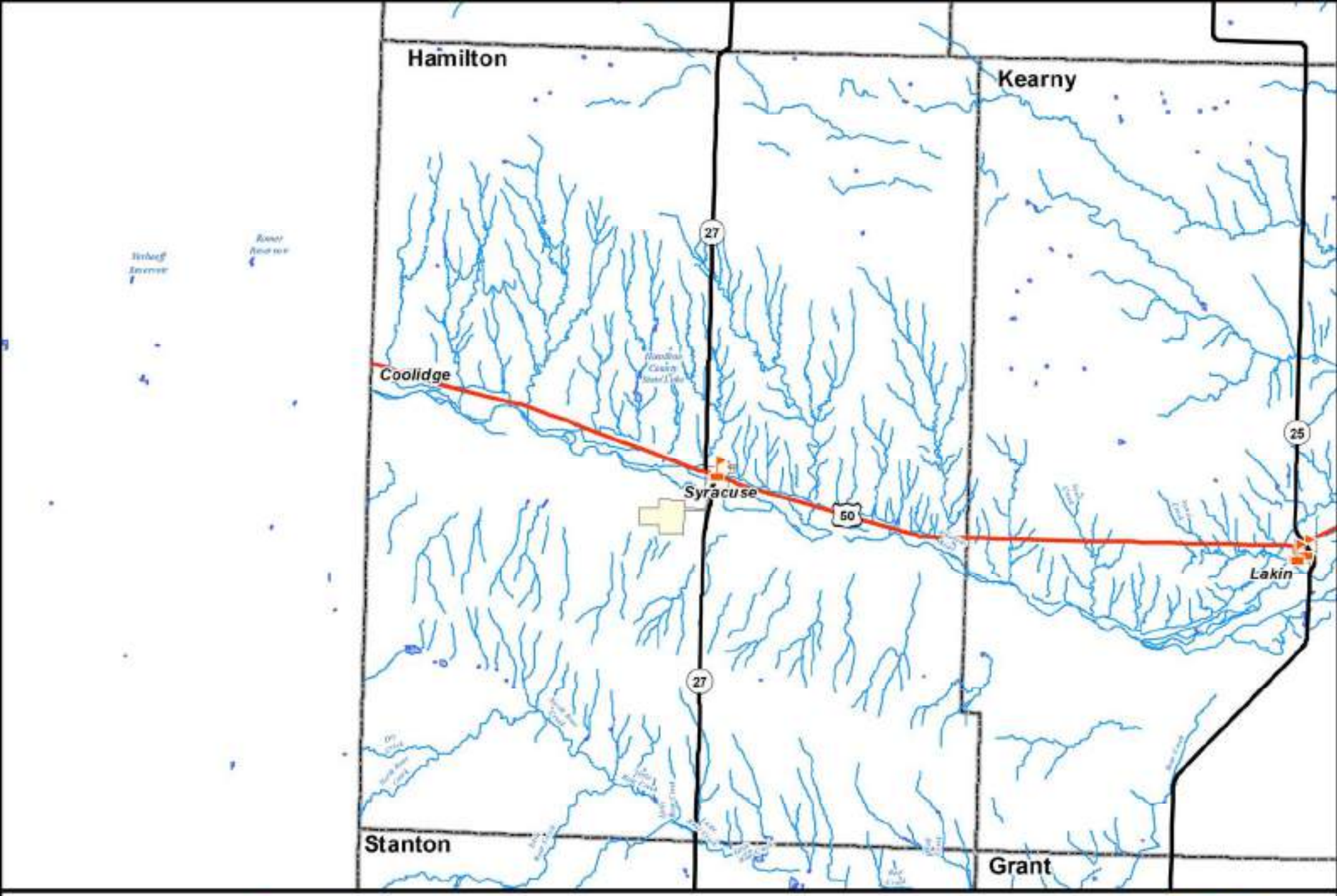
N

0 3 6 12 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 3/6/2014

Kansas
Adjutant General
Division of Emergency Management



Schools, Colleges and Floodplains Hamilton County, KS

School
College

Interstates
US Highways
Kansas Highways
Streams
Lake

County Boundaries
City Boundaries
0.2% chance flood hazard
1% chance flood hazard

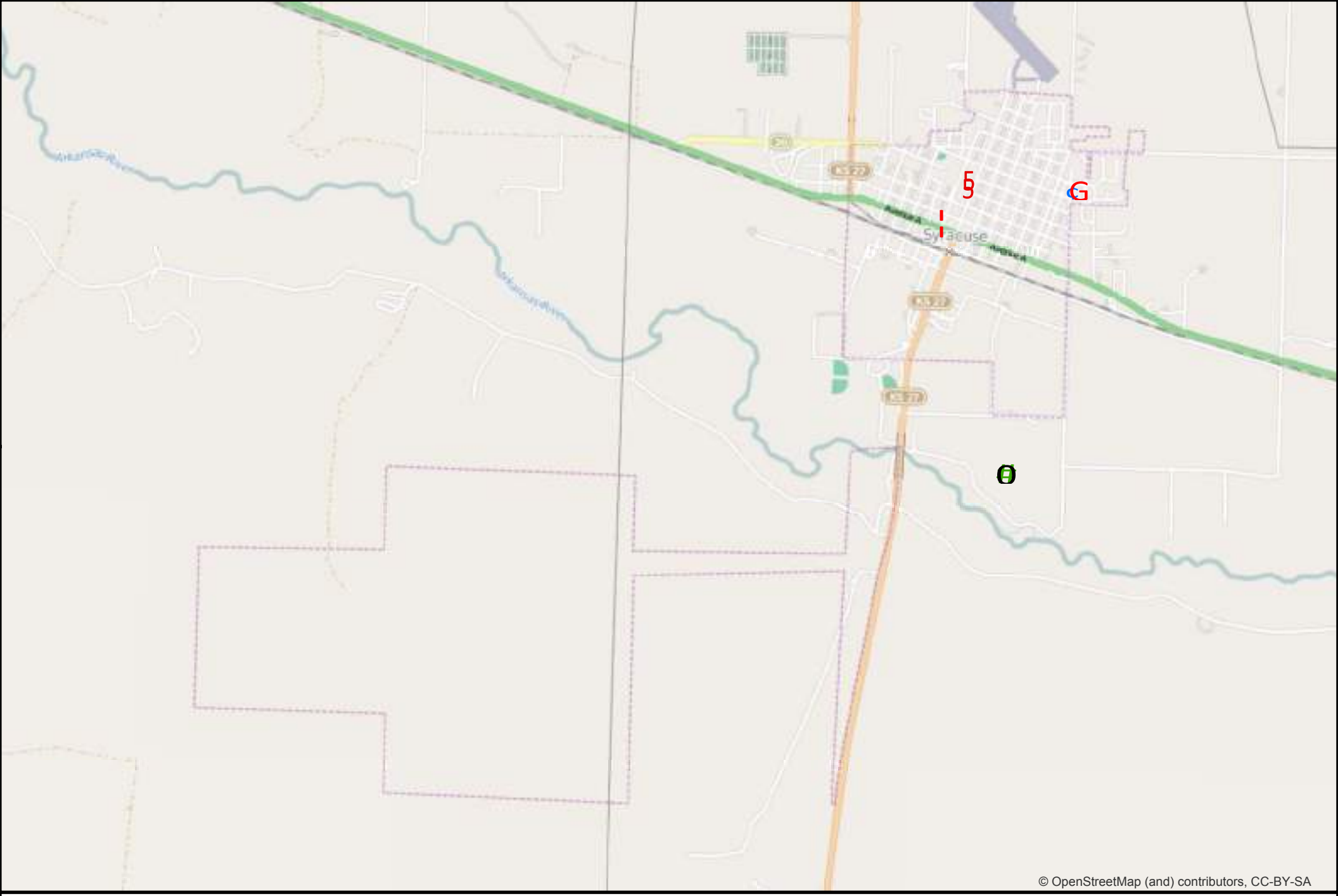
N

0 3 6 12 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 4/1/2014

Kansas
Adjutant General
Division of Emergency Management



Dam
Levee
Hospital
School
College
EMS
Fire Station

Flood Zone

0.2% Chance Annual Flood
A
AE
Floodway

Flood Hazard Areas
Critical Infrastructure
City of Syracuse
Hamilton
County, KS

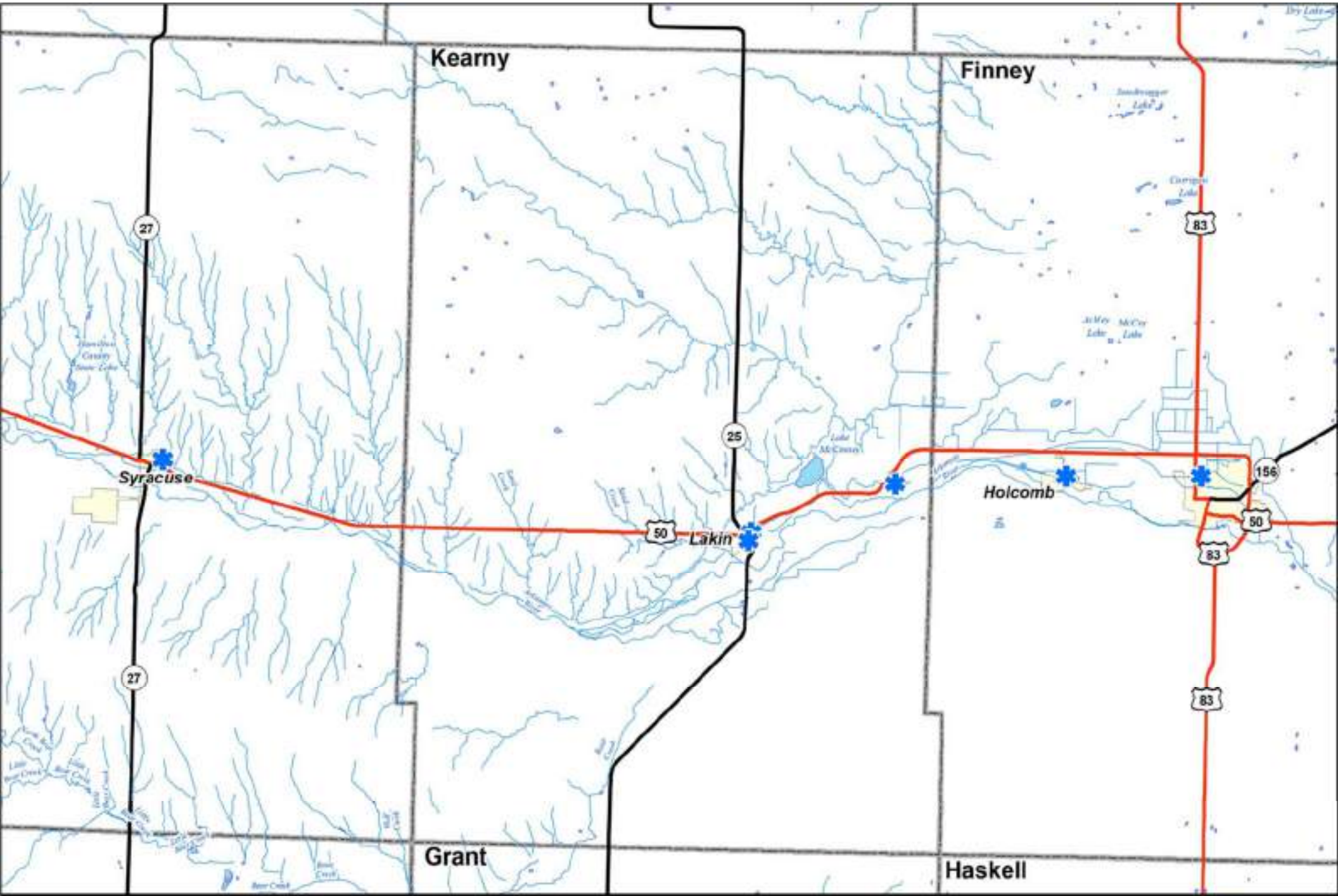
3

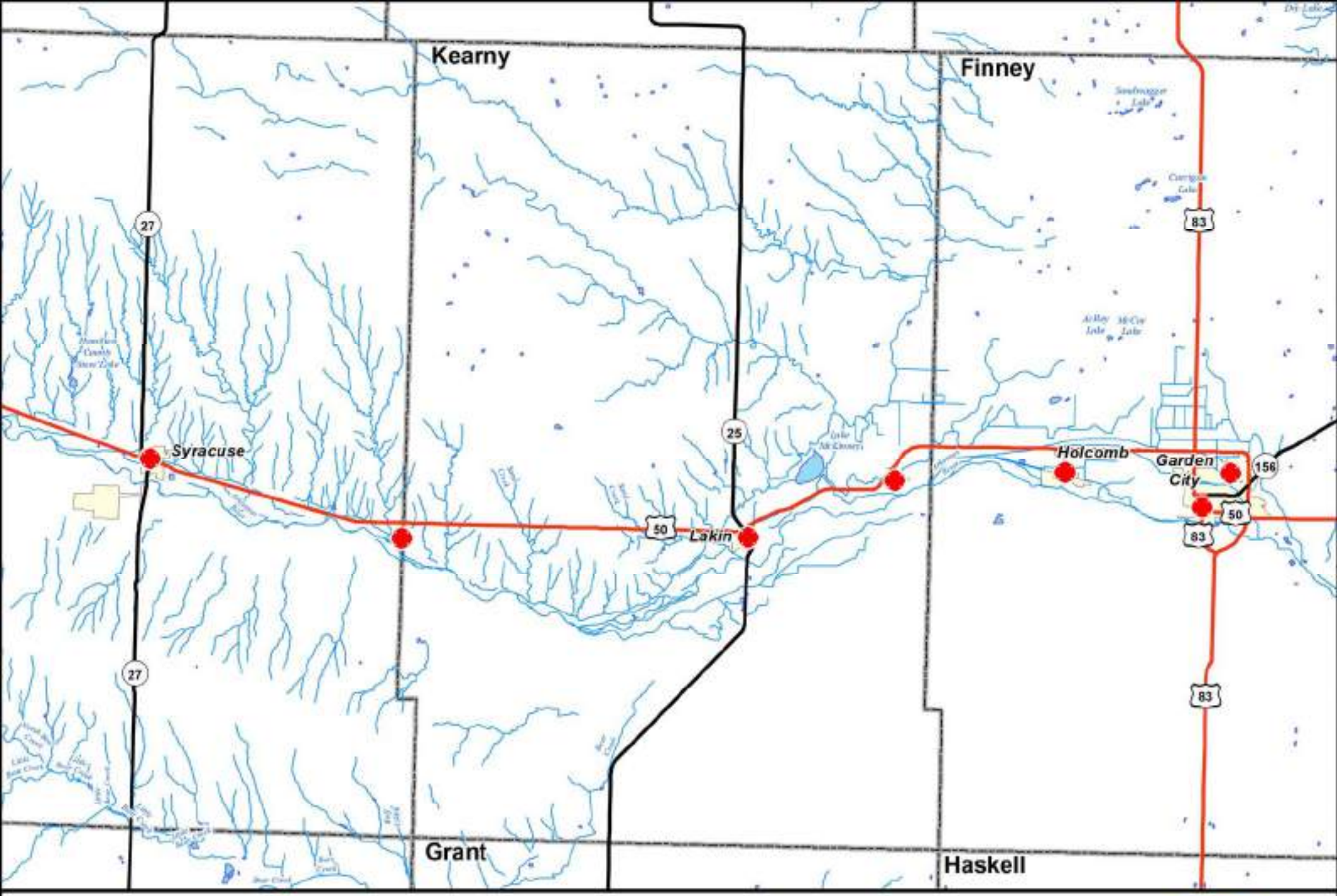
0 0.325 0.65 1.3 Miles

Data Sources: USGS, US Census Bureau,
KS Adjutant General, KDOT, USDA, KDA, KDHE

Date: 7/31/2014

Kansas
Adjutant General
Division of Emergency Management


Kearny
Finney
Grant
Haskell
Syracuse
Lakin
Holcomb
27
25
50
83
156



Fire Stations and Floodplains
Kearny County, KS

Fire Station
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

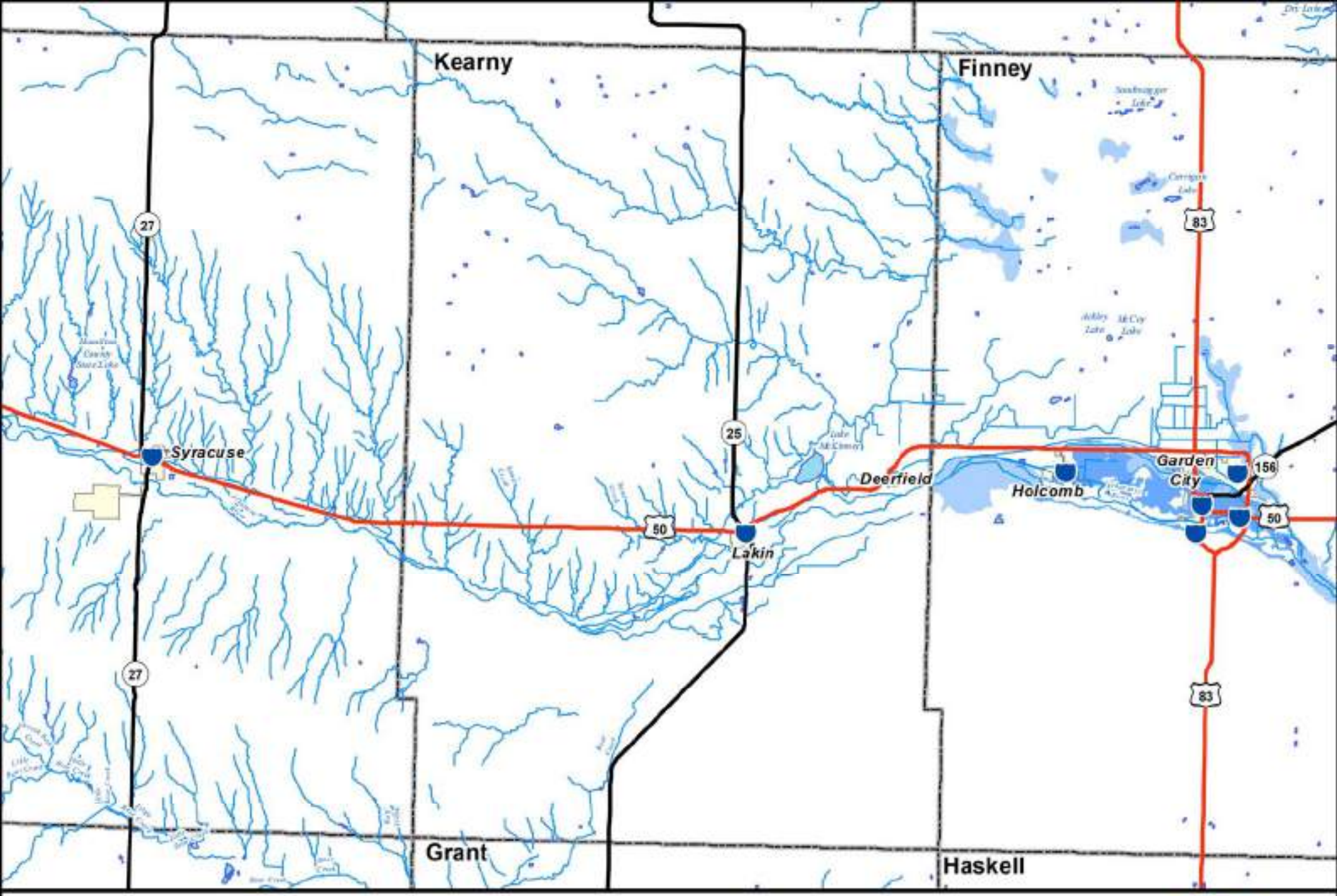
N

0 3 6 12 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Law Enforcement and Floodplains Kearny County, KS

Law Enforcement
0.2% chance flood hazard
1% chance flood hazard
Interstates
US Highways
Kansas Highways
Streams
Lake
County Boundaries
City Boundaries

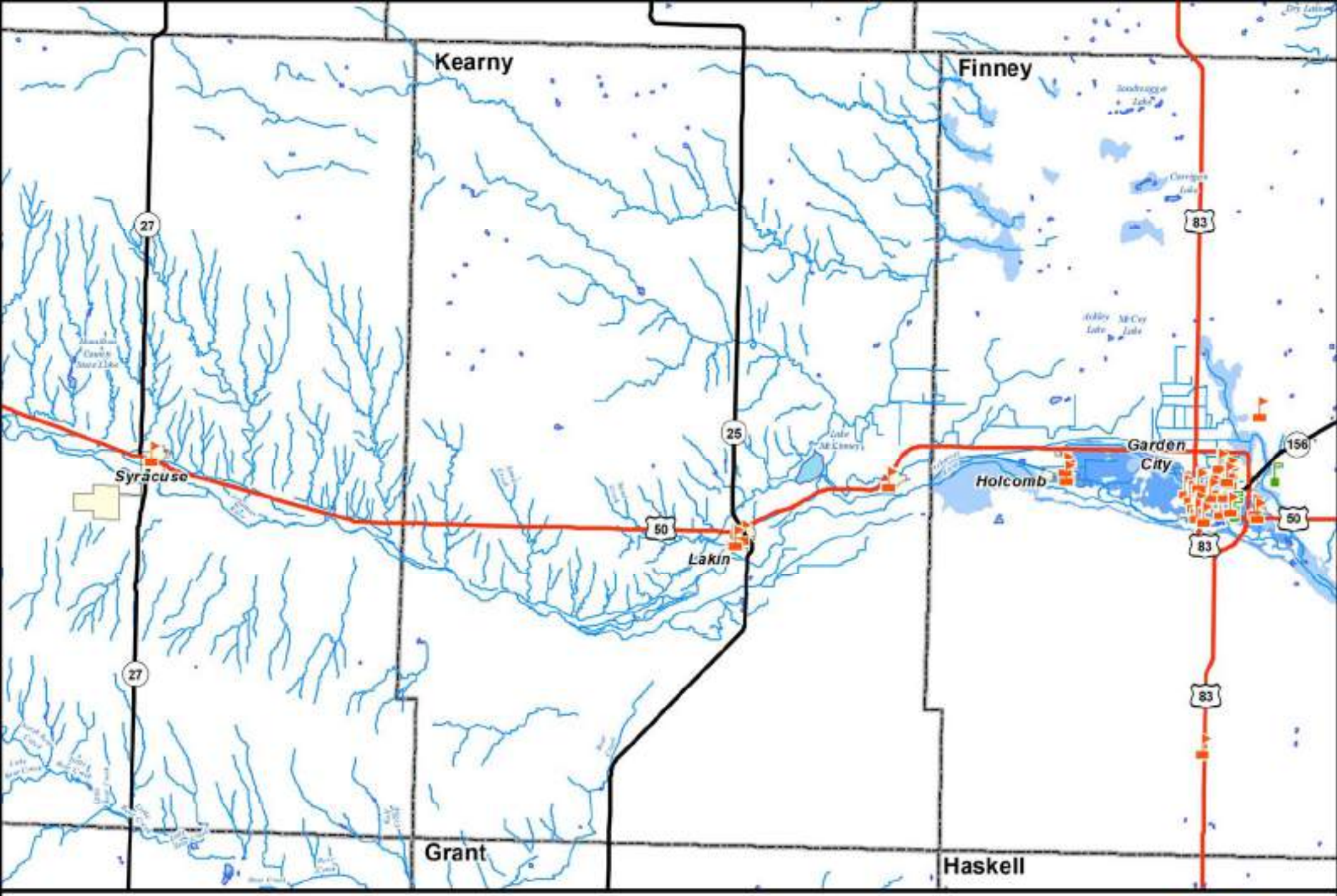
N

0 3 6 12 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 3/6/2014

Kansas
Adjutant General
Division of Emergency Management



Schools, Colleges and Floodplains Kearny County, KS

School
College

Interstates
US Highways
Kansas Highways
Streams
Lake

County Boundaries
City Boundaries
0.2% chance flood hazard
1% chance flood hazard

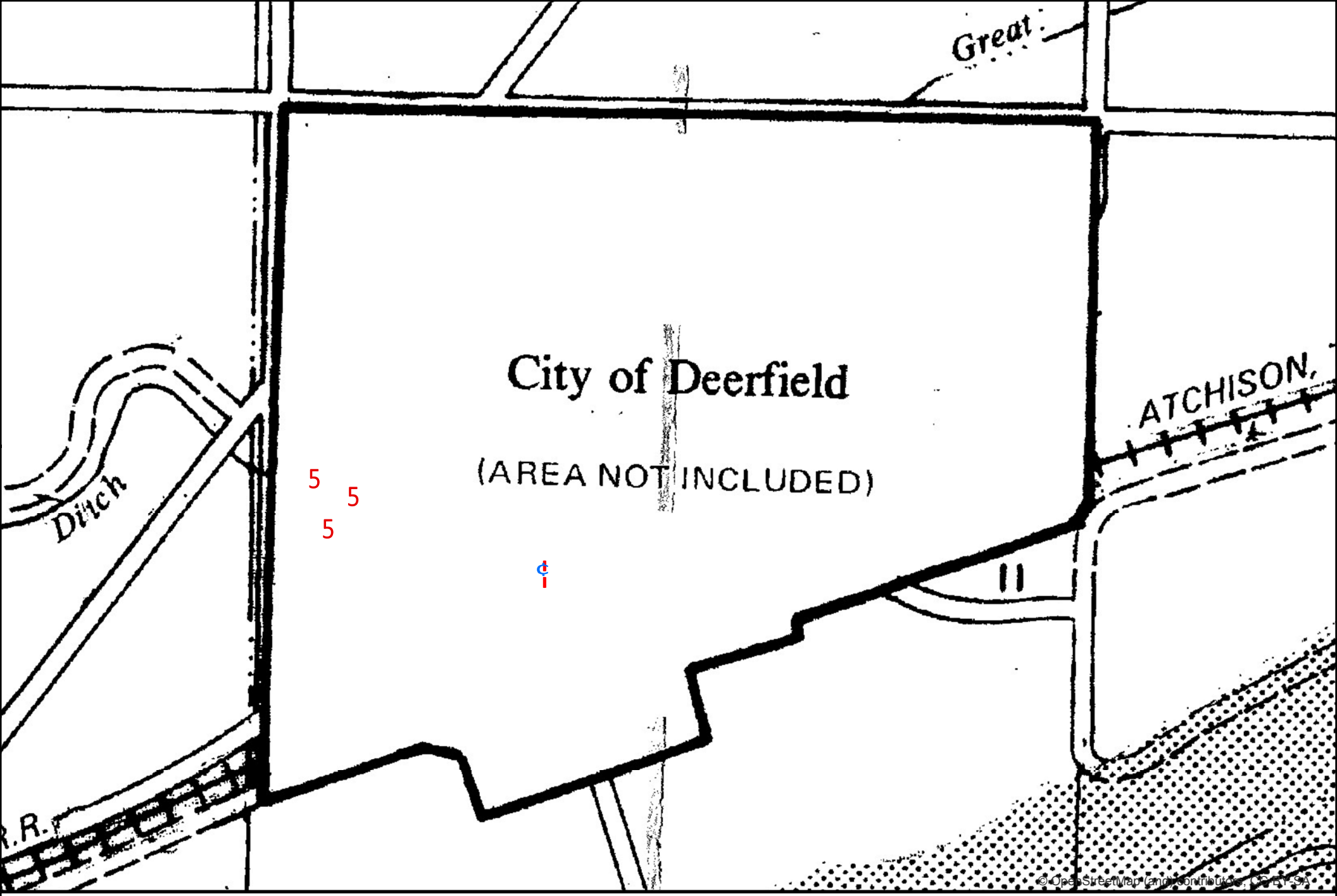
N

0 3 6 12 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 4/1/2014

Kansas
Adjutant General
Division of Emergency Management



Dam
Levee
Hospital
School
College
EMS
Fire Station

Flood Zone

0.2% Chance Annual Flood
A
AE
Floodway

Flood Hazard Areas
Critical Infrastructure
City of Deerfield
Kearny
County, KS

3

0 0.075 0.15 0.3 Miles

Data Sources: USGS, US Census Bureau,
KS Adjutant General, KDOT, USDA, KDA, KDHE

Date: 7/31/2014

Kansas Adjutant General
Division of Emergency Management

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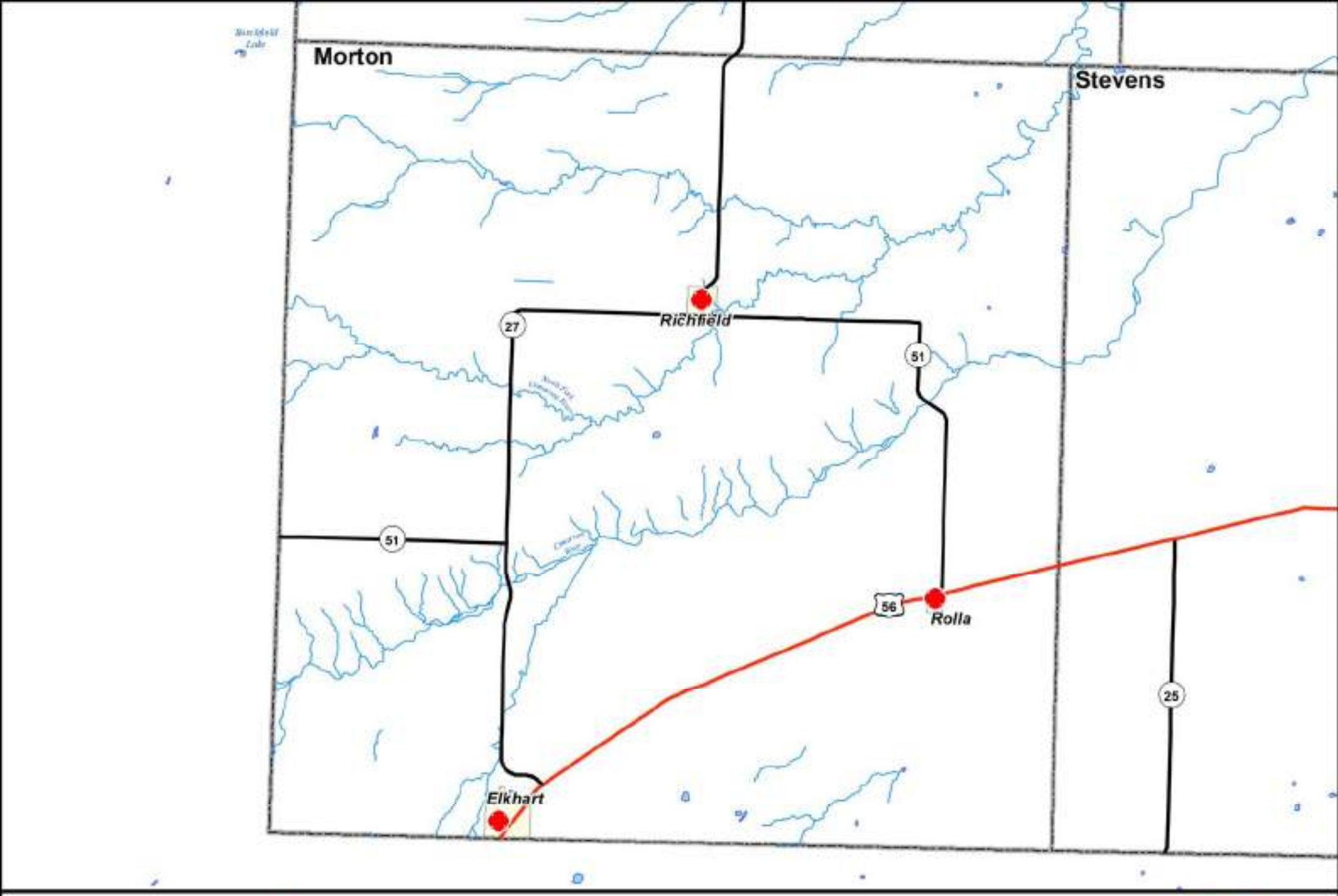


Fire Stations and Floodplains
Morton County, KS

Fire Station
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

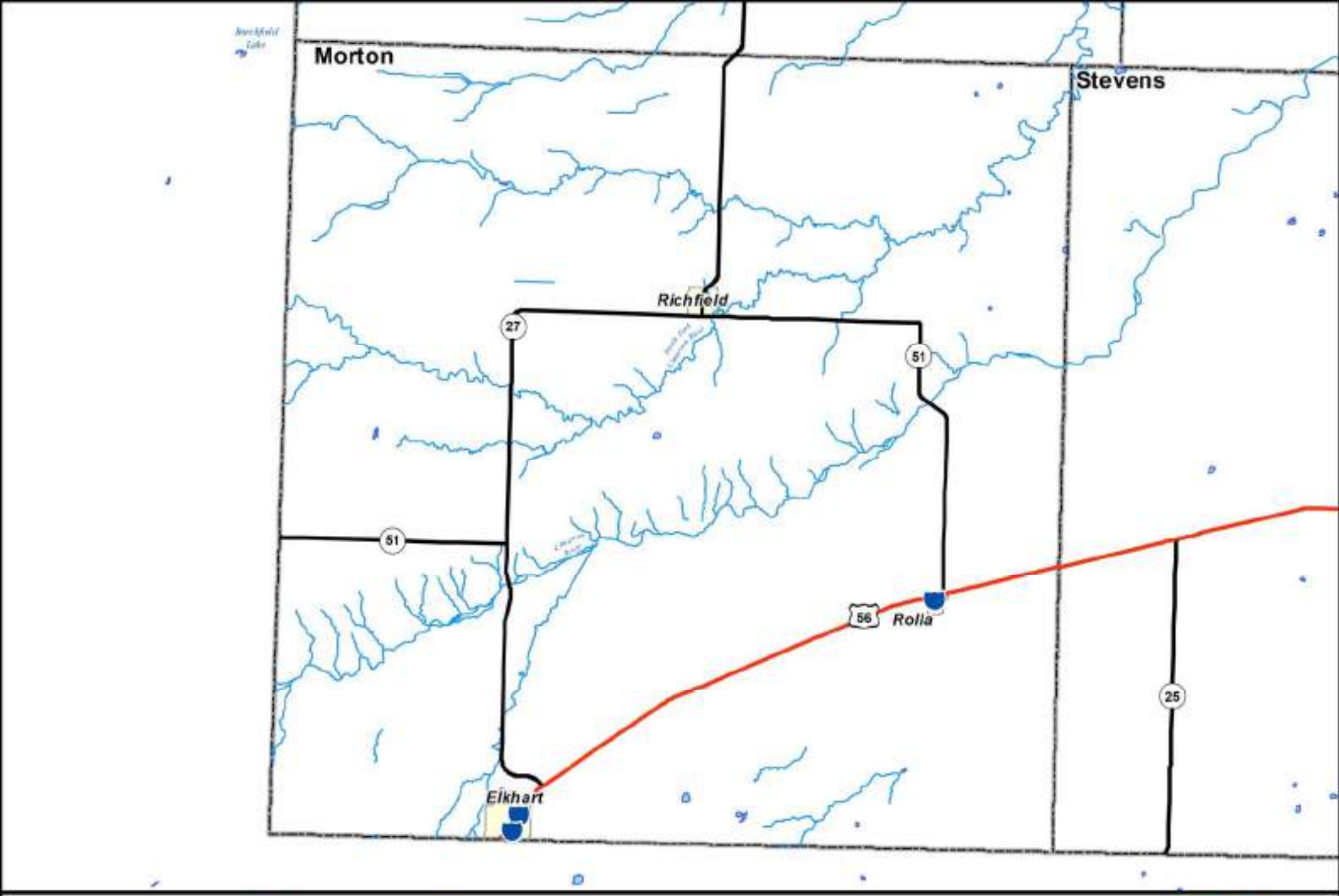
N

0 2.25 4.5 9 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Law Enforcement and Floodplains Morton County, KS

Law Enforcement
0.2% chance flood hazard
1% chance flood hazard
Interstates
US Highways
Kansas Highways
Streams
Lake
County Boundaries
City Boundaries

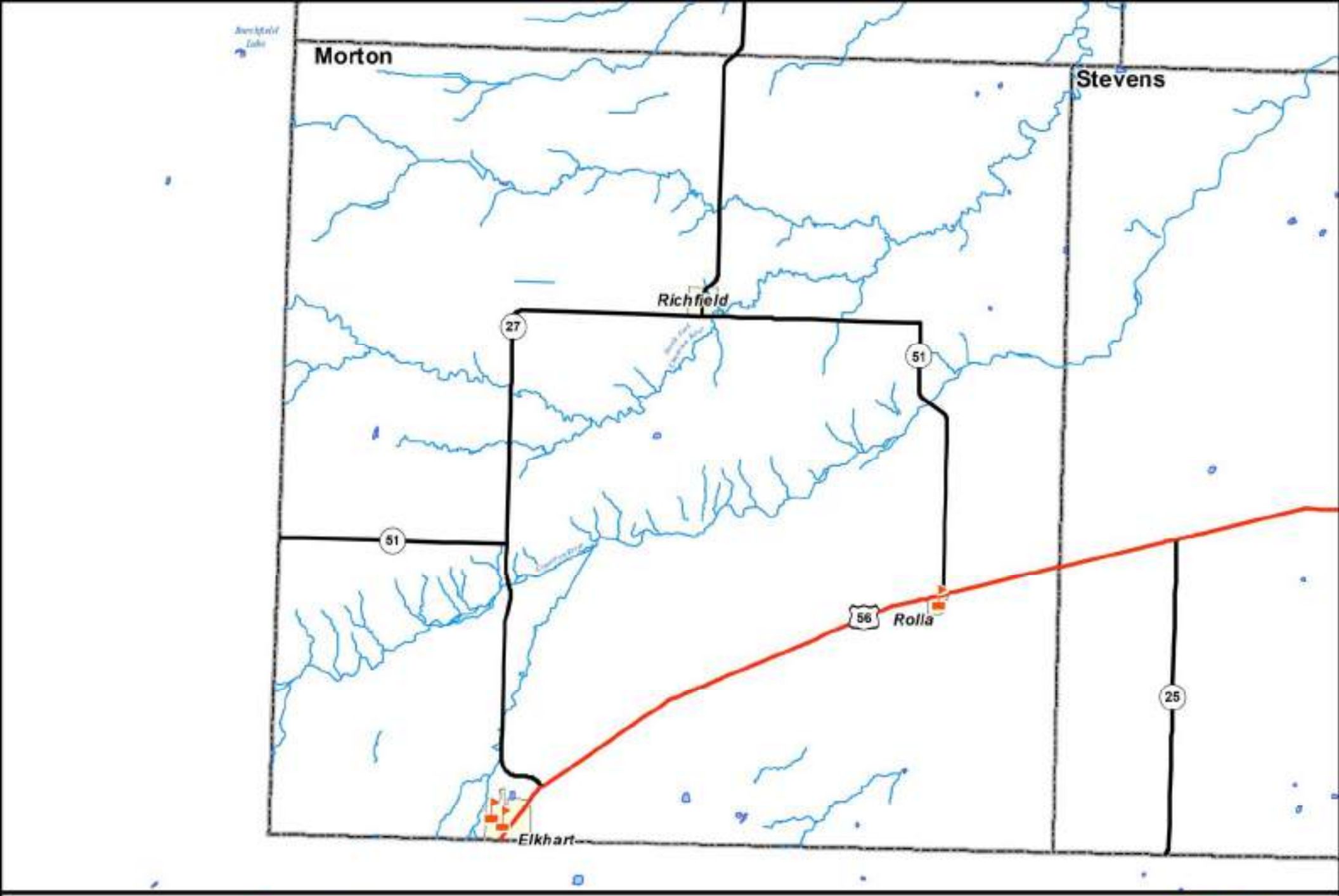
N

0 2.25 4.5 9 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 3/6/2014

Kansas
Adjutant General
Division of Emergency Management



Schools, Colleges and Floodplains
Morton County, KS

School
College

Interstates
US Highways
Kansas Highways
Streams
Lake

County Boundaries
City Boundaries
0.2% chance flood hazard
1% chance flood hazard

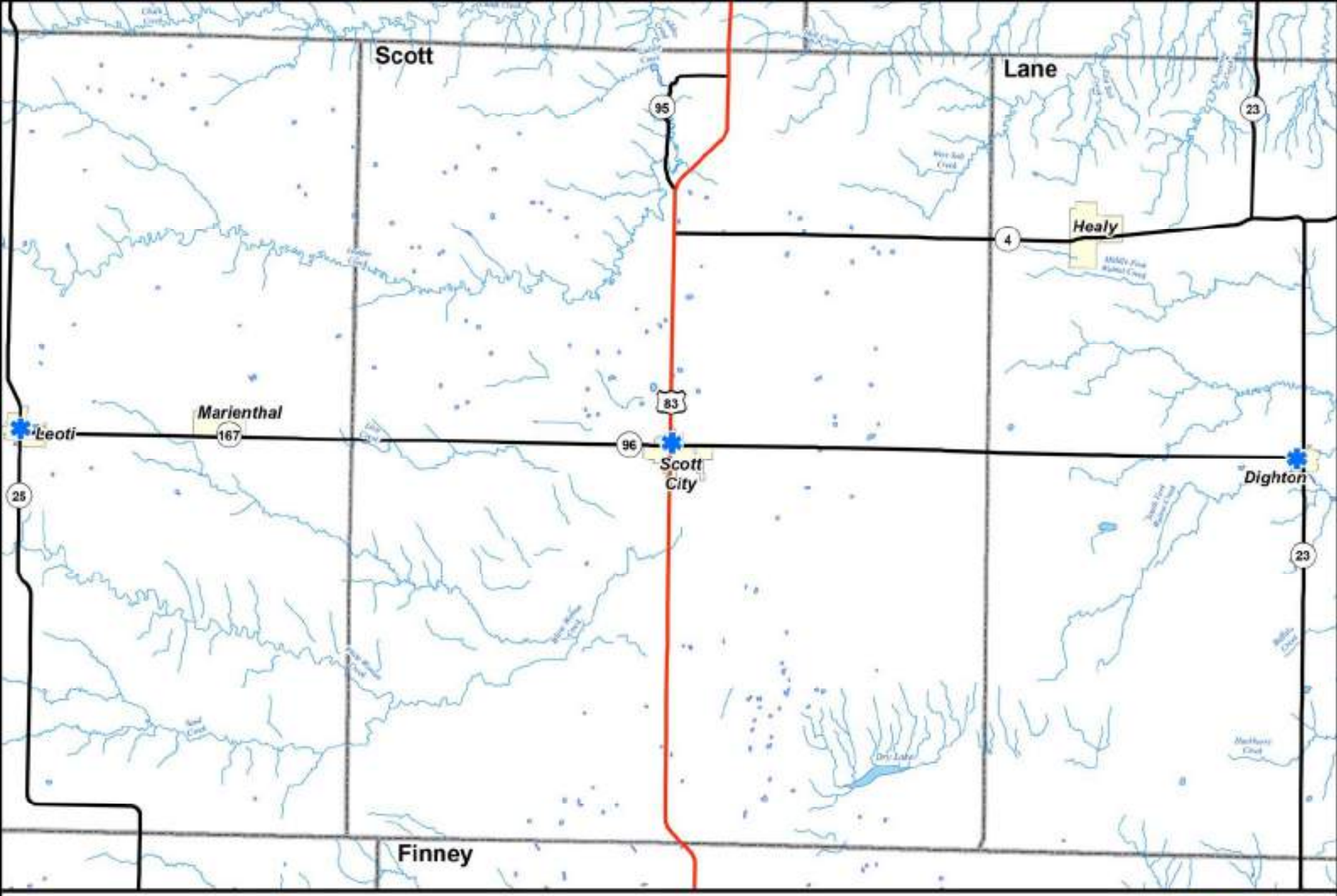
N

0 2.25 4.5 9 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 4/1/2014

Kansas
Adjutant General
Division of Emergency Management



EMS locations, and Floodplains
Scott County, KS

EMS
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

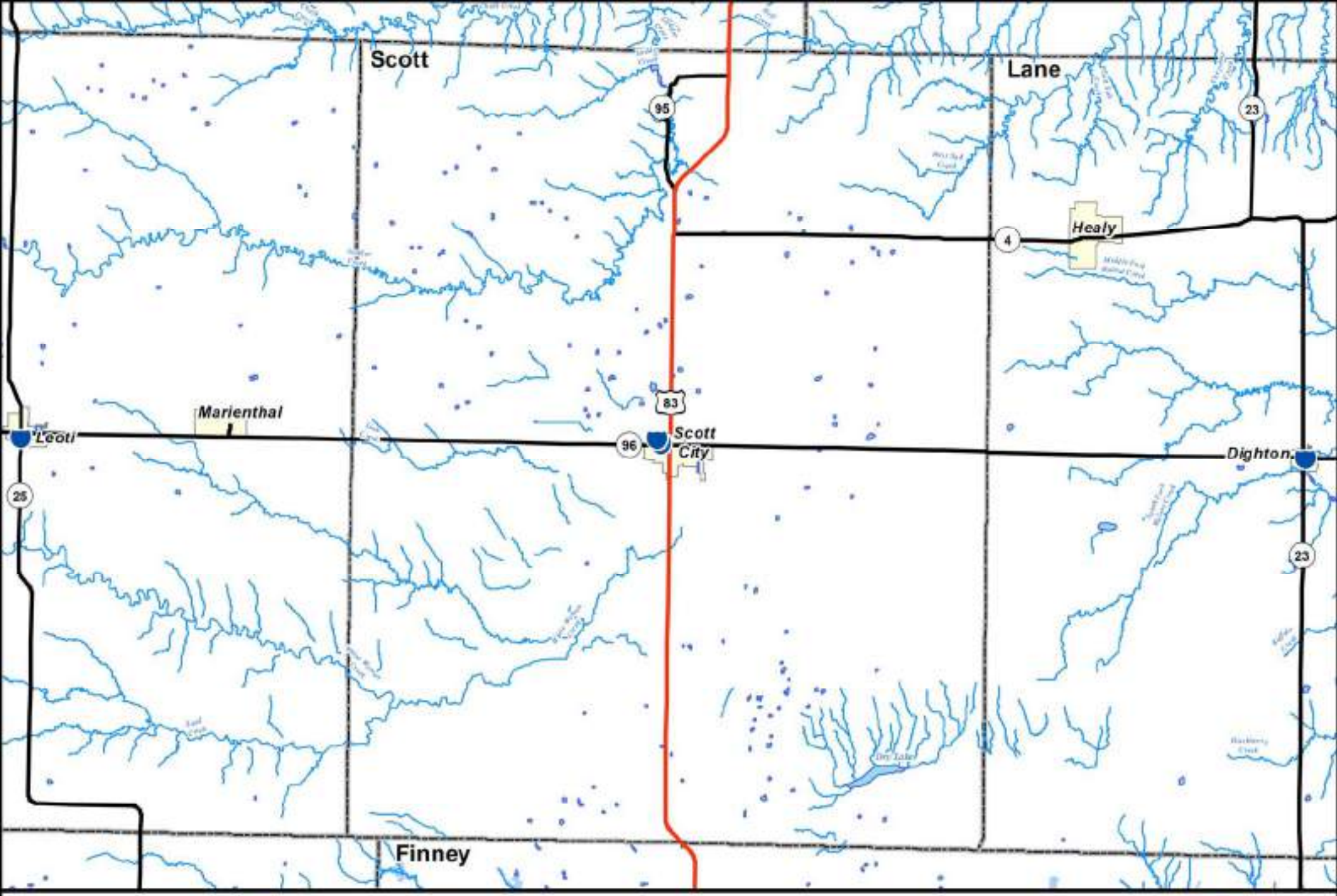
N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Law Enforcement and Floodplains Scott County, KS

Law Enforcement
0.2% chance flood hazard
1% chance flood hazard
Interstates
US Highways
Kansas Highways
Streams
Lake
County Boundaries
City Boundaries

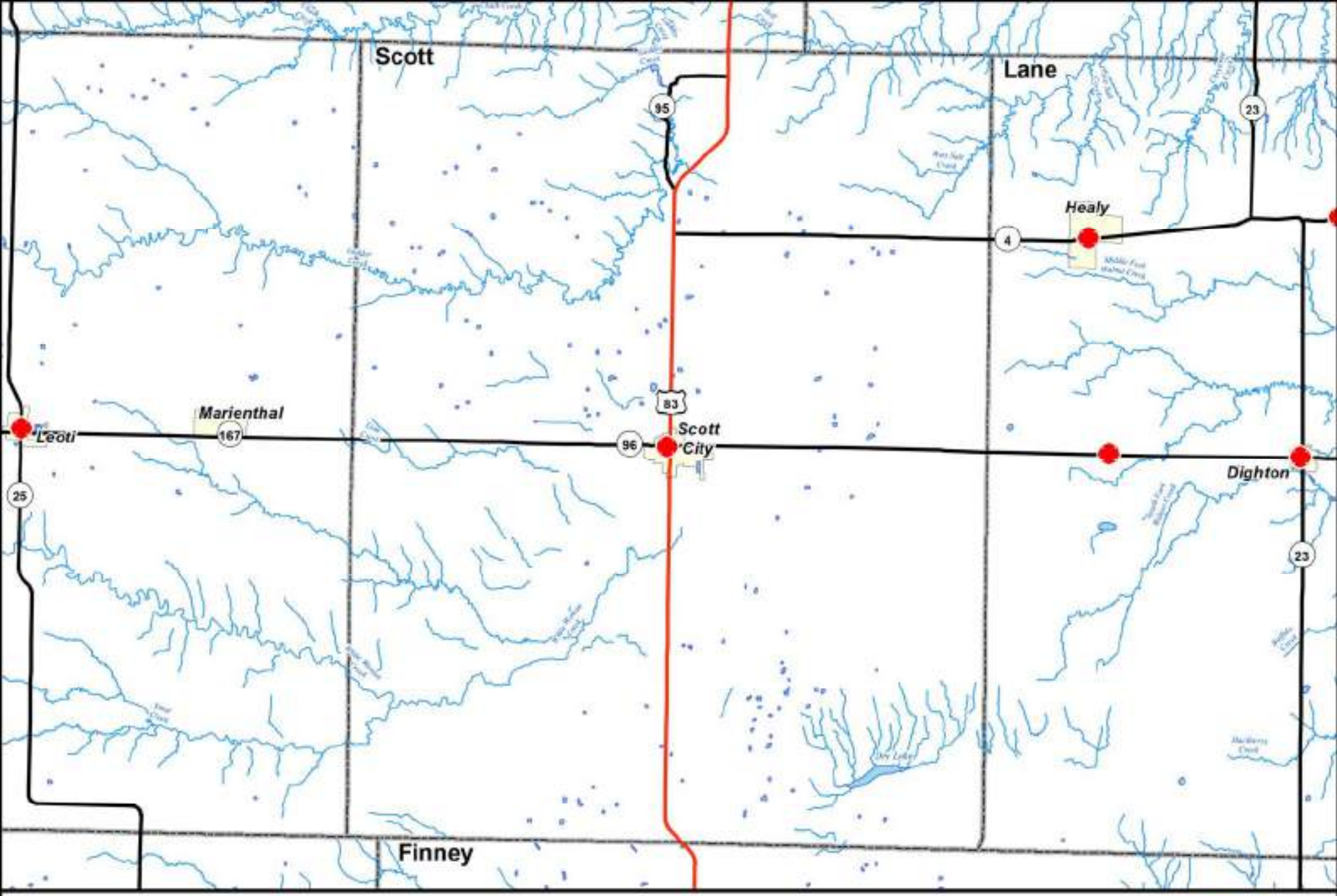
N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 3/6/2014

Kansas
Adjutant General
Division of Emergency Management



Fire Stations and Floodplains
Scott County, KS

Fire Station
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

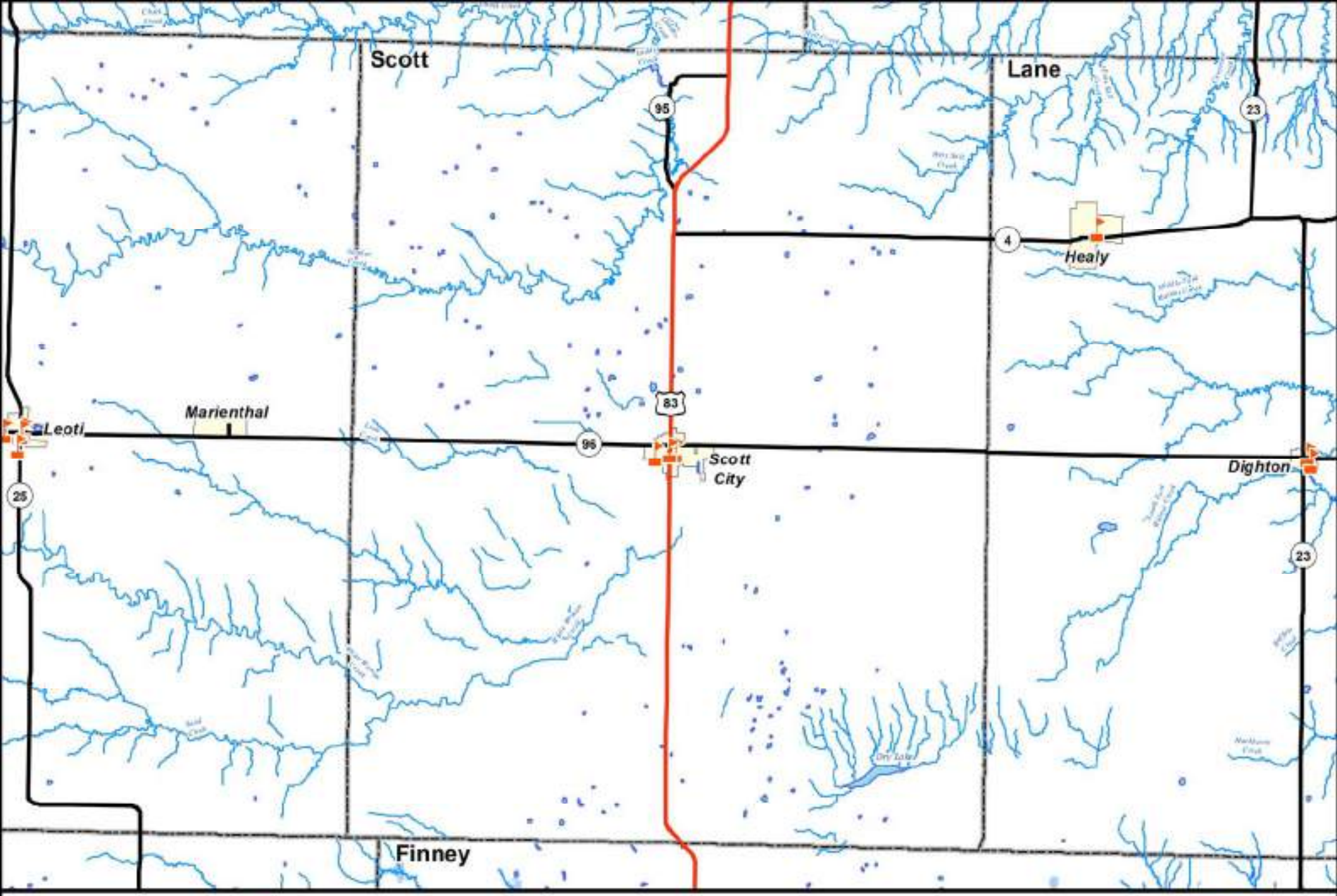
N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Schools, Colleges and Floodplains Scott County, KS

School
College

Interstates
US Highways
Kansas Highways
Streams
Lake

County Boundaries
City Boundaries
0.2% chance flood hazard
1% chance flood hazard

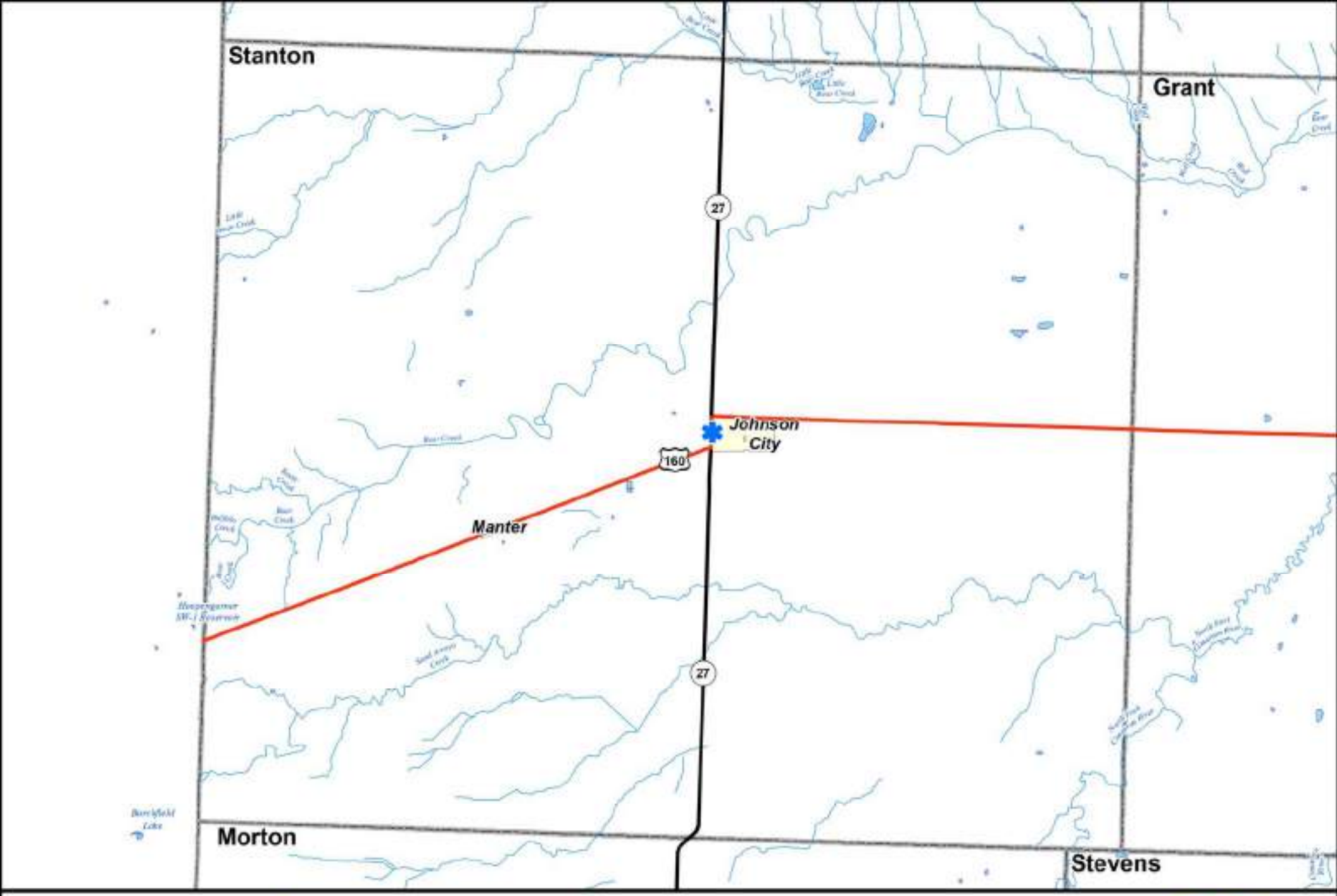
N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 4/1/2014

Kansas
Adjutant General
Division of Emergency Management



EMS locations, and Floodplains
Stanton County, KS

EMS
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

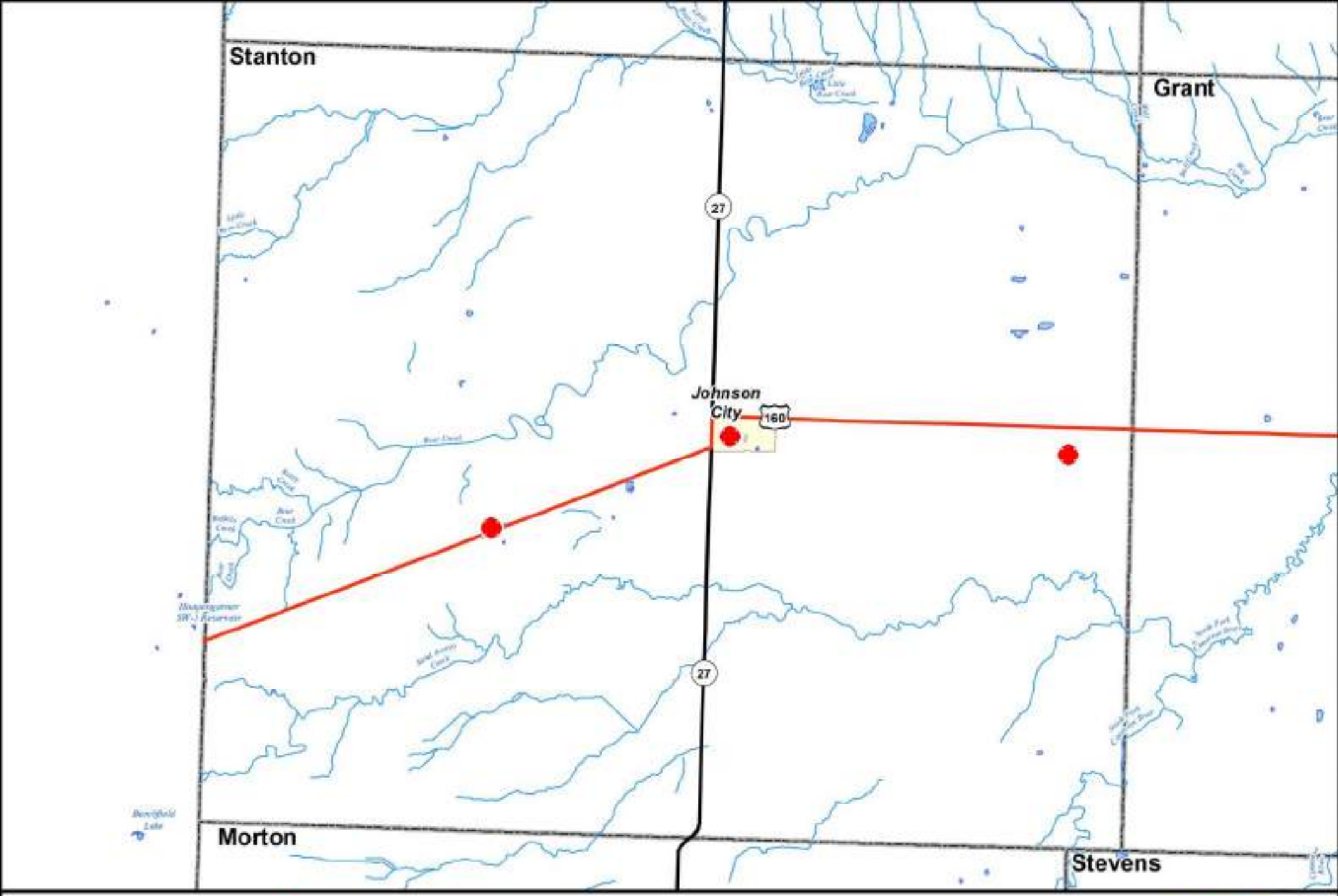
N

0 2 4 8 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Fire Stations and Floodplains
Stanton County, KS

Fire Station
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

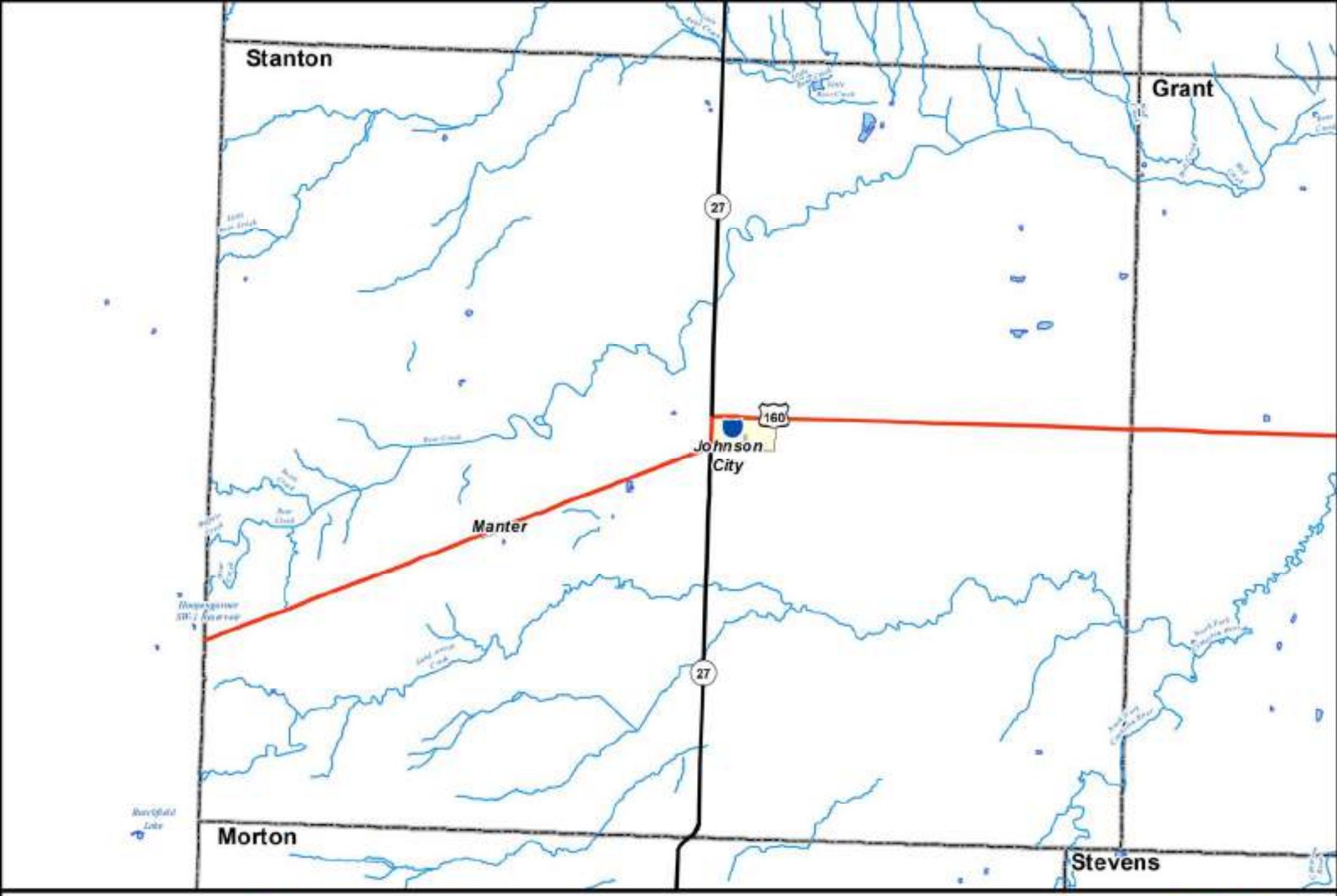
N

0 2 4 8 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Law Enforcement and Floodplains Stanton County, KS

Law Enforcement
0.2% chance flood hazard
1% chance flood hazard
Interstates
US Highways
Kansas Highways
Streams
Lake
County Boundaries
City Boundaries

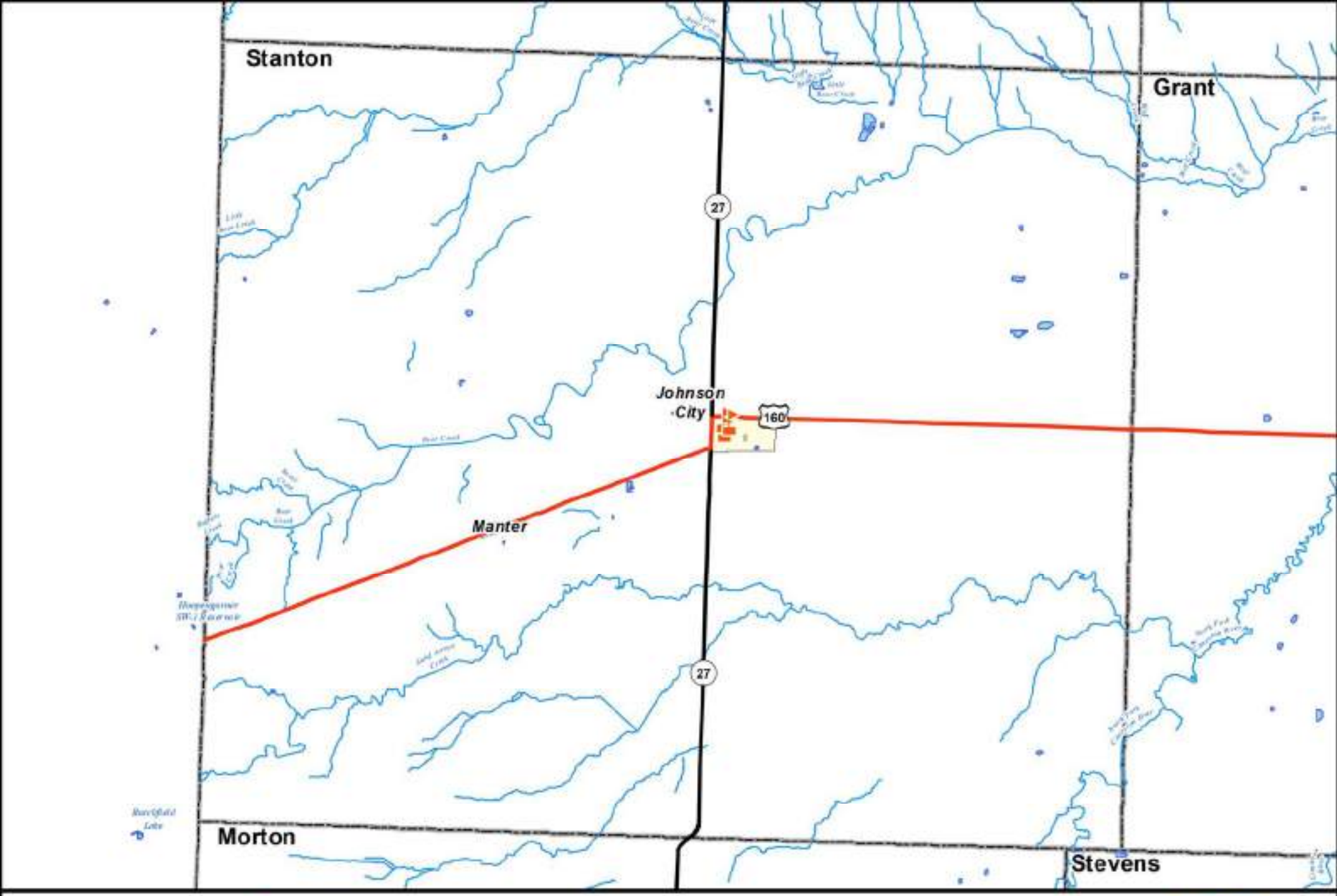
N

0 2 4 8 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 3/6/2014

Kansas
Adjutant General
Division of Emergency Management



Schools, Colleges and Floodplains Stanton County, KS

School
College

Interstates
US Highways
Kansas Highways
Streams
Lake

County Boundaries
City Boundaries
0.2% chance flood hazard
1% chance flood hazard

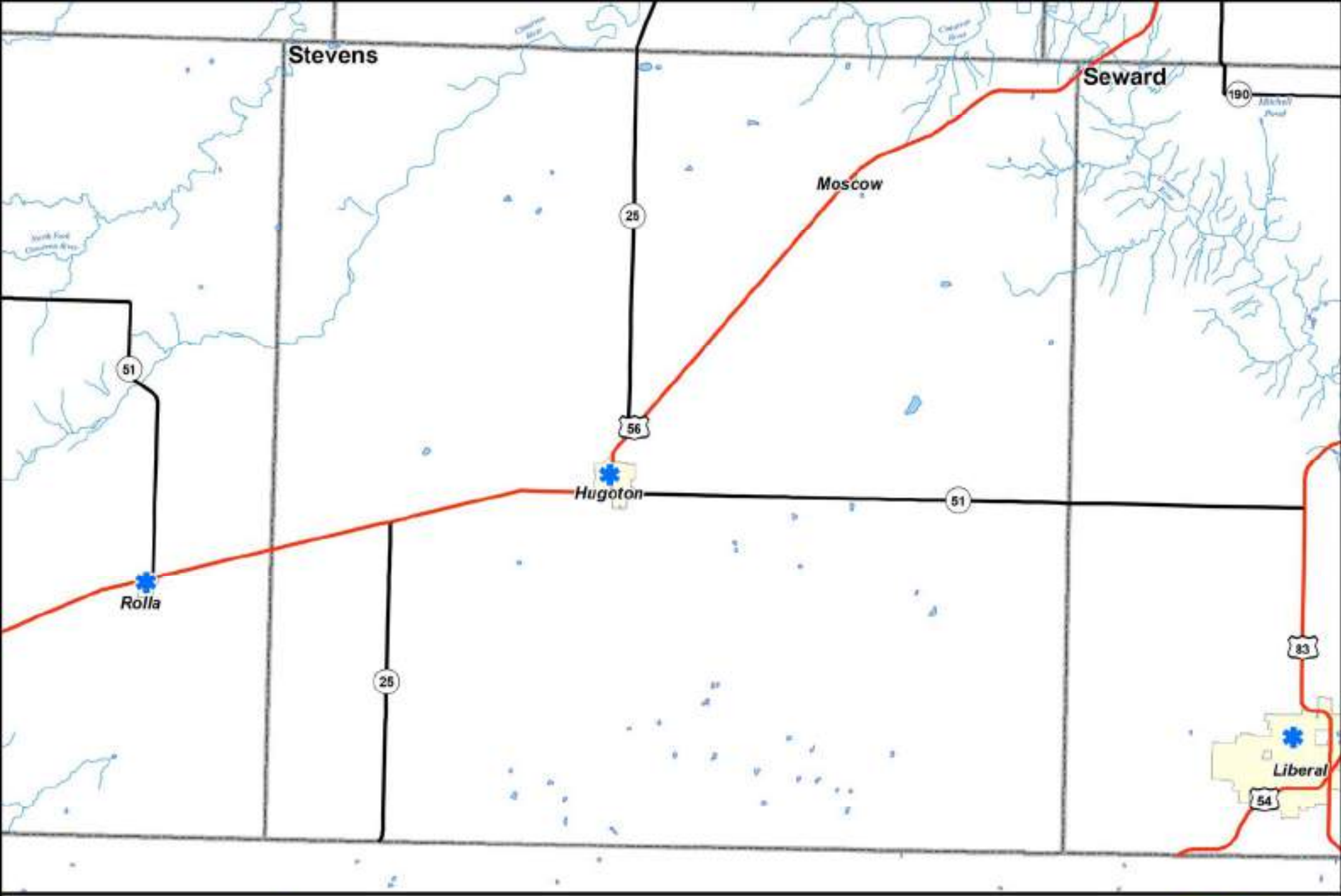
N

0 2 4 8 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 4/1/2014

Kansas
Adjutant General
Division of Emergency Management



EMS locations, and Floodplains
Stevens County, KS

EMS
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

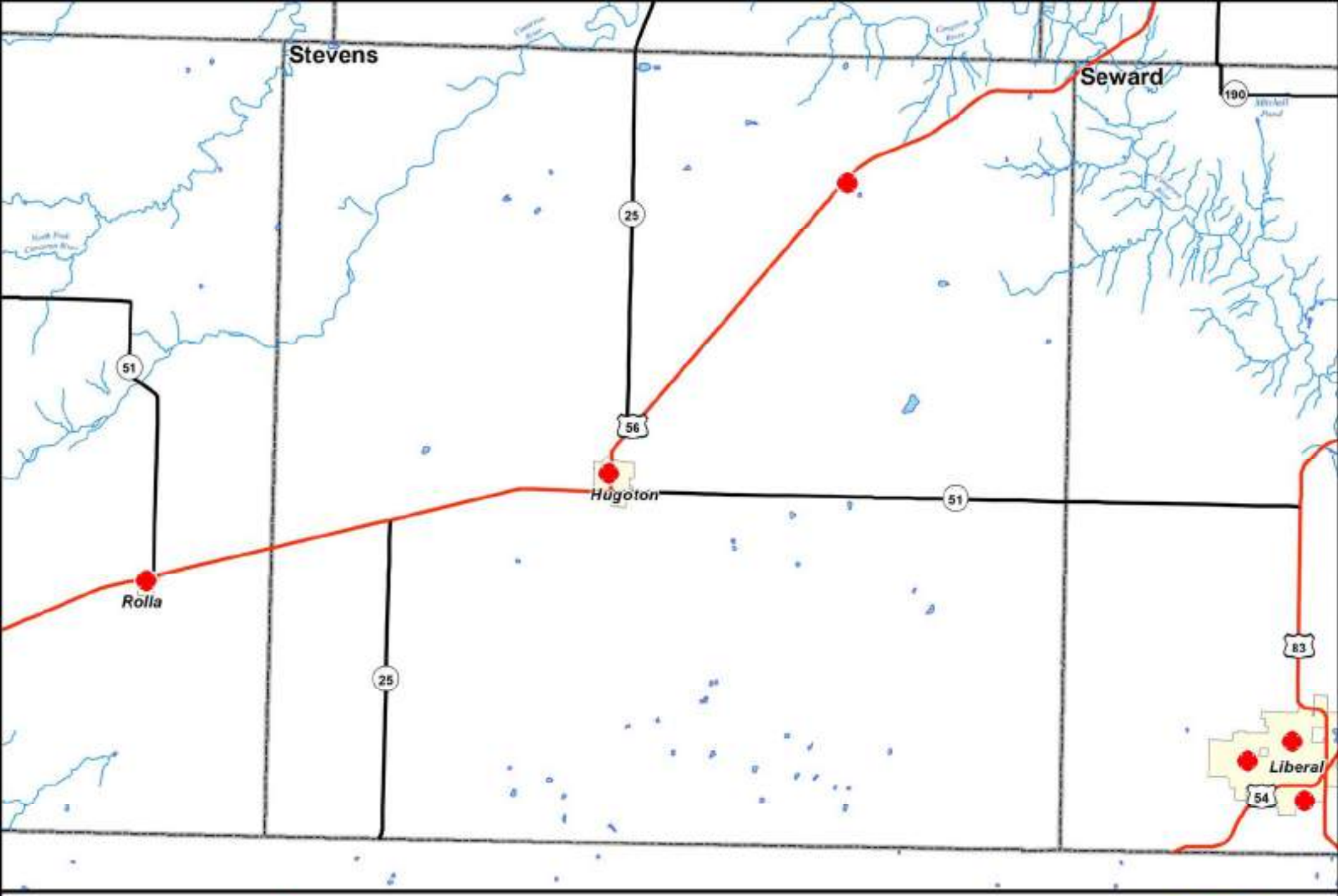
N

0 2.25 4.5 9 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Fire Stations and Floodplains
Stevens County, KS

Fire Station
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

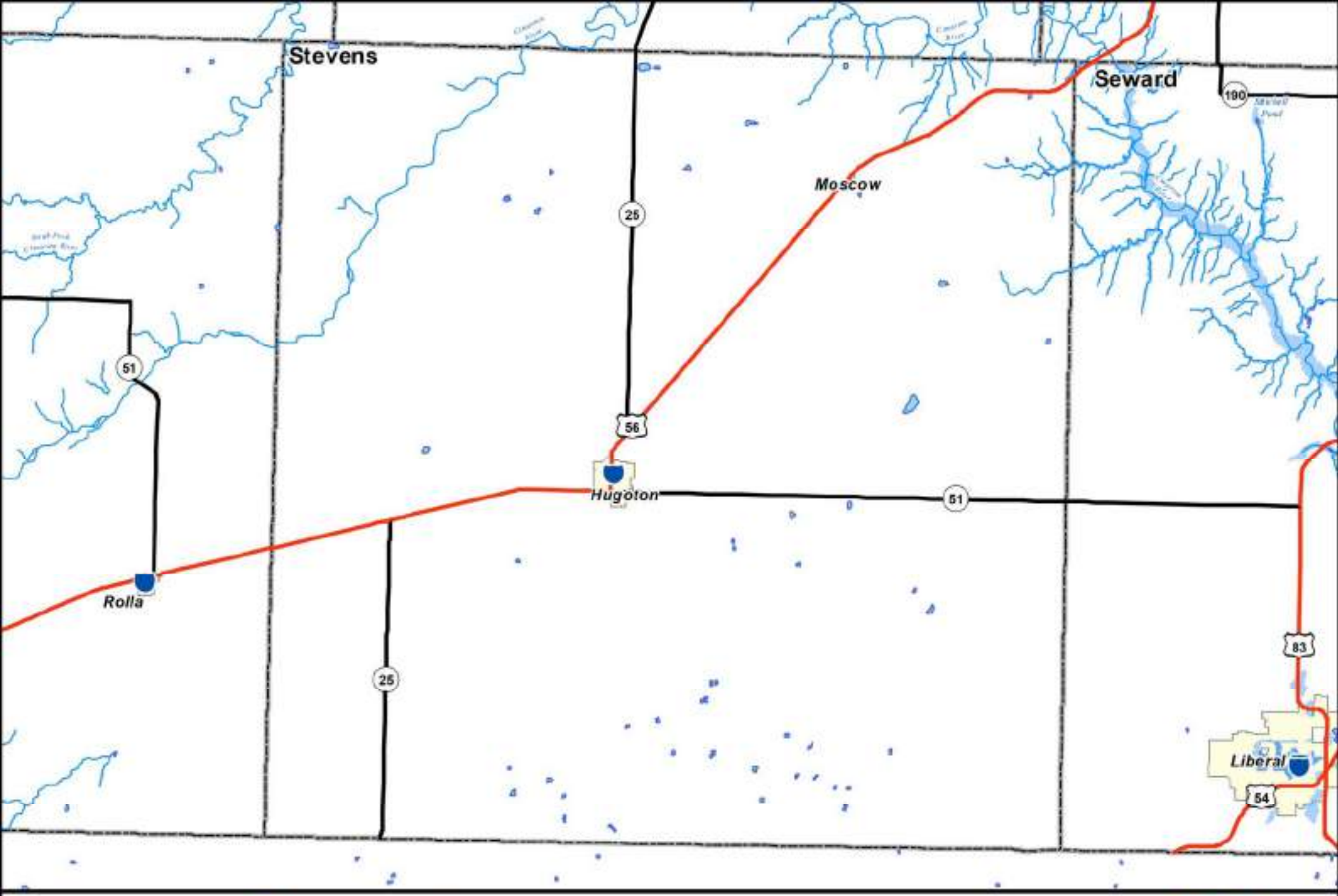
N

0 2.25 4.5 9 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Law Enforcement and Floodplains Stevens County, KS

Law Enforcement
0.2% chance flood hazard
1% chance flood hazard
Interstates
US Highways
Kansas Highways
Streams
Lake
County Boundaries
City Boundaries

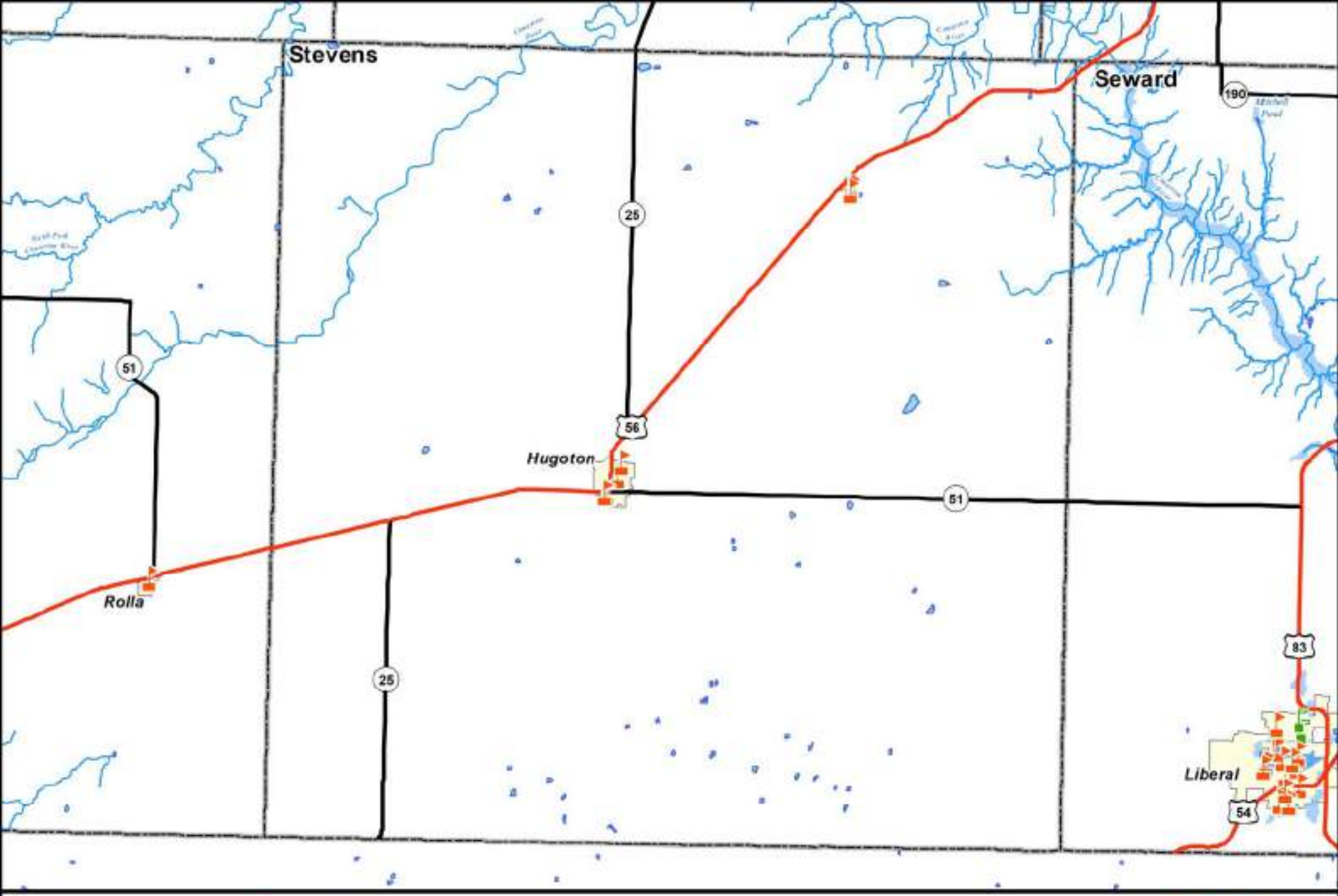
N

0 2.25 4.5 9 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 3/6/2014

Kansas
Adjutant General
Division of Emergency Management



Schools, Colleges and Floodplains Stevens County, KS

School
College

Interstates
US Highways
Kansas Highways
Streams
Lake

County Boundaries
City Boundaries
0.2% chance flood hazard
1% chance flood hazard

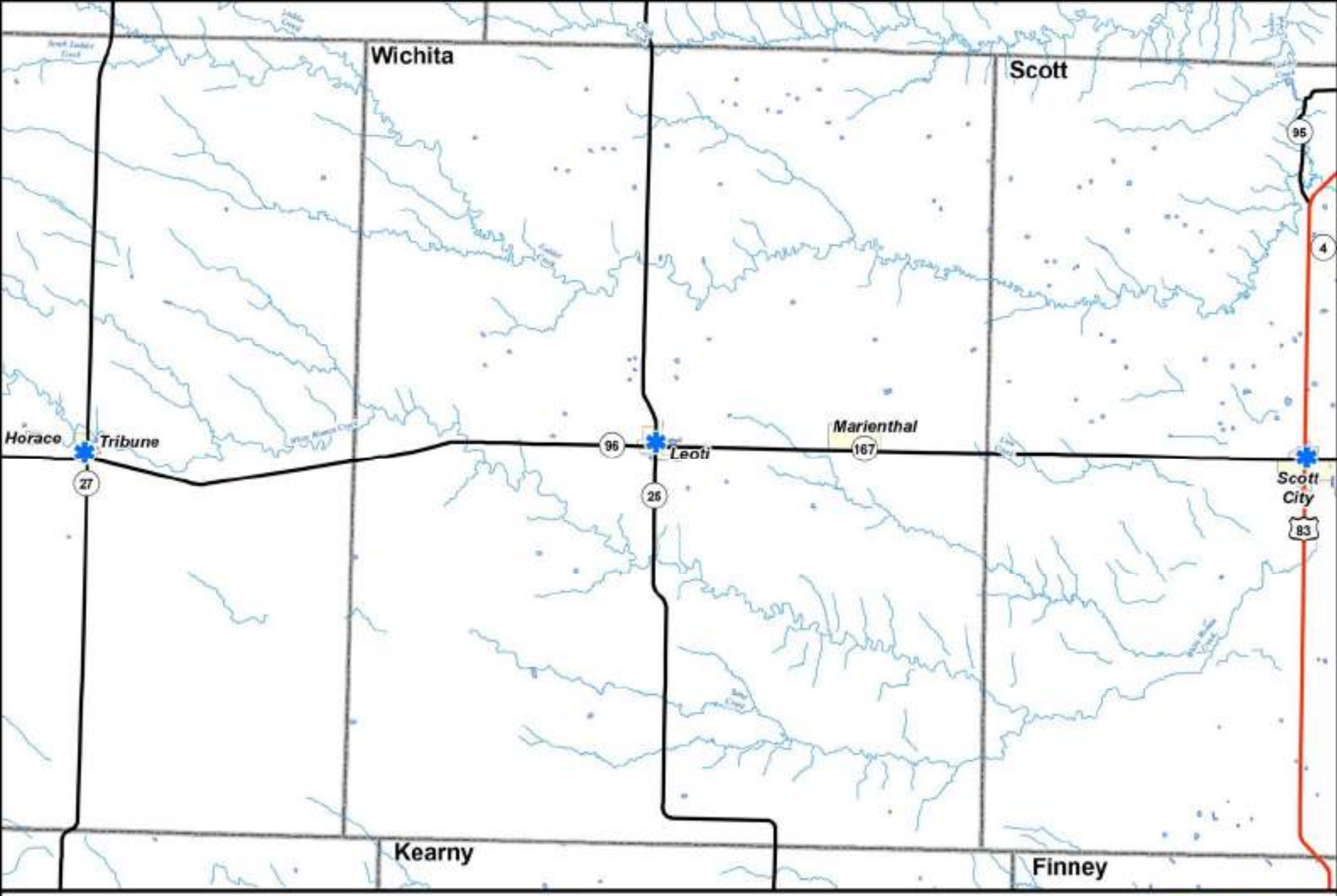
N

0 2.25 4.5 9 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 4/1/2014

Kansas
Adjutant General
Division of Emergency Management



EMS locations, and Floodplains
Wichita County, KS

EMS
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boudaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

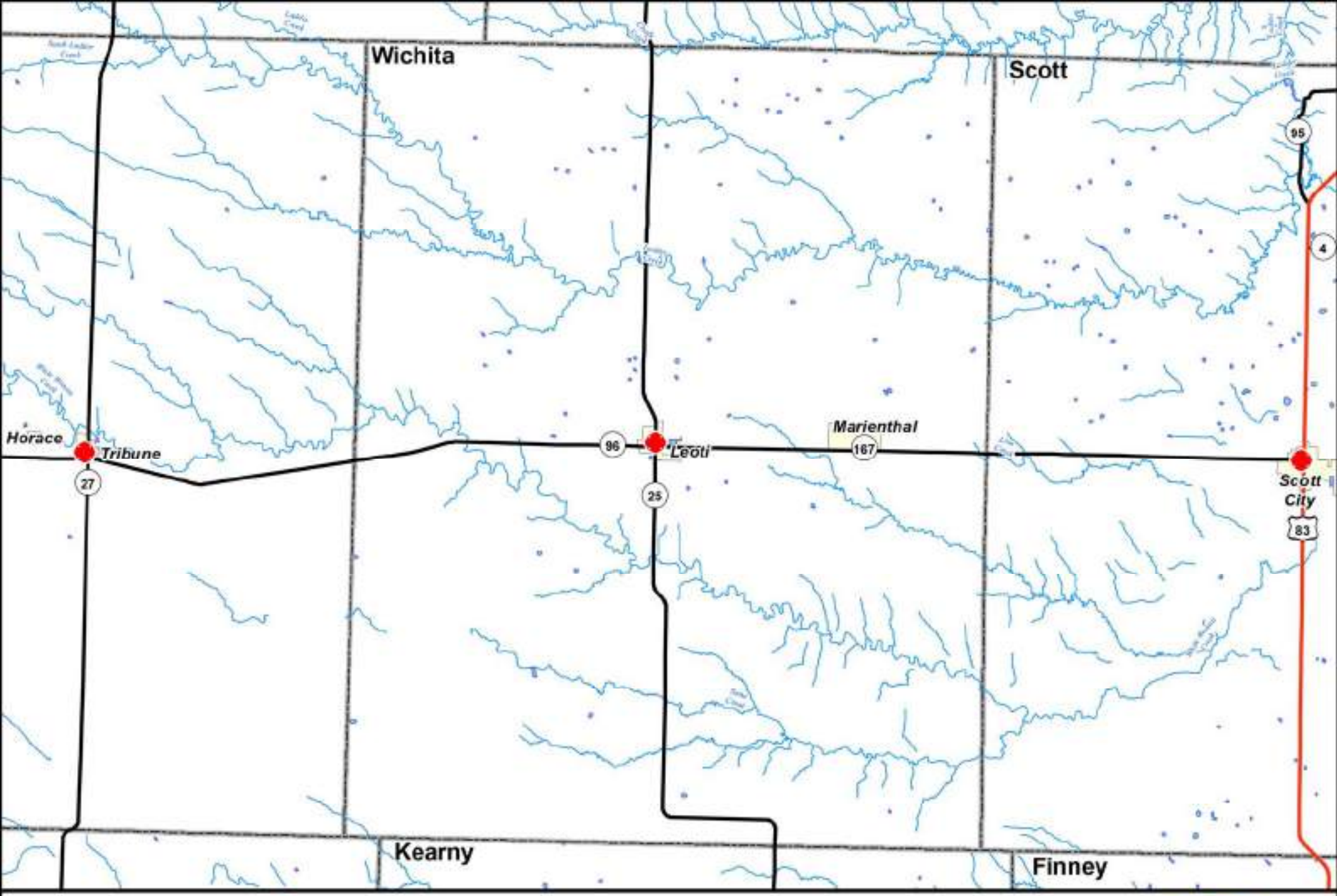
N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Fire Stations and Floodplains Wichita County, KS

Fire Station
Interstates
US Highways
Kansas Highways
Lake
Streams
County Boundaries
0.2% chance flood hazard
1% chance flood hazard
Cities (Census 2010)

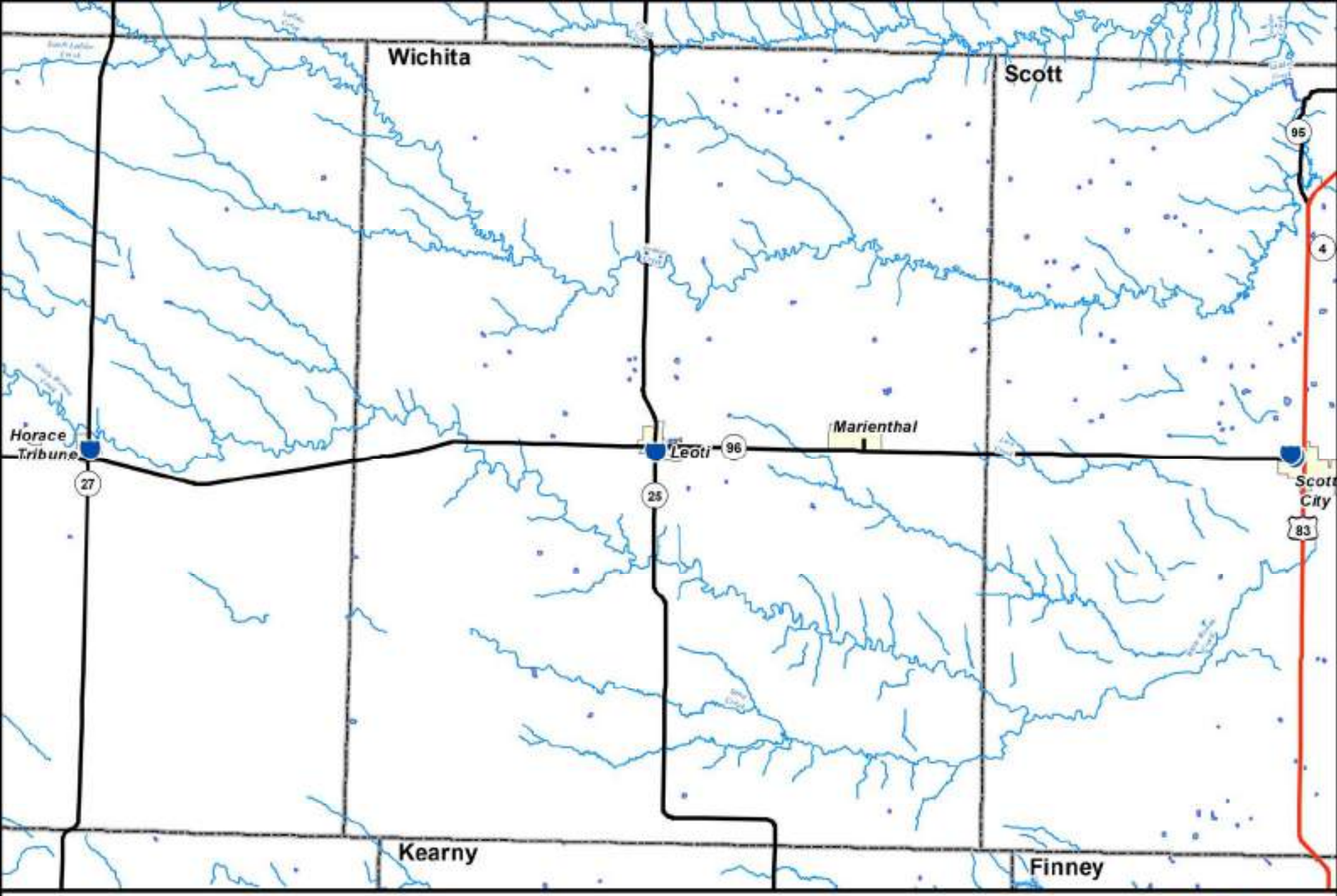
N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 2/10/2014

Kansas
Adjutant General
Division of Emergency Management



Law Enforcement and Floodplains Wichita County, KS

Law Enforcement
0.2% chance flood hazard
1% chance flood hazard
Interstates
US Highways
Kansas Highways
Streams
Lake
County Boundaries
City Boundaries

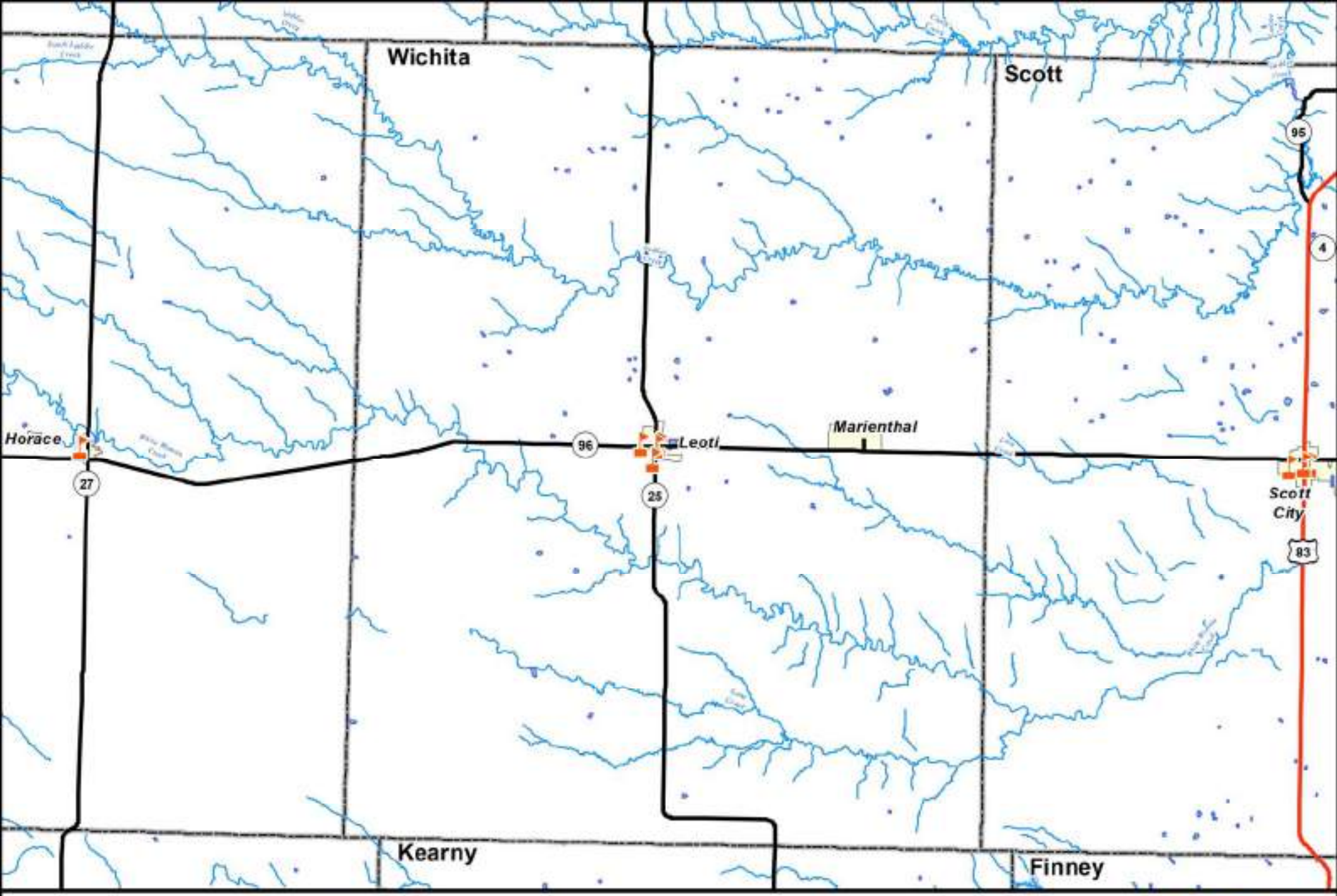
N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 3/6/2014

Kansas
Adjutant General
Division of Emergency Management



Schools, Colleges and Floodplains Wichita County, KS

School
College

Interstates
US Highways
Kansas Highways
Streams
Lake

County Boundaries
City Boundaries
0.2% chance flood hazard
1% chance flood hazard

N

0 2.5 5 10 Miles

Data Sources: USGS, US Census Bureau, KS Adjutant General, KDOT, USDA

Date: 4/1/2014

Kansas
Adjutant General
Division of Emergency Management

	Magnitude/Severity
Flood	2.11

Local Concerns

The following detail specific local concerns as related to flooding:

- In Grant County, Ulysses has occasional urban flooding concerns.
- In Hamilton County, Syracuse is located on the Arkansas River and is subject to potential flooding.
- In Kearny County, one primary flood zone, designated as Zone A, was identified in Lakin. The flood area does not appear to encompass any developed or improved areas.

Future Development

Continuing land development in southwest Kansas could place more people and property in flood-prone areas, unless floodplain management is implemented. It is not known how much development is occurring in flood hazard areas, but for communities in these counties that participate in the NFIP, any development in the floodplain should be built according to its corresponding floodplain management ordinance.

Modeling completed by HAZUS-MH 2.1 indicates that $16,031,000 in total direct building loss and income loss is vulnerable to flooding, with 2,184 persons vulnerable to displacement. However, regional population totals have decreased from 35,660 in 2000 to 34,152 in 2013 and are estimated to decrease to 22,237 by 2040. These decreases may be complemented as many of the flood prone cities have enacted floodplain ordinances limiting development in hazardous areas and/or are members of the NFIP.

In addition, according to the State's minimum standards, the first floor elevations of residential property must be a minimum of one foot above the base flood elevation. For non-residential properties, the standard is to either elevate or flood proof to one foot above the base flood elevation.

The Department of Agriculture, Division of Water Resources conducts Community Assistance Contacts which offer assistance to the participating communities and assess the floodplain program. Community Assistance Visits which are similar to full audits, are also conducted by the Division of Water Resources in order to ensure communities are in compliance with the floodplain management program.

Probability of Future Hazard Events

Based on the NCDC historical data available from 2004 to 2014, there were 39 flood and flash flood events in the region, causing $1,500 in property damage. The USDA indicates that during the period 2010 to 2013, $3,494 in annual insurance payments were made for the region. Additionally, during the past five years there have been two presidentially declared disasters for flooding (along with other causes such as tornados) totaling $19,672,447 in disaster costs.

However, county specific information was unavailable for the presidential disaster declarations. Available county specific information suggests that large scale, impactful flooding and flash flooding events occur on an occasional basis. And while past occurrence is no guarantee of future occurrence, it is reasonable to determine that occasional future flooding occurrences.

	Probability
Flood	2.22

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Flood Consequence Analysis

Subject	Ranking	Impacts of Flood
Health and Safety of Persons in the Area of the Incident	Severe	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.
Responders	Minimal	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Minimal to Severe	Temporary relocation may be necessary if inundation affects government facilities.
Property, Facilities, and Infrastructure	Severe	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.
Delivery of Services	Minimal to Severe	Delivery of services could be affected if there is any disruption to the roads and/or utilities due to the flood waters.
Environment	Severe	Impact will be severe for impacted area. Impact will lessen with distance.
Economic Conditions	Minimal to Severe	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 Governance	Minimal to Severe	Perception of whether the flood could have been prevented, warning time, and response and recovery time will greatly impact the public's confidence.

3.7.9 HAILSTORM

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Hailstorm	4.00	3.00	3.00	1.00	3.25

Description

According to the 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. As long as the updraft forces can support or suspend the weight of the hailstone, hail can continue to grow. At the time when the updraft can no longer support the hailstone, it will fall down to the earth.

In the United States, hail causes more than $1 billion in damage to property, crops and livestock each year. Because of the large agricultural industry in southwest Kansas, crop damage and livestock losses due to hail are of great concern to the region. Even relatively small hail can cause serious damage to crops and trees. Vehicles, roofs of buildings and homes, and landscaping are the other things most commonly damaged by hail. Hail has been known to cause injury and the occasional fatality to humans, often associated with traffic accidents.

	Warning Time
Hailstorm	3.00

	Duration
Hailstorm	1.00

Hazard Location

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

Previous Occurrences and Local Events

The following detail notable regional hail events.

> **June 18, 2010: Regional:** A warm front moved north into south western Kansas and created thunderstorms close to the Oklahoma border.
>
> **June 12, 2009: Regional:** Hail was accompanied by 70 to 90 mph winds and did extensive damage to vehicles, buildings, crops and wildlife. The largest stones were a bit bigger than a baseball with the majority golf ball sized.

June 19, 2007: Stanton County: Widespread severe weather produced very large hail in the county. A USDA disaster declaration was received.

July 3, 2005: Stanton County: Large hail caused at least 50 percent crop damage to 200,000 acres across the county. A USDA disaster declaration was received.

June 12, 2005: Grant County, Ulysses: A 4.75-inch hail event was reported in the City of Ulysses

August 9, 2004: Kearny County: A 4.25-inch hail event was reported within the county.

June 28, 2003: Hamilton County: A 4.5-inch hail event was reported within the county.

The following table details NCDC hail event information.

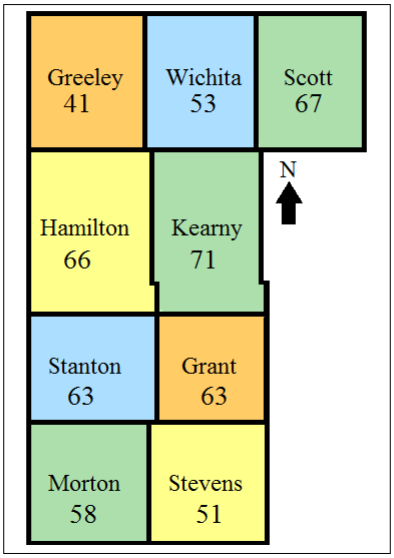
NCDC Hail Events, 2004 - 2014

County	Number of Days with Hail Events	Maximum Amount, in Inches	Property Damages	Crop Damages
Grant	63	4.75	$0	$0
Greeley	41	4.25	$6,500	$0
Hamilton	66	2.75	$0	$0
Kearny	71	4.25	$0	$0
Morton	58	2.75	$0	$0
Scott	67	3.00	$0	$0
Stanton	63	2.75	$0	$0
Stevens	51	2.00	$500	$0
Wichita	53	3.50	$2,000	$0
Regional Total	533	3.33 (average)	$9,000	$0

Source: NCDC Storm Events Database

The following map show the number of days with hail events in each county from 2004 - 2014, as per NCDC data.

NCDC Number of Days with Hail Event, 2004-2014



Hazard Vulnerability and Impact

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

Tornado and Storm Research Organization Hail Damage Descriptions

Intensity Category	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	0.2-0.4	Pea	No damage
Potentially Damaging	0.4-0.6	Mothball	Slight general damage to plants, crops
Significant	0.6-0.8	Marble, grape	Significant damage to crop and vegetation
Severe	0.8-1.2	Walnut	Severe damage to crops, damage to glass and plastic, paint and wood scored
Severe	1.2-1.6	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	1.6-2.0	Golf ball > Pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	2.0-2.4	Hen's egg	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	2.4-3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Super Hailstorms	3.6-3.9	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	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 are the data sources for the rating factors: Social Vulnerability Index for Kansas counties from the Hazards and Vulnerability Research Institute at the University of South Carolina,

NCDC storm events (2004 – 2014), U.S. Census Bureau (2012), USDA's Census of Agriculture (2012) and USDA Risk Management Agency (2010 – 2014). Please note that the data on crop losses only applies to insured crops. According to the *2011 Kansas Crop Insurance Profile Report* issued by the USDA Risk Management Agency 82 percent of Kansas' row crops were insured in 2011.

It was determined that since hail is a common occurrence in Kansas, that using historical events and property damages from 2004 forward provides adequate events to describe the hail hazard in southwest Kansas. Additionally, please note that data for 2014 runs through September 1, making it an incomplete year.

Vulnerability Factor Amounts for Hail

County	SoVI Rating (1-5)	Prior Events 2004-2014	Property Damages	Annualized Property Damages	Total Building Exposure ($000)	Population Density	Crop Exposure (2012 Census of Agriculture)	Crop Insurance Paid for Hail (2010-2013)	Annualized Crop Insurance Paid
Grant	3	63	$0	$0	$469,849	14	$86,023,000	$2,482,351	$620,588
Greeley	4	41	$6,500	$591	$131,666	2	$58,936,000	$3,404,511	$851,128
Hamilton	4	66	$0	$0	$187,869	3	$55,383,000	$1,125,469	$281,367
Kearny	4	71	$0	$0	$228,723	5	$80,730,000	$4,284,072	$1,071,018
Morton	2	58	$0	$0	$230,152	4	$58,361,000	$2,602,032	$650,508
Scott	4	67	$0	$0	$350,514	7	$64,648,000	$1,278,121	$319,530
Stanton	2	63	$0	$0	$151,658	3	$79,556,000	$3,126,723	$781,681
Stevens	5	51	$500	$45	$293,762	5	$144,543,000	$4,750,097	$1,187,524
Wichita	4	53	$2,000	$182	$175,679	3	Unavailable	$2,084,327	$521,082
Regional Total	-	533	$9,000	$818	$2,669,872	5	$628,180,000	$25,137,703	$6,284,426

Using the above information, a value of 1-10 was assigned to the data obtained for each factor and then weighted equally and factored together to obtain overall vulnerability scores for comparison and to determine the greatest vulnerable counties. The Social Vulnerability Index is in a range of 1- 5. To give Social Vulnerability Index the same weight as the other factors, the numbers were multiplied by two.

Hail Data Rating Determination

Ratings	Social Vulnerability	NCDC Prior Events	Annualized Property Damage	Building Exposure Valuation	Population Density *	Crop Exposure	Annualized Crop Loss
1		18 - 55	0 - $10,000	$117,421 - $4,492,825	1.6 - 116.3	0 - $18,548,500	0 - $100,000
2	1	56 - 90	$10,001 - $50,000	$4,492,826 - $8,868,229	116.4 - 231.1	$18,548,501 - $32,126,000	$100,001 - $300,000
3		91 - 125	$50,001 - $100,000	$8,868,230 - $13,243,634	231.2 - 345.9	$32,126,001 - $45,703,500	$300,000 - $500,000
4	2	126 - 160	$100,001 - $300,000	$13,243,635 - $17,619,039	346 - 460.7	$45,703,501 - $59,281,000	$500,001 - $700,000
5		161 - 195	$300,001 - $500,000	$17,619,040 - $21,994,444	460.8 - 575.5	$59,281,001 - $72,858,500	$700,001 - $900,000
6	3	196 - 230	$500,001 - $700,000	$21,994,445 - $26,369,848	575.6 - 690.3	$72,858,501 - $86,436,000	$900,001 - $1,100,000
7		231 - 265	$700,001 - $900,000	$26,369,849 - $30,745,253	690.4 - 805.1	$86,436,001 - $100,013,500	$1,100,001 - $1,300,000
8	4	266 - 300	$900,001 - $1,100,000	$30,745,254 - $35,120,658	805.2 - 919.9	$100,031,501 - $113,591,000	$1,300,001 - $1,700,000
9		301 - 335	$1,000,001 - $4,000,000	$35,120,659 - $39,496,062	920- 1,034.7	$113,591,001 - $127,168,500	$1,700,001 - $2,100,000
10	5	336 - 370	$4,000,000 - $32,012,357	$39,496,063 - $43,871,468	1,034.8 - 1,149.6	$127,168,501 - $140,746,000	$2,100,000 - $2,300,000

Based on the above ratings system, ranges were applied to each county to determine their potential vulnerability. The following related the scoring to a vulnerability assessment:

- **Low:** Score range of 9 -14
- **Medium-Low:** Score range of 15 - 21
- **Medium:** Score range of 22 - 28
- **Medium-High:** Score range of 29 - 35
- **High:** Score range of 36 - 41

Vulnerability of Regional Counties to Hail

County	SoVi Rating	NCDC Prior Event Rating	Annualized Property Damage Rating	Building Exposure Valuation Rating	Population Density Rating	Crop Exposure Rating	Annualized Crop Loss Rating	Overall Vulnerability Rating	Hail Vulnerability
Grant	6	2	1	1	1	6	4	21	Medium-Low
Greeley	8	1	1	1	1	4	5	21	Medium-Low
Hamilton	8	2	1	1	1	4	2	19	Medium-Low
Kearny	8	2	1	1	1	6	6	25	Medium
Morton	8	2	1	1	1	4	4	21	Medium-Low
Scott	4	2	1	1	1	5	3	17	Medium-Low
Stanton	8	2	1	1	1	6	5	24	Medium
Stevens	4	1	1	1	1	10	7	25	Medium
Wichita	10	1	1	1	1	-	4	18	Medium-Low*

*: Wichita County data is incomplete and rating is lower than likely.

	Magnitude/Severity
Hailstorm	3.00

Future Development

Future development of agricultural resources and/or increases in population would tend to increase the risk of this hazard. Agriculture has a more significant role and the bigger potential for an economic impact resulting from hail events. Regional counties with a large agricultural base would be more susceptible to hail damage if agricultural development is expanded. However, in general, the region is experiencing a population decline and a slow and declining increase in agricultural acreage which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

Severe thunderstorms that create hail events are a common occurrence throughout southwest Kansas. According to the NCDC database, there were 533 days with hail events in southwest Kansas between 2004 and 2014, or an average of 48 events per year. In addition, the USDA reported that on a regional basis, annually $6,284,426 in crop insurance payments were made due to hail damage. Based on this information, there is a high likelihood that at least one hail event that has a significant impact, likely crop damage, could occur in southwest Kansas in any given year.

	Probability
Hailstorm	4.00

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Hail Consequence Analysis

Subject	Ranking	Impacts of Hailstorm
Health and Safety of Persons in the Area of the Incident	Severe	Impact of the immediate area could be severe for affected areas and moderate to light for other less affected areas depending on whether individuals are caught outside during the event.
Responders	Minimal	Impact to responders is expected to be non-existent to minimal.
Continuity of Operations	Minimal to Moderate	Temporary relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Severe	Localized impact could be severe to facilities and infrastructure in the incident area. Utility lines, roads, residential and business properties will be most affected.
Delivery of Services	Minimal to Severe	Delivery of services could be affected if there is any disruption to the roads and/or utilities due to damages sustained.
Environment	Severe	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	Minimal to Severe	Local economy and finances may be adversely affected, depending on damages sustained.
Public Confidence in Governance	Minimal to Moderate	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.

3.7.10 HAZARDOUS MATERIALS

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Hazardous Materials	1.33	1.67	4.00	1.56	1.86

Description

Hazardous materials and waste are a concern for southwest Kansas because a sudden accidental or intentional release of such materials can be dangerous to human health, to nearby property, and to the quality of the environment. Such releases may come from both fixed sources, such as a manufacturing or storage facility, or from a transportation source, such as a truck or pipeline. Generally, with a fixed facility, the hazards are pre-identified, and the facility is required by law to prepare a risk management plan and provide a copy to the Local Emergency Planning Committee (LEPC) and local fire departments. Accidental releases may be due to equipment failure, human error, or a natural or manmade hazard event.

Agricultural facilities throughout southwest Kansas are likely to have dangerous materials present that could pose a threat to surrounding populations in the event of an emergency or disaster. Facilities that store or use chemicals considered unusually dangerous to human safety are required by Section 112R of the Clean Air Act Amendments to assess the potential impacts of an accidental release of the chemical at their facility and to prepare risk management plan (RMP). Of particular interest to southwest Kansas is that ammonia is one of the covered hazardous materials. Numerous southwest Kansas ammonia storage and distribution facilities have filed an RMP with the U.S. Environmental Protection Agency (EPA). A database with information about southwest Kansas facilities that have RMPs is available through the EPA.

The primary agency responsible for hazardous materials within the State of Kansas is the KDHE, Division of Environment. The Kansas Response Plan, Emergency Support Function #10 – Oil and Hazardous Materials is another resource for response information.

	Warning Time
Hazardous Materials	4.00

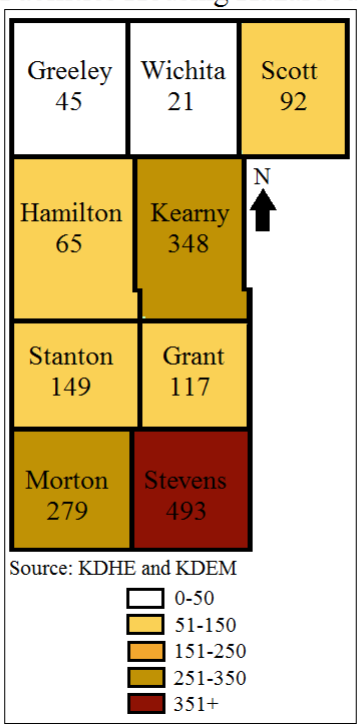
	Duration
Hazardous Materials	1.56

Hazard Location

Hazardous materials pose a threat to communities in southwest Kansas. Localities where hazardous materials are fabricated, processed, and stored as well as those where hazardous waste is treated, stored, and disposed of are most at risk for hazardous materials incidents. Additionally, localities along transportation corridors that carry these materials to their final destinations are also at risk.

In 2011, there were 2,479 facilities housing hazardous chemicals in southwest Kansas identified by the Community Right to Know Act. The number of facilities is illustrated in the following figure.

Number of Facilities Housing Hazardous Chemicals



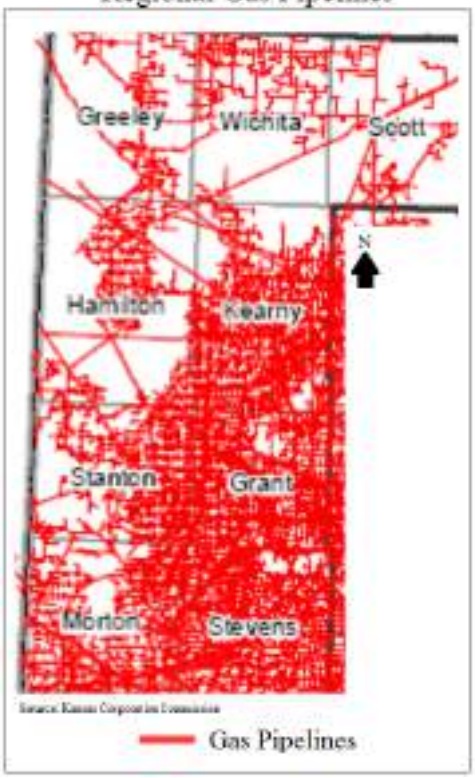
The EPA has indicated that there are Superfund sites in southwest Kansas. A Superfund site is an uncontrolled or abandoned location where hazardous waste is located which may affect local ecosystems and/or people. There are no listed superfund sites in southwest Kansas.

Pipelines and Production Fields

The following figures show production field locations, natural gas and oil pipelines in southwest Kansas.

Regional Oil and Gas Fields

Regional Gas Pipelines



The following table details the amount of gas and liquid pipeline miles per county in southwest Kansas.

2011 Pipeline Mileage

County	Gas Miles	Liquid Miles
Grant	191	65
Greeley	76	0
Hamilton	41	0
Kearny	160	0
Morton	98	16
Scott	167	59
Stanton	6	0
Stevens	52	26
Wichita	49	4
Regional Total	840	202

Source: United States Department of Transportation Pipeline and Hazardous Materials Safety Administration

Previous Occurrences and Extent

Regionally, there have been no reported major hazardous materials accidents or events, events resulting in multiple deaths, large scale injuries, or long term evacuations. The following are locally reported events.

2012: Kearny County: A valve broke of anhydrous ammonia pull tanker resulting in the driver becoming overcome with fumes and dying.

2002: Grant County, Ulysses: Slumber J, a fracking company spilled acid at a work site that caused workers to fall unconscious due to being overcome by fumes. Additionally, local workers and nearby residents were temporality evacuated as a safety precaution.

The following table lists the number of hazardous materials incidents, injuries, fatalities and people evacuated from the public and facilities by county in southwest Kansas region over the 10-year period of 2003-2012.

Number of Hazardous Material Incidents, Injuries, Fatalities and Evacuations, 2003-2012

Incident County	Incidents	Injuries	Fatalities	People Evacuated
Grant	10	4	0	16
Greeley	3	0	0	20
Hamilton	1	0	0	0
Kearny	5	1	1	50
Morton	1	0	0	0
Scott	3	0	0	0
Stanton	2	2	0	0
Stevens	5	0	0	1
Wichita	-	-	-	-
Regional Total	30	7	1	87

Source: Kansas Division of Emergency Management, Technological Hazards Section
-: Information unavailable

Hazard Vulnerability and Impact

According to the KDEM, Technological Hazards Section there are two facilities on Risk Management Plan's Worst Case Scenario list, based on population affected according to the Risk Management Plan's Worst Case Scenario in the region.

In estimating potential losses, the most significant loss potential with hazardous materials incidents concerns people. Special populations are particularly vulnerable to the impacts of a hazardous materials incident because of the potential difficulties involved in the evacuation. The following shows the number of special population facilities in each county that is located within ½ mile of a chemical facility. The locations of colleges, educational and correctional institution facilities are from the Kansas Data Access & Support Center (DASC), health facilities are from FEMA's HAZUS-MH 2.1, aging facilities are from KDEM and child care facilities is from KDHE. A comparison was completed with the latitude and longitude of the facilities with the hazardous chemical facilities in Kansas.

Number of Special Population Facilities within One-Half Mile of a Chemical Facility

County	Health Facilities	Colleges	Educational Facilities	Aging Facilities	Child Care	Correctional Institutions
Grant	2	0	6	3	24	1
Greeley	0	0	2	2	4	1
Hamilton	1	0	2	2	6	1
Kearny	0	0	3	1	6	0
Morton	1	0	4	1	5	1
Scott	1	0	3	1	14	1
Stanton	1	0	3	2	9	1
Stevens	1	0	5	1	13	1
Wichita	1	0	3	2	6	0
Regional Total	8	0	31	15	87	7

Source: DASC, HAZUS, KDHE, and KDEM

For spill and releases, in general, the spiller is responsible to report to all the appropriate agencies depending on the material and volume spilled. To satisfy the requirement of Kansas Regulation K.A.R. 28-48 all spills that impact the soils or waters must be reported to the KDHE or in the case that it originates from an oil or gas production leases, be reported to the Kansas Corporation Commission. If the release is not contained or threatens the health or safety of the local population, the LEPC within the county of the release, must be notified first by dialing 911. Hazardous materials spills and air releases that meet federal reportable quantities and oil and petroleum spills over 110 gallons must also be reported to KDEM.

The following shows that the major cause of hazardous material incidents from 2003-2012.

Causes of Hazardous Materials Incidents in Kansas, 2003-2012

Year	Explosion	Fire	Spill	Equipment Failure	Operator Error	Natural	Dumping	Other
2003	6	14	194	191	29	6	2	51
2004	5	10	58	355	31	2	1	315
2005	1	5	49	181	21	2	6	0
2006	0	3	46	214	18	1	3	89
2007	1	6	41	238	13	3	0	94
2008	3	7	59	168	27	9	1	110
2009	1	7	142	207	25	14	4	112
2010	2	7	234	120	20	2	2	105
2011	1	6	154	91	10	3	2	21
2012	1	8	153	69	23	1	3	94
Total	21	73	1130	1834	217	43	24	991
10 Year Average	2.1	7.3	113	183.4	21.7	4.3	2.4	99.1

Source: Kansas Division of Emergency Management, Technological Hazards Section

The "Managing the Risk: 2011 Kansas Commission on Emergency Planning and Response Annual Report" shows the number of hazardous material releases reported to all three Kansas agencies of KDEM, the KDHE and the KCC.

Reports from the U.S. Department of Transportation's Pipeline & Hazardous Materials Safety Administration provides detail and incident history for the pipeline systems in southwest Kansas between 2001 and 2012. Significant incidents are those incidents reported by pipeline operators with any of the following conditions met:

- Fatality or injury requiring in-patient hospitalization
- $50,000 or more in total costs, measured in 1984 dollars
- Highly volatile liquid releases of five or more barrels or other liquid releases of 50 or more barrels
- Liquid releases resulting in an unintentional fire or explosion

According to these reports there were three incidents that caused no deaths, four injuries and $1,921,931 in damages over the 12 year period (2001-2012). The following table gives the incident details.

Regional Pipeline Incidents, 2001 - 2012

County	Total Natural Gas Transmission Incidents	Total Natural Gas Distribution Incidents	Total Hazardous Liquid Incidents	Total Fatalities	Total Injuries	Total Damage	Gross Barrels Lost	Total Barrels Recovered
Grant	0	1	0	0	0	$71,563	0	0
Greeley	0	0	0	0	0	0	0	0
Hamilton	0	0	0	0	0	0	0	0
Kearny	0	0	0	0	0	0	0	0
Morton	0	0	1	0	0	$1,578	58	25
Scott	0	0	0	0	0	0	0	0
Stanton	0	0	0	0	0	0	0	0
Stevens	0	0	1	0	0	$19,349	70	70
Wichita	0	0	0	0	0	0	0	0
Regional Total	0	1	2	0	0	$92,490	128	95

Source: U.S. Department of Transportation's Pipeline & Hazardous Materials Safety Administration

In general, it is difficult to quantify potential losses of hazardous materials events due to the many variables and human elements. For example, a spill of a toxic airborne chemical in a populated area could have great potential for loss of life while a spill of a very small amount of a chemical in a rural agricultural area would be much less costly and possible limited to remediation of soil. Therefore, for the purposes of this plan, the loss estimates will take into account a hypothetical scenario. Please note that the hypothetical scenario is included for illustrative purposes only.

The impact of this type of disaster will likely be localized to the immediate area surrounding the incident. The initial concern will be for people and then the environment. If contamination occurs, the spiller is responsible for the cleanup actions and will work close with local responders, KDHE, KCC, KDEM, and EPA to ensure that cleanup is done safely and in accordance with federal and state laws.

For discussion purposes, the materials needed for a spill at a fixed facility at an easily remediated area are listed in the following table. The costs for the cleanup are estimated from the current State of Kansas Unified HazMat Response Program statewide contract # 35167.

Hypothetical Cost Estimate For Hazardous Materials Spill Remediation

Classification	Rates Per Hour/Unit	Number of Hours/Units	Total Cost
Project Manager	$90.00	24	$2,160
Health & Safety Supervisor	$86.00	24	$2,064
Environmental Tech	$50.00	12	$600
Foreman	$55.00	24	$1,320
Equipment Operator	$56.50	24	$1,356
Laborer	$45.00	24	$1,080
Truck, 4 wheel drive	$680/wk	1	$680
Backhoe, Case 416B	$320.00/day	2	$640
Forklift, 3 ton all terrain	$160.00/day	2	$320
Skimmer	$250.00/day	2	$500
Pump, 4”	$80.00/day	3	$240
Drums, chemical, 17H or E	$90.00	25	$2,250
Drums, 95 gallon	$295.00	25	$7,375
Vermiculite per bag	$15.00	6	$90
Acid Suits	$70.00/each	6	$420
Gloves	$4.00/pair	30	$120
Total			$21,215

Source: State of Kansas Unified HazMat Response Program statewide contract # 35167

	Magnitude/Severity
Hazardous Materials	1.67

Future Development

People, livestock and vegetation in close proximity to facilities fabricating, processing and storing as well as those where hazardous waste is treated, stored and disposed of are most at risk for hazardous materials incidents. Additionally, localities along transportation corridors that carry these materials to their final destinations are at risk. Populations downstream, downwind and downhill of a released substance are particularly vulnerable. Depending on the characteristics of the substance released, a larger area may be in danger from explosion, absorption, injection or inhalation. Occupants of areas previously contaminated by a persistent material may also be harmed either directly or through consumption of contaminated food and water. As the

infrastructure and population of urban centers of southwest Kansas increases, along with the number and type of hazardous chemicals stored and transported through the region, the amount of potential losses could increase. However, in general, the region is experiencing a population decline which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

Based on the limited historical occurrence, future major events are unlikely. Over the 10 year period from 2002 to 2012 there were 30 reported hazardous materials incidents resulting in one reported death, seven reported injuries and 87 evacuations for the region. This equates to three incidents a year on average. In addition, while any death is a tremendous loss, the rate of 0.1 deaths per year for a 10 year period is very low. However, if the infrastructure and population of southwest Kansas reverses trends and begins to increase, or there is an increase in the number and type of hazardous chemicals stored and transported through the region, the amount of incidents could increase.

	Probability
Hazardous Materials	1.33

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Hazardous Material Event Consequence Analysis

Subject	Ranking	Impacts of Hazardous Material Event
Health and Safety of Persons in the Area of the Incident	Severe	Impact of the immediate area could be severe for affected areas.
Responders	Severe	Impact to responders is expected to be severe.
Continuity of Operations	Minimal to Moderate	Temporary relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Severe	Localized impact could be severe in the incident area. Streams, open bodies of water, aquifers, roads, residential and business properties will be most affected.
Delivery of Services	Minimal to Severe	Delivery of services could be affected if there is any disruption to the roads and/or utilities.
Environment	Severe	Impact could be severe for the immediate area. Impact will lessen with distance.
Economic Conditions	Minimal to Severe	Local economy and finances may be adversely affected, depending on damages.
Public Confidence in Governance	Minimal to Moderate	Response and recovery will be in question if not timely and effective. Warning systems and the timeliness of those warnings could be questioned.

3.7.11 LAND SUBSIDENCE

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Land Subsidence	1.00	1.11	1.89	4.00	1.86

Description

Land subsidence is caused when the ground above manmade or natural voids collapses. Subsidence can be related to mine collapse, water and oil withdrawal, or natural causes such as shrinking of expansive soils, salt dissolution (which may also be related to mining activities), and cave collapses. The surface depression is known as a sinkhole. If sinkholes appear beneath developed areas, damage or destruction of buildings, roads and rails, or other infrastructure can result. The rate of subsidence, which ranges from gradual to catastrophic, correlates to its risk to public safety and property damage.

The development of sinkhole and subsidence areas can be grouped into three major categories:

- Natural dissolution of soluble minerals
- Extraction of minerals by either solution mining or shaft mining
- Downward drainage of fresh water, via a drill hole or unplugged oil or gas well which penetrates a soluble mineral formation and has an outlet for the solution cavity water to be disposed.

Major materials or minerals present in southwest Kansas that are associated with subsidence and sinkhole development include salt, limestone and dolomite, gypsum, coal, lead and zinc. Some isolated incidents of subsidence have been associated with high volume pumping of water wells.

	Warning Time
Land Subsidence	1.89

	Duration
Land Subsidence	4.00

Hazard Location

The Kansas Department of Health and Environment in 2006 prepared a report on "Subsurface Void Space and Sinkhole/Subsidence Area Inventory for the State of Kansas." The report inventoried subsurface void space from oil and gas exploration and production, natural sources, shaft mining, and solution mining. The total void space inventory for all sources in the state is 119,136 acres, however no void space was reported for the region.

Areas of karst, a terrain or type of topography generally underlain by soluble rocks, such as limestone, gypsum, and dolomite, in which the topography is chiefly formed by dissolving the rock, are also particularly prone to sinkholes.

The following map illustrates the location of karst features and features analogous to karst in southwest Kansas. 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 southwest Kansas.

In addition, it is estimated that Grant County has approximately 28 acres of subsurface void space from hydrocarbon storage caverns.

Previous Occurrences and Extent

No notable incidents of land subsidence have been recorded for the region.

Hazard Vulnerability and Impact

To analyze vulnerability to land subsidence in the region the November 2006 KDHE report entitled "Subsurface Void Space and Sinkhole/Subsidence Area Inventory for the State of Kansas" was reviewed for additional details about land subsidence vulnerability. In addition, data was obtained from KDHE for the following:

- Lead and Zinc Mines that required filling
- Coal Subsidence Projects
- Coal Emergency Program Projects

A review of available data indicates the region is not currently susceptible to catastrophic subsidence events due to subsurface conditions or activities.

	Magnitude/Severity
Land Subsidence	1.11

Future Development

Future development would tend to increase the risk of this hazard, especially on areas of known subsidence or with subsidence potential. However, in general, the region is experiencing a population decline, a decline in the number of residences and a decline in the number of businesses which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

There have been no reported land subsidence events in the region in the past 10 years. This would equate to approximately zero events per year. As such, it is unlikely that a future subsidence event will cause a measurable impact.

	Probability
Land Subsidence	1.00

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Land Subsidence Consequence Analysis

Subject	Ranking	Impacts of Land Subsidence
Health and Safety of Persons in the Area of the Incident	Moderate to Severe	Local impact expected to be moderate to severe for the incident area.
Responders	Minimal	Impact to responders would be minimal.
Continuity of Operations	Minimal	Minimal expectation of execution of the COOP, unless a facility is impacted.
Property, Facilities, and Infrastructure	Severe	Localized impact to facilities and infrastructure in the incident area has the potential to do severe damage.
Delivery of Services	Minimal	Impacts to the delivery of services could be severe if roads/utilities are affected. Otherwise impact would be non-existent to minimal.
Environment	Minimal	Impact to the area would be minimal.
Economic Conditions	Minimal	Impacts to the economy will depend on the severity of the damage.
Public Confidence in Governance	Minimal to Severe	Local development policies will be questioned.

3.7.12 LANDSLIDE

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Landslide	1.00	1.00	3.89	1.00	1.43

Description

A landslide is the downhill movement of masses of soil and rock by gravity. The basic ingredients for landslides are gravity, susceptible soil or rock, sloping ground, and water. Typically, as the slope angle increases, so does the potential for landslides. Anything that increases the slope angle can trigger a landslide, including a stream actively eroding a hill or construction practices. Landslides may occur when soil on hillsides is saturated following extended periods of rainfall or snow melt, and may also be caused by:

- Earthquakes
- Fire (and resulting loss of vegetation)
- Excavation and mining
- Irrigation
- Construction activities

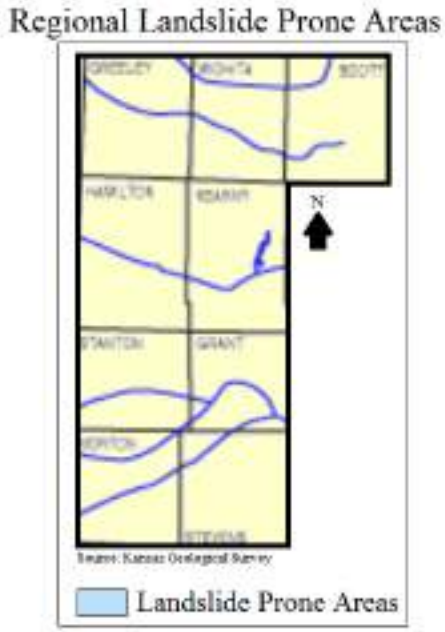
Landslides can damage or destroy structures, roadways, and utilities as well as block roadways with debris.

	Warning Time
Landslide	3.89

	Duration
Landslide	1.00

Hazard Location

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. The following map by the Kansas Geological Survey identifies slide prone areas in the region.



Inquiries with the Kansas Geological Survey indicated that no records were kept concerning landslide occurrences.

Previous Occurrences and Extent

There have been no notable recorded landslide events in southwest Kansas:

Hazard Vulnerability and Impact

Losses due to landslides in southwest Kansas will continue in those areas of the region that are prone to this hazard. Landslide losses are primarily related to damage to property. However, if a sudden landslide impacts an inhabited structure, injuries or deaths could occur. Historically, landslides in southwest Kansas have been isolated events impacting a few properties or a particular area. Often, damages in terms of estimated losses are not reported. Additionally, there is not a repository for damages to be reported, other than NCDC. The NCDC database does not include any previous landslide events in Kansas. This is likely because the events are generally isolated and do not impact large areas.

If construction is occurring in or near landslide hazard areas, more structures/population will be at risk to damage/injury from landslides. The effects of landslides on people and structures can be lessened by total avoidance of landslide hazard areas or by restricting, prohibiting, or imposing conditions on hazard-zone activity. The hazard from landslides can be reduced by avoiding construction on steep slopes and existing landslides, or by stabilizing the slopes. Stability increases when ground water is prevented from rising in the landslide mass by covering the landslide with an impermeable membrane, directing surface water away from the landslide, draining ground water away from the landslide, and minimizing surface irrigation. Slope stability is also increased when a retaining structure and/ or the weight of a soil/rock berm are placed at the toe of the landslide or when mass is removed from the top of the slope.

It is not possible at this time to determine quantitative estimates for potential losses associated with the landslide hazard as there is no centralized data source upon which to base analysis.

	Magnitude/Severity
Landslide	1.00

Future Development

Future development in landslide prone areas would tend to increase the risk of this hazard. However, no major population areas have been identified with a landslide risk in the region. In addition, the region is experiencing a population decline, a decline in the number of residences and a decline in the number of businesses which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

There have been no reported landslide events in the region in the past 10 years. This would equate to approximately zero events per year. As such, it is unlikely that a future landslide event will cause a measurable impact.

	Probability
Landslide	1.00

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Landslide Consequence Analysis

Subject	Ranking	Impacts of Landslide
Health and Safety of Persons in the Area of the Incident	Moderate to Severe	Localized impact could be moderate to severe for the incident area.
Responders	Minimal	Impact to responders would be minimal.
Continuity of Operations	Minimal	Minimal expectation of execution of the COOP, unless a facility is impacted.
Property, Facilities, and Infrastructure	Minimal to Severe	Localized impact to facilities and infrastructure in the incident area has the potential to do severe damage if they are on, or in, the area of the landslide.
Delivery of Services	Minimal	Impacts to the delivery of services could be severe if roads/utilities are affected. Otherwise impact would be non-existent to minimal.
Environment	Minimal	Impact to the area would be minimal other than the immediate area.
Economic Conditions	Minimal	Impacts to the economy will depend on the severity of the damage, i.e., are roads blocked, did any businesses get caught in the landslide.
Public Confidence in Governance	Minimal to Severe	Local development policies will be questioned.

3.7.13 LIGHTNING

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Lightning	1.44	1.00	4.00	1.00	1.65

Description

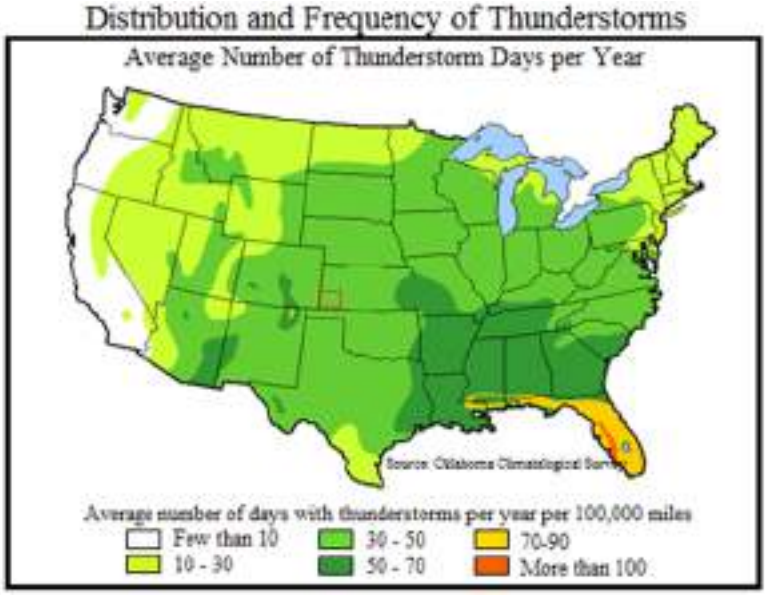
Lightning is a discharge of atmospheric electricity that is triggered by a buildup of differing charges within a cloud. According to the NWS, lightning is one of the most underrated severe weather hazards and is the second deadliest weather killer in the United States. Of the estimated 1,000 people who are struck by lightning each year in the United States, only 10 percent are killed, but survivors may suffer life-long disabilities.

	Warning Time
Lightning	4.00

	Duration
Lightning	1.00

Hazard Location

Severe thunderstorms strike southwest Kansas regularly, with accompanying lightning that can cause injury, death, property damage and wildfires. The widespread and frequent nature of thunderstorms makes lightning a relatively common occurrence. Of particular concern to southwest Kansas is protection of facilities and communications systems that are important to emergency response operations, protection of public health and maintenance of the region's economy. Most of southwest Kansas has an average 30-50 thunderstorm days per year.



Lightning occurs over broad geographic regions. The entire planning area, including all participating jurisdictions, is at risk to lightning.

Previous Occurrences and Extent

Information measured by the National Lightning Detection Network between 1997 and 2011 ranks Kansas 16th among the continental states in terms of cloud-to-ground flash densities with 934,368 flashes per year (11.4 flashes per square mile). According to the NCDC Storm Events database, there were seven lightning events in southwest Kansas between 2004 and 2014 resulting in $174,000 in property damage and $5,000 in crop damage**.** The NCDC receives storm data from the NWS, which receives information from a variety of sources, which include but are not limited to county, state, and federal emergency management officials, local law enforcement officials, Skywarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public. Reporting of events and the historic events detailed here are likely not a true reflection of all the damaging lightning strikes.

NCDC Lightning Events 2004 - 2014

County	Total Events	Property Damage	Crop Damage	Deaths
Grant	0	$0	$0	0
Greeley	0	$0	$0	0
Hamilton	0	$0	$0	0
Kearny	0	$0	$0	0
Morton	0	$0	$0	0
Scott	0	$0	$0	0
Stanton	0	$0	$0	0
Stevens	0	$0	$0	0
Wichita	0	$0	$0	0
Regional Total	0	$0	$0	0

Source: NCDC Storm Events Database

According to the USDA's Risk Management Agency the annualized crop insurance paid due to damages from lighting strikes for the period between 2010 and 2013 was $1,356,101. It is worth noting that in many cases the USDA classifies lightning as "other," lumping disparate events together. As such, it is impossible accurately determine an insurance paid figure, and the figure noted above is solely an estimate.

Based on NCDC data, showing no property or crop damages over the 11 year period from 2004 to 2014, with 2014 data representing to date totals only, southwest Kansas can expect minimal amounts of lightning-related losses each year.

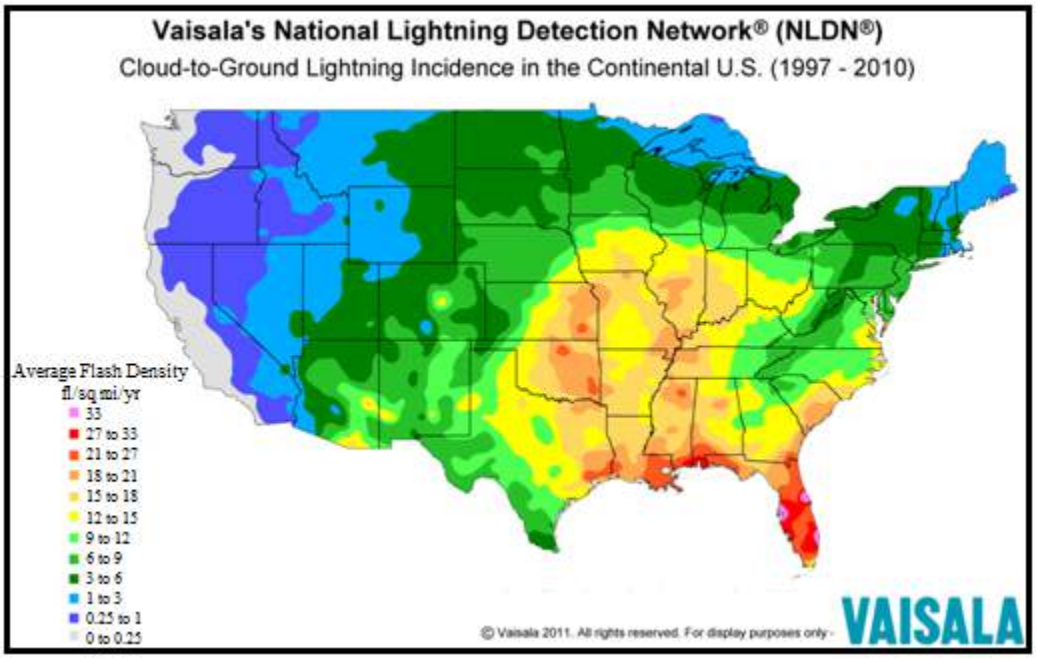
According to the NCDC, there have been no reported deaths or injuries from lightning in southwest Kansas from 2004 to 2014.

Local Events

There have been no notable lightning events causing major damage reported for the region.

Hazard Vulnerability and Impact

In general, the frequency of occurrence of lightning is similar to the pattern of thunderstorm frequency. Data suggests that there are 3 to 9 flashes per square mile per year in southwest Kansas. The following figure, which is based on data from 1997 to 2010, shows that the distribution of lightning throughout the U.S.



The statistical analysis method was used to refine and assess the relative vulnerability of each of region's counties to lightning. The region assigned ratings to pertinent factors including social vulnerability index, prior events, prior annualized property damage, building exposure valuation, population density and crop exposure (annualized crop losses were not used since USDA did not have insured crop loss amounts to use in the tabulation).

The following information was used for this analysis:

- Social Vulnerability Index for Kansas from the Hazards and Vulnerability Research Institute at the University of South Carolina
- National Climatic Data Center storm events 2004 – 2014
- U.S. Census Bureau (2012)
- USDA's Census of Agriculture (2012).

Vulnerability Factor Amounts for Lightning

County	SoVI Rating (1-5)	Prior Events 2004-2014	Property Damages	Annualized Property Damages	Total Building Exposure ($000)	Population Density	Crop Exposure (2012 Census of Agriculture)
Grant	3	0	$0	$0	$469,849	14	$86,023,000
Greeley	4	0	$0	$0	$131,666	2	$58,936,000
Hamilton	4	0	$0	$0	$187,869	3	$55,383,000
Kearny	4	0	$0	$0	$228,723	5	$80,730,000
Morton	2	0	$0	$0	$230,152	4	$58,361,000
Scott	4	0	$0	$0	$350,514	7	$64,648,000
Stanton	2	0	$0	$0	$151,658	3	$79,556,000
Stevens	5	0	$0	$0	$293,762	5	$144,543,000
Wichita	4	0	$0	$0	$175,679	3	Unavailable
Regional Total	-	0	$0	$0	$2,669,872	5	$628,180,000

Using the above information, a value of 1-10 was assigned to the data obtained for each factor and then weighted equally and factored together to obtain overall vulnerability scores for comparison and to determine the greatest vulnerable counties. The Social Vulnerability Index is in a range of 1- 5. To give Social Vulnerability Index the same weight as the other factors, the numbers were multiplied by two.

Lightning Data Rating Determination

Ratings	Social Vulnerability	NCDC Prior Events	Annualized Property Damage	Building Exposure Valuation	Population Density *	Crop Exposure
1		1	$143 - $3,600	$117,421 - $4,492,825	1.6 - 116.3	0 - $18,548,500
2	1	2	$3,601 - $7,200	$4,492,826 - $8,868,229	116.4 - 231.1	$18,548,501 - $32,126,000
3		3	$7,201 - $10,800	$8,868,230 - $13,243,634	231.2 - 345.9	$32,126,001 - $45,703,500
4	2	4	$10,801 - $14,400	$13,243,635 - $17,619,039	346 - 460.7	$45,703,501 - $59,281,000
5		5	$14,401 - $18,000	$17,619,040 - $21,994,444	460.8 - 575.5	$59,281,001 - $72,858,500
6	3	6	$18,001 - $21,600	$21,994,445 - $26,369,848	575.6 - 690.3	$72,858,501 - $86,436,000
7		n/a	$21,601 - $ 25,200	$26,369,849 - $30,745,253	690.4 - 805.1	$86,436,001 - $100,013,500
8	4	n/a	$25,201 - $28,000	$30,745,254 - $35,120,658	805.2 - 919.9	$100,031,501 - $113,591,000
9		n/a	$28,801 - $33,000	$35,120,659 - $39,496,062	920- 1,034.7	$113,591,001 - $127,168,500
10	5	n/a	$33,001 and up	$39,496,063 - $43,871,468	1,034.8 - 1,149.6	$127,168,501 - $140,746,000

Note: n/a relates to not applicable because no county had more than 5 prior events

Based on the above ratings system, ranges were applied to each county to determine their potential vulnerability. The following related the scoring to a vulnerability assessment:

- **Low:** Score range of 7 -13
- **Medium-Low:** Score range of 14 - 18
- **Medium:** Score range of 19 - 23
- **Medium-High:** Score range of 24 - 28
- **High:** Score range of 29 - 34

Vulnerability of Kansas Counties to Lightning

County	SoVi Rating	NCDC Prior Event Rating	Annualized Property Damage Rating	Bldg Exposure Valuation Rating	Population Density Rating	Crop Exposure Rating	Overall Vulnerability Rating	Lightning Vulnerability
Grant	6	0	0	1	1	6	14	Medium-Low
Greeley	8	0	0	1	1	4	14	Medium-Low
Hamilton	8	0	0	1	1	4	14	Medium-Low
Kearny	8	0	0	1	1	6	16	Medium-Low
Morton	8	0	0	1	1	4	14	Medium-Low
Scott	8	0	0	1	1	5	15	Medium-Low
Stanton	4	0	0	1	1	6	10	Low
Stevens	4	0	0	1	1	10	20	Medium
Wichita	10	0	0	1	1	-	12*	Low

*: Wichita County data is incomplete and rating is lower than likely.

	Magnitude/Severity
Lightning	1.00

Future Development

Future development would tend to increase the risk of this hazard. However, in general, the region is experiencing a population decline and building decline, which could potentially lessen the potential impact of a future event. Increase in development in large population centers could increase the risk of an event if proper protocols to lessen the impact during construction of new building are not followed.

Probability of Future Hazard Events

While lightning strikes occur frequently, no notable events were reported or recorded for the region during the past ten years. And while lighting will continue to strike, the probability of a lightning strike causing major damage is unlikely as borne out by the reported data.

	Probability
Lightning	1.44

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Lightning Consequence Analysis

Subject	Ranking	Impacts of Lightning
Health and Safety of Persons in the Area of the Incident	Minimal to Moderate	Impact to the health and safety of persons could be minimal to moderate if within the incident area.
Responders	Minimal	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Minimal	Temporary relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Minimal to Severe	Impact could be severe if property, facilities or infrastructure take a direct hit which could result in fire or destruction.
Delivery of Services	Minimal to Severe	Delivery of services could be affected if there is any disruption to the roads and/or utilities due to damages sustained.
Environment	Minimal to Severe	Impact will be isolated, yet severe to any trees, animals, etc., that takes a direct hit, or is in the path of any fire that may be generated due to the lighting strike.
Economic Conditions	Minimal	Local economy impact should be fairly minimal, unless the lightening causes fires which damage businesses and stops revenue.
Public Confidence in Governance	Minimal	Response and recovery will be in question if not timely and effective, specifically if electricity and other utilities are affected.

3.7.14 MAJOR DISEASE OUTBREAK

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Major Disease Outbreak	1.33	2.22	1.00	4.00	1.82

Description

Infectious diseases are human 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.

While there are a number of biological diseases/agents that are of concern to southwest Kansas, the following categories of disease are being addressed in this plan: vaccine preventable disease, food borne disease, and community associated infections as having significant recurring impact on the morbidity of south Kansans. The following descriptions are general and it should be noted that individuals may experience more or less severe consequences based upon their own circumstances.

Vaccine Preventable:

- **Measles:** a respiratory disease caused by a virus spread through the air by breathing, coughing or sneezing. It is so contagious that any child who is exposed to it and is not immune will probably get the disease.

- **Mumps:** a contagious disease that causes fever, headache, muscle aches, tiredness, and loss of appetite, and is followed by swelling of salivary glands. Most people with mumps recover fully.

- **Pertussis:** a highly communicable, vaccine-preventable disease that is typically results in severe coughing, whooping, and vomiting. Major complications are most common among infants and young children and include hypoxia, apnea, pneumonia, seizures, encephalopathy, and malnutrition. Young children can die from pertussis, with most deaths occur among unvaccinated children or children too young to be vaccinated.

- **Influenza:** a viral infection of the nose, throat, bronchial tubes, and lungs. There are two main types of virus, A and B, with each type including many different strain which tend to change each year. Influenza is highly contagious and is easily transmitted through contact with droplets from the nose and throat of an infected person during coughing and sneezing.

- **Pandemic Influenza:** A pandemic influenza is an influenza virus that causes a global outbreak of serious illness. An influenza pandemic occurs when a new virus emerges for which people have little or no immunity, and for which there is no

vaccine. Infection rate and mortality may be markedly higher than a normal influenza.

Food Borne Disease:

- **Norovirus:** a group of related viruses that cause acute gastroenteritis in humans, including diarrhea, vomiting, and stomach pain. Noroviruses are transmitted primarily through the fecal-oral route, either by consumption of fecal contaminated food or water or by direct person-to-person spread.

- **Salmonellosis:** an infection with bacteria that causes diarrhea, fever, and abdominal cramps. The illness usually lasts four to seven days, and most persons recover without treatment.

	Warning Time
Major Disease Outbreak	1.00

	Duration
Major Disease Outbreak	4.00

Hazard Location

The entire planning area is susceptible to a disease outbreak. However, more densely populated areas are more susceptible to the diseases that are transmitted person to person.

Previous Occurrences and Extent

There have been four a pandemics in the past century that have impacted southwest Kansas:

1918–19: Spanish flu (H1N1): This flu is estimated to have sickened 20-40% of the world's population, causing the death of 500,000 Americans. Recently, the origin of the pandemic was traced to an outbreak of influenza in Haskell County, Kansas, in January 1918. By the end of 1918, the Kansas death toll was around 12,000.

1957–58: Asian flu (H2N2): This virus was quickly identified because of advances in technology, and a vaccine was produced. In total, there were about 70,000 deaths in the United States. Information about how this pandemic affected southwest Kansas was not available.

1968–69: Hong Kong flu (H3N2): This strain caused approximately 34,000 deaths in the United States. It was first detected in Hong Kong in early 1968 and spread to the United States later that year.

2009 H1N1 Influenza: The 2009 H1N1 Pandemic Influenza began in Kansas with the first identified case on April 24, 2009. Kansas was the third state to positively identify this novel strain of influenza.

Southwest Kansas is also impacted by a variety of communicable and non-communicable diseases. The following tables provide the numbers of reportable diseases by county from 2002 to 2013. Not all diseases are listed.

2002 - 2013 Reportable Diseases

County	Amebiasis	Arboviral Disease	Botulism	Campylobacteriosis	Cholera	Cryptosporidiosis	Ehrlichiosis/Anaplasmosis	Giardiasis	H. influenzae, invasive	Hemolytic Uremic Syndrome (HUS)	Hepatitis A	Hepatitis B, acute	Hepatitis C, acute	Legionellosis	Listeriosis
Grant	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0
Greeley	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0
Hamilton	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0
Kearny	0	0	0	4	0	0	0	0	0	3	0	0	0	0	0
Morton	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0
Scott	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0
Stanton	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0
Stevens	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Wichita	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
Regional Total	0	0	0	31	0	1	0	1	3	3	0	0	0	0	0

Source: Kansas Department of Health and Environment

2002 - 2013 Reportable Diseases Continued

County	Lyme Disease	Malaria	Measles	Meningitis, non-HiB, non-Neisseria	Meningococcal Disease	Mumps	Pertussis	Rabies, animal	Salmonellosis	Shiga toxin-producing E. coli	Shigellosis	Strep., Group A, invasive	Strep. pneumoniae, invasive	TSE or Prion Disease	Tuberculosis, active	Tularemia	Typhoid Fever	Varicella
Grant	0	0	0	0	0	0	0	0	4	0	0	0	0	0	1	0	0	0
Greeley	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	1
Hamilton	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0
Kearny	0	0	0	0	0	0	0	0	3	1	0	0	0	0	1	0	0	0
Morton	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
Scott	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Stanton	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0
Stevens	0	0	0	0	0	0	0	5	3	2	0	0	0	0	0	0	0	2
Wichita	0	0	0	0	0	0	0	1	7	0	0	0	0	0	0	0	0	4
Regional Total	0	0	0	0	0	0	1	6	27	7	1	0	0	0	2	0	0	8

Source: Kansas Department of Health and Environment

Hazard Vulnerability and Impact

All people within the southwest Kansas region would be susceptible to a major disease outbreak. As the type of disease cannot be known in advance it is impossible to predict if any segment of the population would be a greater risk. However, the following generalities may be made:

- Population density will affect the rate of spread of a transmissible pathogen
- The young and old are usually more susceptible to deleterious effects of disease
- Access to medical care will impact the outcomes for infected individuals
- The novelty of the disease will impact availability of treatments and vaccines
- Inherent immunity may be present in some populations

As evidenced by annual infectious disease summaries (http://www.kdheks.gov/epi/index.html) and reports of investigations (http://www.kdheks.gov/epi/outbreaks.htm) completed by the KDHE Bureau of Epidemiology and Public Health Informatics, many southwest Kansas counties experience one or multiple disease outbreaks each year. Potential casualty losses are anticipated to be greatest in counties with higher populations, higher pediatric populations and higher elderly

populations. Health professional shortage areas and rural areas are more susceptible to having limited medical capabilities and by extension are more susceptible to the possibility of being overwhelmed because of a large surge of patients seeking care.

Although infectious diseases do not respect geographic boundaries, several populations in southwest Kansas are at specific risk to infectious diseases. Communicable diseases are most likely to spread quickly in institutional settings such as dormitories, long-term care facilities, day care facilities, and schools.

The HMPC ranked the disease outbreak as catastrophic based on a pandemic scenario. The magnitude of an infectious disease outbreak is related to the ability of the public health and medical communities to stop the spread of the disease. Most disease outbreaks that cause catastrophic numbers of deaths are infectious in nature, meaning that they are spread from person to person. The key to reducing the catastrophic nature of the event is to stop the spread of disease. This is generally done in three ways:

- Identification and isolation of the ill
- Quarantine of those exposed to the illness
- Education of the public about methods to prevent transmission.

The public health and health care providers in southwest Kansas routinely utilize all three methods to reduce morbidity and mortality from infectious disease. However, the capacity of the health care system is limited. For example, local health departments have specific pandemic influenza response plans, and mass prophylaxis plans, but most departments have only a few staff members. Most local health departments would need to rely on volunteers, pre-scripted messages and procedures and the cooperation of the public in order to respond effectively to a large scale pandemic. Similarly, hospitals in southwest Kansas have emergency response and pandemic influenza plans, but little excess capacity exists to care for and/or isolate hundreds, even thousands of patients. Because of these limitations in personnel and equipment, the health care community is planning to utilize “community containment” measures. These measures which could include closure of schools, day cares and other public events would have far-reaching economic impacts on the community and might shutdown facilities for 30 days or more. Closure of the day cares or schools would have a serious impact on business as parents might not be able to find child care elsewhere.

According to "The Annual Impact of Seasonal Influenza in the US: Measuring Disease Burden and Costs" by NA Molinari, nationally the economic burden of influenza medical costs, medical costs plus lost earnings, and the total economic burden were $10.4 billion, $26.8 billion and $87.1 billion respectively. The financial burden of healthcare-associated infections nationally has been estimated at $33 billion annually. There is no data currently available on the economic impact of previous illness in southwest Kansas. Using pandemic influenza as the worst case scenario for estimating potential losses, the Kansas Department of Health and Environment’s Pandemic Influenza Planning includes the following vulnerability estimates. It has been estimated that a medium-level pandemic could cause, in Kansas:

- Between 229,203 and 534,807 persons may require outpatient care

- Between 5,016 and 11,706 may require hospitalization
- Between 1,163 and 2,714 individuals may die

The majority of these deaths and hospitalizations would occur in more highly populated counties.

The U.S. Centers for Disease Control and Prevention (CDC) estimates 76 million people suffer food borne illnesses each year in the United States, accounting for 325,000 hospitalizations and more than 5,000 deaths. Food borne disease is extremely costly. Health experts estimate that the yearly cost of all food borne diseases in this country is $5 to $6 billion in direct medical expenses and lost productivity. Infections with the bacteria *Salmonella* alone account for $1 billion yearly in direct and indirect medical costs.

	Magnitude/Severity
Major Disease Outbreak	2.22

Future Development

Future development and population increases would tend to increase the risk of this hazard due to the potential for a more rapid spread of an agent or disease. Additionally, the further development of transportation infrastructure would increase the risk of a major disease event due to an influx of travelers to the region. As the population of Kansas ages, the vulnerability to this hazard is likely to increase. The impacts and potential losses are largely economic and are dependent on the type, extent, and duration of the illness. Increases in population in major population centers would also likely increase the risk of this hazard. However, in general, the larger region is experiencing a population decline which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

Each year, the Kansas KDHE produces a report that details the legally "reportable diseases" in each county in Kansas. While over time this report can serve as a predictor of the likelihood of future disease, it is impossible to predict outbreaks. Based on the relatively limited/controlled outbreak history in the state and region the possibility of a large-scale major disease outbreak is unlikely

	Probability
Major Disease Outbreak	1.33

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Major Disease Outbreak Consequence Analysis

Subject	Ranking	Impacts of Major Disease Outbreak
Health and Safety of Persons in the Area of the Incident	Severe	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, & medical svc.
Responders	Severe	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	Minimal	Continuity of Operations will be greatly dependent on availability of healthy individuals. COOP is not expected to be exercised.
Property, Facilities, and Infrastructure	Minimal	Access to facilities and infrastructure could be affected until decontamination is completed
Delivery of Services	Minimal	Delivery of services could be affected if there are road blocks or mass hysteria of any level.
Environment	Severe	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	Severe	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	Severe	Response and recovery will be in question if not timely and effective. Availability of medical supplies, vaccines, and treatments will come into question.

3.7.15 RADIOLOGICAL EVENT

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Radiological Event	1.00	1.11	4.00	3.78	1.76

Description

An accident involving radioactive materials could occur from a variety of sources, including nuclear reactors, transportation accidents, industrial and medical uses and lost or stolen sources. Radiological accidents could cause injury or death, contaminate property and valuable environmental resources, as well as disrupt the functioning of communities and their economies.

	Warning Time
Radiological Event	4.00

	Duration
Radiological Event	3.78

Hazard Location

The entire planning region is at risk from a radiological event due to transportation accidents.

Previous Occurrences and Extent

There are no reported radiological events for southwest Kansas.

Hazard Vulnerability and Impact

There are over 300 licensees of various sizes for radioactive material within the State of Kansas. In general, the major usage of radioactive materials in southwest Kansas are for medical diagnostics and therapy, soil density testing in the construction industry, and in radiography cameras in pipeline construction and repair.

It is common for materials, including pharmaceuticals, industrial sources and nuclear fuel rods destined to nuclear reactors, to be transported across southwest Kansas highways and railroads. Areas near interstates and major highways have an increased risk of transportation accidents. Remote areas also have to account for long response times from hazardous materials and health physics personnel.

Counties within the 50-mile Emergency Planning Zone for commercial nuclear power plants have a slightly higher radiological risk than other counties within the region, but the potential for an incident is extremely low. Federal regulations require emergency planning for the area within up to a 50-mile radius of a nuclear power plant. The potential danger from an accident is exposure to radiation. This exposure could come from the release of radioactive material from the plant into the environment, usually characterized by a plume of radioactive gases and particles. The major

hazards to people in the vicinity of the plume are radiation exposure to the body from the cloud and particles deposited on the ground, inhalation of radioactive materials and ingestion of radioactive materials.

During all lawful operations of radioactive materials, the licensee is responsible for ensuring that the area around the source material is cordoned off or shielding is used to prevent unnecessary exposures. Inspections of practices and security measures are regularly conducted to ensure compliance and conformity to regulations in order to protect the public. The frequency of inspections can be adjusted in response to perceived risk. Public risk can be reduced by minimizing the duration of exposure, shielding the source material and maximizing the distance from the source.

	Magnitude/Severity
Radiological Event	1.11

Future Development

Additional development along transportation corridors would likely increase the potential exposure of the nearby population to a radiological event. Additionally, greater loads on the highways and rail corridors could increase the chances of an accident involving a radiological transport vehicle. However, in general, the region is experiencing a population decline which could result in lower rail and road traffic that could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

Based on the lack of radiological events in southwest Kansas during the last 10 years the probability of an event occurring is unlikely.

	Probability
Radiological Event	1.00

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Radiological Event Consequence Analysis

Subject	Ranking	Impacts of Radiological Event
Health and Safety of Persons in the Area of the Incident	Severe	Impact expected to be severe for persons within the incident area. Protection capabilities and warning times will greatly affect the severity.
Responders	Severe	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	Minimal to Severe	Temporary relocation could be necessary if government facilities are in close proximity to the incident area. This temporary relocation could become significant depending on clean-up.
Property, Facilities, and Infrastructure	Severe	Impact within the incident area could be severe to property, facilities, and infrastructure.
Delivery of Services	Minimal to Severe	Delivery of services could be affected within and around the affected area.
Environment	Severe	Localized impact within the incident area could be severe to native plants, wildlife and natural habitats. Clean up and remediation will be required.
Economic Conditions	Minimal to Severe	Economic conditions could be adversely affected and dependent upon time and length of clean up and investigation.
Public Confidence in Governance	Minimal to Severe	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.

3.7.16 SOIL EROSION AND DUST

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Soil Erosion & Dust	2.22	1.33	1.11	3.78	1.94

Description

Soil erosion and dust are both ongoing problems for southwest Kansas. Both can cause significant loss of valuable agricultural soils, damage crops, harm environmental resources and have adverse economic impacts. Soil erosion in southwest Kansas is largely associated with periods of drought, when winds are able to move tremendous quantities of exposed dry soil (wind erosion), and flooding (stream bank erosion). Improper agricultural and grazing practices can also contribute to soil erosion.

The United States is losing soil 10 times faster than the natural replenishment rate, and related production losses cost the country about $37.6 billion each year. On average, wind erosion is responsible for about 40 percent of this loss and can increase markedly in drought years. Wind erosion physically removes the lighter, less dense soil constituents such as organic matter, clays and silts. Thus it removes the most fertile part of the soil and lowers soil productivity, which can result in lower crop yields or poorer grade pastures and increase economic costs.

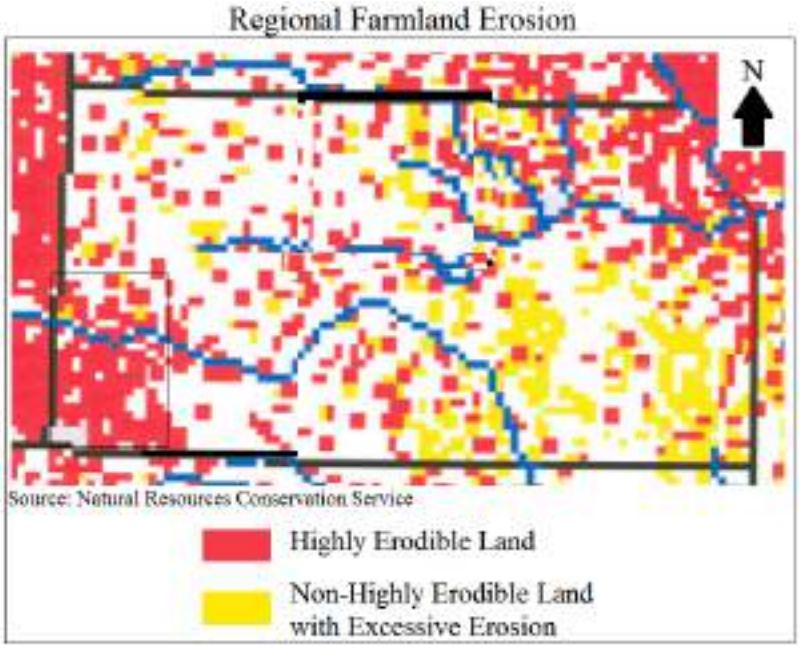
Stream bank erosion, which can remove agricultural land and damage or destroy roads and bridges and utility lines, occurs each year, particularly in the spring when high runoff is most common. A large proportion of all eroded soil material ends up in rivers, streams and lakes, which makes waterways more prone to flooding and contamination and reduces water supply storage space.

	Warning Time
Soil Erosion & Dust	1.11

	Duration
Soil Erosion & Dust	3.78

Hazard Location

The following figure shows areas of excessive erosion of farmland in Kansas based on a 1997 analysis. 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. While southwest Kansas does have areas of highly erodible land, the entire area is susceptible to soil erosion and dust.



Previous Occurrences

The most prominent soil erosion and dust event in southwest Kansas, known as the Dust Bowl, occurred across the mid-western United States from 1930-1936. Southwest Kansas is situated within the most severely impacted region (100 million acre across Oklahoma, the Texas panhandle, New Mexico, eastern Colorado and western Kansas). Sustained drought, loss of native prairie and the agricultural practices of the time were primary causes for this unmitigated disaster. During the Dust Bowl years millions of tons of fertile soils were lost as well as a significant percentage of the region's population via migration, dust pneumonia and malnutrition. More recently, the Kansas State Hazard Mitigation Plan reports that during the 1970s and in the spring of 1996 wind erosion seriously damaged agricultural land throughout the Great Plains.

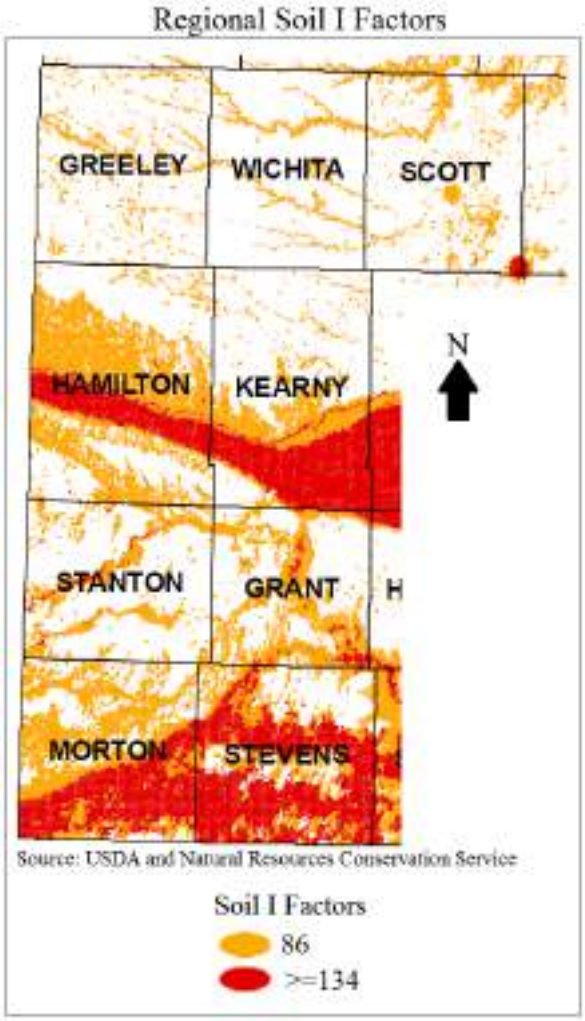
Notable historical erosion events include:

> **2007:** According to the 2007 Natural Resources Inventory (NRI) by the Natural Resources Conservation Service, Kansas lost 1.734 tons per acre to wind erosion on cultivated cropland.
>
> **1930s:** Kansas is well known for its role in the 1930s Dust Bowl, in which the Central Plains states suffered drought and resulting wind erosion for about a decade. It is estimated that 21.5 million acres were lost during this time.

Hazard Vulnerability and Impact

The map below indicates all southwest Kansas soils that have an "I" value, or wind erodibility index, of 86 or greater. In general, the higher the I value, the more susceptible it is to wind erosion. These are soils that should be further evaluated before recommending the use of emergency tillage

or not. The evaluation of these soils will need to take into account the predominate particle size (i.e. classification of "sandy" would cause the soil to have characteristics more like a 134 soil), as well as the ability for the soil to form a stable clod.



There have not been any state-wide studies to estimate the dollar value of top soil lost to soil erosion and dust.

The 2007 Natural Resources Inventory by the Natural Resources Conservation Service shows the historical estimates for tons per acres soil lost annually for cultivated cropland, non-cultivated cropland and pastureland. This estimate can continue as potential soil losses in Kansas.

Kansas Average Wind Erosion in Tons per Acre per Year by Broad Cover/Use

Broad Cover/Use	1982	1987	1992	1997	2002	2007
Cultivated Cropland	2.747	2.963	2.062	1.482	1.463	1.734
Pastureland	0.009	0.016	0.022	0.015	0.019	0.034

Source: 2007 National Resources Inventory, April 22, 2010

Note: Estimated average annual wind erosion is tons per acre per year with margins of error.

The following table presents regional acreage data for cropland and pastureland.

Regional Acreage Data (2012)

	Acreage
Total Cropland Acres	3,331,257
Total Pasture Acres	1,409,286

Source: USDA National Agricultural Statistics Service

Based on the statewide wind erosion average figures and the total cropland and pasture acreage for the region, the following can be extrapolated for the southwest Kansas.

Regional Estimated Soil Tonnage Lost To Wind Erosion, 1982 - 2007

	1982	1987	1992	1997	2002	2007
Estimated Regional Tonnage Lost to Wind Erosion, Cultivated Cropland	9,307,981	10,039,880	6,986,916	5,021,634	4,957,254	5,875,515
Estimated Regional Tonnage Lost to Wind Erosion, Pastureland	7,244	12,878	17,707	12,073	15,293	27,366

Calculated using USDA and 2007 National Resources Inventory data

Soil erosion has also affected the regional federal reservoirs, with erosion depositing large quantities of sediment in these reservoirs, impacting water supply and quality as well as flood storage. Because of differing climatic conditions, land uses, and physical attributes in the various watersheds, sedimentation rates vary among the reservoirs.

In 2001, the KWO completed a report that projected the effect of sedimentation on state-owned storage in federal reservoirs. By the year 2040, sedimentation was projected to reduce the total amount of state-owned storage from 1.2 million acre-feet to roughly 857,000 acre-feet, a rate of loss of 6,260 acre-feet per year. Regionally, there are no federal reservoirs.

	Magnitude/Severity
Soil Erosion & Dust	1.33

Future Development

Future development of agricultural resources and/or increases in population would tend to increase the risk of this hazard. However the region is experiencing a steady state in agricultural acreage which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

Data indicates that approximately 6,000,000 tons of soil are eroded in the region on a yearly basis, as per 2007 data. This figure is below the over 10,000,000 tons eroded in 1987, a 30 year high point. However, 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 large agricultural base for the region, there is an occasional probability of a future event causing a greater measurable impact to the regions crops and farmers.

	Probability
Soil Erosion & Dust	2.22

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Soil Erosion and Dust Consequence Analysis

Subject	Ranking	Impacts of Soil Erosion and Dust
Health and Safety of Persons in the Area of the Incident	Minimal	Impact tends to be agricultural; however, dust can be a danger to susceptible individuals in the form of air pollutants.
Responders	Minimal	With proper preparedness and protection, impact to the responders is expected to be minimal.
Continuity of Operations	Minimal	Minimal expectation for utilization of the COOP.
Property, Facilities, and Infrastructure	Minimal to Moderate	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.
Delivery of Services	Minimal	Impact on the delivery of services should be non-existent to minimal, unless roads and utilities are affected.
Environment	Severe	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	Minimal	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 Governance	Minimal	Planning, response, and recovery may be questioned if not timely and effective.

3.7.17 TERRORISM, AGRI-TERRORISM

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Terrorism, Agri-Terrorism	1.00	2.00	4.00	1.00	1.75

Description

The United States does not have a standardized definition of terrorism that is agreed upon by all agencies. The Federal Bureau of Investigation generally defines terrorism as:

> "the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives."

The USA Patriot Act expanded this definition to include domestic terrorism, defined as:

> "acts dangerous to human life that are a violation of the criminal laws of the United States or of any State" intended to "intimidate or coerce a civilian population," "influence the policy of a government by intimidation or coercion" or "affect the conduct of a government by mass destruction, assassination, or kidnapping" that are conducted primarily within the jurisdiction of the United States."

The Homeland Security Act of 2002, which created the Department of Homeland Security, extended the definition of terrorism further by including any act that:

> "involves an act that dangerous to human life or potentially destructive to critical infrastructure or key resources, and is a violation of the criminal laws of the United States or of any state or other subdivision of the United States and appears to be intended to intimidate or coerce a civilian population to influence the policy of a government by intimidation or coercion, or to affect the conduct of a government by mass destruction, assassination, or kidnapping"

The statement "potentially destructive to critical infrastructure or key resources" indicates that the act does not need to be dangerous to human life for it to be considered an act of terrorism. Terrorists may use a range of possible actions, including:

- Chemical attacks
- Biological attacks
- Radiological attacks
- Nuclear attacks
- Cyber-terrorism
- Agri-terrorism

	Warning Time
Terrorism, Agri-Terrorism	4.00

	Duration
Terrorism, Agri-Terrorism	1.00

Hazard Location

Kansas is home to a wide variety of criminal extremist groups. The Southern Poverty Law Center reported that in 2012, 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.

Previous Occurrences

There have been no incidents or events reported in the region.

Hazard Vulnerability and Impact

Of particular concern to southwest Kansas is agri-terrorism. Agri-terrorism consists of acts to intentionally contaminate, ruin, or otherwise make agricultural products unfit or dangerous for consumption or further use. The introduction of a biological agent into an animal or crop would be financially devastating and would have a major impact on the food supply of the state region, state and nation. Potential terrorists' targets for livestock disease introduction would be concentration points, such as the region's licensed feedlots and livestock markets. Additionally, Kansas has over 120 agricultural crop-dusters, many of which are configured for chemical spraying.

It is not possible to calculate a specific vulnerability for each county in southwest Kansas. However, because of the desire for publicity following attacks, it is more likely that counties with greater population densities would be the target of attacks. Sparsely populated rural counties are less desirable targets for publicity-seeking terrorists. It is expected that the likelihood of attack is directly related to population density or more likely to an event that is occurring or to a specific location of importance to the attacker. For example, a large venue event, such as a sporting event attended by tens of thousands of people might be considered a desirable target. Most large public venues occur in densely populated areas since those areas are able to provide the infrastructure support (hotels, eateries, etc) for large numbers of people.

Potential losses from Terrorism/Agri-Terrorism include all infrastructure, critical facilities, crops, humans and animals. The degree of impact would be directly related to the type of incident and the target. Potential losses could include cost of repair or replacement of damaged facilities, lost economic opportunities for businesses, loss of human life, injuries to persons, loss of food supplies, disruption of the food supply chain, and immediate damage to the surrounding environment. Secondary effects of infrastructure failure could include public safety hazards, spread of disease,

increased morbidity and mortality among the local and distant populations, public panic and long-lasting damage to the environment. Terrorism events are rare occurrences and specific amounts of estimated losses for previous occurrences are not available due to the complexity and multiple variables associated with these types of hazards. In some instances, information about these events is secure and unavailable to the public in order to maintain national security and prevent future attacks.

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. The Electronic Mass Casualty Assessment and Planning Scenarios system usually rates the worried well as equal to 9 times the number of infected cases.

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 a local downtown area during a heavily attended event. The agent directly contaminates the downtown area and the immediate surrounding area. This attack would cause harm to humans and could render portions of the downtown 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 downtown area is 5,000. 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	3,750 persons
Severe Airway Injuries (1-2 hours)	1 - 2 Hours	3,750 persons
Severe Skin Injuries (2 hrs to days)	2 Hours to Days	4,500 persons
Deaths	Immediate to Days	100 persons
Cost of Decontamination	N/A	$60,000

Scenario #2: Pneumonic Plague

Event: Two canisters containing aerosolized pneumonic plague bacteria are opened in public bathrooms of a heavily populated building. Each release location will directly infect 110 people; hence, the number of release locations dictates the initial infected population. The secondary infection rate of two 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	220 persons
Secondary Infected Population	440 persons
Deaths (7% of Infected)	46

Scenario #3: Improvised Explosive Device

Event: An improvised explosive device utilizing an ammonium nitrate/fuel oil (ANFO) mixture is carried in a panel van to a parking area around a local event. Potential losses with this type of scenario include both human and structural assets.

Event Assumptions:

The quantity of ANFO used is 1,000 pounds. The population density of the lot is assumed to be 1 person per every 25 square feet. 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 (BATF) Standards. The Falling Glass Hazard distance is estimated at 600 feet according to BATF Explosive Standards. In this event, damage would occur to vehicles and structures. 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	551 persons
Trauma Injuries	961 persons
Urgent Care Injuries	11,935
Injuries not Requiring Hospitalization	4,736
Repair Costs for 25 Vehicles	$100,000
Replacement Costs for 25 Vehicles	$500,000

	Magnitude/Severity
Terrorism, Agri-Terrorism	2.00

Future Development

In general, acts of terrorism have historically been conducted in major population centers or on targets of high significance within the United States. If more large public events are held in southwest Kansas, more potential may exist for these venues to become targets of attack. However, in general, the region is experiencing a population decline which could potentially lessen the potential impact of a future event.

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 the event may increase with the increased or newly developed areas.

Probability of Future Hazard Events

By nature, acts of terrorism are difficult to foresee. However, based on the lack of any historic events the probability of future regional terrorist attacks is unlikely.

	Probability
Terrorism, Agri-Terrorism	1.00

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Terrorism, Agri-Terrorism Consequence Analysis

Subject	Ranking	Impacts of Terrorism, Agri-Terrorism
Health and Safety of Persons in the Area of the Incident	Severe	Impact could be severe for persons in the incident area.
Responders	Minimal to Severe	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	Minimal to Severe	Depending on damage to facilities/personnel in the incident area, re-location may be necessary and lines of succession execution.
Property, Facilities, and Infrastructure	Severe	Impact within the incident area could be severe for explosion, moderate to low for Hazmat.
Delivery of Services	Minimal to Severe	Delivery of services could be affected if communications, road and railways, and facilities incur damage.
Environment	Minimal to Severe	Localized impact within the incident area could be severe depending on the type of incident.
Economic Conditions	Minimal to Severe	Economic conditions could be adversely affected and dependent upon time and length of clean up and investigation.
Public Confidence in Governance	Minimal to Severe	Impact dependent on if the incident could have been avoided by government entities, clean-up, investigation times and outcomes.

3.7.18 TORNADO

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Tornado	3.22	2.67	3.67	1.00	2.90

Description

The NWS defines a tornado as "a violently rotating column of air extending from a thunderstorm to the ground." Tornados are the most violent of all atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 mph, and damage paths can be more than one mile wide and 50 miles long.

Although tornados have been documented on every continent, they occur most frequently in the United States east of the Rocky Mountains. Southwest Kansas is situated in an area that is generally known as "Tornado Alley." Climatological conditions are such that warm and cold air masses meet in the center of the country to create conditions of great instability and fast moving air at high pressure that can ultimately result in formation of tornado funnels.

In southwest Kansas, most tornados and tornado-related deaths and injuries occur during the months of April, May, and June. However, tornados have struck in every month. Similarly, while most tornados occur between 3:00 p.m. and 9:00 p.m., a tornado can strike at any time.

Tornados are classified according to the Enhanced Fujita (EF) Scale. The EF scale ranks tornados according to wind speed and the resulting damage caused. This system is an update to the original Fujita Scale, and was implemented on February 1, 2007. The following table illustrates the changes in the scaling systems.

Fujita Scale and Enhanced Fujita Scale Comparison

Fujita Scale			Derived EF Scale		Operational EF Scale	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

Source: NWS

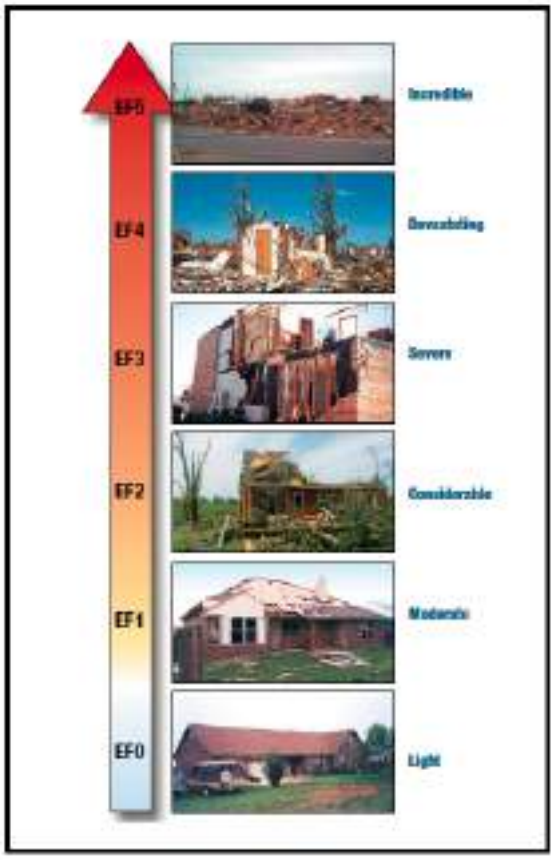
The wind speeds for the EF scale and damage descriptions are based on information from the NOAA Storm Prediction Center. The damage descriptions are summaries. For the actual EF scale it is necessary to look up the damage indicator (type of structure damaged) and refer to the degrees of damage associated with that indicator.

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.
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

The following picture, provided by FEMA, visually indicates expected damage from each tornado type.



Source: FEMA, Taking Shelter from the Storm, 2008

The best lead time for a tornado is about 30 minutes. Tornados have been known to change paths very rapidly, thus limiting the time in which to take shelter. Tornados may not be visible on the ground due to evening hours, blowing dust or driving rain and hail. Therefore, there is very little, or no, warning of when a specific tornado may be on the ground.

	Warning Time
Tornado	3.67

	Duration
Tornado	1.00

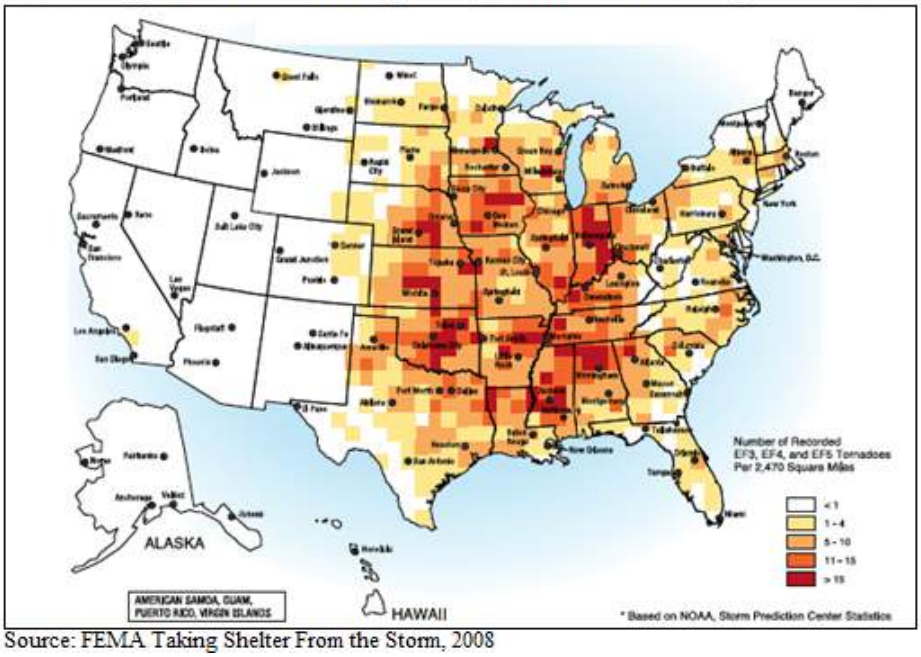
Hazard Location

Although tornados have been documented on every continent, they occur most frequently in the United States east of the Rocky Mountains. Southwest Kansas is situated in an area that is generally known as Tornado Alley.

While tornados can occur in all areas of the State of Kansas, historically, some areas of the state have been more susceptible to this type of damaging storm. All of southwest Kansas, including all of the participating jurisdictions, is at risk to tornados.

The following figure illustrates the number of F3, F4, and F5 tornados recorded in the United States between 1950 and 2006. Each colored block indicates an area of approximately 2,470 square miles. Data from the map indicates the southwest Kansas region falls within areas that range from 1-4 to 5-10 recorded events.

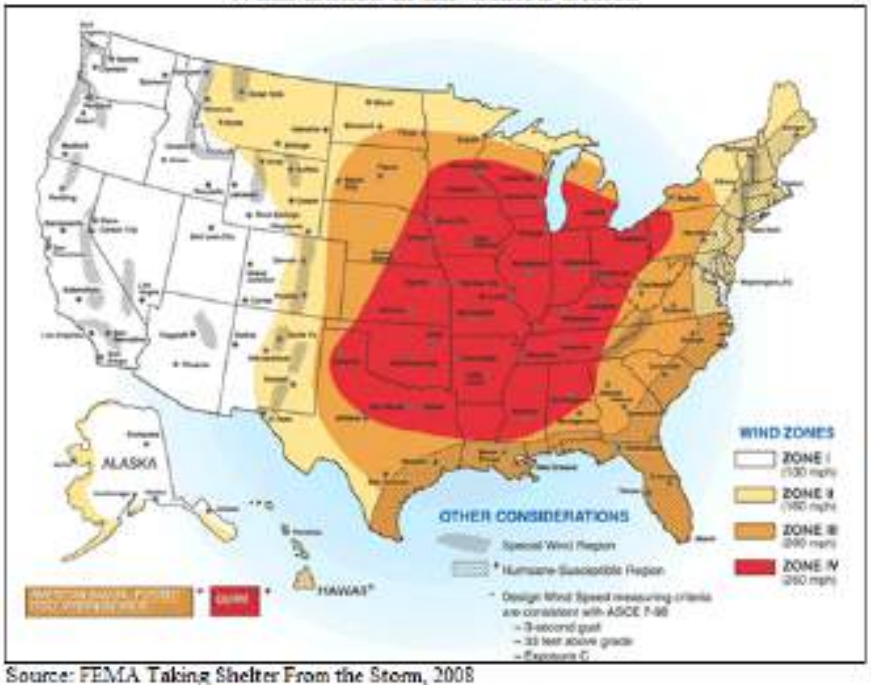
Tornado Activity in the United States
Summary of Recorded EF3, EF4, and EF5 Tornados, 1950-2006



Source: FEMA Taking Shelter From the Storm, 2008

Additionally, the following figure shows that southwest Kansas is in Wind Zones III and IV, indicating that the area has the strongest and most frequent tornado activity.

Wind Zones in the United States



Source: FEMA Taking Shelter From the Storm, 2008

By using the data derived from the above maps and the risk rating table from FEMA, it is possible to see that southwest Kansas is in a high risk area for tornados.

Area Risk Rating

Number of Tornados Per 2,470 Square Miles	Wind Zone			
	I	II	III	IV
<1	Low Risk	Low Risk	Low Risk	Moderate Risk
1-4	Low Risk	Moderate Risk	High Risk	High Risk
5-10	Low Risk	Moderate Risk	High Risk	High Risk
11-15	High Risk	High Risk	High Risk	High Risk
>15	High Risk	High Risk	High Risk	High Risk

Source: Taking Shelter from the Storm, FEMA, 2008

Previous Occurrences and Extent

In the past ten years, tornados have impacted southwest Kansas repeatedly, including four Presidential Disaster Declarations since 2004. Details about some of these events as well as the Presidential Disaster Declarations that included tornados can be found on the following pages.

Kansas Presidential Declarations Involving Tornados

Declaration Number	Declaration Date*	Disaster Description	Regional Counties Involved	Disaster Cost**
4150	10/22/2013 (7/22/2013 - 08/16/2013)	Severe Storms, Winds, **Tornados** and Flooding	Hamilton	$11,412,827
4010	07/29/2011 (05/19-06/04/2011)	Severe Storms, Strait-Line Winds, **Tornados** and Flooding	Hamilton, Morton and Stanton	$8,259,620

Sources: FEMA and Kansas Division of Emergency Management

* Incident dates are in parentheses.

** Disaster costs include Public Assistance and Individual Assistance for all affected counties, including those not listed

The following provide brief discussions of the most recent Presidential Disaster Declarations for the region:

FEMA-4150-DR: Severe Storms, Winds, Tornados and Flooding – November 22, 2013 - From July 22 to August 16, 2013 severe storms, winds, tornados, and flooding caused limited damages in Hamilton County. The primary impacts of this event were to public roads and bridges with an estimated $11,412,827 in damages.

FEMA-4010-DR: Severe Storms, Winds, Tornados and Flooding – July 29, 2011 - From May 19 to June 4, 2011 severe storms, winds, tornados, and flooding caused damages in 25 Kansas Counties. The primary impacts of this event were to public roads and bridges with an estimated $9,800,000 in damages.

The following provide further descriptions and other notable tornado events.

October 26, 2006: Twenty-eight tornadoes were reported in southwest Kansas, specifically in Grant County. Only two of the storms caused damage, which was relatively minor.

The following table shows NCDC information for the 10 years from 2004 to 2014, with 2014 being an incomplete year. Additionally, the strongest rated tornado event is indicated.

NCDC Tornado Events, 2004-2014

County	Number of Days with Tornados	Strongest Tornado Event	Deaths	Total Property Damage	Crop Damage
Grant	3	F2	0	$444,000	$0
Greeley	9	F0	0	$25,000	$0
Hamilton	4	EF0	0	$0	$0
Kearny	7	EF1	0	$180,000	$0
Morton	1	F0	0	$0	$0
Scott	7	EF1	0	$210,000	$0
Stanton	3	EF0	0	$0	$0
Stevens	3	EF0	0	$500	$0
Wichita	3	EF1	0	$5,000	$0
Regional Total	40	F2	0	$864,500	$0

Source: NCDC Storm Events Database

Local Events

The following detail locally reported events:

May 25, 2008: A tornado with a magnitude of F0 touched down three miles northeast of Scott City, in Scott County, for 30 seconds. No damage or injury was reported.

November 10, 2008: The tornado was a 200 yard wide tornado that persisted for 10 minutes and traveled 2.9 miles and the associated thunderstorm turned the ground white from hail. Winds were estimated at 70 mph and air temperature at the time was only 53 degrees. There were no injuries or damage reported with this tornado.

May 11, 2005: A tornado with a magnitude of F2 was reported in Grant County that caused $350,000 in property damage. The tornado was 250 yards in width and stayed on the ground for approximately 13 miles. No injuries, deaths, or crop damages were reported for this event.

May 16, 2004: A tornado with a magnitude of F0 was reported three miles south of Scott City, in Scott County. There was no damage reported.

Hazard Vulnerability and Impact

To refine and access the relative vulnerability of each of southwest Kansas' counties to tornados, ratings were assigned to pertinent factors at the county level. These factors are: social vulnerability index, prior events, prior annualized property damage, building exposure valuation, population density, crop exposure and annualized crop loss. Then a rating value of 1-10 was assigned to the data obtained for each factor and then weighted equally and factored together to obtain overall vulnerability scores for comparison and to determine the most vulnerable counties.

Tornados that touch-down can create a unique path of destruction. So using the prior events as a factor can give the perception that a county has a higher overall vulnerability to tornados.

The following information was used for this analysis:

- Social Vulnerability Index for Kansas from the Hazards and Vulnerability Research Institute at the University of South Carolina
- National Climatic Data Center storm events 2004 – 2014
- U.S. Census Bureau (2012)
- USDA's Census of Agriculture (2012)
- USDA Risk Management Agency (2010 – 2013)

Regional Counties Tornado Vulnerability Factors

County	SoVI Rating	Prior Events 2004-2014	Property Damages	Annualized Property Damage	Total Building Exposure ($000)	Population Density	Crop Exposure (2012 USDA Census of Agriculture)	Crop Loss Insurance Paid (2010-2013)	Annualized Crop Loss Insurance Paid
Grant	3	3	$444,000	$40,364	$469,849	14	$86,023,000	$0	$0
Greeley	4	9	$25,000	$2,273	$131,666	2	$58,936,000	$0	$0
Hamilton	4	4	$0	$0	$187,869	3	$55,383,000	$0	$0
Kearny	4	7	$180,000	$16,364	$228,723	5	$80,730,000	$0	$0
Morton	2	1	$0	$0	$230,152	4	$58,361,000	$0	$0
Scott	4	7	$210,000	$19,091	$350,514	7	$64,648,000	$57,476	$14,369
Stanton	2	3	$0	$0	$151,658	3	$79,556,000	$2,232	$558
Stevens	5	3	$500	$45	$293,762	5	$144,543,000	$0	$0
Wichita	4	3	$5,000	$455	$175,679	3	Unavailable	$0	$0
Regional Total	-	40	$864,500	$78,591	$2,669,872	5	$628,180,000	$0	$0

Using the above information, a value of 1-10 was assigned to the data obtained for each factor and then weighted equally and factored together to obtain overall vulnerability scores for comparison and to determine the greatest vulnerable counties. The Social Vulnerability Index is in a range of 1- 5. To give Social Vulnerability Index the same weight as the other factors, the numbers were multiplied by two.

Ranges for Tornado Vulnerability Ratings

Ratings	Social Vulnerability	Prior Events	Annualized Property Damage	Building Exposure Valuation	Population Density *	Crop Exposure	Annualized Crop Loss Insurance Paid
1		3 - 7	$500 - $500,000	$117,421 - $4,492,825	1.6 - 116.3	0 - $18,548,500	$0 - $1,000
2	1	8 - 12	$500,001 - $1,000,000	$4,492,826 - $8,868,229	116.4 - 231.1	$18,548,501 - $32,126,000	$1,001 - $2,000
3		13 - 17	$1,000,001 - $1,300,000	$8,868,230 - $13,243,634	231.2 - 345.9	$32,126,001 - $45,703,500	$2,001 - $3,000
4	2	18 - 22	$1,300,001 - $2,000,000	$13,243,635 - $17,619,039	346 - 460.7	$45,703,501 - $59,281,000	$3,001 - $4,000
5		23 - 27	$2,000,001 - $3,000,000	$17,619,040 - $21,994,444	460.8 - 575.5	$59,281,001 - $72,858,500	$4,0001- $5,000
6	3	28 - 32	$3,000,001 - $4,000,000	$21,994,445 - $26,369,848	575.6 - 690.3	$72,858,501 - $86,436,000	$5,001 - $6,000
7		33 - 37	$4,000,001 - $7,000,000	$26,369,849 - $30,745,253	690.4 - 805.1	$86,436,001 - $100,013,500	$6,001 - $7,000
8	4	38 - 42	$8,000,001 - $11,000,000	$30,745,254 - $35,120,658	805.2 - 919.9	$100,031,501 - $113,591,000	$7,001 - $8,000
9		43 - 47	$11,000,001 - $13,000,000	$35,120,659 - $39,496,062	920- 1,034.7	$113,591,001 - $127,168,500	$8,001 - $9,000
10	5	48 - 54	Above $13,000,001	$39,496,063 - $43,871,468	1,034.8 - 1,149.6	$127,168,501 - $140,746,000	$9,001 and up

Based on the above ratings system, ranges were applied to each county to determine their potential vulnerability. The following related the scoring to a vulnerability assessment:

- **Medium:** Score range of 9 - 19
- **Medium-High:** Score range of 20 - 29
- **High:** Score range of 30 - 40

Vulnerability of Regional Counties to Tornados

County	SoVi Rating	Prior Event Rating	Annualized Property Damage Rating	Building Exposure Valuation Rating	Population Density Rating	Crop Exposure Rating	Annualized Crop Insurance Rating	Overall Vulnerability Rating	Tornado Vulnerability
Grant	6	1	1	1	1	6	1	17	Medium
Greeley	8	2	1	1	1	4	1	18	Medium
Hamilton	8	1	1	1	1	4	1	17	Medium
Kearny	8	1	1	1	1	6	1	19	Medium
Morton	8	1	1	1	1	4	1	17	Medium
Scott	4	1	1	1	1	5	10	23	Medium-High
Stanton	8	1	1	1	1	6	1	19	Medium
Stevens	4	1	1	1	1	10	1	19	Medium
Wichita	10	1	1	1	1	-	1	15	Medium*

*: Wichita County data is incomplete and rating is lower than likely.

Between 2001 and 2010 51% of those killed by tornados were living in mobile homes, according to the NOAA. The *2012 Kansas Severe Weather Awareness Week* reports people living in mobile homes are killed by tornados at a rate 20 times higher than people living in permanent homes. The following table represents the number of mobile homes per county, and the percentage of total housing stock.

Percentage of Mobile Homes per Regional County

County	Number of Housing Units	Number of Mobile Homes	Percentage Mobile Homes
Grant	2,907	649	22.33%
Greeley	621	52	8.37%
Hamilton	1,221	105	8.60%
Kearny	1,539	370	24.04%
Morton	1,448	262	18.09%
Scott	2,187	170	7.77%
Stanton	975	183	18.77%
Stevens	2,272	406	17.87%
Wichita	1,041	147	14.12%
Regional Total	14,211	2,344	16.49%

Sources: United States Census Bureau (2012) and U.S. Census Bureau American Community Survey (2008-2012)

	Magnitude/Severity
Tornado	2.67

Future Development

Future development, increases in population and additional development of agricultural resources and would tend to increase the risk of this hazard. New development anywhere in southwest Kansas will be susceptible to tornado impacts. New manufactured housing development will be most susceptible to damage, particularly if not anchored properly. The extent of new manufactured housing development is not known. Regional population centers, which are experiencing slight growth would also be more susceptible to this hazard. However, regional population totals are estimated to decrease from an estimated 2013 population of 34,152 to an estimated 2040 population of 22,237.

Probability of Future Hazard Events

The following calculations of probability are used for illustrative purposes only. The calculations were sourced from the FEMA Benefit-Cost Analysis Reengineering Tornado Safe Room Module Methodology Report, Version 4.5 Final, Dated May 2009. Revisions to the calculation methodology include using the entire area of the county as opposed to the 80 km by 80 km cell sized. Additionally, tornados reported on the Fujita Scale were converted to the Enhanced Fujita Scale using available data. Finally, probabilities were not calculated for EF class tornados with zero occurrence.

The following equation was used to determine probabilities equation:

Probability of a Tornado(EF) = (EF count * EF area) / (Cell area * Years)

Where:

- EF count = Estimate tornado count for EF class from mapping
- EF area = Area of tornado for EF class in km2
- Cell area = Area of analysis cell, county size in KM2
- Years = Years of record from 2004 to 2014, with 2014 as an incomplete data year

The outcome represents the probability of a tornado occurring within the designated area at a point in time. The lower the number, the lower the probability of occurrence.

Mean Tornado Length and Width

EF Class	Length (km2)	Width (km2)	EF Area
EF0	1.4	0.0284	0.03976
EF1	4.7	0.064	0.3008
EF2	10.7	0.1259	1.34713
EF3	22.5	0.2636	5.931
EF4	43.6	0.4607	20.08652
EF5	54.6	0.5555	30.3303

The following table details the illustrative calculated probability for the occurrence of a tornado in each regional county.

Illustrative Calculated Probability of Tornado

County	Approximate Area (KM2)	Tornado Rating (EF Scale)	Tornado Area (KM2)	Number of Occurrences	Number of Years	Probability
Grant	1,489	0	0.03976	8	10	0.00214%
		1	0.3008	3	10	0.00606%
		2	1.34713	1	10	0.00905%
Greeley	2,015	0	0.03976	13	10	0.00257%
Hamilton	2,585	0	0.03976	4	10	0.00062%
Kearny	2,256	0	0.03976	13	10	0.00229%
		1	0.3008	1	10	0.00133%
Morton	1,891	0	0.03976	1	10	0.00021%
Scott	1860	0	0.03976	11	10	0.00235%
		1	0.3008	1	10	0.00162%
Stanton	1,761	0	0.03976	4	10	0.00090%
Stevens	1,883	0	0.03976	4	10	0.00084%
Wichita	1,862	0	0.03976	3	10	0.00064%
		1	0.3008	1	10	0.00162%

According to the NCDC, there were 40 tornados in southwest Kansas between 2004 and 2014. Based on this information, the probability that at least one tornado will occur in southwest Kansas in any given year is likely.

Based on the NCDC historical data available from 2004 to 2014, there were 40 tornados recorded in the region, causing $864,500 in property damage. This equates to approximately four events per year on average. However, it is important to note that it is generally considered impossible to document all occurrences of tornados in a large, most unpopulated area. Additionally, during the past five years there have been two presidentially declared disasters for tornados (along with other causes such as flooding) totaling $19,672,447 in disaster costs. However, county specific information was unavailable for the presidential disaster declarations. Available county specific information suggests that large scale, impactful tornado events occur on an on a regular basis, as borne out by the above referenced probability table. And while past occurrence is no guarantee of future occurrence, it is reasonable to determine that it is likely future tornados will occur.

	Probability
Tornado	3.42

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Tornado Consequence Analysis

Subject	Ranking	Impacts of Tornado
Health and Safety of Persons in the Area of the Incident	Severe	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.
Responders	Minimal	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Minimal to Severe	Temporary to permanent relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Minimal to Severe	Localized impact could be severe in the trajectory path. Roads, buildings, and communications could be adversely affected. Damage could be severe.
Delivery of Services	Minimal to Severe	Delivery of services could be affected if there is any disruption to the roads and/or utilities due to damages sustained. Depending on the incident size the damage could be severe.
Environment	Minimal to Severe	Impact will be severe for the immediate impacted area. Impact will lessen as distance increases from the immediate incident area.
Economic Conditions	Minimal to Severe	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 Governance	Minimal to Severe	Response and recovery will be in question if not timely and effective. Warning systems and warning time will also be questioned.

3.7.19 UTILITY/INFRASTRUCTURE FAILURE

	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Utility/Infrastructure Failure	2.44	2.11	4.00	2.33	2.57

Description

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 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
- Tornados 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.

	Warning Time
Utility / Infrastructure Failure	4.00

	Duration
Utility / Infrastructure Failure	2.33

Hazard Location

All of southwest Kansas 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.

Electricity in southwest Kansas is provided by either investor-owned utilities or rural electric cooperatives (RECs). Electric utilities in Kansas are regulated by both the KCC and the Federal Energy Regulatory Commission.

RECs are not-for-profit, member-owned electric utilities. Distribution cooperatives deliver electricity to consumers. Generation and transmission cooperatives generate and transmit electricity to distribution co-ops. 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. The majority of the region is covered by Lane-Scott Electrical Cooperative, Pioneer Electric Cooperative and Wheatland Electric Cooperative. Additional information may be found at Kansas Electric Cooperative, Inc. website.

Locations of electric certified areas and transmission lines may be found at www.kcc.state.ks.us/maps/ks_electric_certified_areas.pdf. Additional information is provided in the following map.

Electrical Transmission Lines and Power Plants

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.

The following figure shows the highways in southwest Kansas.

Natural Gas and Oil Pipelines

Hazards that can impact natural gas and oil pipelines include earthquakes, expansive soils, land subsidence, landslide, and terrorism. Natural gas and oil pipelines have been previously discussed.

Water and Sewer Systems

The primary hazards that can impact water supply systems include drought, floods, hazardous materials, and terrorism. Water district boundary maps were provided in section 2.16.

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 southwest Kansas is available at www. kcc.state.ks.us/maps /ks_telephone_certified_areas.pdf.

Previous Occurrences and Extent

Each year disruptions to utility services ranging from minor to serious are a secondary result of other hazard events including drought, flood, tornado, windstorm, winter storm, lightning, and extreme heat, as illustrated in previous event descriptions.

Hazard Vulnerability and Impact

While every community in the region is at risk to utility/infrastructure failure, the vulnerability is somewhat mitigated in southwest Kansas due to the lower population density, development, and economic activities in large portions of the region that would be disrupted by a major infrastructure failure event.

Regionally smaller utility suppliers generally have limited resources for mitigation. Thus, the large number of small electric 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 southwest Kansas. 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 (current federal mileage rate)

Source: FEMA BCA Reference Guide, June 2009, Appendix C

	Magnitude/Severity
Utility / Infrastructure Failure	2.11

Future Development

Future development and increases in population would increase the risk of this hazard. In addition, lack of maintenance and system upgrades could also increase the risk of this hazard occurring on a more frequent basis. Larger regional hubs may be more susceptible to failure events due to the reasonably dense nature of development, and this susceptibility will likely increase with increased development. In general, the majority of the region is experiencing a population decline which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

Minor utility failures occur annually across the region, with larger failures usually tied to other disaster events such as windstorms or tornados. 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.

	Probability
Utility / Infrastructure Failure	2.44

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Utility/Infrastructure Failure Consequence Analysis

Subject	Ranking	Impacts of Utility / Infrastructure Failure
Health and Safety of Persons in the Area of the Incident	Moderate to Severe	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	Minimal	Impact to responders will be minimal if properly trained and equipped.
Continuity of Operations	Minimal	COOP plans are not expected to be activated If the recovery time is excessive then temporary relocation may become necessary.
Property, Facilities, and Infrastructure	Minimal	Impact is dependent on the nature of the incident, and electric, water, sewage, gas and communication disruptions.
Delivery of Services	Minimal	Delivery of services could be affected within and around the affected area.
Environment	Minimal	Impact should be minimal.
Economic Conditions	Minimal	Economic conditions could be adversely affected depending on extent of damage.
Public Confidence in Governance	Minimal	Impact will be dependent on whether response, recovery, and planning were timely and effective.

3.7.20 WILDFIRE

Hazard	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Wildfire	3.11	2.00	4.00	2.00	2.80

Description

Wildfires in southwest Kansas typically originate in pasture or prairie areas following the ignition of dry grasses (by natural or human sources). On occasion, ranchers and farmers intentionally ignite vegetation to restore soil nutrients or alter the existing vegetation growth. These fires have the potential to erupt into wildfires. Wildfires are also associated with lightning and drought conditions, as dry conditions make vegetation more flammable. Wildfires may also originate, or spread to forested areas, or other areas with concentrations of woody fuel that can cause wildfires to increase in intensity and spread. Since protecting people and structures takes priority, a wildfire's cost to natural resources, crops, and pastured livestock can be ecologically and economically devastating. In addition to the health and safety impacts to those directly affected by fires, the region is also concerned about the health effects of smoke emissions to surrounding areas.

The region experiences most of its wildfires in March and April when people are conducting controlled burns in grassland and fields. As the plant mass greens up later in the summer and the humidity is higher, the risk of wildfires is generally lower. This trend, however, does not continue in years of extreme drought when hot and dry weather prevail.

The wildland/urban interface is the area where human improvements such as homes, ranches and farms come in contact with the wildlands. Urban expansion has driven the increased building of homes in wildland areas. Wherever people are living in or adjacent to wildland areas, the threat of wildfire exists. As the rural population increases, so does the risk to life and property from wildfire.

	Warning Time
Wildfire	4.00

	Duration
Wildfire	2.00

Hazard Location

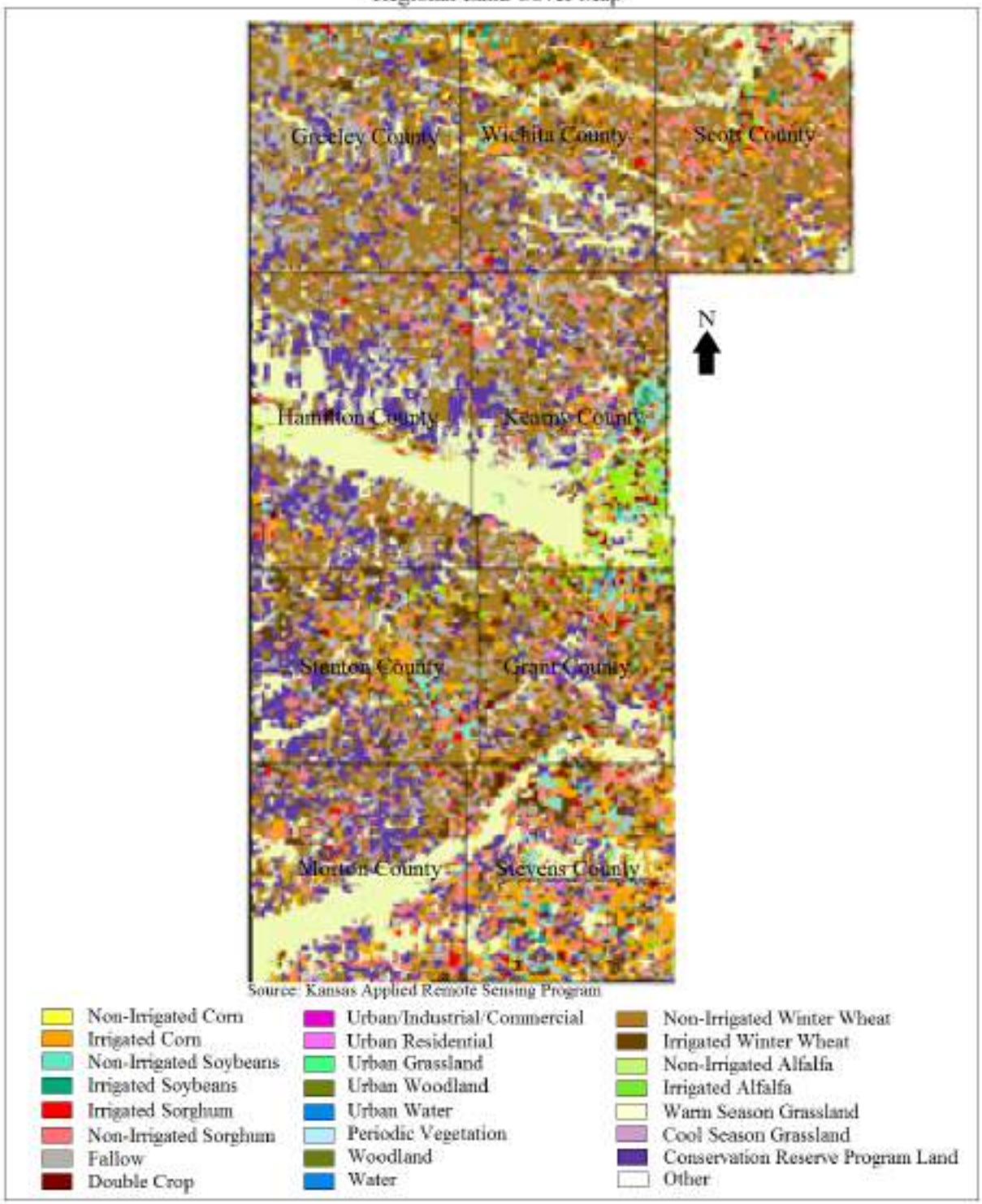
Wildfires in southwest Kansas typically originate in pasture or prairie areas following the ignition of dry grasses (by natural or human sources). The Eastern Red Cedar is of concern in areas of southwest Kansas. This invasive evergreen species can take over fence rows and un-planted fields, adding to wildfire fuel and risk. Additionally, this type of fuel, as well as other tree plantings near structures can cause structures to be consumed by wildfires, putting inhabitants at risk.

Due to the primarily rural and agricultural characteristics of the region, as well as the existence of wild land and grassland areas, the entire region is susceptible to wildfires. However, due to lower

population densities in large areas of the region the number of people potentially affected by a wildfire is often minimal. Additionally, due to the built up nature of the larger cities in the region, the risk of wildfires in these areas is also lower.

According to the 2011 *Kansas Forest Action Plan*, with the exception of Eastern Redcedar/hardwood, most forest types in Kansas do not pose significant fire management issues. However, grasslands which make up a majority of the open areas in southwest Kansas due pose fire management issues. These areas, and the wild land-urban interface where development has occurred, are the focus of wild land fire management issues in Kansas. The following figure shows the land cover in southwest Kansas.

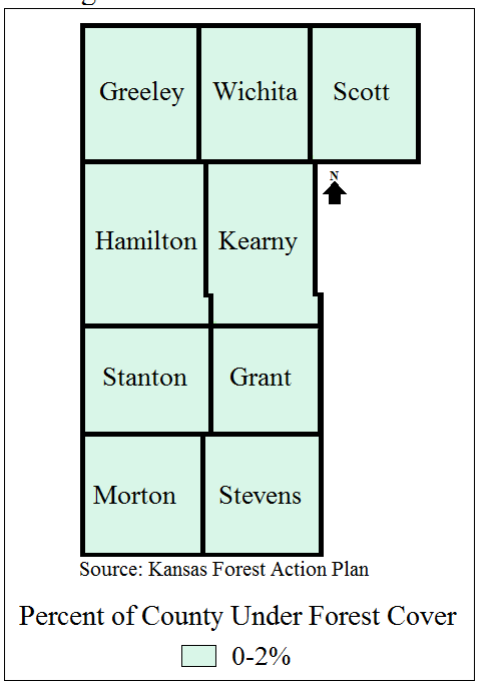
Regional Land Cover Map



Forests have increased in volume by a billion cubic feet and in density by 106 percent since 1965 with an estimated 74 million dry tons of total biomass. Growing stock volume has been increasing steadily for the past 40 years. The average age of Kansas forests is getting younger with the

majority of volume and trees occurring between 30 and 59 years of age. The following figure shows the percent forest cover in southwest Kansas counties.

Regional Percent Forest Cover



Although Eastern Redcedar makes up less than 4 percent of forest types, it has increased in volume by 23,000 percent since 1965 and is the primary species of concern in grasslands. The Kansas Forest Action Plan indicates that southwest Kansas has a very low density and occurrence of Redcedar.

Previous Occurrences and Extent

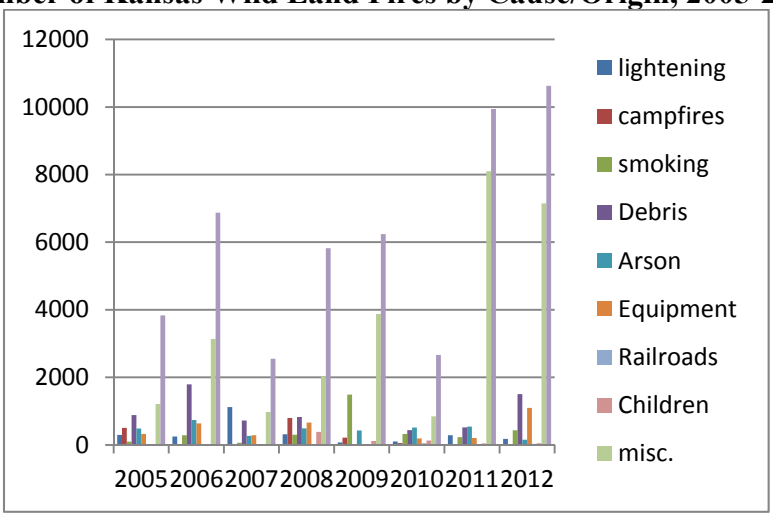
The following provide brief details on notable regional wildfire events.

> **2012**: More than 41,000 acres and 26 structures burned across the state from April through September due to extreme drought conditions. This places 2012 as one of the worst years for wildfires in Kansas on record.

Hazard Vulnerability and Impact

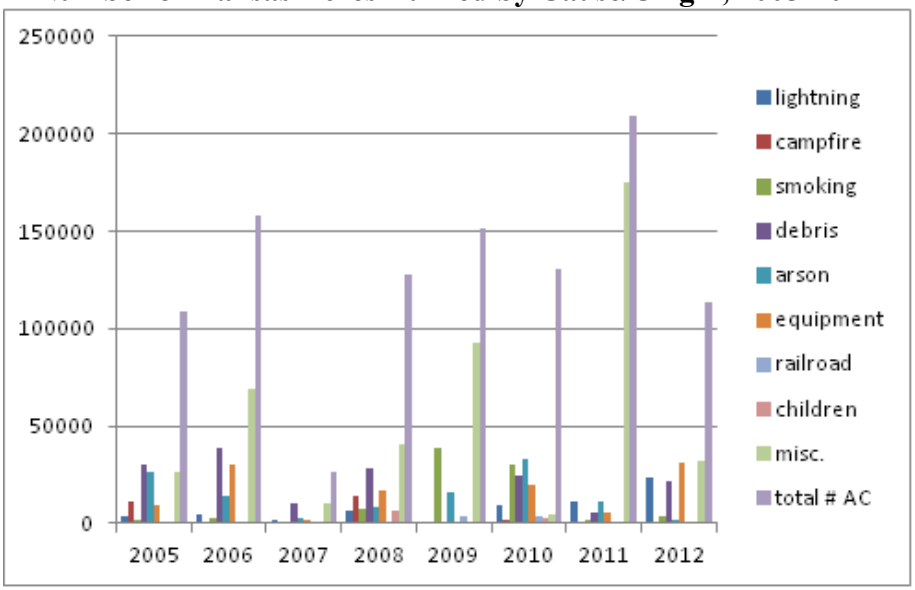
The Kansas Forest Service provided the following charts based on statistics from the National Fire Incident Reporting System regarding occurrence of wildfires in Kansas from 2005-2012. The first figure provides the total number of wild land fires in Kansas by cause/origin and the second figure provides the number of acres burned in Kansas each year by cause/origin.

Number of Kansas Wild Land Fires by Cause/Origin, 2005-2012



Source: Kansas Forest Service

Number of Kansas Acres Burned by Cause/Origin, 2005-2012



Source: Kansas Forest Service

USDA's Risk Management Agency on Crop insurance payments for loss of crops due to wildfire indicates that no payments were made as a result of wildfires to the southwest Kansas region.

Although some data is available from the National Fire Incident Reporting System (NFIRS) in terms of previous events, this data has limitations in providing useful statistical data for an overview regional vulnerability analysis. The most problematic issues are that not all fire departments report to NFIRS and of those that report, not all incidents are reported. This current lack of local level requirements and a past lack of enforcement of state statutes has led to a lack of fire occurrence data for both prescribed burns and wildfires being available in southwest Kansas. Changes in enforcement of wildfire reporting requirements at the state level, as well as prescribed fire reporting requirements that are part of the EPA-mandated Kansas Flint Hills Smoke

Management Plan (approved in 2011) will give the Kansas Forest Service a much greater opportunity to begin using real-time fire occurrence data to assist in making the best fire management decisions.

In light of the data limitations associated with available statistics, and with the publication of the 2011 *Kansas Forest Action Plan*, it has been determined that the best available data for the regional vulnerability analysis is the weighted sum analysis that was completed and utilized to develop a wildfire risk composite layer as part of the Forest Action Plan. The weighted sum analysis combined six data layers produced from a combination of eight separate datasets. In close consultation with the Kansas Forest Service's Fire Management Coordinator and other Fire Management staff six data inputs were developed to represent Wildfire Risk in Kansas. These data inputs and their corresponding analysis weight are listed below:

Kansas Forest Action Plan Wildfire Data Sets and Weighted Sums

Data Set	Analysis Weight
Wildland Urban Interface	0.85
ISO Fire Station Coverage Gaps	0.75
Conservation Reserve Program Lands	0.60
Eastern Redcedar in Grasslands	0.75
Moderate Fire Potential risk	0.53
High Fire Potential risk	0.80

Source: *Kansas Forest Action Plan*,

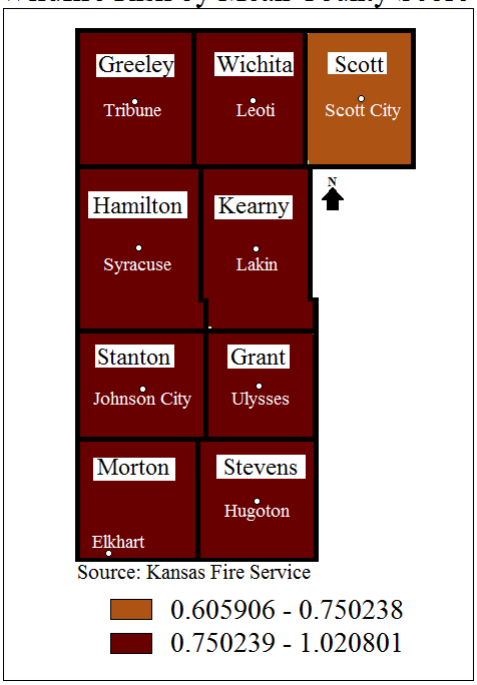
The resulting score contains values ranging from 0 to 3.48, with the higher the numbers indicating higher wildfire risk. The following table provides the mean score for each county within the southwest Kansas region.

Wildfire Risk Score

County	Mean Wildfire Risk Score
Grant	0.81166213751
Greeley	0.89731788635
Hamilton	1.00021004677
Kearny	0.79696023464
Morton	1.02080094814
Scott	0.75023835897
Stanton	0.81276172400
Stevens	0.83445894718
Wichita	0.81508344412
Regional Average	0.859944

The following figure provides a map indicating the mean score for each county.

Wildfire Risk by Mean County Score

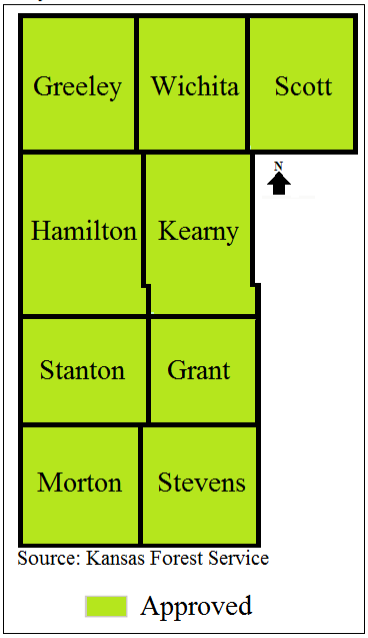


Community Wildfire Protection Plans

One way for communities at risk to wildfire to reduce their overall vulnerability is development of Community Wildfire Protection Plans (CWPP) to identify specific areas at risk and actions that can be taken to reduce risk. The Healthy Forests Restoration Act (HFRA) provided communities with an opportunity to influence where and how federal agencies implement fuel reduction projects on federal lands. A CWPP is the most effective way to take advantage of this opportunity. Additionally, communities with Community Wildfire Protection Plans in place are given priority for funding of HFRA hazardous fuels reduction projects.

The following figure shows the status of CWPPs in southwest Kansas counties.

Community Wildfire Protection Plan Status



	Magnitude/Severity
Wildfire	2.00

Future Development

Future development and increases in population would tend to increase the risk of this hazard. As cities continue to expand they often build in areas that are prone to wildfires and may not have adequate fire coverage. Larger regional cities that are experiencing growth could be at a higher risk to this hazard if the growth outstrips fire coverage and/or is in high danger areas. The remainder of the region is experiencing a population, and associated structure, decline which could potentially lessen the potential impact of a future event. Since the vast majority of reported wildfires occur in unpopulated areas, future vulnerability appears to be largely limited to crops.

Probability of Future Hazard Events

Wildfires occur on an annual basis in the region, usually in rural and agricultural areas. In conjunction with continued drought conditions throughout the region, and normal periods of high heat, it is expected that future wildfires are likely.

	Probability
Wildfire	3.11

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Wildfire Consequence Analysis

Subject	Ranking	Impacts of Wildfire
Health and Safety of Persons in the Area of the Incident	Severe	Impact of the immediate area could be severe for affected areas.
Responders	Minimal to Severe	Impact to responders could be severe depending on the size and scope of the fire, especially for fire fighters. Impact will be low to moderate for support responders with the main threat as smoke inhalation.
Continuity of Operations	Minimal to Severe	Temporary relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Severe	Localized impact could be severe to facilities and infrastructure in the incident area as all are vulnerable to destruction by wildfire.
Delivery of Services	Minimal to Severe	Delivery of services could be affected if there is any disruption to the roads and/or utilities due to damages sustained.
Environment	Severe	Impact will be severe for the immediate area with regards to trees, bushes, animals, and crops. Impact will lessen as distance increases.
Economic Conditions	Minimal to Moderate	Impacts to the economy could be moderate in the immediate area.
Public Confidence in Governance	Minimal to Severe	Response and recovery will be in question if not timely and effective. Evacuation orders and shelter availability could be called in to question.

3.7.21 WINDSTORM

Hazard	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Windstorm	4.00	2.56	2.44	1.89	3.12

Description

Relatively frequent strong winds are a weather characteristic of southwest Kansas. High winds, often accompanying severe thunderstorms, can cause significant property and crop damage, threaten public safety, and have adverse economic impacts from business closures and power loss.

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. In 2005, hail and wind damage made up 45% of homeowners' insurance losses. One type of straight-line wind is the downburst, which can cause damage equivalent to a strong tornado and can be extremely dangerous to aviation.

Thunderstorms over southwest Kansas typically happen between late April and early September, but, given the right conditions, they can develop as early as March. They are usually produced by super-cell thunderstorms or a line of thunderstorms that typically develop on hot and humid days.

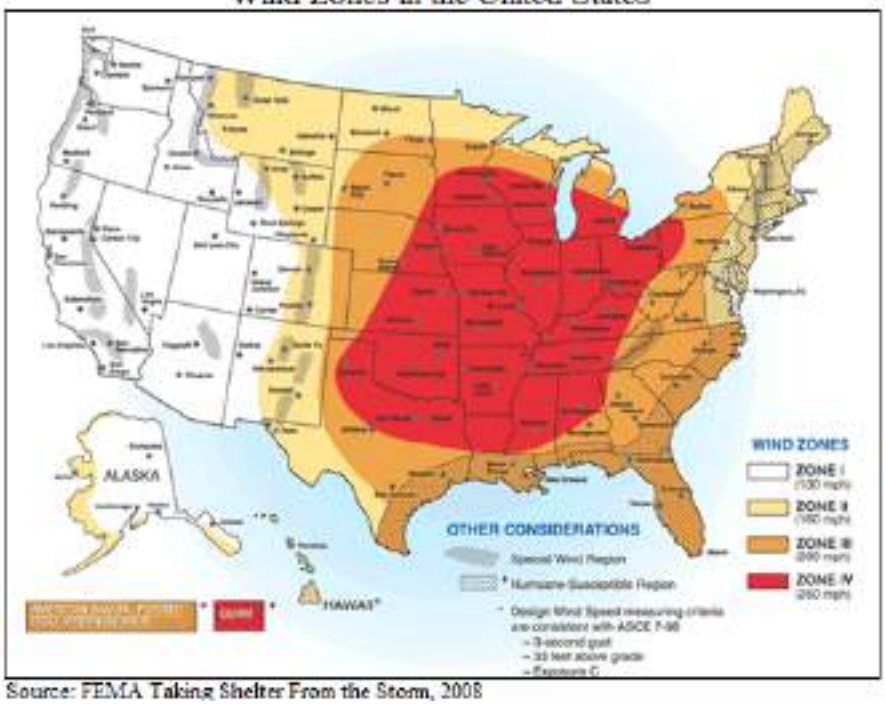
	Warning Time
Windstorm	2.44

	Duration
Windstorm	1.89

Hazard Location

The following figure shows the wind zones of the United States based on maximum wind speeds. Southwest Kansas is located within wind zones III and IV, the highest inland categories.

Wind Zones in the United States



Source: FEMA Taking Shelter From the Storm, 2008

Previous Occurrences and Extent

The following are notable high wind events that have occurred in the region.

June 12, 2009: Regionally, severe thunderstorms moved out of eastern Colorado late in the evening and several of these storms were significant supercell storms. One supercell in particular started near Pueblo Colorado during the late afternoon on the 11th and ended up south of Dodge City by sunrise on the 12th. Large hail and damaging winds destroyed crops and caused significant property damage.

May 2, 2008: In Stanton County, a very strong low pressure center and high pressure moving down into the central Plains produced a tight pressure gradient over county. In addition, mixing of the boundary layer allowed strong winds aloft to reach the surface. Visibilities in blowing dust lowered to less than one mile at times.

December 22, 2008: In Stanton County, a peak wind gust of 61 mph was recorded at the Johnson City airport. Strong winds prevailed across Western Kansas during the afternoon with a few peak gusts in the warning category.

August 20, 2007: In Scott County severe thunderstorms caused one fatality.

June 19, 2007: In Stanton County a roof of an outbuilding was torn off by the high wind.

February 24, 2007: In Hamilton County power poles were blown down 3 miles west of Syracuse and two vehicles were blown into the ditch.

August 1, 2006: In Stevens County, the City of Hugoton reported thunderstorm winds. The winds caused $20,000 in property damage, but did not result in any crop damage, deaths, or injuries.

June 16, 2006: In Wichita County an intense line of thunderstorms developed around midday in eastern Colorado and rolled east through the afternoon hours. The line of storms produced dozens of severe weather reports, including intense outflow winds of 70 to 90 mph. Minor damage to homes and significant tree and power line damage occurred, and numerous agricultural irrigation systems were overturned or damaged.

June 6, 2005: In Morton County, the City of Elkhart reported a thunderstorm wind event causing the roof of a lumber building to be detached. There were also reports of downed power lines. Property damage was estimated at $15,000, with no reported injuries.

July 4, 2004: In Scott County high winds broke off tree limbs one inch in diameter. There was no property or crop damages reported and no fatalities or injuries.

According to the NCDC Storm Events database, there were 413 high wind, strong wind and thunderstorm wind events in southwest Kansas between 2004 and 2014. The average recorded high wind over that period was 76 knots, with the strongest wind measured at 85 knots. Total property damage for events between 2004 and 2014 is estimated at $4,380,200 with no estimated crop damages. The data reported below is from the NCDC who receives storm data from the NWS, which receives information` from a variety of sources, which include but are not limited to county, state, and federal emergency management officials, local law enforcement officials, Skywarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public. The wind events represent wind reports, not necessarily individual storms, and thus likely over count the actual number of windstorms.

NCDC Wind Events, 2004- 2014

County	Number of Days with Wind Events	Strongest Measured Wind (Knots)	Total Property Damage	Total Crop Damage
Grant	50	85	$88,200	$0
Greeley	43	80	$490,500	$0
Hamilton	62	78	$11,500	$0
Kearny	48	88	$3,601,000	$100,000
Morton	43	70	$15,000	$0
Scott	52	70	$16,500	$0
Stanton	49	74	$1,500	$0
Stevens	37	71	$29,000	$0
Wichita	29	70	$127,000	$0
Regional Total	413	76 (average)	$4,380,200	$100,000

Source: NCDC Storm Events Database

Hazard Vulnerability and Impact

All counties in southwest Kansas are vulnerable to windstorms. To refine and access the relative vulnerability of each of southwest Kansas' counties to wind events, the region assigned ratings to pertinent factors that were examined at the county level. These factors are: social vulnerability index, prior events, prior annualized property damage, building exposure valuation, population density, crop exposure and annualized crop loss. Then a rating value of 1-10 was assigned to the data obtained for each factor and then weighted equally and factored together to obtain overall vulnerability scores for comparison and to determine the most vulnerable counties.

The following information was used for this analysis:

- Social Vulnerability Index for Kansas from the Hazards and Vulnerability Research Institute at the University of South Carolina
- National Climatic Data Center storm events 2004 – 2014
- U.S. Census Bureau (2012)
- USDA's Census of Agriculture (2012).

Vulnerability Factor Amounts for Wind

County	SoVI Rating (1-5)	Prior Events 2004-2014	Property Damages	Annualized Property Damages	Total Building Exposure ($000)	Population Density	Crop Exposure (2012 Census of Agriculture)	Crop Insurance Paid for Wind (2010 - 2013)	Annualized Crop Insurance Paid
Grant	3	50	$88,200	$8,820	$469,849	14	$86,023,000	$3,328,554	$832,138
Greeley	4	43	$490,500	$49,050	$131,666	2	$58,936,000	$699,374	$174,843
Hamilton	4	62	$11,500	$1,150	$187,869	3	$55,383,000	$731,589	$182,897
Kearny	4	48	$3,601,000	$360,100	$228,723	5	$80,730,000	$442,128	$110,532
Morton	2	43	$15,000	$1,500	$230,152	4	$58,361,000	$1,888,433	$472,108
Scott	4	52	$16,500	$1,650	$350,514	7	$64,648,000	$165,629	$41,407
Stanton	2	49	$1,500	$150	$151,658	3	$79,556,000	$1,321,935	$330,483
Stevens	5	37	$29,000	$2,900	$293,762	5	$144,543,000	$1,847,164	$461,791
Wichita	4	29	$127,000	$12,700	$175,679	3	Unavailable	$195,937	$48,984
Regional Total	-	413	$4,380,200	$438,020	$2,669,872	5	$628,180,000	$10,620,743	$2,655,183

Using the above information, a value of 1-10 was assigned to the data obtained for each factor and then weighted equally and factored together to obtain overall vulnerability scores for comparison and to determine the greatest vulnerable counties. The Social Vulnerability Index is in a range of 1- 5. To give Social Vulnerability Index the same weight as the other factors, the numbers were multiplied by two.

Wind Data Rating Determination

Ratings	Social Vulnerability	NCDC Prior Events	Annualized Property Damage	Building Exposure Valuation	Population Density	Crop Exposure	Annualized Crop Loss
1		9 - 34	$0 - $200,000	$117,421 - $4,492,825	1.6 - 116.3	$0 - $18,548,500	$0 - $40,800
2	1	35 - 56	$200,001 - $400,000	$4,492,826 - $8,868,229	116.4 - 231.1	$18,548,501 - $32,126,000	$40,801 - $81,576
3		57 - 78	$400,001 - $600,000	$8,868,230 - $13,243,634	231.2 - 345.9	$32,126,001 - $45,703,500	$81,577 - $122,352
4	2	79 - 100	$600,001 - $800,000	$13,243,635 - $17,619,039	346 - 460.7	$45,703,501 - $59,281,000	$122,353 - $163,128
5		101 - 122	$800,001 - $1,000,000	$17,619,040 - $21,994,444	460.8 - 575.5	$59,281,001 - $72,858,500	$163,129 - $203,904
6	3	123 - 144	$1,000,001 - $3,000,000	$21,994,445 - $26,369,848	575.6 - 690.3	$72,858,501 - $86,436,000	$203,905 - $244,680
7		145 - 165	$3,000,001 - $5,000,000	$26,369,849 - $30,745,253	690.4 - 805.1	$86,436,001 - $100,013,500	$244,681 - $285,456
8	4	166 - 187	$5,00,001 - $7,000,000	$30,745,254 - $35,120,658	805.2 - 919.9	$100,031,501 - $113,591,000	$285,457 - $326,232
9		188 - 209	$7,000,001 - $9,000,000	$35,120,659 - $39,496,062	920- 1,034.7	$113,591,001 - $127,168,500	$326,233 - $367,008
10	5	210 - 232	$9,000,001 - $25,460,428	$39,496,063 - $43,871,468	1,034.8 - 1,149.6	$127,168,501 - $140,746,000	$367,009 - $407,783

Based on the above ratings system, ranges were applied to each county to determine their potential vulnerability. The following related the scoring to a vulnerability assessment:

- **Low:** Score range of 9 -14
- **Medium-Low:** Score range of 15 - 19
- **Medium:** Score range of 20 - 24
- **Medium-High:** Score range of 25 - 29
- **High:** Score range of 30 - 35

The following table provides the factor's amount per county that are considered for wind vulnerability.

Vulnerability of Southwest Kansas Counties to Wind

County	SoVi Rating	NCDC Prior Event Rating	Annualized Property Damage Rating	Bldg Exposure Valuation Rating	Population Density Rating	Crop Exposure Rating	Annualized Crop Loss Rating	Overall Vulnerability Rating	Wind Vulnerability
Grant	6	2	1	1	1	6	10	27	Medium-High
Greeley	8	2	1	1	1	4	5	22	Medium
Hamilton	8	3	1	1	1	4	5	23	Medium
Kearny	8	2	2	1	1	6	3	23	Medium
Morton	8	2	1	1	1	4	10	27	Medium-High
Scott	4	2	1	1	1	5	2	16	Medium-Low
Stanton	8	2	1	1	1	6	9	28	Medium-High
Stevens	4	2	1	1	1	10	10	29	Medium-High
Wichita	10	1	1	1	1	-	2	16	Medium-Low*

. *: Wichita County data is incomplete and rating is lower than likely.

	Magnitude/Severity
Windstorm	2.56

Future Development

Future development projects should consider windstorm hazard at the planning, engineering and architectural design stage with the goal of reducing vulnerability. However, in general, the region is experiencing a population decline and a near static state for agriculture which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

Available data suggests that southwest Kansas has experienced 418 high wind days over the 10 year period from 2004 to 2014, with a total property damage amount of $4,380,200. This would equate to an average of 42 high wind days per year with an average loss of $438,020 per year. As such, the probability of this hazard occurring during future years is highly likely.

	Probability
Windstorm	4.00

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Windstorm Consequence Analysis

Subject	Ranking	Impacts of Windstorm
Health and Safety of Persons in the Area of the Incident	Minimal to Moderate	Impact of the immediate area could be minimal to moderate for affected areas.
Responders	Minimal	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Minimal	Temporary relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Minimal to Severe	Localized impact could be minimal to moderate in the incident area. Utility lines would likely be severely affected.
Delivery of Services	Minimal	Delivery of services could be affected if there is any disruption to the roads and/or utilities.
Environment	Minimal to Severe	Impact may be severe for the immediate impacted area with regards to trees, bushes, and crops. Impact will lessen as distance increases from the immediate incident area.
Economic Conditions	Minimal to Severe	Impacts to the economy will greatly depend on the trajectory of the windstorm. Revenue could be impacted if businesses are halted due to structural damages and infrastructure damage.
Public Confidence in Governance	Minimal	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.

3.7.22 WINTER STORM

Hazard	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Winter Storm	3.78	2.78	2.11	3.00	3.15

Description

Winter storms in southwest Kansas usually come in the form of heavy snow or freezing rain. Regardless of form, they can have significant impacts to the region and its residents for days, weeks or months. They can immobilize a region by blocking roads and railways and closing airports, which can disrupt emergency and medical services, hamper the flow of supplies and isolate homes and farms. Heavy snow can collapse roofs and knock down trees and power lines. Unprotected livestock may be lost. Economic impacts include cost of snow removal, damage repair, business and crop losses, and power failures.

A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. The NWS describes different types of winter storm 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.

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. Even small accumulations of ice can be extremely dangerous to motorists and pedestrians.

	Warning Time
Winter Storm	2.11

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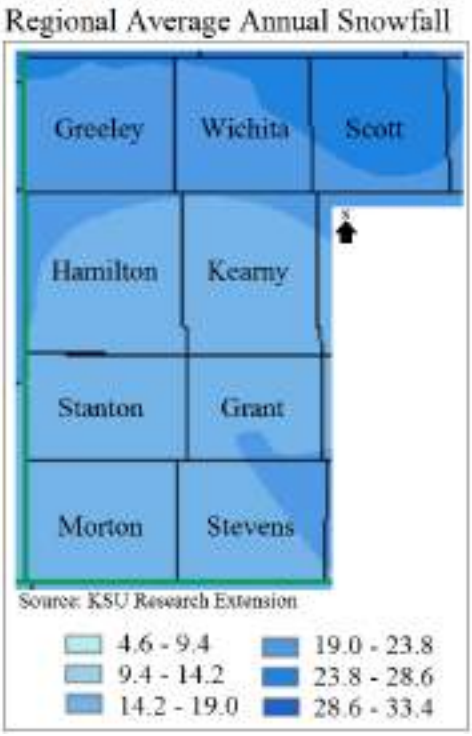
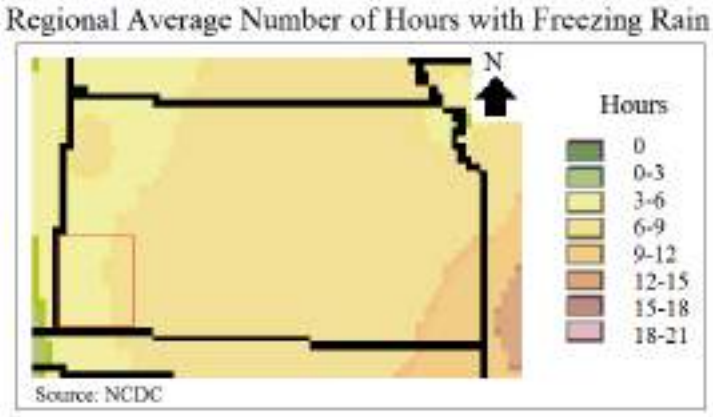
	Duration
Winter Storm	3.00

Hazard Location

The entire planning region is vulnerable to heavy snow and freezing rain. The following map illustrates the average annual snowfall for the region.



Freezing rains occurs frequently in southwest Kansas. The following map indicates the average number of hours of freezing rain per year.



In recent years, except the winter of 2011-2012, the weather patterns have created significant snow accumulations and ice storms throughout the region. Also future development could potentially increase vulnerability to this hazard by increasing the demand on the utilities and increasing the exposure of aging infrastructure networks.

Previous Occurrences and Extent

In the past ten years, winter storms have impacted southwest Kansas repeatedly, including two Presidential Disaster Declarations since 2004. Details about some of these events as well as the Presidential Disaster Declarations can be found on the following pages.

Kansas Presidential Declarations Involving Tornados

Declaration Number	Declaration Date*	Disaster Description	Regional Counties Involved	Disaster Cost**
1675	01/07/2007 (4/14-4/15/2012)	Severe Winter Storm	Grant, Greeley, Hamilton, Kearny, Morton, Scott, Stanton, Stevens and Wichita	$315,201,639

Sources: FEMA and Kansas Division of Emergency Management
* Incident dates are in parentheses.
** Disaster costs include Public Assistance and Individual Assistance and may include additional, unlisted counties

The following are brief descriptions of some of the above referenced tornado events:

FEMA-1675-DR: Severe Winter Storms - January 7, 2007 (December 28–30, 2006): This storm was one of Kansas' worst disasters on record. It began on December 28, 2006, and increased in intensity December 29 overnight into December 30. Snow depths ranged from four to 30 inches. Several counties set snowfall records. Numerous highways were closed for days in western Kansas, and there were major power outages because of icing. The ice was 1/4 inch thick on guide wires that brought several communication towers down. During the peak of the storm there were 46,300 meters off-line and 10,500 power poles down. Approximately 60,000 people were without power. There were three storm-related fatalities. The storm also severely impacted ranchers, making it temporarily impossible for some to feed and water livestock. The Kansas National Guard used Black Hawk helicopters to feed stranded cattle. FEMA Public Assistance funding for this disaster was $$315,201,639.

The following provide further descriptions and other notable winter storm events.

April 12-13, 2007: Regionally, measured snowfall total of 11.0 inches with a snow depth of 6 inches. Much of the snow melted and compacted as it fell. A storm system moved out of the Desert Southwest late on Thursday the 12th and moved east of the Rockies by Friday the 13th. Abundant moisture from the Gulf surged northward into the storm. Initially

precipitation started out as rain but changed over to snow by early Friday. Significant snowfall accumulations of 6 to 14 inches occurred across Greeley and Wichita counties.

March 20, 2006: A major late winter storm brought 8 to 10 inches of snow to most southwest counties.

November 29, 2004: A strong winter storm marched east along the Kansas-Oklahoma border during the late afternoon and evening hours, leaving a swath of heavy snow across parts of the region. An inch or greater of snow fell southeast of a line from 10 miles east of Hugoton to near Scott City.

According to the NCDC there were 73 winter storms (ice storm and winter storm) in southwest Kansas between 2004 and 2014, with 2014 being an incomplete data year. Total property damage during that period was estimated by the NCDC at $1,885,000 whereas the total public assistance and individual assistance from the Presidential Declaration listed above totaled over $315,201,639 for all involved counties, including the counties from the southwest Kansas region. This suggests that although there are more winter storm events recorded in NCDC than there have been declarations, and that damages to NCDC are likely under-reported. I

NCDC Winter Storm Events, 2004 -2014

County	Number of Winter Storm Events	Total Property Damage Winter Weather and Storms	Number of Ice Storm Events	Total Property Damage, Ice Storms
Grant	8	$0	1	$0
Greeley	5	$785,000	0	$0
Hamilton	6	$0	1	$0
Kearny	9	$0	1	$0
Morton	9	$0	1	$0
Scott	10	$0	1	$0
Stanton	7	$0	1	$0
Stevens	7	$0	1	$0
Wichita	4	$1,100,000	1	$0
Regional Total	65	$1,885,000	8	$0

Source: NCDC Storm Events Database

Local Events

The following are locally reported events:

April 12-13, 2007: In Stevens County a late spring snow storm, heavy at times, was also accompanied by north to north west winds of 25 to 40 mph, which caused considerable drifting. Six to ten inches of snow fell in Hugoton. The storm did not result in any reported property damage, crop damage, fatalities, or injuries.

January 20, 2007: In Stanton County seven inches of snow was reported eight miles north of Bigbow. Six to nine inches of snow fell northwest of a line from Johnson City to Sublette to Howell to Hanston to Ash Valley.

December 31, 2006: In Morton County a winter storm produced a quarter to a half an inch accumulations of ice, a half an inch of sleet followed by six to twelve inches of snow in the western part of the county. Tree damage was extreme, but there were no injuries associated with this event.

Hazard Vulnerability and Impact

All counties in southwest Kansas are vulnerable to winter storms. To refine and access the relative vulnerability of each of southwest Kansas' counties to winter storm events, the region assigned ratings to pertinent factors that were examined at the county level. These factors are: social vulnerability index, prior events, prior annualized property damage, building exposure valuation, population density, crop exposure and annualized crop loss. Then a rating value of 1-10 was assigned to the data obtained for each factor and then weighted equally and factored together to obtain overall vulnerability scores for comparison and to determine the most vulnerable counties.

The following information was used for this analysis:

- Social Vulnerability Index for Kansas from the Hazards and Vulnerability Research Institute at the University of South Carolina
- National Climatic Data Center storm events 2004 – 2014
- U.S. Census Bureau (2012)
- USDA's Census of Agriculture (2012).

Vulnerability Factor Amounts for Winter Storm

County	SoVI Rating (1-5)	Prior Events 2004-2014	Property Damages	Annualized Property Damages	Total Building Exposure ($000)	Population Density	Crop Exposure (2012 Census of Agriculture)	Crop Insurance Paid (2010 - 2013)	Annualized Crop Insurance Paid
Grant	3	9	$0	$0	$469,849	14	$86,023,000	$4,195,135	$1,048,784
Greeley	4	5	$785,000	$78,500	$131,666	2	$58,936,000	$2,485,941	$621,485
Hamilton	4	7	$0	$0	$187,869	3	$55,383,000	$2,512,415	$628,804
Kearny	4	10	$0	$0	$228,723	5	$80,730,000	$2,206,812	$551,704
Morton	2	10	$0	$0	$230,152	4	$58,361,000	$3,473,884	$868,471
Scott	4	11	$0	$0	$350,514	7	$64,648,000	$2,552,036	$638,009
Stanton	2	8	$0	$0	$151,658	3	$79,556,000	$6,941,072	$1,735,268
Stevens	5	8	$0	$0	$293,762	5	$144,543,000	$5,443,580	$1,360,895
Wichita	4	5	$1,100,000	$110,000	$175,679	3	Unavailable	$4,618,339	$1,154,585
Regional Total	-	73	$1,885,000	$188,500	$2,669,872	5	$628,180,000	$34,429,214	$8,608,005

Using the above information, a value of 1-10 was assigned to the data obtained for each factor and then weighted equally and factored together to obtain overall vulnerability scores for comparison and to determine the greatest vulnerable counties. The Social Vulnerability Index is in a range of 1- 5. To give Social Vulnerability Index the same weight as the other factors, the numbers were multiplied by two.

Winter Storm Data Rating Determination

Ratings	Social Vulnerability	NCDC Prior Events	Annualized Property Damage	Building Exposure Valuation	Population Density	Crop Exposure	Annualized Crop Loss
1		1 - 21	$0 - $50,000	$117,421 - $4,492,825	1.6 - 116.3	0 - $18,548,500	0 - $200,000
2	1	21 - 29	$50,001 - $100,000	$4,492,826 - $8,868,229	116.4 - 231.1	$18,548,501 - $32,126,000	$200,001 - $400,000
3		30 - 36	$100,001 - $300,000	$8,868,230 - $13,243,634	231.2 - 345.9	$32,126,001 - $45,703,500	$400,000 - $600,000
4	2	37 - 44	$300,001 - $500,000	$13,243,635 - $17,619,039	346 - 460.7	$45,703,501 - $59,281,000	$600,001 - $800,000
5		45 - 52	$500,001 - $700,000	$17,619,040 - $21,994,444	460.8 - 575.5	$59,281,001 - $72,858,500	$800,001 - $1,000,000
6	3	53 - 60	$700,001 - $900,000	$21,994,445 - $26,369,848	575.6 - 690.3	$72,858,501 - $86,436,000	$1,000,001 - $1,300,000
7		61 - 69	$900,001 - $1,100,000	$26,369,849 - $30,745,253	690.4 - 805.1	$86,436,001 - $100,013,500	$1,300,001 - $1,500,000
8	4	70 - 77	$1,100,001 - $1,700,000	$30,745,254 - $35,120,658	805.2 - 919.9	$100,031,501 - $113,591,000	$1,500,001 - $1,700,000
9		78 - 85	$1,700,001 - $2,200,000	$35,120,659 - $39,496,062	920- 1,034.7	$113,591,001 - $127,168,500	$1,700,001 - $2,700,000
10	5	86 - 93	$2,200,001 - $2,800,000	$39,496,063 - $43,871,468	1,034.8 - 1,149.6	$127,168,501 - $140,746,000	$2,700,001 - $3,700,000

Based on the above ratings system, ranges were applied to each county to determine their potential vulnerability. The following related the scoring to a vulnerability assessment:

- **Low:** Score range of 13 -17
- **Medium-Low:** Score range of 18 - 22
- **Medium:** Score range of 23 - 27
- **Medium-High:** Score range of 28 - 32
- **High:** Score range of 33 - 37

The following table provides the factor's amount per county that are considered for winter storm vulnerability.

Regional Vulnerability to Winter Storms

County	SoVI Converted Rating	Prior Event Rating	Annualized Property Damage Rating	Building Exposure Valuation Rating	Population Density Rating	Crop Exposure Rating	Annualized Crop Insurance Rating	Overall Vulnerability Rating	Winter Storm Vulnerability
Grant	6	1	1	1	1	6	6	22	Medium-Low
Greeley	8	1	2	1	1	4	4	21	Medium-Low
Hamilton	8	1	1	1	1	4	4	20	Medium-Low
Kearny	8	1	1	1	1	6	3	21	Medium-Low
Morton	8	1	1	1	1	4	5	21	Medium-Low
Scott	4	1	1	1	1	5	4	17	Low
Stanton	8	1	1	1	1	6	9	27	Medium
Stevens	4	1	1	1	1	10	7	25	Medium
Wichita	10	1	3	1	1	-	6	22	Medium-Low

	Magnitude/Severity
Winter Storm	2.78

Future Development

Future development projects should consider winter storm hazard at the planning, engineering and architectural design stage with the goal of reducing vulnerability. However, in general, the region is experiencing a population decline which could potentially lessen the potential impact of a future event.

Probability of Future Hazard Events

According to the NCDC there were 73 winter storm and ice storm events in southwest Kansas between 2004 and 2014, resulting in $1,885,000 in property damage. This equates to an average of seven events per year. In addition, one federal disaster was declared in 2007 with $315,201,639 in disaster costs over all effected counties. Based on this information, it is highly likely that at least one winter storm will occur in southwest Kansas in any given year.

	Probability
Winter Storm	3.78

Consequence Analysis

The information in the following table provides the Consequence Analysis.

Winter Storm Consequence Analysis

Subject	Ranking	Impacts of Winter Storm
Health and Safety of Persons in the Area of the Incident	Severe	Impact of the immediate area could be severe for affected areas and moderate to light for other less affected areas.
Responders	Minimal	Impact to responders could be severe for unprotected personnel and moderate to light for prepared personnel.
Continuity of Operations	Minimal	Minimal expectation of execution of the COOP.
Property, Facilities, and Infrastructure	Minimal to Severe	Localized impact to facilities and infrastructure in the incident area. Utility lines most affected.
Delivery of Services	Minimal to Severe	Delivery of services could be affected if there is any disruption to the roads and/or utilities due to damages sustained.
Environment	Severe	Greatest impact will be to trees, bushes, foliage, crops, and wildlife, which could be severe.
Economic Conditions	Minimal to Severe	Impacts to the economy will greatly depend on the severity of the winter storm, longevity of the storm, and any damages sustained such as utilities and roads.
Public Confidence in Governance	Minimal to Severe	Response and recovery will be in question if not timely and effective. Utility failure could be called in to question if outages are persistent.

3.8 DATA SOURCES

The following table details the data sources used for this section.

Data on the past impacts and future probability of these hazards in the southwest Kansas planning area was collected from the following sources:

- Bureau of Alcohol, Tobacco, Firearms and Explosives Standards
- Electronic Mass Casualty Assessment and Planning Scenarios developed by Johns Hopkins University
- Emergency Management Accreditation Program
- Environmental Protection Agency
- Federal Bureau of Investigation
- Federal Emergency Management Agency
- Federal Emergency Management Agency Benefit-Cost Analysis Reengineering Tornado Safe Room Module Methodology Report, Version 4.5 Final, Dated May 2009
- Federal Emergency Management Agency Flood Insurance Administration
- Federal Emergency Management Agency Flood Insurance Rate Maps
- Federal Emergency Management Agency HAZUS-Multi Hazard-2.1
- Federal Emergency Management Agency Mid-Term Levee Inventory
- Federal Emergency Management Agency National Flood Insurance Program
- Federal Emergency Management Agency "Local Mitigation Planning Handbook, March 2013"
- Federal Emergency Management Agency, Taking Shelter From the Storm, 2008
- Federal Emergency Management Agency's "Policy and Loss Data by Community with County and State Data"
- Federal Emergency Management Agency's Policy and Claim Statistics for Flood Insurance
- Hazards and Vulnerability Research Institute at the University of South Carolina
- Homeland Security Act of 2002
- Kansas Corporation Commission
- Kansas Data Access & Support Center
- Kansas Department of Agriculture, Division of Animal Health
- Kansas Department of Agriculture, Division of Water Resources
- Kansas Department of Agriculture, Division of Water Resources, Water Structures Program
- Kansas Department of Agriculture, Plant Protection and Weed Control Division
- Kansas Department of Health & Environment, Bureau of Water, Livestock Waste Management
- Kansas Department of Health and Environment "Subsurface Void Space and Sinkhole/Subsidence Area Inventory for the State of Kansas", 2006
- Kansas Department of Health and Environment Bureau of Epidemiology and Public Health Informatics

- Kansas Department of Health and Environment Surface Mining Section
- Kansas Department of Health and Environment, Division of Environment
- Kansas Department of Health and Environment's Kansas Environmental Public Health Tracking Program
- Kansas Division of Emergency Management
- Kansas Division of Emergency Management 2012 Kansas Severe Weather Awareness Week
- Kansas Division of Emergency Management, Technological Hazards Section
- Kansas Fire Service
- Kansas Flint Hills Smoke Management Plan
- Kansas Forest Action Plan
- Kansas Forest Service
- Kansas Geological Survey
- Kansas Geological Survey, "Earthquakes in Kansas"
- Kansas Operations Plan
- Kansas Response Plan
- Kansas State University College of Engineering
- Kansas State University Research and Extension Climatic Map of Kansas
- Kansas Statutes Annotated
- Kansas Unified HazMat Response Program Statewide Contract # 35167
- Kansas Water Office
- Kansas Water Office Kansas Drought Stage Declarations
- Kansas Water Office, 2009 Kansas Water Plan
- Kansas Water Office, Kansas 2014 Drought Update
- Kansas University Geological Survey
- Kansas Commission on Emergency Planning and Response Annual Report, Managing the Risk: 2011
- Modified Mercalli Intensity Scale
- National Climatic Data Center
- National Dam Safety Act
- National Drought Mitigation Center Drought Impact Reporter
- National Fire Incident Reporting System
- National Fire Incident Reporting System
- National Interagency Fire Center Predictive Services
- National Oceanic and Atmospheric Administration Storm Prediction Center
- National Oceanic and Atmospheric Administration
- National Resources Conservation Service
- National Seismic Hazard Mapping Project
- National Weather Service
- National Weather Service Heat Index Program
- Oklahoma Climatological Survey
- Palmer Drought Severity Index

- Spatial Hazard Event and Loss Database
- Stanford University's National Performance of Dams Program
- "Surface Water in Kansas and its Interactions with Groundwater" 2000 M. A. Sophocleous, B. B. Wilson
- "The Annual Impact of Seasonal Influenza in the US: Measuring Disease Burden and Costs" by NA Molinari
- The Southern Poverty Law Center
- Tornado and Storm Research Organization
- Translines Express, Kansas Department of Transportation, April 11, 2012
- United States Army Corps of Engineers
- United States Army Corps of Engineers Levee Safety Program
- United States Army Corps of Engineers National Levee Database
- United States Bureau of Reclamation
- United States Census Bureau
- United States Census Bureau American Community Survey 2005 – 2009
- United States Centers for Disease Control and Prevention
- United States Department of Agriculture Kansas Crop Insurance Profile Report
- United States Department of Agriculture National Resources Inventory
- United States Department of Agriculture, Division of Water Resources
- United States Department of Agriculture, National Agricultural Statistics Service
- United States Department of Agriculture, Risk Management Agency
- United States Department of Agriculture's Census of Agriculture
- United States Department of Transportation Pipeline and Hazardous Materials Safety Administration
- United States Drought Monitor
- United States Fish and Wildlife Service
- United States Geological Survey Fact Sheet, "Water Use in Kansas 1990-2000"
- United States Geological Survey, Earthquake Hazards Program
- University of Kansas Institute for Policy and Social Research
- USA Patriot Act
- Vaisala's National Lightning Detection Network
- Other agencies and data collections as noted

4.0 CAPABILITY ASSESSMENT

4.1 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 tool."

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. This assessment includes a comprehensive examination of the following capabilities:

- Planning Capabilities
- Policies and Ordinances
- Programs
- Studies, Reports and Maps
- Departmental Staff
- Non-Governmental Organizations (NGOs)
- Financial Resources

A capability assessment helps to determine which mitigation actions are practical based on a jurisdictions 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 jurisdictions vulnerability to an identified hazard. Additionally, a capability assessment can detail current successful mitigation actions that should continue to receive support.

For the 2014 update each participating jurisdiction was given an opportunity to review and revise their capability assessment information presented from their previous plan.

4.2 METHODOLOGY

In order to facilitate this plan update and consolidation the following capability questions were asked of participating jurisdictions:

Planning Capabilities

Comprehensive Plan
Capital Improvement Plan
City Emergency Operations Plan
County Emergency Operations Plan
Local Recovery Plan
County Recovery Plan
Debris Management Plan
Economic Development Plan
Transportation Plan
Land-use Plan
Flood Mitigation Assistance Plan
Watershed Plan
Firewise or other fire mitigation plan
Critical Facilities Plan (Mitigation/Response/Recovery)

Policies/Ordinances

Zoning Ordinance
Building Code
Floodplain Ordinance
Subdivision Ordinance
Tree Trimming Ordinance
Nuisance Ordinance
Storm Water Ordinance
Drainage Ordinance
Site Plan Review Requirements
Historic Preservation Ordinance
Landscape Ordinance
Wetlands / Riparian Areas Conservation Plan

Programs

Zoning/Land Use Restrictions
Codes Building Site/Design
Hazard Awareness Program
National Flood Insurance Program
Community Rating System program under the National Flood Insurance Program
National Weather Service Storm Ready Certification
Firewise Community Certification
Building Code Effectiveness Grading
ISO Fire Rating
Economic Development Program
Land Use Program
Public Education/Awareness

Programs, Continued

Property Acquisition
Planning/Zoning Boards
Stream Maintenance Program
Tree Trimming Program
Engineering Studies for Streams (Local/County/Regional)
Mutual Aid Agreements

Studies/Reports/Maps

Hazard Analysis/Risk Assessment (City)
Hazard Analysis/Risk Assessment (County)
Evacuation Route Map
Critical Facilities Inventory
Vulnerable Population Inventory
Land Use Map

Staff/Department

Building Code Official
Building Inspector
Mapping Specialist (GIS)
Engineer
Development Planner
Public Works Official
Emergency Management Coordinator
NFIP Floodplain Administrator
Bomb and/or Arson Squad
Emergency Response Team
Hazardous Materials Expert
Local Emergency Planning Committee
County Emergency Management Commission
Sanitation Department
Transportation Department
Economic Development Department
Housing Department
Historic Preservation

NGOs

American Red Cross
Salvation Army
Veterans Groups
Local Environmental Organization
Homeowner Associations
Neighborhood Associations
Chamber of Commerce
Community Organizations (Lions, Kiwanis, etc.)

Financial Resources

Apply for Community Development Block Grants
Fund projects thru Capital Improvements funding
Authority to levy taxes for specific purposes
Fees for water, sewer, gas, or electric services
Impact fees for new development
Incur debt through general obligation bonds
Incur debt through special tax bonds
Incur debt through private activities
Withhold spending in hazard prone areas

Gathering this information from participating southwestern jurisdictions assisted in assessing capabilities and served as a guide to potential future changes to create robust policies, procedures, plans and teams to strengthen hazard mitigation planning.

4.3 REGIONAL SCHOOLS, COLLEGES AND UNIVERSITIES

In order to facilitate this plan update and consolidation the following capability questions were asked of participating jurisdictions:

Schools, Colleges and Universities Capability Questions

Full-time building official (i.e. Principal)
Emergency Manager
Grant Writer
Public Information Officer
Capital improvements project funding
Local funds
General obligation bonds
Special tax bonds
Private activities/donations
State and federal funds

4.4 GOVERNANCE

The planning area is comprised of nine counties, along with participating jurisdictions within those counties. All of the counties in the planning area operate under a county commissioner form of governance. In this form of government, the elected board of commissioners oversee county operations. The following table details each counties form of governance.

County Governance

Jurisdiction	Government Structure	Number of Commissioners
Grant County	Commission	3
Greeley County	Commission	3
Hamilton County	Commission	5
Kearny County	Commission	3
Morton County	Commission	3
Scott County	Commission	3
Stanton County	Commission	3
Stevens County	Commission	3
Wichita County	Commission	3

In general, the participating towns and cities operate either under a Mayoral form of governance or an elected city council form of governance.

4.5 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 HMPC.

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 jurisdiction 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 counties.

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 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.

4.5.1 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 governmental decision making. A comprehensive plan 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.

Capital Improvement Plan

A capital improvement plan guides scheduling of, and spending on, public improvements. A capital improvement plan can guide future development away from identified hazard areas, an effective mitigation strategy.

Emergency Operations Plan

An emergency operations plan outlines responsibilities, means and methods by which resources are deployed during and following an emergency or disaster.

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.

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.

Economic Development Plan

An economic development plan assists in advancing a strong and sustainable economy over the long term. This plan provides strategies, programs, and policies that will foster the jurisdictions business climate.

Transportation Plan

A transportation plan aids with the evaluation, review, and design and locating of transportation infrastructure, including streets, highways, public transport lines, and transportation centers.

Land Use Plan

Land-use planning is used to regulate land use in an efficient and equitable manner, and to assist jurisdictions in managing the development of land within their boundaries.

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 National Flood Insurance Program.

Watershed Management Plan

A watershed management plan is used to provide assessment and management information for a geographically defined watershed.

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.

Critical Facilities Plan

A critical facilities plan is used to identify a jurisdictions 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 is used to determine methods to mitigate damage to these facilities.

The table below summarizes relevant local planning capabilities.

Jurisdictional Planning Capabilities

Jurisdiction	Comprehensive Plan	Capital Improvement Plan	City Emergency Operations Plan	County Emergency Operations Plan	Local Recovery Plan	County Recovery Plan	Debris Management Plan	Economic Development Plan	Transportation Plan	Land-use Plan	Flood Mitigation Assistance Plan	Watershed Plan	Firewise or other fire mitigation plan	Critical Facilities Plan (Mitigation/Response/ Recovery)
Grant County		x		x		x	x							
City of Ulysses	x	x	x	x		x	x		x	x				
Greeley County				x		x							x	
City of Horace	x	x	x		x			x			x		x	x
City of Tribune		x												
Hamilton County				x										
City of Coolidge														
City of Syracuse														
Kearny County			x	x				x		x	x	x		
City of Deerfield														
City of Lakin														
Morton County	x			x	x	x	x						x	x
City of Elkhart	x				x									
City of Rolla														

Jurisdiction	Comprehensive Plan	Capital Improvement Plan	City Emergency Operations Plan	County Emergency Operations Plan	Local Recovery Plan	County Recovery Plan	Debris Management Plan	Economic Development Plan	Transportation Plan	Land-use Plan	Flood Mitigation Assistance Plan	Watershed Plan	Firewise or other fire mitigation plan	Critical Facilities Plan (Mitigation/Response/ Recovery)
Scott County	x			x	x	x	x		x	x	x		x	x
City of Scott	x													
Stanton County				x										
City of Johnson City														
City of Manter														
Stevens County	x	x		x				x	x					x
City of Hugoton	x													
City of Moscow	x													
Wichita County				x			x							
City of Leoti														

4.5.2 POLICIES AND ORDINANCES

Based on the types of state of Kansas government authority granted, participating jurisdictions were asked if the following ordinances and plans were enacted and enforced.

Zoning

Zoning is the traditional and most common tool available to local jurisdictions to control the use of land. State of Kansas statutes grant municipalities and counties authority to engage in zoning for land use. Counties may also regulate inside municipal jurisdiction at the request of a municipality. 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.

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. Kansas does not have state mandatory building codes. However, municipalities and counties may adopt codes for their respective areas if approved by the state as providing "adequate minimum standards." Local governments in Kansas are also empowered to carry out building inspections, and may empower cities and counties to create an inspection department to enforce construction codes and ordinances.

Floodplain Ordinance

In 1992 the Kansas General Assembly approved legislation for floodplain management (Kansas Statutes Annotated 12-766, “Floodplain Management”) authorizing the Department of Agriculture, Division of Water Resources as the primary department to oversee and approve local zoning regulation. The regulation requires planning and approval to prevent inappropriate development in the one hundred-year floodplain and to reduce flood hazards. The purpose of the law is 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 of Kansas in flood hazard areas.

The statute affects local governments by directing them 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

The act also makes certain that local ordinances meet 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. In addition, communities with such ordinances in place will be given priority in the consideration of applications for loans and grants from the Clean Water Revolving Loan and Grant Fund.

Subdivision Ordinance

Subdivision regulations control the division of land into parcels for the purpose of building development or sale. Flood-related subdivision controls typically require that sub-dividers install adequate drainage facilities and design water and sewer systems to minimize flood damage and contamination. They prohibit the subdivision of land subject to flooding unless flood hazards are overcome through filling or other measures, and they prohibit filling of floodway areas. Subdivision regulations require that subdivision plans be approved prior to the division and/or sale of land. Subdivision regulations are a more limited tool than zoning and only indirectly affect the type of use made of land and the specifications for structures on that land.

Broad subdivision control authority resides with the county for areas outside of municipalities and municipal extra-territorial planning jurisdictions. Subdivision is defined as all divisions of a tract or parcel of land divided into two or more lots and all divisions involving new streets.

Tree Trimming Ordinance

These ordinances may place requirements for the removal, pruning, planting, and other tree work depending upon whether the tree is in the public right-of-way or on a private lot as well as tree size or species, and property zoning.

Nuisance Ordinance

Kansas' local governments have been granted broad regulatory powers in their jurisdictions. Kansas General Statutes 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.

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.

Drainage Ordinance

The purpose of a drainage ordinance is to improve storm sewer systems for the management and control of storm water runoff to prevent polluted waters from entering the water supply and other receiving waters.

Site Plan Review Ordinance

The purpose of a site plan review ordinance is to ensure orderly growth, and to minimize the adverse effects growth that could be caused by the development of commercial, industrial, retail or institutional structures.

Historic Preservation Ordinance

The purpose of a preservation ordinance is created to protect buildings and neighborhoods from destruction or modifications. A preservation ordinance protects designated historic properties through review requirements for renovations and protects historic neighborhoods through design guidelines for new development.

Landscape Ordinance

A landscape ordinance generally provides rules and procedures for the protection and maintenance of vegetation and landscaping.

Wetlands/Riparian Areas Conservation Plan

The purpose of a Wetlands/Riparian Areas Conservation Plan is to preserve and protect wetlands, water resources, and adjacent upland areas.

The table below summarizes relevant local policies and ordinances.

Jurisdictional Policies and Ordinances

Jurisdiction	Zoning Ordinance	Building Code	Floodplain Ordinance	Subdivision Ordinance	Tree Trimming Ordinance	Nuisance Ordinance	Storm Water Ordinance	Drainage Ordinance	Site Plan Review Requirements	Historic Preservation Ordinance	Landscape Ordinance	Wetlands / Riparian Areas Conservation Plan
Grant County												
City of Ulysses	x	x		x	x	x	x	x	x		x	
Greeley County										x		
City of Horace						x						
City of Tribune		x			x	x						
Hamilton County	x		x									
City of Coolidge												
City of Syracuse	x		x									
Kearny County	x		x	x	x							
City of Deerfield	x	x	x	x	x	x	x	x	x			
City of Lakin	x	x	x	x	x	x	x	x	x			
Morton County												
City of Elkhart	x	x		x	x						x	
City of Rolla												
Scott County			x									
City of Scott	x	x		x	x	x	x	x	x		x	

Jurisdiction	Zoning Ordinance	Building Code	Floodplain Ordinance	Subdivision Ordinance	Tree Trimming Ordinance	Nuisance Ordinance	Storm Water Ordinance	Drainage Ordinance	Site Plan Review Requirements	Historic Preservation Ordinance	Landscape Ordinance	Wetlands / Riparian Areas Conservation Plan
Stanton County												
City of Johnson City												
City of Manter												
Stevens County	x					x						
City of Hugoton	x	x				x			x			
City of Moscow						x						
Wichita County	x	x	x			x	x	x	x	x	x	x
City of Leoti	x	x			x	x	x					

4.5.3 PROGRAMS

This part of the capabilities assessment includes the identification and evaluation of existing programs. Many of the programs have been generally discussed in the previous sections.

Hazard Awareness Program

A program designed to inform citizens as to the nature and extent of local and regional natural and manmade hazards.

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.

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.

Building Code Effectiveness Grading

The Building Code Effectiveness Grading Schedule assesses the building codes in effect and how the community enforces its building codes, with special emphasis on mitigation of losses from natural hazards.

ISO Fire Rating

ISO’s Fire Rating gauges the fire protection capability of the local fire department to respond to fires.

Land Use Program

A Land Use Program is designed with the goal of balancing environmental protection with economic development. This program, coupled with various other planning efforts, provides resources to local leaders to establish policies to guide the development of the community, including annexation, expansion, and building.

Public Education/Awareness

Education programs for the public that provide education and awareness about hazards, hazard planning and mitigation efforts.

Stream Maintenance Program

Programs designed to keep streams free from debris and blockages to prevent or minimize flooding.

Engineering Studies for Streams (Local/County/Regional)

Studies that detail information concerning flow data, potential trouble spots, and improvement recommendations for streams.

Mutual Aid Agreements

Mutual Aid Agreements are an understanding among localities to lend assistance across jurisdictional boundaries. This may occur due to an emergency response that exceeds local resources, such as a disaster. Mutual aid may be requested only when such an emergency occurs. Or may be a formal standing agreement on a continuing basis.

The table below summarizes relevant local programs.

Jurisdictional Programs

Jurisdiction	Zoning/Land Use Restrictions	Codes Building Site/Design	Hazard Awareness Program	National Flood Insurance Program	Community Rating System program under the National Flood Insurance Program	National Weather Service Storm Ready Certification	Firewise Community Certification	Building Code Effectiveness Grading	ISO Fire Rating	Economic Development Program	Land Use Program	Public Education/ Awareness	Property Acquisition	Planning/Zoning Boards	Stream Maintenance Program	Tree Trimming Program	Engineering Studies for Streams	Mutual Aid Agreements
Grant County			x			x			8	x		x		x				x
City of Ulysses	x	x				x			4	x	x	x		x				x
Greeley County			x															x
City of Horace						x			5	x		x		x				x
City of Tribune										x		x	x					x
Hamilton County	x			x					6	x	x			x				x
City of Coolidge																		x
City of Syracuse	x			x					6	x	x			x				x
Kearny County			x	x						x	x	x						x
City of Deerfield	x	x						x	7		x			x				x
City of Lakin	x	x		x				x	4		x			x				x
Morton County										x		x						x
City of Elkhart	x	x						x	6	x						x		x
City of Rolla									8	x								x
Scott County			x									x						x
City of Scott	x	x		x				x						x		x		x

Jurisdiction	Zoning/Land Use Restrictions	Codes Building Site/Design	Hazard Awareness Program	National Flood Insurance Program	Community Rating System program under the National Flood Insurance Program	National Weather Service Storm Ready Certification	Firewise Community Certification	Building Code Effectiveness Grading	ISO Fire Rating	Economic Development Program	Land Use Program	Public Education/ Awareness	Property Acquisition	Planning/Zoning Boards	Stream Maintenance Program	Tree Trimming Program	Engineering Studies for Streams	Mutual Aid Agreements
Stanton County				x					10									x
City of Johnson City				x					6									x
City of Manter				x					10									x
Stevens County	x	x							x									x
City of Hugoton	x	x							x					x				x
City of Moscow									x									x
Wichita County							x			x	x		x	x				x
City of Leoti	x			x														x

4.5.4 AVAILABLE STUDIES, REPORTS AND MAPS

Mitigation planning can be informed by existing information for a jurisdiction, including studies, reports and maps. The following is a brief description of the types of usable studies, reports or maps that may be available to a jurisdiction.

Hazard Analysis/Risk Assessment

A hazard analysis is the identification of different type of hazards that may affect a jurisdiction. A risk assessment is the determination of quantitative or qualitative value of risk related to a situation and a recognized hazard.

Evacuation Route Map

A map detailing the evacuation routes for a jurisdiction, often incorporating road, services, and travel time information.

Critical Facilities Inventory

A list of all critical facilities within a jurisdiction, which may include fire stations, police stations, hospitals, schools, day care centers, senior care facilities, major roads and bridges, critical utility sites, and hazardous material storage areas.

Vulnerable Population Inventory

A vulnerable population inventory may include members of the jurisdictions population who are elderly, limited in functional capacity, homeless, or have limited financial means. These populations may be poorly equipped with the resources and capabilities necessary to prepare for, and respond to, disasters without additional assistance.

Land Use Map

A jurisdictional map detailing current land uses.

The table below summarizes relevant local studies, reports and maps.

Available Jurisdictional Studies, Reports and Maps

Jurisdiction	Hazard Analysis/Risk Assessment (City)	Hazard Analysis/Risk Assessment (County)	Evacuation Route Map	Critical Facilities Inventory	Vulnerable Population Inventory	Land Use Map
Grant County		x				
City of Ulysses	x					x
Greeley County						x
City of Horace						
Hamilton County						x
City of Coolidge						
City of Syracuse						
Kearny County						
City of Deerfield						
City of Lakin						
Morton County		x	x	x	x	x
City of Elkhart	x		x	x	x	x
City of Rolla	x		x	x	x	x
Scott County	x	x	x		x	x
City of Scott						x
Stanton County						
City of Johnson City						
City of Manter						
Stevens County		x	x	x	x	x
City of Hugoton						
City of Moscow						
Wichita County		x	x			x
City of Leoti						

4.5.5 STAFFING AND DEPARTMENTAL CAPABILITIES

A comprehensive mitigation program relies on many skilled professionals. These professionals include:

- Planners
- Engineers
- Inspectors
- Emergency managers
- Floodplain managers
- GIS personnel

While exact responsibilities differ from jurisdiction to jurisdiction, the general duties of applicable departments are described below.

Building Code Official

Building officials are generally the jurisdictional administrator of building and construction codes, engineering calculation supervision, permits, facilities management, and accepted construction procedures.

Building Inspector

A building inspector is an official who inspects structures to ensure compliance with the plans and to check workmanship as well as code compliance.

GIS 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.

Engineer

An engineer may be responsible for the oversight, management and development of jurisdictions' road and infrastructure network.

Development Planner

A development planner may be responsible for guiding a jurisdictions worth and 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.

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.

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.

Bomb or Arson Squad

A bomb or arson squad is used to respond to, and investigate the cause of, fire and bomb events.

Emergency Response Team

An emergency response team is used to respond to emergency events.

Hazardous Materials Expert

A hazardous materials expert provides response and recovery information for hazardous material events.

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.

Sanitation Department

Sanitation Departments are generally the agency responsible for garbage collection and recycling collection. Sanitation departments may also be tasked with street cleaning and snow removal.

Transportation Department

In general, transportation departments are responsible for road and bridge maintenance and transportation planning. Transportation departments may also be tasked with snow removal.

Economic Development Department

The economic development department is generally responsible for guiding a jurisdictions economic policies, fostering business development, and nurturing existing businesses.

Housing Department

Duties of a housing department may include enforcing fair housing laws, assisting low income citizens with finding housing, and managing jurisdictional housing properties.

Historic Preservation

A historic preservation department or society may provide expertise on environmental impacts to cultural resources, administer historic preservation grants, encourage historic preservation through local governments, and provide technical assistance for historic rehabilitation.

The table below summarizes relevant local staffing and departmental capabilities.

Staffing and Departmental Capabilities

Jurisdiction	Building Code Official	Building Inspector	Mapping Specialist (GIS)	Engineer	Development Planner	Public Works Official	Emergency Management Coordinator	NFIP Floodplain Administrator	Bomb and/or Arson Squad	Emergency Response Team	Hazardous Materials Expert	Local Emergency Planning Committee	County Emergency Management Commission	Sanitation Department	Transportation Department	Economic Development Department	Housing Department	Historic Preservation
Grant County	x	x				x	x					x			x	x		x
City of Ulysses	x	x			x	x	x					x		x	x	x	x	
Greeley County				x		x	x			x		x				x	x	x
City of Horace						x				x	x	x		x	x	x		
City of Tribune	x	x		x		x	x					x		x	x	x	x	x
Hamilton County							x	x				x		x	x	x		
City of Coolidge												x						
City of Syracuse								x				x		x		x		
Kearny County					x	x	x	x		x						x		x
City of Deerfield	x	x		x	x	x								x			x	x
City of Lakin	x	x		x	x	x		x						x			x	x
Morton County						x	x			x	x	x	x	x	x	x		x
City of Elkhart	x	x		x		x	x			x		x	x	x		x		x
City of Rolla						x						x						

Jurisdiction	Building Code Official	Building Inspector	Mapping Specialist (GIS)	Engineer	Development Planner	Public Works Official	Emergency Management Coordinator	NFIP Floodplain Administrator	Bomb and/or Arson Squad	Emergency Response Team	Hazardous Materials Expert	Local Emergency Planning Committee	County Emergency Management Commission	Sanitation Department	Transportation Department	Economic Development Department	Housing Department	Historic Preservation
Scott County	x		x			x	x			x		x	x	x	x	x		
City of Scott	x	x				x	x					x	x	x	x	x		
Stanton County						x								x		x		x
City of Johnson City						x		x						x		x		x
City of Manter						x		x						x		x		x
Stevens County	x	x	x			x	x					x		x		x		
City of Hugoton	x	x				x						x		x		x		
City of Moscow						x						x						
Wichita County	x	x				x	x			x		x	x	x		x		x
City of Leoti				x		x						x		x		x	x	

4.5.6 NON-GOVERNMENTAL ORGANIZATIONS CAPABILITIES

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.

There are many types of NGOs, including:

- **Charitable**: Generally directed toward meeting the needs of the poor or those impacted by disasters.
- **Service**: Generally directed toward providing health, family planning or education services.
- **Participatory**: Generally directed toward self-help and/or community development projects.

NGOs can further be divided into community, local or national organizations. The following is a brief discussion of NGOs operating within the region.

American Red Cross

The American Red Cross is a humanitarian organization that provides emergency assistance, disaster relief and education. In addition to domestic disaster relief, the American Red Cross 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 with a worldwide membership of over 1.5 million. 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.

Veterans Groups

Generally veteran groups are local chapters of national groups that provide aid to active and retired soldiers and provide charitable support to target communities.

Local Environmental Organizations

An environmental organization may seek to protect, analyze or monitor the environment against misuse or degradation.

Homeowners Associations

Homeowner associations are residents of a community who form a board to monitor, control and oversee many aspects of a building, area or development. An association may have elected leaders and often has mandatory dues.

Neighborhood Associations

Neighborhood associations are groups of residents or property owners who advocate for or organize activities within a neighborhood. An association may have elected leaders and voluntary dues.

Chamber of Commerce

A chamber of commerce is generally a group of local businesses whose goal is to further the interests of businesses. Business owners in towns and cities form these local societies to advocate on behalf of the business community. Local businesses are members, and they elect a board of directors or executive council to set policy for the chamber. The board or council then hires a President, CEO or Executive Director, plus staffing appropriate to size, to run the organization.

Community Organizations

Generally community organizations are local chapters of national groups, such as the Elks, Shriners, or Kiwanis, that provide charitable support to citizens in need.

The table below summarizes the presence of relevant local NGOs.

Jurisdictional NGOs

Jurisdiction	American Red Cross	Salvation Army	Veterans Groups	Local Environmental Organization	Homeowner Associations	Neighborhood Associations	Chamber of Commerce	Community Organizations (Lions, Kiwanis)
Grant County			x				x	x
City of Ulysses			x			x	x	x
Greeley County			x				x	x
City of Horace			x		x		x	x
City of Tribune			x					
Hamilton County							x	x
City of Coolidge							x	
City of Syracuse							x	x
Kearny County	x		x				x	x
City of Deerfield								
City of Lakin								
Morton County		x	x				x	x
City of Elkhart		x	x				x	x
City of Rolla								x
Scott County			x				x	x
City of Scott			x		x		x	x
Stanton County	x	x	x				x	x
City of Johnson City	x	x	x				x	x
City of Manter	x	x	x				x	x
Stevens County							x	x
City of Hugoton							x	x
City of Moscow								x
Wichita County		x	x	x				x
City of Leoti			x					

4.5.7 FISCAL CAPABILITIES

In general, the jurisdictions of the region 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.

Community Development Block Grant

The Community Development Block Grant (CDBG) is a U.S. Department of Housing and Urban Development program that funds local community development activities such as affordable housing, anti-poverty programs, and infrastructure development. CDBG, like other block grant programs, differ from categorical grants, made for specific purposes, in that they are subject to less federal oversight and are largely used at the discretion of the state and local governments and their sub-grantees.

Capital Improvement Funding

A Capital Improvement Plan is generally a short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan. Essentially, the plan provides a link between a municipality, school district, parks and recreation department and/or other local government entity and a comprehensive and strategic plans and the entity's annual budget. Funding may be drawn from this plan, if funding has been set aside as part of the planning process, and if the action works with the overall planning objectives and goals.

Authority to Levy Taxes

The authority to levy taxes would allow the jurisdiction to tax its population base.

Impact Fees for New Developments

Impact fees for new developments allow a jurisdiction to charge fees to developers to mitigate against any impact that development may have.

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. No assets are used as collateral.

Incur Debt through Special Tax Bonds

A government bond where repayment is guaranteed by a tax that the issuer levies specifically for that purpose.

Incur Debt through General Private Activities

In general, these tend to be tax-exempt bonds issued by or on behalf of local or state government for the purpose of providing special financing benefits for qualified projects. The financing is most often for projects of a private user, and the government generally does not pledge its credit.

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.

The following table highlights each jurisdiction's fiscal capabilities.

Jurisdictional Fiscal Capabilities

Jurisdiction	Apply for Community Development Block Grants	Fund projects thru Capital Improvements funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric services	Impact fees for new development	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activities	Withhold spending in hazard prone areas
Grant County	x	x	x			x	x		x
City of Ulysses	x	x	x	x		x	x		
Greeley County	x	x	x			x	x		x
City of Horace	x		x	x		x			
City of Tribune	x	x	x	x		x	x		
Hamilton County	x	x	x	x			x		x
City of Coolidge	x	x	x	x	x	x			x
City of Syracuse	x	x	x	x	x	x			x
Kearny County	x	x	x	x		x			
City of Deerfield	x	x	x	x		x			
City of Lakin	x	x	x	x		x			
Morton County	x	x	x			x	x		
City of Elkhart	x	x	x	x	x	x	x		
City of Rolla		x	x	x		x	x		
Scott County	x	x							
City of Scott	x	x							
Stanton County			x	x		x	x		
City of Johnson City			x	x		x	x		
City of Manter			x	x		x	x		
Stevens County	x	x	x		x	x	x	x	x
City of Hugoton	x	x	x	x		x			
City of Moscow	x	x	x	x		x			
Wichita County	x	x	x	x	x	x	x		
City of Leoti	x	x	x	x		x	x		

4.5.8 SCHOOL, COLLEGE OR UNIVERSITY CAPABILITY ASSESSMENT

Participating schools, colleges and universities 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, colleges and universities.

Grant Writer

A grant writer writes applications for grant funding from an institution such as a government department, corporation, foundation or trust.

Public Information Officer

Public Information Officers (PIOs) are the communications coordinators or spokespersons. The primary responsibility of a PIO is to provide information to the media and public as required by law and according to the standards of their profession.

General Obligation Bond

A general obligation bond is a common type of municipal bond that is secured by a state or local government's pledge to use legally available resources, including tax revenues, to repay bond holders.

Special Tax Bond

A type of bond that is repaid by revenues derived from taxation of a particular activity or asset. These bonds are repaid with either excise taxes or special assessment taxes.

Information as to the current capacity of participating schools, colleges and universities is summarized in the following table.

School, College or University	Master Plan	Capital Improvement Plan	School Emergency Plan, Shelter in Place Protocols, Evacuation Protocols	Weapons Policy	Full-time building official (i.e. Principal)	Emergency Manager	Grant Writer	Public Information Officer	Capital improvements project funding	Local funds	General obligation bonds	Special tax bonds	Private activities/donations	State and federal funds
Grant County														
USD #214 - Ulysses		x	x	x	x	x		x	x	x			x	x
Greeley County														
USD #200 – Greeley County	x	x	x	x	x			x	x	x				
Hamilton County														
USD #494 - Syracuse		x	x	x	x	x		x	x	x	x			
Kearny County														
USD #215 - Lakin	x	x	x	x	x	x		x	x	x				
USD #216 - Deerfield	x	x	x	x	x			x	x	x	x	x	x	x
Morton County														
USD #217 - Rolla	x	x	x	x	x	x		x	x					
USD #218 - Elkhart	x	x	x	x	x	x		x	x					
Scott County														
USD #466 – Scott County	x	x	x	x	x		x	x	x	x	x	x		x
Stanton County														
USD #452 – Stanton County	x	x	x	x	x			x	x	x				x
Stevens County														
USD #209 - Moscow	x	x	x	x	x			x		x				x
USD #210 - Hugoton		x	x	x	x				x	x			x	x
Wichita County														
USD #467 - Leoti	x	x	x	x	x			x						

5.0 MITIGATION ACTIONS

5.1 INTRODUCTION

44 CFR 201.6 (c)(3) requires "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 tool."

This section of the Plan describes development of a mitigation strategy for each participating jurisdiction, and the region as a whole. In general, developing a comprehensive strategy consists of:

To ensure that a comprehensive mitigation strategy was developed, a thorough review of potential regional and local hazards and current policies, procedures and regulations was conducted to help participating jurisdictions identify and achieve their goals. Additionally, this review assists participating jurisdictions in linking relevant policies, procedures, regulations, ordinances and planning documents to help establish priorities and meet desired implementation deadlines.

For the 2014 regional combination and update, historical goals, objectives, and strategies were re-examined, and where applicable combined, and new goals and strategies were identified and included.

5.2 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.

The HMPC developed goals and objectives to provide direction for reducing hazard-related losses both locally and regionally. The following definitions of goals and objectives were provided by FEMA in publication 386-3, *Developing a Mitigation Plan* (2002):

- **Goal:** General guidelines that explain what you want to achieve. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. They are usually long-term, broad, policy-type statements.

Identified goals were based on known hazards and a review of goals and objectives from previously approved county mitigation plans and the 2007 Kansas Hazard Mitigation Plan. This review was conducted to ensure that this region's goals were both obtainable and practical.

Through a group discussion at their second meeting, the HMPC identified and refined four primary, cross-jurisdictional goals. The identified goals are as follows:

- **Goal 1:** Reduce and/or eliminate the risk to the people and property of southwest Kansas from the identified hazards in this plan.
- **Goal 2:** Strive to protect all of the vulnerable populations, structures, and critical facilities in southwest Kansas from the impacts of the identified hazards.
- **Goal 3:** Improve public outreach initiatives to include education, awareness and partnerships with all willing entities in order to enhance understanding of the risks southwest Kansas faces due to the impacts of the identified hazards.
- **Goal 4:** Enhance communication and coordination among all agencies and between agencies and the public.

5.3 IDENTIFICATION AND ANALYSIS OF 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. 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.

For this plan update and regional combination participating jurisdictions were provided with a complete list of their previous mitigation actions and asked to review them to determine if they had been achieved, are in process or on hold, or had been cancelled. Additionally, participating jurisdictions were provided with forms to identify and incorporate newly identified actions. Participating jurisdictions priorities were developed based on past damages, existing exposure to

risk, other community goals, and weaknesses identified by the local government capability assessments.

In preparing the region's mitigation strategy all reasonable and obtainable mitigation actions were considered to help achieve the general regional goals. Additionally, each participating jurisdiction was invited to identify relevant actions.

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.

In addition, participating jurisdictions were provided with information on types of mitigation actions. A handout was provided at the first meeting, and upon request, with types of mitigation actions which originated from the National Flood Insurance Program's Community Rating System. The follow provides a brief explanation of each action.

Prevention: Administrative or regulatory actions or processes that influence the way land and buildings are developed and built, including:

- Planning and zoning
- Building codes
- Open space preservation
- Floodplain regulations
- Stormwater management regulations
- Drainage system maintenance
- Capital improvements programming
- Shoreline and riverine setbacks

Property protection: Actions that involve the modification of existing buildings or structures to protect them from a hazard or remove them from the hazard area, including:

- Acquisition

- Relocation
- Building elevation
- Critical facilities protection
- Retrofitting
- Safe room and shatter-resistant glass
- Insurance

Structural: Actions that involve the construction of structures to reduce the impact of hazard, including:

- Reservoirs
- Dams and levees
- Diversion, detention and/ or retention
- Channel modification
- Storm sewers

Natural resource protection: Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems, including

- Floodplain protection
- Watershed management
- Riparian buffers
- Forest/ vegetation management
- Erosion and sediment control
- Wetland preservation and restoration
- Habitat preservation
- Slope stabilization

Emergency services: Although not typically considered a "mitigation" technique, these are actions that protect people and property during and immediately after a disaster or hazard event, including:

- Warning systems
- Evacuation planning and management
- Emergency response training and exercises
- Sandbagging for flood protection
- Installing temporary shutters for wind protection

Public education and awareness: Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them, including:

- Outreach projects

- Speaker and/ or demonstration events
- Hazard map information
- Real estate disclosure
- Library materials
- School children educational programs

5.4 PRIORITIZING 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.

In formulating a regional mitigation strategy, a wide range of activities was considered to help achieve identified goals and to lessen the vulnerability of the region to the effects of identified hazards.

Through a series of jurisdictional meetings, phone discussions, electronic communications and self-analysis participating jurisdictions were asked to review the previously determined regional and local mitigation actions to determine if they had been completed, were On- Going, or had been cancelled. In addition, jurisdictions were asked to review the initial STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) analysis to see if the ranking were still applicable. Participating jurisdictions were asked to submit any NEW mitigation actions with an analysis while newly participating jurisdictions were required, as per FEMA, to submit NEW mitigation actions.

A self-analysis method was used for reviewing and prioritizing mitigation action alternatives. This methodology takes all local considerations into account to ensure that, based on a jurisdictions' capabilities, funding, public wishes, political climate, and legal framework and context reasonable actions are determined. The following provides a brief description of each consideration:

- Are all people within the jurisdiction being treated equally and fairly?
- Will the action disrupt the social fabric of the jurisdiction?
- Does the proposed action work and is it technically feasible?
- Does the action offer a long term solution to the problem?
- Does the jurisdiction have adequate staffing
- Is there someone to coordinate and lead the effort?
- Is there sufficient funding available?
- Are there ongoing administrative requirements that need to be met?
- Does the action have political and public support?
- Does the jurisdiction have the legal authority to implement the action?
- Will the jurisdiction be liable for the action or for any inaction?
- Could the action face any legal challenges?

- What are the costs and benefits of this action?
- Do the benefits exceed the costs?
- Has funding for the action been identified?

Identified actions were prioritized by the participating jurisdiction and were given one of the following rankings:

- **High:** Actions that should be implemented as soon as possible
- **Medium:** Actions that should be implemented in the long-term
- **Low:** Actions that should be implemented if and when funding becomes available

Of major concern to all participating jurisdictions was the potential or identified 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.

Although detailed analysis was not conducted during the mitigation action development process, these factors were of primary concern when selecting measures.

Each participating jurisdiction's mitigation actions, including newly identified actions and reviewed actions, can be found in the following sections listed by county.

Where a strategy's status is blank, either updates were not received from the jurisdiction, or the jurisdiction has elected not to participate in this process.

5.5 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 of a single jurisdiction. This section provides a general description of some of the avenues available to jurisdictions to defray the cost of implementing mitigation actions The following are potential available funding streams:

- Hazard Mitigation Grant Program (HMGP): The HMGP assists in implementing long-term hazard mitigation measures following Presidential disaster declarations. Funding is available to implement projects in accordance with State, Tribal, and local priorities.

- Pre-Disaster Mitigation (PDM): The PDM program provides funds on an annual basis for hazard mitigation planning and the implementation of mitigation projects prior to a disaster. The goal of the PDM program is to reduce overall risk to the population and structures, while at the same time, also reducing reliance on Federal funding from actual disaster declarations.

- Flood Mitigation Assistance (FMA): FMA provides funds on an annual basis so that measures can be taken to reduce or eliminate risk of flood damage to buildings insured under the NFIP.

- Public Assistance (PA) Grant Program: The mission of FEMA's PA program is to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President. Through the PA program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain private non-profit organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. The Federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The grantee (usually the State) determines how the non-Federal share (up to 25%) is split with the eligible applicants.

- Small Business Administration (SBA) Disaster Loans: The SBA provides low-interest disaster loans to homeowners, renters, businesses of all sizes, and most private nonprofit organizations. 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.

- The Housing and Urban Development Agency provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.

- Community Development Block Grant Program - The Community Development Block Grant (CDBG) program is a flexible program that provides communities with resources to address a wide range of unique community development needs. Beginning in 1974, the CDBG program is one of the longest Continuously run programs at the Housing and Urban Development Agency. The CDBG program provides annual grants on a formula basis to 1209 general units of local government and States. HUD provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.

- 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 ONA program provides grants for necessary expenses and serious needs that cannot be provided for by insurance, another federal program, or other source of assistance. The current maximum allowable amount for any one disaster to individuals or families is $25,000. The program gives funds for disaster-related necessary expenses and serious needs, including the following categories:

    - Personal property
    - Transportation
    - Medical and dental
    - Funeral
    - Essential tools
    - Flood insurance
    - Moving and storage

- Wildland Urban Interface (WUI) Grants: The 10-Year Comprehensive Strategy focuses on assisting people and communities in the WUI to moderate the threat of catastrophic fire through the four broad goals of improving prevention and suppression, reducing hazardous fuels, restoring fire-adapted ecosystems, and promoting community assistance. The WUI Grant may be used to apply for financial assistance towards hazardous fuels and educational projects within the four goals of: improved prevention, reduction of hazardous fuels, restoration of fire-adapted ecosystems and promotion of community assistance.

5.6 JURISDICTIONAL MITIGATION ACTIONS

(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Information as to the identified mitigation actions for participating jurisdictions is summarized in the following sections and tables. All mitigation action information was provided by jurisdictional officials through the outreach from the HMPC. For each action presented the current status is provided. Actions listed as on-going are carried over from the previous plan and are awaiting funding or opportunity to start. Actions that are listed as completed have been finished. Actions listed as deleted have been removed from consideration. New actions are actions that have been added for this plan and are identified as such. Any information listed with a "-" is either no longer relevant or unavailable. Finally, some actions have been reassigned and are noted as such. In these cases not all information is provided under the original listing, rather the newly assigned responsible entity has been given the opportunity to detail the requested information.

5.6.1 GRANT COUNTY

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Grant County-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners, and display at both the library and routinely visited county offices.	All Hazards	Emergency Manager	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Grant County-2	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	Medium	2	$500.00	Local	12/31/2020	On-going, no specific or reportable progress made
Grant County-3	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other appropriate events.	All Hazards	Emergency Manager	High	3	$500.00	Local	Continuous	On-going, no specific or reportable progress made
Grant County-4	Construct safe rooms in all Critical facilities built by the county.	Tornados, Windstorms	Emergency Manager	High	1,2,3	$7 - $10 million dollars	Local, State, FEMA	12/31/2020	Modified to include dollar amount.
Grant County-5	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	Emergency Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Grant County-6	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-Terrorism, Civil Disorder	Emergency Manager, Local Producers, Health Department Director, Extension Office Director	Medium	3	$500.00	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Grant County-7	Coordinate county and local government mitigation efforts with RECs, encourage identification of hazards potentially affecting their infra- structure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Utility/ Infrastructure Failure	Emergency Manager	High	4	Staff Time	Local	12/31/2020	Delete
Grant County-8	Grant County will work with the KDA-DWR to educate and promote local jurisdictional participation in the NFIP.	Flood	Emergency Manager, County Planner	High	3,4	Staff Time	Local, State	12/31/2020	On-going, no specific or reportable progress made
Grant County-9	Research and recommend appropriate building codes for the County that include wind-resistant design techniques for new construction.	Tornados, Windstorms	Director Planning and Zoning, Emergency Manager	Low	1,2,3,4	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Grant County-10	Research, develop and recommend a Comprehensive Land Use Plan for Grant County.	Flood	Mitigation Officer, County Planner	Medium	1,2	$10,000	Local	12/31/2020	On-going, no specific or reportable progress made
Grant County-11	Conduct an inventory/survey for the emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Manager	High	1,2,4	Staff Time	Local, State	12/31/2020	On-going, no specific or reportable progress made
Grant County-12	Research and recommend an ordinance/resolution to require tornado shelters for new major manufactured and/or mobile home parks with more than 10 mobile home spaces.	Tornados, Windstorms	Planning Director	Medium	1,2,4	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Grant County-13	Develop cross-departmental information collection capabilities, and incorporate building/parcel data utilizing a GIS for purposes of conducting more detailed hazard risk assessments and for tracking permitting / land use patterns, buildings and infrastructure replacement costs, and overall structural accounting for the county.	All Hazards	Emergency Manager	High	4	$20,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Grant County-14	Develop and implement a wildfire prevention/education program.	Wildfire	Fire Chief, Emergency Manager	Medium	3,4	$5,000	Local	Continuous	On-going, no specific or reportable progress made
Grant County-15	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources.	Wildfire	Fire Chief, Emergency Manager	Medium	4	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Grant County-16	Create a working group to evaluate the firefighting water supply resources within the County.	Wildfire	Fire Chief, Emergency Manager	Medium	4	Staff Time	Local	12/31/2020	Delete
Grant County-17	Purchase back-up generators for critical facilities.	Utility/ Infrastructure Failure	Fire Chief, Emergency Manager	High	1,2	$500,000	Local, state, federal	12/31/2020	New
Ulysses-1	Collect educational materials on individual and family preparedness / mitigation measures for property owners, and display at both the library and routinely visited city offices.	All Hazards	City Manager	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Ulysses-2	Identify the City's most at-risk critical facilities, and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	City Manager	Medium	2	$500.00	Local	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Ulysses-3	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other appropriate events.	All Hazards	City Manager	High	3	$500.00	Local	Continuous	Delete
Ulysses-4	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornados, Windstorms	City Manager	High	1,2,3	$1,000,000	Local, State, FEMA	12/31/2020	On-going, no reportable progress made
Ulysses-6	The City will work to educate and promote local jurisdictional participation in the NFIP and will research and complete an application package for participation in the NFIP.	Flood	City Manager	High	3,4	Staff Time	Local, State	12/31/2020	On-going, no reportable progress made
Ulysses-7	Research and seek funding for projects aimed at the minimization of flood damage to residential and commercial properties.	Flood	City Manager	Medium	1,2	Varies by project	Local, State, FEMA	12/31/2020	On-going, no reportable progress made
USD#214-1	Develop and fund mitigation projects for the construction of tornado safe rooms for USD #214 schools.	Tornados, Windstorms	Superintendent	High	1,2	$1,500,000	Local, State, FEMA	12/31/2020	On-going, no reportable progress made
Pioneer COOP-1	Complete inspection and retreatment of all power poles, approximately 100,000 poles	Utility/ Infrastructure Failure	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New
Pioneer COOP-2	Replace 30' poles with 40' poles, and include raptor protections, for greater vertical clearance to reduce potential damage by farm equipment.	Utility/ Infrastructure Failure	Director	High	1,2	$56,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-3	Replace #4 ACSR conductor.	Utility/ Infrastructure Failure	Director	Medium	1,2	$44,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-4	Conduct oil testing on all transformers.	Utility/ Infrastructure Failure	Director	Medium	1,2	$512.50 per unit	Local, State, Federal	12/31/2020	New
Pioneer COOP-5	Install security cameras at all substations.	Terrorism	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New

5.6.2 GREELEY COUNTY

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Greeley County-1	Work with the Kansas Department of Health and Environment on public health and environmental mitigation issues.	Major Disease Outbreak	Director County Health Department	High	4	Staff Time	Local, State	Continuous	On-going, no specific or reportable progress made
Greeley County-2	Work with the Kansas Division of Emergency Management, the NWS, FEMA, and other entities on hazard mitigation identification, planning, awareness, etc.	All Hazards	Emergency Manager	High	4	Staff Time	Local, State, FEMA	Continuous	On-going, no specific or reportable progress made
Greeley County-3	Host a severe weather warning training session on an annual basis.	All Hazards	Emergency Manager	High	1,2,3	$300 per session	Local, NWS Emergency Management Planning Grant	Annually	On-going, no specific or reportable progress made
Greeley County-4	Improve awareness and educate on the hazards and risks for Greeley County.	All Hazards	Emergency Manager	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Greeley County-5	Promote and educate on water conservation and drought conditions.	Utility/Infrastructure Failure, Drought	Emergency Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Greeley County-6	Maintain existing outdoor weather warning systems. Seek funding for the purchase and installation of outdoor weather warning sirens.	All Hazards	Emergency Manager	High	1,2	$75,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Greeley County-7	Advocate, seek funding, and implement hazard reduction maintenance and improvements on structures and infrastructure.	All Hazards	Emergency Manager	High	1,2,3	Dependent on scope of project	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Greeley County-8	Work with Kansas Department of Agriculture on issues related to drought, animal health, agricultural infestations, flood and dam hazards, and food safety.	Drought, Agricultural Infestation, Flood, Dam and Levee Failure, Major Disease Outbreak	Director County Extension Division	Medium	4	Staff Time	Local, State	Continuous	On-going, no specific or reportable progress made
Greeley County-9	Promote and seek funding on the purchase and use of NOAA weather radios	All Hazards	Emergency Manager	Medium	1,2,3	$3,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Greeley County-10	Research burn data information collection and sharing - in particular for events affecting 300 or more acres, related losses, and response investments.	Wildfire	Emergency Manager	Medium	4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Greeley County-11	Continue to involve neighboring jurisdictions in all hazard mitigation and planning activities	All Hazards	Emergency Manager	Medium	4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Greeley County-12	Attend state meetings on water conservation, Intensive Ground Water Use Control Area meetings for the Western Kansas GMD #1.	Utility/Infrastructure Failure, Drought	Emergency Manager	Medium	4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Greeley County-13	Provide public information on hazards and how they can be effectively mitigated.	All Hazards	Emergency Manager	Low	3	Staff Time	Local, American Red Cross	Continuous	On-going, no specific or reportable progress made
Greeley County-14	Assess areas of flooding concern, especially roads and highways which have undersize culverts, drain blockages or washouts. Provide funding and replace or repair deteriorating conditions.	Flood	Director of Public Works	Low	1,2	Dependent on scope of project	Local, State, FEMA	Continuous	On-going, no specific or reportable progress made
Greeley County-15	Educate and promote agencies on the importance of creating a history of hazard related events for future mitigation initiatives.	All Hazards	Emergency Manager	Low	1,2,3,4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Greeley County-16	Provide shelters for those without heat or air conditioning during times of extremes.	Extreme Temperatures	Non-profit volunteers	Low	1,2	$250,000	Local	Seasonal and Temporary	On-going, no specific or reportable progress made
Greeley County-17	Request an assessment of the Wildland/Urban interface risks for the county from the Kansas Forest Service	Wildfire	Emergency Manager	Low	1,2,4	Staff Time	Kansas Forest Service/State	12/31/2020	On-going, no specific or reportable progress made
Greeley County-18	Monitor impact of drought on surface water and other natural resources.	Drought	Director of County Extension	Low	4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Greeley County-19	Consider participation in programs such as the NFIP to allow residents access to flood insurance.	Flood	Emergency Manager	Low	1,2,4	Staff Time	Local	Annually	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Greeley County-20	Consider adoption of building codes.	All Hazards	Director of Zoning and Planning	Low	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Greeley County-21	Construct a community safe room to protect the citizens.	Tornado, Windstorm	Emergency Manager	Medium	1,2	$500,000	Local State, Federal	12/31/2020	New
Greeley County-22	Purchase and install generators for critical facilities.	Utility/Infrastructure Failure, Drought	Emergency Manager	Medium	1,2	$20,000	Local, State, Federal	31-Dec-20	New
Horace-1	Promote and educate on water conservation and drought conditions.	Utility/Infrastructure Failure, Drought	City Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Horace-2	Maintain existing outdoor weather warning systems. Seek funding for outdoor weather warning sirens.	All Hazards	City Manager	High	1,2	$75,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Horace-3	Advocate, seek funding, and implement hazard reduction maintenance and improvements on structures and infrastructure.	All Hazards	City Manager	High	1,2,3	Dependent on scope of project	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Horace-4	Promote and seek funding on the purchase and use of NOAA weather radios	All Hazards	City Manager	Medium	1,2,3	$3,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Horace-5	Provide public information on hazards and how they can be effectively mitigated.	All Hazards	City Manager	Low	3	Staff Time	Local, American Red Cross	Continuous	On-going, no specific or reportable progress made
Horace-6	Assess areas of flooding concern, especially roads and highways which have undersize culverts, drain blockages or washouts. Provide funding and replace or repair deteriorating conditions.	Flood	Director of Public Works	Low	1,2	Dependent on scope of project	Local, State, FEMA	Continuous	On-going, no specific or reportable progress made
Horace-7	Provide shelters for those without heat or air conditioning during times of extremes.	Extreme Temperatures	Non-profit volunteers	Low	1,2	$100,000	Local	Seasonal and Temporary	On-going, no specific or reportable progress made
Horace-8	Monitor impact of drought on surface water and other natural resources.	Drought	City Manager	Low	4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Horace-9	Consider participation in programs such as the NFIP to allow residents access to flood insurance.	Flood	City Manager	Low	1,2,4	Staff Time	Local	Annually	On-going, no specific or reportable progress made
Horace-10	Consider adoption of building codes.	All Hazards	Director of Zoning and Planning	Low	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Horace-11	Construct a community safe room to protect the citizens.	Tornado, Windstorm	City Manager	Medium	1,2	$500,000	Local State, Federal	12/31/2020	New

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Horace-12	Purchase and install generators for critical facilities.	Utility/Infrastructure Failure, Drought	City Manager	Medium	1,2	$20,000	Local, State, Federal	12/31/2020	New
Tribune-1	Host a severe weather warning training session on an annual basis.	All Hazards	City Manager	High	1,2,3	$300 per session	Local, NWS Emergency Management Planning Grant	Annually	On-going, no specific or reportable progress made
Tribune-2	Improve awareness and educate on the hazards and risks for the City of Tribune and Greeley County.	All Hazards	City Manager	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
USD #200-1	Improve awareness and educate on the hazards and risks for Greeley County.	All Hazards	Superintendent	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
USD #200-2	Promote and seek funding on the purchase and use of NOAA weather radios	All Hazards	Superintendent	Medium	1,2,3	$3,000	Local, State, Federal	12/31/2020	Complete
USD #200-3	Advocate, seek funding, and implement hazard reduction maintenance and improvements on structures and infrastructure.	All Hazards	Superintendent	High	1,2,3	Dependent on scope of project	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
USD #200-4	Continue policy of risk reduction by adjusting school bus schedules in times of fog	Fog	Superintendent	low	2	Deleted	Deleted	Deleted	Deleted
USD #200-5	Seek FEMA Funding for approved safe rooms for school buildings, as appropriate.	Tornado, Windstorm	Superintendent	Medium	2	$1,500,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD #200-6	Provide public information on hazards and how they can be effectively mitigated.	All Hazards	Superintendent	Low	3	Staff Time	Local, American Red Cross	Continuous	On-going, no specific or reportable progress made
Greeley County Hospital-1	Purchase and install emergency generators for facilities.	Utility/Infrastructure Failure	Director	High	1,2	$30,000	Local, State, Federal	12/31/2020	New
Greeley County Hospital-1	Construct safe room(s) for all hospital facilities.	Tornado, Windstorm	Director	High	1,2	$1,000,000	Local, State, Federal	12/31/2020	New
Wheatland REC-1	Improve awareness and educate on the dangers and risks of utility hazard events for Greeley County.	All Hazards	Director	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Wheatland REC-2	Advocate, seek funding, and implement hazard reduction maintenance and improvements on structures and infrastructure.	All Hazards	Director	High	1,2,3	Dependent on scope of project	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Wheatland REC-3	Provide public information on hazards and how they can be effectively mitigated.	All Hazards	Director	Low	3	Staff Time	Local, American Red Cross	Continuous	On-going, no specific or reportable progress made

5.6.3 HAMILTON COUNTY

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Hamilton County-1	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	County NFIP Administrator	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Hamilton County-2	Collect educational materials on individual and family preparedness/mitigation measures for property owners, and display at both the library and routinely visited county offices.	All Hazards	Emergency Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Hamilton County-3	Construct safe rooms for the protection of the citizens.	Tornado, Windstorm	Emergency Manager	High	3,4	$350,000	Local	12/31/2020	New
Hamilton County-4	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storms	Emergency Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Hamilton County-5	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-Terrorism, Civil Disorder	Director County Health Department, Emergency Manager, Local Producers	Medium	3	$1,000 per program	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Hamilton County-6	Hamilton County is committed to continued participation and compliance with the NFIP.	Flood	NFIP Administrator	High	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Hamilton County-7	Identify funding, procure and install new warning sirens.	Tornado	Emergency Manager	Medium	1,2	$90,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Hamilton County-8	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program, in addition to other flood protection measures.	Flood	Mitigation Officer, Planner	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Hamilton County-9	Identify the county's most at-risk critical facilities,	All Hazards	Emergency Manager	Medium	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Hamilton County-10	Conduct an 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	1,2,4	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Hamilton County-11	Consider implementing a GIS based 911 system and use the data to enhance future hazard risk assessments.	All Hazards	County Appraiser	Low	1,2,4	$20,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Hamilton County-12	Develop and implement a wildfire prevention/education program.	Wildfire	Fire Chief, Emergency Manager	Medium	1,2,3	$350 per workshop	Local	Continuous	On-going, no specific or reportable progress made
Hamilton County-13	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources. Include agreements with local, state and federal agencies.	Wildfire	Fire Chief, Emergency Manager	High	4	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Hamilton County-14	Create a working group to evaluate the firefighting water supply resources within the County. This should include both fixed and mobile supply issues.	Wildfire	Fire Chief, Emergency Manager	Medium	4	$10,000	Local	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Hamilton County-15	Distribute assessment report examples provided by the Kansas Forest Service to applicable parties to develop an understanding of the Community Wildfire Protection Plan (CWPP). Recommend joining the program and completing an assessment report for approval.	Wildfire	Fire Chief, Emergency Manager	High	3,4	Staff Time	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Hamilton County-16	Incorporate wildfire maps, develop actions and projects for wildfire prevention, and complete an assessment report to meet CWPP requirements for submittal to the Kansas Forest Service.	Wildfire	Fire Chief, Emergency Manager	High	3,4	Staff Time	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Hamilton County-17	Schedule meetings with the Kansas Forest Service to map suspected hazardous wildfire areas in the county for potential participation in the Community Wildfire Protection Program.	Wildfire	Fire Chief, Emergency Manager	High	4	Staff Time	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Hamilton County-18	Acquire backup generators at critical facilities.	Utility/ Infrastructure Failure	City Administrator	Medium	1,2	$200,000	Local, State, Federal	12/31/2020	New
Hamilton County-19	Develop a program in coordination with the State of Kansas and FEMA to acquire and preserve parcels of land subject to flooding from willing and voluntary property owners.	Flood	Director Zoning Department, Emergency Manager	Low	1,2,3,4	Dependent upon fair market value	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Coolidge-1	Identify funding sources, procure and install new warning sirens.	Tornado	City Administrator	Medium	1,2	$30,000	Local, State, Federal	12/31/2020	New
Coolidge-2	Construct a community safe room to protect the citizens.	Tornado, Windstorm	City Administrator	High	3,4	$150,000	Local	12/31/2020	New
Coolidge-3	Acquire backup generators at critical facilities.	Utility/ Infrastructure Failure	City Administrator	Medium	1,2	$200,000	Local, State, Federal	12/31/2020	New

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Syracuse-1	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	City Administrator	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Syracuse-2	Collect educational materials on individual and family preparedness/mitigation measures for property owners, and display at both the library and routinely visited county offices.	All Hazards	City Administrator	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Syracuse-3	Construct a community safe room to protect the citizens.	Tornado, Windstorm	City Administrator	High	3,4	$150,000	Local	12/31/2020	On-going, no specific or reportable progress made
Syracuse-4	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storms	City Administrator	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Syracuse-5	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Administrator	Medium	3	$1,000 per program	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Syracuse-6	The city of Syracuse is committed to continued participation and compliance with the NFIP.	Flood	NFIP Administrator	High	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Syracuse-7	Identify funding sources, procure and install new warning sirens.	Tornado	City Administrator	Medium	1,2	$30,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Syracuse-8	Continue to identify flood prone areas in order to consider flood reduction measures which could be developed by city planners.	Flood	Director Zoning	Medium	1,2	$10,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Syracuse-9	Acquire backup generators at critical facilities.	Utility/ Infrastructure Failure	City Administrator	Medium	1,2	$200,000	Local, State, Federal	12/31/2020	New
USD #494-1	Develop and fund mitigation projects for the construction of tornado safe rooms for USD #494 schools.	Tornado, Windstorm	Superintendent	High	1,2	$1,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-1	Complete inspection and retreatment of all power poles, approximately 100,000 poles	Utility/ Infrastructure Failure	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New
Pioneer COOP-2	Replace 30’ poles with 40’ poles, and include raptor protections, for greater vertical clearance to reduce potential damage by farm equipment.	Utility/ Infrastructure Failure	Director	High	1,2	$56,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-3	Replace #4 ACSR conductor.	Utility/ Infrastructure Failure	Director	Medium	1,2	$44,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-4	Conduct oil testing on all transformers.	Utility/ Infrastructure Failure	Director	Medium	1,2	$512.50 per unit	Local, State, Federal	12/31/2020	New
Pioneer COOP-5	Install security cameras at all substations.	Terrorism	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New
Wheatland REC-1	Improve awareness and educate on the dangers and risks of utility hazard events for Hamilton County.	All Hazards	Director	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wheatland REC-2	Advocate, seek funding, and implement hazard reduction maintenance and improvements on structures and infrastructure.	All Hazards	Director	High	1,2,3	Dependent on scope of project	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Wheatland REC-3	Provide public information on hazards and how they can be effectively mitigated.	All Hazards	Director	Low	3	Staff Time	Local, American Red Cross	Continuous	On-going, no specific or reportable progress made

5.6.4 KEARNY COUNTY

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Kearny County-1	Kearny County is committed to continued participation and compliance with the NFIP.	Flood	Emergency Manager	High	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Kearny County-2	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	Emergency Manager	High	1,2,3	$1,000	Local	Continuous	Delete
Kearny County-3	Collect educational materials on individual and family preparedness /mitigation measures for property owners, and display at both the library and routinely visited public offices.	All Hazards	Emergency Manager	High	3	Staff Time	Local	Continuous	Delete
Kearny County-4	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other appropriate events.	All Hazards	Emergency Manager	High	3	$500 per workshop	Local	Continuous	Delete
Kearny County-5	Encourage the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Flood	Emergency Manager	High	3,4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Kearny County-6	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storms	Emergency Manager	High	3	Staff Time	local	Continuous	Delete
Kearny County-7	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-Terrorism, Civil Disorder	County Health Departments, Emergency Manager, Local Producers	Medium	3	$500	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Kearny County-8	Coordinate county and local government mitigation efforts with RECs, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Utility/ Infrastructure Failure	Director of Public Works, Rural Electric Coops Managers	High	4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Kearny County-9	Research and recommend appropriate building codes for the county that include wind-resistant design techniques for new construction.	All Hazards	Emergency Manager	High	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Kearny County-10	Recommend development of a Comprehensive Land Use Plan for Kearny County.	Flood	Emergency Manager	Medium	1,2,4	$10,000	Local	12/31/2020	Delete
Kearny County-11	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program, in addition to other flood protection measures.	Flood	Emergency Manager	High	1,2,4	Staff Time	Local	Continuous	Delete
Kearny County-12	Identify flash-flood prone areas to consider flood reduction measures to county planners.	Flood	Emergency Manager	High	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Kearny County-13	Conduct an inventory/survey for the emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Manager	High	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Kearny County-14	Research and recommend an ordinance/resolution to require tornado shelters for new major manufactured and/or mobile home parks with more than 10 mobile home spaces.	Tornado, Windstorm	Emergency Manager	High	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Kearny County-15	Develop cross-departmental information collection capabilities, and incorporate data utilizing a GIS for purposes of conducting more detailed hazard risk assessments and for tracking permitting / land use patterns, buildings and infrastructure replacement costs, and overall structural accounting for the county.	All Hazards	County Appraiser	High	4	Staff Time	Local, Grants	12/31/2020	On-going, no specific or reportable progress made
Kearny County-16	Develop and implement a wildfire prevention/education program.	Wildfire	Fire Chief, Emergency Manager	Medium	3	$300 per workshop	Local	Continuous	On-going, no specific or reportable progress made
Kearny County-17	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources. Include agreements with local, state and federal agencies.	Wildfire	Fire Chief, Emergency Manager	High	4	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Kearny County-18	Create a working group to evaluate the firefighting water supply resources within the County.	Wildfire	Fire Chief, Emergency Manager	Medium	4	$5,000	Local	12/31/2020	On-going, no specific or reportable progress made
Kearny County-19	Identify the most at-risk critical facilities	All Hazards	Emergency Manager	Medium	2	Unknown	Local	12/31/2020	On-going, no specific or reportable progress made
Kearny County-20	Work with the Department of Agriculture, Lakin WD No. 49, and the Garden City Company to obtain the Emergency Action Plans for the high hazard dams located in Kearny County.	Dam and Levee Failure	Emergency Manager, Dam Owners	High	4	Staff Time	Local	31-Dec-20	On-going, no specific or reportable progress made
Kearny County-21	Develop an evacuation annex to the Local Emergency Operations Plan (LEOP) for dam failure for high hazard dams in Kearny County.	Dam and Levee Failure	Emergency Manager	High	1,2	Staff Time	Local	31-Dec-20	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Deerfield-1	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	City Manager	High	1,2,3	$1,000	Local	Continuous	On-going, no specific or reportable progress made
Deerfield-2	Collect educational materials on individual and family preparedness /mitigation measures for property owners, and display at both the library and routinely visited public offices.	All Hazards	City Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Deerfield-3	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other appropriate events.	All Hazards	City Manager	High	3	$500 per workshop	Local	Continuous	Delete
Deerfield-4	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities. Seek funding to retain an engineer to design a community tornado shelter and apply for grant funding for construction.	Tornado, Windstorm	City Manager	High	1,2	$1,000,000	Local	Continuous	Delete
Deerfield-5	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storms	City Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Deerfield-6	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3	$500	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Lakin-1	The City of Lakin is committed to continued participation and compliance with the NFIP.	Flood	City Manager	High	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Lakin-2	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	City Manager	High	1,2,3	$1,000	Local	Continuous	Delete
Lakin-3	Collect educational materials on individual and family preparedness /mitigation measures for property owners, and display at both the library and routinely visited public offices.	All Hazards	City Manager	High	3	Staff Time	Local	Continuous	Delete
Lakin-4	Annually host a public “hazards workshop” in combination with local festivals, fairs, or other appropriate events.	All Hazards	City Manager	High	3	$500 per workshop	Local	Continuous	Delete
Lakin-5	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Flood	City Manager	High	3,4	$500,000	Local	Continuous	Delete
Lakin-6	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storms	City Manager	Medium	3	Staff Time	local	Continuous	On-going, no specific or reportable progress made
Lakin-7	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3	$500	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Lakin-8	Conduct a study of the existing storm warning system and seek funding to upgrade or replace the warning sirens for the City. The study should include a 'warning system policy' that includes the dissemination of information about the 'warning siren policy to the community.	Tornado, Windstorm	City Manager	Medium	1,2	$30,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Lakin-9	Identify flash-flood prone areas to consider flood reduction measures to city officials.	Flood	City Manager	Medium	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Lakin-10	Purchase and install generators for critical facilities/infrastructure	Utility/ Infrastructure Failure	City Manager	High	1,2	$100,000	Local, State, Federal	12/31/2020	New
Lakin-11	Construct safe rooms for the community.	Tornado, Windstorm	City Manager	High	1,2	$600,000	Local, State, Federal	12/31/2020	New
Lakin-12	The city of Lakin is pursuing construction of a nano-filtration water treatment facility.	Utility/ Infrastructure Failure	City Manager	High	1,2	$6,500,000	USDA Rural Development Grants, KDHE Loans	12/31/2020	On-going, no specific or reportable progress made
Lakin-13	Complete required upgrades and retrofits to powerplant.	Utility/ Infrastructure Failure	City Manager	High	1,2	$8,000,000	Federal Grants	12/31/2020	New
USD #215-1	Develop and fund mitigation projects for the construction of tornado safe rooms for USD #215 schools.	Tornado, Windstorm	Superintendent	Low	1,2	$1,000,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
USD #216-1	Develop and fund mitigation projects for the construction of tornado safe rooms for USD #216 schools.	Tornado, Windstorm	Superintendent	Low	1,2	$1,000,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Pioneer COOP-1	Complete inspection and retreatment of all power poles, approximately 100,000 poles	Utility/ Infrastructure Failure	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New
Pioneer COOP-2	Replace 30’ poles with 40’ poles, and include raptor protections, for greater vertical clearance to reduce potential damage by farm equipment.	Utility/ Infrastructure Failure	Director	High	1,2	$56,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-3	Replace #4 ACSR conductor.	Utility/ Infrastructure Failure	Director	Medium	1,2	$44,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-4	Conduct oil testing on all transformers.	Utility/ Infrastructure Failure	Director	Medium	1,2	$512.50 per unit	Local, State, Federal	12/31/2020	New
Pioneer COOP-5	Install security cameras at all substations.	Terrorism	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New
Wheatland REC-1	Advocate, seek funding, and implement hazard reduction maintenance and improvements on structures and infrastructure.	All Hazards	Director	High	1,2,3	Dependent on scope of project	Local, State, Federal	12/31/2020	New

5.6.5 MORTON COUNTY

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Morton County-1	The County and local governments will work with the KDA-DWR to educate and promote local participation in the NFIP.	Flood	Emergency Manager	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Morton County-2	Collect educational materials on individual and family preparedness / mitigation measures for property owners, and display at both the library and routinely visited county offices.	All Hazards	Emergency Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Morton County-3	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other appropriate events.	All Hazards	Emergency Manager	High	3	$500 per workshop	Local	Continuous	On-going, no specific or reportable progress made
Morton County-4	Encourage the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	Emergency Manager	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Morton County-5	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storms	Emergency Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Morton County-6	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-Terrorism, Civil Disorder	Director County Health Department, Emergency Manager, Local Producers	Medium	3	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Morton County-7	Coordinate county and local government mitigation efforts with RECs, encourage identification of hazards potentially affecting their infra- structure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Utility/ Infrastructure Failure	Director of Road and Bridges	High	4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Morton County-8	Recommend appropriate building codes for the County that include wind-resistant design techniques for new construction.	Tornado, Windstorm	Emergency Manager	Medium	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Morton County-9	Consider developing a Comprehensive Land Use Plan for Morton County.	Flood	Mitigation Officer	Medium	1,2	$10,000	Local	12/31/2020	On-going, no specific or reportable progress made
Morton County-10	Consider and submit an application package for participating in the NFIP.	Flood	Emergency Manager	High	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Morton County-11	Conduct an inventory/survey for the emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Manager	Medium	1,2	Staff Time	Local, State	12/31/2020	On-going, no specific or reportable progress made
Morton County-12	Research and recommend an ordinance/resolution to require tornado shelters for new major manufactured and/or mobile home parks with more than 10 mobile home spaces.	Tornado, Windstorm	County Planner	Medium	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Morton County-13	Develop cross-departmental information collection capabilities, and incorporate data utilizing a GIS for purposes of conducting more detailed hazard risk assessments and for tracking permitting / land use patterns, buildings and infrastructure replacement costs, and overall structural accounting for the county.	All Hazards	County Appraiser, Director of GIS	High	1,2,4	$5,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Morton County-14	Develop and implement a wildfire prevention/education program.	Wildfire	Fire Chief, Emergency Manager	Medium	3	$1,000 per year	Local	Continuous	On-going, no specific or reportable progress made
Morton County-15	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources. Include agreements with local, state and federal agencies.	Wildfire	Fire Chief, Emergency Manager	Medium	4	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Morton County-16	Evaluate firefighting water supply resources within the County. This should include both fixed and mobile supply issues.	Wildfire	Fire Chief, Emergency Manager	Medium	1,2,4	$5,000	Local	12/31/2020	On-going, no specific or reportable progress made
Morton County-17	Identify the most at-risk critical facilities	All Hazards	Emergency Manager	Medium	2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Elkhart-1	Educate and promote local participation in the NFIP.	Flood	City Administrator	High	1,2,3	Staff Time	Local	12/31/2017	New
Elkhart-2	Collect educational materials on individual and family preparedness and mitigation measures.	All Hazards	City Administrator	High	1,2,3	Staff Time	Local	12/31/2020	New
Elkhart-3	Seek funding for the construction of safe rooms for the community.	Tornado, Windstorm	City Administrator	High	1,2	$1,000,000	Local, State, Federal	12/31/2020	New

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rolla-1	The County and local governments will work with the KDA-DWR to educate and promote local participation in the NFIP.	Flood	City Manager	High	1,2,3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Rolla-2	Collect educational materials on individual and family preparedness / mitigation measures for property owners, and display at both the library and routinely visited county offices.	All Hazards	City Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Rolla-3	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other appropriate events.	All Hazards	City Manager	High	3	$200 per workshop	Local	Continuous	On-going, no specific or reportable progress made
Rolla-4	Encourage the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2,3	$500,000	Local	Continuous	On-going, no specific or reportable progress made
Rolla-5	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storms	City Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Rolla-6	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rolla-7	Seek grant funding for the construction of community tornado shelters for the town of Rolla.	Tornado, Windstorm	City Manager	Low	1,2	$350,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
USD #217-1	Develop and fund mitigation projects for the construction of tornado safe rooms in USD #217 schools.	Tornado, Windstorm	Superintendent	Low	1,2	$1,000,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
USD #218-1	Develop and fund mitigation projects for the construction of tornado safe rooms in USD #218 schools.	Tornado, Windstorm	Superintendent	Low	1,2	$1,000,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Pioneer Electrical COOP-1	Upgrade and enhance old copper conductor power lines with new aluminum conductor and new poles to endure ice and wind conditions and provide a more reliable power supple.	Utility/ Infrastructure Failure	Operations Manager	High	1,2	$5,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-1	Complete inspection and retreatment of all power poles, approximately 100,000 poles	Utility/ Infrastructure Failure	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New
Pioneer COOP-2	Replace 30’ poles with 40’ poles, and include raptor protections, for greater vertical clearance to reduce potential damage by farm equipment.	Utility/ Infrastructure Failure	Director	High	1,2	$56,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-3	Replace #4 ACSR conductor.	Utility/ Infrastructure Failure	Director	Medium	1,2	$44,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-4	Conduct oil testing on all transformers.	Utility/ Infrastructure Failure	Director	Medium	1,2	$512.50 per unit	Local, State, Federal	12/31/2020	New

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Pioneer COOP-5	Install security cameras at all substations.	Terrorism	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New
Tri-County COOP-1	Upgrade and enhance old copper conductor power lines with new aluminum conductor and new poles to endure ice and wind conditions and provide a more reliable power supple.	Utility/ Infrastructure Failure	Operations Manager	High	1,2	$5,000,000	Local, State, Federal	12/31/2020	New

5.6.6 SCOTT COUNTY

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Scott County-1	Collect educational materials on individual and family preparedness and/or mitigation measures for property owners, and display at both the library and routinely visited local government offices	All Hazards	County Planner, Emergency Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Scott County-2	Identify the Jurisdiction's most at-risk vital / critical facilities	All Hazards	Emergency Manager	Medium	2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Scott County-3	Conduct inventory / survey for the county's emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Manager	Medium	1,2	Staff Time	Local, State	12/31/2020	On-going, no specific or reportable progress made
Scott County-4	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events.	All Hazards	Emergency Manager	Medium	3	$500 per annum	Local	Continuous	On-going, no specific or reportable progress made
Scott County-5	Encourage the construction of safe rooms and tornado shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	Emergency Manager, Fire Chief, Police Chief	High	1,2	Staff Time	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Scott County-6	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	Emergency Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Scott County-7	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-Terrorism, Civil Disorder	County Health Department Director, Emergency Manager, Local Producers	Medium	3	Staff Time	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Scott County-8	Coordinate county and local government mitigation efforts with RECs, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Utility/ Infrastructure Failure	Director Public Works	High	4	Staff Time	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Scott County-9	Appoint a committee to research and develop an application package for participation in the NFIP.	Flood	Emergency Manager	Medium	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Scott County-10	Develop cross-departmental information collection capabilities, and incorporate data utilizing a Geographic Information System (GIS) for purposes of conducting more detailed hazard risk assessments and for tracking permitting / land use patterns, buildings and infrastructure replacement costs, and overall structural accounting for the Jurisdiction.	All Hazards	County Appraiser, Emergency Manager	High	1,2,4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Scott County-11	Develop and implement a wildfire prevention/education program. In addition to providing education to the general public, the program should also target children, fire and equipment users, builders and developers, and homeowners.	Wildfire	Fire Chief, Emergency Manager	Medium	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Scott County-12	Examine the current agreements within the jurisdiction and assess the need to expand or update cooperative agreements for firefighting resources. Include agreements with local, state and federal agencies.	Wildfire	Fire Chief, Emergency Manager	Medium	4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Scott County-13	Appoint a working group to evaluate the firefighting water supply resources within the jurisdiction.	Wildfire	Fire Chief, Emergency Manager	Medium	4	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Scott County-14	Seek funding for the purchase and installation of a backup power generator for the Scott County Health Office and facilities.	Utility/ Infrastructure Failure	Director County Health Department, Emergency Manager	Medium	1,2	$30,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Scott City-1	Collect educational materials on individual and family preparedness and/or mitigation measures for property owners, and display at both the library and routinely visited local government offices	All Hazards	City Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Scott City-2	Identify the Jurisdiction's most at-risk vital / critical facilities, and evaluate the potential mitigation techniques for protecting each facility in a cost effective manner.	All Hazards	City Manager	Medium	2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Scott City-3	Conduct inventory / survey for the city's emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	City Manager	Medium	1,2	Staff Time	Local, State	12/31/2020	On-going, no specific or reportable progress made
Scott City-4	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events.	All Hazards	City Manager	Medium	3	$300 per workshop	Local	Continuous	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Scott City-5	Encourage and seek funding for the construction of safe rooms and tornado shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	$500,000	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Scott City-6	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Scott City-7	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3	Staff Time	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Scott City-8	Scott City is committed to continued participation and compliance with the NFIP.	Flood	City Manager	High	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Scott City-9	Appoint a planning committee to assess flood prone areas and recommend flood reduction measures to city planners.	Flood	City Manager	Medium	1,2,4	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Scott City-10	Seek funding for purchase of backup generators for the city's water supply and sewer lift station.	Utility/ Infrastructure Failure	Fire Chief, City Manager	Medium	1,2	$40,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Scott City-11	Obtain funding for the purchase and installation of a backup power generator for the local fire station.	Utility/ Infrastructure Failure	Fire Chief	Medium	1,2	$25,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Scott City-12	Seek funding for the purchase and installation of a backup power generator for the City Hall.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	$25,000	Local, State, Federal	31-Dec-20	On-going, no specific or reportable progress made
Scott City-13	Encourage the repositioning of as many utility lines as possible underground.	Utility/ Infrastructure Failure	Director of Public Works	High	1,2	Unknown	Local	31-Dec-20	On-going, no specific or reportable progress made
USD #466-1	Develop and fund mitigation projects for the construction of tornado safe rooms for USD #466.	Tornado, Windstorm	Superintendent	High	1,2	$1,000,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Scott County Hospital-1	Prepare and implement a biological/bioterrorism Hazard Preparedness Program to ensure the safety of staff and patients.	Major Disease Outbreak	Health and Safety Coordinator	High	1,2	$50,000	Local, State, Federal	12/31/2020	New
Mid-West Energy-1	Upgrade and enhance old copper conductor power lines with new aluminum conductor and new poles to endure ice and wind conditions and provide a more reliable power supple.	Utility/ Infrastructure Failure	Operations Manager	High	1,2	$5,000,000	Local, State, Federal	12/31/2020	New
Lane-Scott Electric-1	Upgrade and enhance old copper conductor power lines with new aluminum conductor and new poles to endure ice and wind conditions and provide a more reliable power supple.	Utility/ Infrastructure Failure	Operations Manager	High	1,2	$5,000,000	Local, State, Federal	12/31/2020	New

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wheatland REC-1	Improve awareness and educate on the hazards and risks for Scott County.	All Hazards	Director	High	1,2,3	Staff Time	Local	Continuous	New
Wheatland REC-2	Advocate, seek funding, and implement hazard reduction maintenance and improvements on structures and infrastructure.	All Hazards	Director	High	1,2,3	Dependent on scope of project	Local, State, Federal	12/31/2020	New
Wheatland REC-3	Provide public information on hazards and how they can be effectively mitigated.	All Hazards	Director	Low	3	Staff Time	Local, American Red Cross	Continuous	New

5.6.7 STANTON COUNTY

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Stanton County-1	Seek funding and construct a safe room within the new Hospital to protect patients, staff, and visitors	Tornado, Windstorm	Director County Hospital	High	1,2	$400,000	Bond, Local, State, Federal	12/31/2020	Completed in 2012 with County Bonds
Stanton County-2	Continued participation in the National Flood Insurance Program	Flood	Emergency Manger	Low	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Stanton County-3	Promotion and Maintenance of the Hazard Mitigation Plan.	All Hazards	Emergency Manger	Low	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Stanton County-4	Develop and enhance existing education campaigns related to disaster preparedness. This project also would include local testing of warning systems to ensure viability.	All Hazards	Emergency Manager, Library	Medium	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Stanton County-5	Conduct training for fire fighters to include tactical decision making and pre-incident assessments of properties for vulnerabilities.	Wildfire	Fire Chief	Low	1,2	$30.00 per student	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Stanton County-6	Install elevator for elderly access to basement during severe weather.	All Hazards	Emergency Manager	High	1,2	$40,000	Local, State, Federal	12/31/2020	New
Stanton County-7	Purchase and install emergency generators for critical facilities	Utility/ Infrastructure Failure	Emergency manager	High	1,2	$50,000	Local, State, Federal	12/31/2020	New
Stanton County-8	Fire prevention training for children in grades K through 5. This would include the Sparky the fire Dog program, Stop, Drop, and roll program.	Wildfire	Fire Chief	Medium	1,2,3	$1,000	Local, State, Federal	Continuous	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Johnson City-1	Upgrade of the Electric Utility System for Johnson City. Current system is aging. This project would include power pole replacement and power line upgrades.	Utility/Infrastructure Failure	City Superintendent	High	1,2	$10,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Johnson City-2	Continued participation in the National Flood Insurance Program, including dissemination of program information.	Flood	City Superintendent	Low	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Manter-1	Repair/Upgrade of Outdoor Warning Siren.	Tornado, Windstorm	City Manager	Medium	1,2	$11,000	Local, State, Federal	12/31/2020	Completed utilizing County Funds
Manter-2	Purchase and install emergency generators for critical facilities	Utility/ Infrastructure Failure	City Manager	High	1,2	$50,000	Local, State, Federal	12/31/2020	New
USD #452-1	Purchase and install emergency generators for school facilities	Utility/Infrastructure Failure	Superintendent	High	1,2	$30,000	Local, State, Federal	12/31/2020	New
USD #452-2	Construct safe room.	Tornado, Windstorm	Superintendent	High	1,2	$1,000,000	Local, State, Federal	12/31/2020	New
Stanton County Hospital-1	Purchase and install emergency generators for facilities.	Utility/Infrastructure Failure	Director	High	1,2	$30,000	Local, State, Federal	12/31/2020	New
Stanton County Hospital-2	Construct safe room(s) for all hospital facilities.	Tornado, Windstorm	Director	High	1,2	$1,000,000	Local, State, Federal	12/31/2020	New

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Pioneer COOP-1	Complete inspection and retreatment of all power poles, approximately 100,000 poles	Utility/ Infrastructure Failure	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New
Pioneer COOP-2	Replace 30’ poles with 40’ poles, and include raptor protections, for greater vertical clearance to reduce potential damage by farm equipment.	Utility/ Infrastructure Failure	Director	High	1,2	$56,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-3	Replace #4 ACSR conductor.	Utility/ Infrastructure Failure	Director	Medium	1,2	$44,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-4	Conduct oil testing on all transformers.	Utility/ Infrastructure Failure	Director	Medium	1,2	$512.50 per unit	Local, State, Federal	12/31/2020	New
Pioneer COOP-5	Install security cameras at all substations.	Terrorism	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New

5.6.8 STEVENS COUNTY

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Stevens County-1	Coordinate county and local government mitigation efforts with RECs, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Utility/ Infrastructure Failure	Director Road Department, Planner, Director REC's	High	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Stevens County-2	Annually host a public "hazards workshop" in conjunction with local festivals, fairs, or other appropriate events.	All Hazards	Emergency Manager	Medium	3	$500 per workshop	Local	Continuous	On-going, no specific or reportable progress made
Stevens County-3	Encourage the construction of safe rooms in public and private schools, day care centers, and senior care facilities. Provide assistance with grant applications.	Tornado, Windstorm	Director Planning and Zoning, Emergency Manager	High	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Stevens County-4	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	Emergency Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Stevens County-5	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-terrorism, Civil Disorder	Director County Extension, Emergency Manager, Local Producers	Medium	3	Staff Time	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Stevens County-6	Develop and implement a wildfire prevention/education program.	Wildfire	Fire Chief, Emergency Manager	Medium	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Stevens County-7	Collect educational materials on individual and family preparedness /mitigation measures for property owners, and display at both the library and routinely visited county offices.	All Hazards	Emergency Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Stevens County-8	Identify the county's most at-risk critical facilities	All Hazards	County Planner, Emergency Manager	Medium	2	Staff Time	Local, State	Continuous	On-going, no specific or reportable progress made
Stevens County-9	Conduct an inventory/survey for the county's emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Manager	Medium	1,2	Staff Time	Local, State	Continuous	On-going, no specific or reportable progress made
Stevens County-10	Research and recommend an ordinance/resolution to require installation of tornado shelters for any new major manufactured and/or mobile home parks with more than 10 mobile home spaces.	Tornado, Windstorm	Director of Planning and Zoning	Medium	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Stevens County-11	Develop cross-departmental information collection capabilities, and incorporate data utilizing a GIS for purposes of conducting more detailed hazard risk assessments and for tracking permitting / land use patterns, buildings and infrastructure replacement costs, and overall structural accounting for the county.	All Hazards	County Appraiser, GIS technician, Emergency Manager	Medium	4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Stevens County-12	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources. Include agreements with local, state and federal agencies.	Wildfire	Fire Chief, Emergency Manager	Medium	4	Staff Time	Local	Continuous	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Stevens County-13	Prepare and adopt an Outdoor Warning Sirens Plan for the county, including unique geographical locations, technical requirements, system types and operational procedures of each local jurisdiction. Seek funding to purchase and install new warning sirens in accordance with the plan recommendations.	All Hazards	Emergency Manager	Medium	1,2	$75,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Hugoton-1	Annually host a public "hazards workshop" in conjunction with local festivals, fairs, or other appropriate events.	All Hazards	City Manager	Medium	3	$250.00	Local	Continuous	On-going, no specific or reportable progress made
Hugoton-2	Encourage and seek funding for the construction of safe rooms in public and private schools, day care centers, and senior care facilities. Provide assistance with grant applications.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Hugoton-3	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Hugoton-4	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-terrorism, Civil Disorder	City Manager	Medium	3	Staff Time	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Hugoton-5	Develop and implement a wildfire prevention/education program.	Wildfire	City Manager, Fire Chief	Medium	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Hugoton-6	Conduct a study of the Hugoton electrical distribution system to identify potential shortfalls, and develop a plan to upgrade the power grid. Seek funding to implement upgrades.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	Unknown	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Hugoton-7	Conduct a storm water drainage system study for the City of Hugoton, and consider adopting a storm water drainage plan and/or ordinance to protect the infrastructure of Hugoton.	Flood	City Manager	Medium	1,2	$15,000	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Hugoton-8	Conduct a study of the Hugoton potable water supply, and develop a strategy to protect the system from power failure and potential contamination issues. Seek funding for a generator.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	$30,000	Local	12/31/2020	On-going, no specific or reportable progress made
Moscow-1	Annually host a public “hazards workshop” in conjunction with local festivals, fairs, or other appropriate events.	All Hazards	Mayor	Medium	3	$250.00	Local	Continuous	On-going, no specific or reportable progress made
Moscow-2	Encourage and seek funding for the construction of safe rooms in public and private schools, day care centers, and senior care facilities. Provide assistance with grant applications.	Tornado, Windstorm	Mayor	High	1,2	$300,000	Local	12/31/2020	On-going, no specific or reportable progress made
Moscow-3	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	Mayor	High	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Moscow-4	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues that can severely impact the county and regional economies, and develop and implement plans to address these issues.	Terrorism/ Agri-terrorism, Civil Disorder	Mayor	Medium	3	Staff Time	Local, State, Federal	Continuous	On-going, no specific or reportable progress made
Moscow-5	Develop and implement a wildfire prevention/education program. In addition to providing education to the general public, the program should also target children, fire and equipment users, builders and developers, and homeowners.	Wildfire	Mayor, Fire Chief	Medium	3	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Moscow-6	Conduct a study of the McLeod Street area to determine possible causes of street flooding, and develop mitigation options for the City of Moscow.	Flood	Mayor, Clerk	Medium	1,2	$20,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Moscow-7	Conduct a storm water drainage study for the City of Moscow, and consider adoption of1 a stormwater management ordinance.	Flood	Mayor, City Clerk	Medium	1,2	$20,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
USD #209-1	Develop and fund mitigation projects for the construction of tornado safe rooms in USD #209 schools.	Tornado, Windstorm	Superintendent	Medium	1,2	$1,000,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
USD #209-2	Educate USD #209 students about driving in winter storms and handling winter-related health effects.	Winter Storm	Superintendent	High	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD #210-1	Develop and fund mitigation projects for the construction of tornado safe rooms in USD #210 schools.	Tornado, Windstorm	Superintendent	Medium	1,2	$1,000,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
USD #210-2	Educate USD #210 students about driving in winter storms and handling winter-related health effects.	Winter Storm	Superintendent	High	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Pioneer COOP-1	Complete inspection and retreatment of all power poles, approximately 100,000 poles	Utility/ Infrastructure Failure	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New
Pioneer COOP-2	Replace 30’ poles with 40’ poles, and include raptor protections, for greater vertical clearance to reduce potential damage by farm equipment.	Utility/ Infrastructure Failure	Director	High	1,2	$56,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-3	Replace #4 ACSR conductor.	Utility/ Infrastructure Failure	Director	Medium	1,2	$44,000,000	Local, State, Federal	12/31/2020	New
Pioneer COOP-4	Conduct oil testing on all transformers.	Utility/ Infrastructure Failure	Director	Medium	1,2	$512.50 per unit	Local, State, Federal	12/31/2020	New
Pioneer COOP-5	Install security cameras at all substations.	Terrorism	Director	Medium	1,2	$3,400,000	Local, State, Federal	Continuous	New

5.6.9 WICHITA COUNTY

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wichita County-1	Disaster Drills. Wichita County is responsible for assuring that annual disaster drills are conducted. Future drills will take the mitigation strategy into account as a part of the planning process.	All Hazards	Emergency Manager	High	1,2	Staff Time	Local	Continuous	On-going, no specific or reportable progress made
Wichita County-2	Continuity of Operations Planning. Research COOP templates and provide information form FEMA and other sources to city and county departments and local businesses as a first step to creating COOP plans for Wichita County.	All Hazards	Emergency Manager	Medium	4	Staff Time	Local	12/31/2020	On-going, no specific or reportable progress made
Wichita County-3	Seek funding and construct a FEMA approved safe room at the hospital. Currently there is no approved shelter at, or near, the hospital.	Tornado, Windstorm, Winter Storm	Director Hospital, Emergency Manager	High	1,2	$500,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Wichita County-4	Generator for the Wichita County Health Center. Current generator used is over 30 years old.	Utility/ Infrastructure Failure	Director County Health Center, Emergency Manager	High	1,2	$30,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Leoti-1	Stormwater Draining Improvement. Addition of culverts and repairs to roadways to prevent backup of flood waters. Includes addition of a pump to the city Pond.	Flood	City Manager	High	1,2	$80,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
Leoti-2	Evaluate the existing storm shelter in the Wichita County Historical Society for safe areas from severe weather, prioritize upgrades to the facility and create a notification protocol for members. Seek funding for upgrades and notification system, and implement necessary changes after sourcing appropriate funding.	Tornado, Windstorm, Winter Storm	City Manager	Medium	1,2	$30,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Leoti-3	Procure and install generators at municipal wells and sewer lift stations.	Utility/ Infrastructure Failure	City Clerk	High	1,2	$450,000	Local, State, Federal	12/31/2030	New
Leoti-4	Public Awareness Campaign and Training for Fire Service on Wildland-Urban Interface Fire Protection.	Wildfire	Fire Chief	High	1,2,3	$1,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
USD #467-1	Upgrade the public address systems in local USD #467 schools. Current system is out of date.	All Hazards	Superintendent	High	1,2	$80,000	Local, State, Federal	12/31/2020	On-going, no specific or reportable progress made
USD #467-2	Assure fire protection equipment and alarm systems are in working order in local schools. Additional equipment is needed, including smoke alarms, additional pull alarm stations, and strobe lighting.	Wildfire	Superintendent	High	1,2	$75,000	Local, State, Federal	12/31/2020	Completed 2012
USD #467-3	School / Community Storm shelter construction. Create a multi-use room that could be used as a tornado / storm shelter for students and the community by constructing a monolithic dome. The room would serve as a weight room, wrestling room, and classrooms for the school system.	Tornado, Windstorm, Winter Storm	Superintendent	High	1,2	$1,500,000	Local, State, Federal	12/31/2020	Completed 2010-2011

5.7 MITIGATION ACTIONS SUPPORTING NATIONAL FLOOD INSURANCE PROGRAM

Participating jurisdictions within the region are committed to continued participation and compliance with the NFIP. The following table identifies specific, previously listed, mitigation actions supporting this commitment and are provided to assist in NFIP CRS application and compliance.

Actions in Support of NFIP

County	Action Identification	Description	Responsible Party	Current Status
Grant	Grant County-8	Grant County will work with the KDA-DWR to educate and promote local jurisdictional participation in the NFIP.	Emergency Manager, County Planner	On-going, no specific or reportable progress made
Grant	Ulysses-6	The City of Ulysses will work with the KDA-DWR to educate and promote local jurisdictional participation in the NFIP. The city will also research and complete an application package for participation in the NFIP.	City Manager	On-going, no specific or reportable progress made
Greeley	Greeley County-19	Consider participation in programs such as the NFIP to allow residents access to flood insurance.	Emergency Manager	On-going, no specific or reportable progress made
Greeley	Horace-9	Consider participation in programs such as the NFIP to allow residents access to flood insurance.	City Manager	On-going, no specific or reportable progress made
Hamilton	Hamilton County-1	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	County NFIP Administrator	On-going, no specific or reportable progress made
Hamilton	Hamilton County-6	Hamilton County is committed to continued participation and compliance with the NFIP.	NFIP Administrator	On-going, no specific or reportable progress made
Hamilton	Syracuse-6	The city of Syracuse is committed to continued participation and compliance with the NFIP.	NFIP Administrator	On-going, no specific or reportable progress made
Kearny	Kearny County-1	Kearny County is committed to continued participation and compliance with the NFIP.	Emergency Manager	On-going, no specific or reportable progress made

County	Action Identification	Description	Responsible Party	Current Status
Kearny	Lakin-1	The City of Lakin is committed to continued participation and compliance with the NFIP.	City Manager	On-going, no specific or reportable progress made
Morton	Morton County-1	The County and local governments will work with the KDA-DWR to educate and promote local participation in the NFIP.	Emergency Manager	On-going, no specific or reportable progress made
Morton	Morton County-10	Consider and submit an application package for participating in the NFIP.	Emergency Manager	On-going, no specific or reportable progress made
Morton	Elkhart-1	Educate and promote local participation in the NFIP.	City Administrator	New
Morton	Rolla-1	The County and local governments will work with the KDA-DWR to educate and promote local participation in the NFIP.	City Manager	On-going, no specific or reportable progress made
Scott	Scott County-9	Appoint a committee to research and develop an application package for participation in the NFIP.	Emergency Manager	On-going, no specific or reportable progress made
Scott	Scott City-8	Scott City is committed to continued participation and compliance with the NFIP.	City Manager	On-going, no specific or reportable progress made
Stanton	Stanton County-2	Continued participation in the National Flood Insurance Program	Emergency Manager	On-going, no specific or reportable progress made
Stanton	Johnson City-2	Continued participation in the National Flood Insurance Program, including dissemination of program information.	City Superintendent	On-going, no specific or reportable progress made

5.8 ACTION IMPLEMENTATION

Each participating jurisdiction is responsible for implementing their specifically identified mitigation actions. To foster accountability and increase the likelihood that actions will be implemented, every proposed action is assigned to a specific department. In general:

- A representative from the responsible department will be responsible for tracking and reporting on action status.
- The representative should provide input on whether the action as implemented is successful in reducing vulnerability, if applicable.
- If the action is unsuccessful in reducing vulnerability, the responsible department will be tasked with identifying deficiencies and additional required actions.

By identifying actions by specific jurisdiction it is hoped that future plan updates will be simplified as each jurisdiction can modify their individual actions without altering the actions of other jurisdictions. Additionally, each action has been assigned a proposed completion timeframe to determine if the action is being implemented according to plan.

6.0 PLAN MAINTENANCE

6.1 INTRODUCTION

44 CFR 201.6 (c)(4) requires "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. (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. (iii) Discussion on how the community will continue public participation in the plan maintenance process."

This chapter details the regional strategy for plan maintenance and outlines the methodology for monitoring, updating, and evaluating the plan. The chapter also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

6.2 LOCAL EMERGENCY PLANNING COMMITTEE REQUIREMENTS

Regional Local Emergency Planning Committees (LEPCs) will be tasked with Plan monitoring, evaluation, and maintenance with assistance from KDEM. The LEPCs, led by county emergency management agencies and with facilitation by KDEM, will:

- Meet regularly to monitor and evaluate the implementation of the Plan
- When applicable, meet after a disaster event to 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

LEPC members will also be responsible for promoting the integration of the hazard mitigation plan into all relevant local and regional plans, policies, procedures and ordinances.

6.3 PLAN MAINTENANCE PROCESS

44 CFR 201.6 (c)(4) requires "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 following diagram present the process for Plan maintenance and updates. KDEM will facilitate a yearly Plan review and further facilitate any revisions, if necessary, and the subsequent re-adoption process.

Prior to Plan expiration, and working with all participating jurisdictions, a five-year update of the Plan will be submitted to the KDEM and FEMA Region VII as per the above noted requirement. The Plan will be reviewed to determine whether there have been any significant changes identified during the one year KDEM facilitated Plan reviews. These changes may include:

- Increased local or regional development or populations
- Increased or decreased exposure to identified hazards
- Emergence of newly identified hazards
- Changes in local or regional capabilities
- Legislative changes
- Newly available data
- Successful or unsuccessful implementation of identified actions
- New jurisdictions who would like to participate

The on-going Plan maintenance process provides participating jurisdictions the capability of evaluating identified actions for success or failure. Additionally, the process allows for the timely revision of the Plan as necessary. Changes to the Plan will be made to accommodate actions that have failed, are not considered feasible, or have been newly identified to address current needs. Updating of the Plan will be enacted through written changes and submissions as directed by the LEPCs and facilitated by KDEM.

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.

6.4 Post-Disaster Declaration Procedures

Following a disaster, the LEPCs may meet to 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.

6.5 Incorporation of Mitigation Plan Into Other Planning Mechanisms

(44 CFR 201.6 (c)(4)(ii) requires "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 governing bodies of the jurisdictions adopting this plan continuously encourage all departments, divisions and planners under their authority to consult and incorporate this plan into other planning mechanisms. To date, there has been no major incorporation of previous mitigation plans into other regional or local planning mechanisms.

All participating jurisdictions will strive to implement actions that minimize loss of life and property damage from hazards. Whenever possible, participating jurisdictions 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

6.6 Continued Public Involvement

44 CFR 201.6 (c)(4)(iii) requires a "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 by participating jurisdictions to keep the public informed on both relevant mitigation

issues and the five year plan revision cycle. Strategies for continued public involvement may include:

- Public hearings
- Postings on electronic media, to include websites
- Notifications, when possible, in local media
- Making plans available for review in public locations

APPENDIX A

ADOPTION RESOLUTIONS

APPENDIX B

MEETING INFORMATION

To	**Region "C" Hazard Mitigation Planning Committee**
Through	**Jeanne Bunting, Mitigation Planner** **Kansas Division of Emergency Management (KDEM)**
From	**Susan Belt, MT(ASCP), AMEC Environment & Infrastructure, Inc**
Tel / E-mail	**785-272-6830 / susan.belt@amec.com**
Date	**10/13/2014**
Subject	**Minutes from the Region "C" Greeley, Scott & Wichita Counties Regional Mitigation Planning Meeting held on 10/6/2014 in Leoti, KS.**

This document is a record of attendance and a summary of the issues discussed during the above meeting. Topics covered during the meeting included: (1) an introduction to the purpose of hazard mitigation planning, (2) the benefits of a multi-jurisdictional approach, (3) the reasons for the regional mitigation planning process, (4) grant programs linked to an approved plan and (5) action items in the previous county hazard mitigation plans. The hazard mitigation planning process was reviewed to include requirements for public involvement and the use of data collection guides. The planning committee reviewed the list of hazards to be used as a part of the regional plan. Mrs. Belt explained that the State Hazard Mitigation Team had decided with the current update of the State Plan to profile the hazard Civil Disorder as a separate hazard rather than including it as a part of the Terrorism hazard. The group discussed mitigation actions and the availability of grant programs during the meeting. The meeting concluded with a discussion of the next steps in the planning process. The formal presentation portion of the meeting began at 9:00 am and concluded at 11:30 am.

Attendees

Name	Organization	County
Amanda Baku	Wichita County Hospital	Wichita
Leanna Binns	Wichita County Health Department	Wichita
Marvel Brandt	Wichita County Health Department	Wichita
Mindi Bremer	Wichita County Hospital	Wichita
Jeanne Bunting	Kansas Division of Emergency Management	N/A/ (State of KS)
Kelly Burch	Wheatland Electric	N/A
Matt Eyer	Blue Umbrella	N/A (contractor)
Karyn Herdrik	Scott County Hospital	Scott
Cathy Hernandez	Kansas Division of Emergency Management	N/A/ (State of KS)
Paul Kasselman	City of Scott City	Scott
Randy Keaton	Wichita County Sheriff's Office	Wichita
Luther Keith	Greeley County Emergency Management	Greeley
Joel Landis	City of Leoti	Wichita
Kasper Lechtenberg	City of Leoti	Wichita
Herby Peters	Wichita County Road Department	Wichita
Steve Samuelson	KDA, Division of Water Resources	N/A/ (State of KS)
Larry Turpin	Scott County Emergency Management	Scott
Mike Wilson	Wichita County Emergency Management	Wichita

Introductions

Susan Belt with AMEC Environment & Infrastructure, Inc., began the meeting by welcoming and thanking the attendees. Participants introduced themselves and identified what jurisdiction they represented.

Introduction to Hazard Mitigation Planning

Mrs. Belt presented information on the purpose and requirements of the Disaster Mitigation Act of 2000. The attendees were reminded that this is a regional planning effort which will combine all of the current local mitigation plans in Region "C." Those plans include: Grant, Greeley, Hamilton, Kearny, Morton, Scott, Stanton, Stevens, and Wichita Counties. Once the regional plan is approved, it will supersede the previous plans. The presentation also addressed the benefits for jurisdictions participating in this mitigation plan update, including eligibility for federal hazard mitigation assistance funding programs. Historically, the region has received about $750,000 in Hazard Mitigation Assistance grants. The group also discussed the Siren grant program that began in 2011. Although the region did not receive any funding for warning sirens following that grant program, methods to remain eligible for future programs was discussed.

Mrs. Belt described the benefits of participating in a multi-jurisdictional plan as improving coordination and communication among local jurisdictions and that these hazards do not stop at jurisdictional boundaries thus this multi-jurisdictional plan allows for a more comprehensive approach. The group also heard information regarding the significant cost savings being realized by the regional approach to planning. There are currently insufficient funds available to provide the full cost of updates to each county plan. The regional approach now being used allows planning services to be provided to each county for the update at no cost to the county. Matt Eyer with Blue Umbrella will be completing the Region "C" mitigation plan for committee review.

Mrs. Belt also described the role of the Hazard Mitigation Planning Committee (HMPC).Each jurisdiction participating in development of the plan must meet the following minimum requirements:

- Designate a representative to serve on the Region "C" Hazard Mitigation Planning Committee, which will meet **twice** during the planning process,
- Provide data for and assist in the development of the updated risk assessment that describes how various hazards impact your jurisdiction,
- Provide data to describe current capabilities,
- Develop/update mitigation actions (at least one) specific to your jurisdiction,
- Provide comments on plan drafts as requested,
- Inform the public, local officials, and other interested parties about the planning process and provide opportunities for them to comment on the plan, and
- Formally adopt the mitigation plan.

Planning for Public Involvement

The local/regional hazard mitigation plan requirements state that the public must have the opportunity to comment on the plan. The public will be given two opportunities to comment on the plan, once during the drafting stage and another when the plan is complete in the final draft

stage. KDEM is planning to utilize a questionnaire on SurveyMonkey.com to ask the public's opinion about hazards that affect them during the drafting stage. The SurveyMonkey.com link was provided on the agenda and as a part of the power point presentation. Emergency managers were asked to post on their county website or emergency management agency Facebook page and to share with all the HMPC members. The HMPC members in the county are also requested to post the SurveyMonkey.com link on their websites and newsletters to the public and to distribute the survey as widely as possible.

Data Collection Process

The participating jurisdictions were provided hard copies of Data Collection Guides. KDEM will follow-up after the meeting with electronic copies emailed to the attendees. Local County Emergency Management Agencies will follow-up with jurisdictions that were not in attendance at this meeting to provide an overview of the process being used and copies of data collection guides for completion. The Data Collection Guides are specific for local units of government and schools. There are two different guides, one for local governments, and one for schools and universities. The jurisdictions were requested to provide data regarding hazards that had occurred in their jurisdiction since the last plan update (2009 to 2014) for the 22 hazards that are in the Regional Plan. The Data Collection Guides were requested to be returned to Jeanne Bunting by November 10, 2014. Mrs. Belt reminded the group that copies of photos and newspaper articles are also helpful in putting the plan together.

Plan Format/ Regional and Countywide Risk Assessment

Mrs. Belt, with the help of Blue Umbrella staff, reviewed the process for integrating the plans. The list of hazards in the State of Kansas plan is the list that is being used for the regional plans. Several of the hazards included in the State Plan were not included in the current plan for most of the counties in Region C. Those counties will need to provide additional information for the risk assessment. Most of the plans in Region C did not utilize the same methodology for ranking hazards that is used by the State Plan and that will be used for the Regional Plans. Blue Umbrella staff will be updating the regional hazard ranking using the State Plan methodology for hazards in their current plan and the new Civil Disorder hazard.

Hazard Mitigation Assistance Grants Available Linked to Approved Plan

The following three Hazard Mitigation Assistance grant programs were outlined, priority activities discussed, deadline of grants, and current funds available for:

- Hazard Mitigation Grant Program (HMGP)
- Pre-disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)

Other state and federal grant programs for mitigation projects were also mentioned.

Mitigation Actions

The planning committee was provided an introduction to update and development of mitigation actions. Each jurisdiction was provided with a copy of the actions included in the current plan. Jurisdictional representatives were requested to provide updates as to: (1) action status – "completed," "pending/on-going," "deleted," or "modified"; (2) updates to the text and a description of the progress for any pending actions. The group was reminded that each participating jurisdiction must have at least one action and that all NFIP jurisdictions must have an NFIP-related action. Participants were also given a copy of sample actions and forms for adding new actions to the plan. Information regarding actions for utility providers was also provided. Individual utilities were encouraged to check on their participation status and action status in each of the counties in which they have resources. The updates on the current actions and any new actions were requested to be returned to Jeanne Bunting by November 10, 2014. The date for the final planning meeting will be sent to each agency. At that final meeting, the mitigation actions for the plan will be prioritized.

Next Steps

The meeting concluded with a discussion of the remaining steps to complete the planning process as follows:

- **November 10, 2014 — Data Collection Guides Due to KDEM**
- **November 10, 2014 — Mitigation Action Updates + New Actions Due to KDEM**
- **January 14, 2015 – Meeting #2 for Emergency Management Officials**
- **TBD (March timeframe) – Meeting #3 All Committee Members – Action Priorities**
- **April/May 2015 — Submit Plan to FEMA**
- **July 2015 — Anticipate FEMA's Approval Pending Adoption**

	REGION C MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN – KICKOFF MEETING, SIGN-IN SHEET

Project: Region C Hazard Mitigation Plan – Kickoff Meeting		**Meeting Date:**	10/6/14 0900-11:30
Facilitator: Susan Bell		**Place/Room:**	Fairgrounds, Leoti, Ks

Name	Department/Agency	County	Email	Phone #	Signature
Steve Samuelson	KDA/DWR	state	steve.samuelson@kda.ks.gov	785-296-4622	Steve Samuelson
Randy Renton	Wichita Sheriff	Wichita	[illegible]	620-375-2723	[illegible]
Jeanne Bunting	KDEM	State	—	—	Jeanne Bunting
Mike Wilson	Wichita Co. EM	Wichita	[illegible]@hotmail.com	620 874-1266	[illegible]
Paul Kasselman	City of Scott City	Scott	kasselman@wbsnet.org	620-874-8146	Paul Kasselman
Larry Turpin	EM Scott Co	Scott	ems@wbsnet.org	620-874-8547	Larry Turpin
Mindi Bremer	WCHC - Leoti Hosp	Wichita	mbremer.wchc@gmail.com	620 375-2233	M Bremer
Amanda Baker	WCHC - Hosp City of Leoti - councilmember	Wichita	abaker.wchc@gmail.com	620-375-2233	Amanda Baker
Kasper Lichtenberg	City of Leoti - City Clerk	Wichita	leoticityclerk@wbsnet.org	620 375 2341	KASPER LICHTENBERG
[illegible]	KDEM	SW Region		620 [illegible] 4785	[illegible]
Luther Keith	Greeley Co EM	Greeley	greeleyem@fairpoint.net	316 213 8733	Luther Keith
Joel Landis	City of Leoti Assistant Superintendent	Wichita	~~[illegible]~~ leotiasstsuperintendent@[illegible].com	(620)874-4276	[illegible]
Matt Ered	Blue Umbrella	—	Matt@BlueUmbrella.Co	303 552 1161	[illegible]

amec

	Region C Multi-Jurisdictional Hazard Mitigation Plan – Kickoff Meeting, SIGN-In Sheet		
Project: Region C Hazard Mitigation Plan – Kickoff Meeting		**Meeting Date:**	10-6-14
Facilitator: Susan Belt		**Place/Room:**	Fairgrounds Leoti Ks.

Name	Department/Agency	County	Email	Phone #	Signature
Kelley Burch	Wheatland Electric	Wichita	kburch@weci.net	620-874-5027	Kelley Burch
Manuel Barrett	WCHD	Wichita	wchd@sunflowertelco.com	620-375-2289	Manuel Barrett
Leanna Binns	WCHD	Wichita	"	"	Leanna Binns
Karyn Hendrick	Scott Co Hospital	Scott	karynh@scotthospital.net	620 872 5811 x158	[illegible]
Shelby Peters	County Road	Wichita	wcrd@wbsnet.org	620 874 1340	Shelby Peters

amec

To	**Region "C" Hazard Mitigation Planning Committee**
Through	**Jeanne Bunting, Mitigation Planner** **Kansas Division of Emergency Management (KDEM)**
From	**Susan Belt, MT(ASCP), AMEC Environment & Infrastructure, Inc**
Tel / E-mail	**785-272-6830 / susan.belt@amec.com**
Date	**10/13/2014**
Subject	**Minutes from the Region "C" Hamilton, Kearny & Stanton Counties Regional Mitigation Planning Meeting held on 10/6/2014 in Syracuse, KS.**

This document is a record of attendance and a summary of the issues discussed during the above meeting. Topics covered during the meeting included: (1) an introduction to the purpose of hazard mitigation planning, (2) the benefits of a multi-jurisdictional approach, (3) the reasons for the regional mitigation planning process, (4) grant programs linked to an approved plan and (5) action items in the previous county hazard mitigation plans. The hazard mitigation planning process was reviewed to include requirements for public involvement and the use of data collection guides. The planning committee reviewed the list of hazards to be used as a part of the regional plan. Mrs. Belt explained that the State Hazard Mitigation Team had decided with the current update of the State Plan to profile the hazard Civil Disorder as a separate hazard rather than including it as a part of the Terrorism hazard. The group discussed mitigation actions and the availability of grant programs during the meeting. The meeting concluded with a discussion of the next steps in the planning process. The formal presentation portion of the meeting began at 2:00 pm and concluded at 4:30 am.

Attendees

Name	Organization	County
Jeanne Bunting	Kansas Division of Emergency Management	N/A (State of KS)
Paul Case	Stanton County Road Department	Stanton
Richard Everett	Southwest Regional Public Health Coordinator	SW Region
Matt Eyer	Blue Umbrella	N/A (contractor)
Greg Garrison	USD 452 Stanton	Stanton
Alex Gentry	Hamilton County Sheriff's Office	Hamilton
Roxane Guerrero	Hamilton County Hospital	Hamilton
Cathy Hernandez	Kansas Division of Emergency Management	N/A (State of KS)
Vaughn Lorenson	Stanton County Emergency Management	Stanton
Tod Musgrove	Stanton County Hospital	Stanton
Steve Post	City of Manter	Stanton
Steve Phillips	Hamilton County Emergency Management	Hamilton
Don Robertson	Kearny County Emergency Management	Kearny
Steve Samuelson	KDA, Division of Water Resources	N/A (State of KS)
John Smith	Stanton County Commissioner	Stanton
Jason Stewart	Stanton County Sheriff	Stanton
Troy Wolf	Stanton County Fire / Rescue	Stanton

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- **November 10, 2014 — Mitigation Action Updates + New Actions Due to KDEM**
- **January 14, 2015 – Meeting #2 for Emergency Management Officials**
- **TBD (March timeframe) – Meeting #3 All Committee Members – Action Priorities**
- **April/May 2015 — Submit Plan to FEMA**
- **July 2015 — Anticipate FEMA's Approval Pending Adoption**

Region C Multi-Jurisdictional Hazard Mitigation Plan – Kickoff Meeting, SIGN-In Sheet

Project: Region C Hazard Mitigation Plan – Kickoff Meeting		**Meeting Date:** 10/6/14 1400-1630	
Facilitator: Susan Belt		**Place/Room:** Fairgrounds - Hamilton County	

Name	Department/Agency	County	Email	Phone #	Signature
Jason Stewart	Stanton Co Sheriff	Stanton		620-492-6866	[illegible]
[illegible]	KDEM	SW REGION		620 355 4785	[illegible]
Richard Everett	SWKHI + WPR6	SW Region		620 492 1930	[illegible]
Troy Wolf	Stanton Co Fire / Rescue	Stanton		620-492-2125	[illegible]
Greg Garrison	USD 452	Stanton		620-492-5115	[illegible]
Steve Phillips	Hamilton Co. EM	Hamilton		620 384 4222	[illegible]
John D. Smith	~~[illegible]~~ Commissioner	Stanton		620 492-1934	John D. Smith
[illegible]	City of Manter	Stanton		620-353-4443	[illegible]
Matt Eyer	Blue Umbrella	–	Matt@BlueUmbrella.co	303-552-1100	[illegible]
Roxanne Guerrero	Hamilton Co Hospital	Hamilton		620 384-7461	[illegible]
Alex Gentry	Hamilton Co Sheriff	Hamilton	GENTRY@HMCOSHERIFF.ORG	620-451-0295	[illegible]
Paul Case	Stanton Co. Rd. Dept.	Stanton		620-492-2276	Paul Case

amec

REGION C MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN – KICKOFF MEETING, SIGN-IN SHEET

Project: Region C Hazard Mitigation Plan - Kickoff Meeting

Facilitator: Susan Belt

Meeting Date: 10/6/14 1400-1630

Place/Room: Fairgrounds - Hamilton County

Name	Department/Agency	County	Email	Phone #	Signature
Don Robertson	EM	Kearny	lakinvfd@pld.com	620 2714769	
Tod Musgrave	Hospital	Stanton		620 492 6250	
Steve Samuelson	KDA/DWR	State	steve.samuelson@kda.ks.gov	785-296-4622	
Vaughn Lorenzen	EM	stanton	stcem@pld.com	620-492-6992	
Jeanne Bunting	12DEM	~~State~~			

amec

To	**Region "C" Hazard Mitigation Planning Committee**
Through	**Jeanne Bunting, Mitigation Planner** **Kansas Division of Emergency Management (KDEM)**
From	**Susan Belt, MT(ASCP), AMEC Environment & Infrastructure, Inc**
Tel / E-mail	**785-272-6830 / susan.belt@amec.com**
Date	**10/13/2014**
Subject	**Minutes from the Region "C" Grant, Morton & Stevens Counties Regional Mitigation Planning Meeting held on 10/7/2014 in Hugoton, KS.**

This document is a record of attendance and a summary of the issues discussed during the above meeting. Topics covered during the meeting included: (1) an introduction to the purpose of hazard mitigation planning, (2) the benefits of a multi-jurisdictional approach, (3) the reasons for the regional mitigation planning process, (4) grant programs linked to an approved plan and (5) action items in the previous county hazard mitigation plans. The hazard mitigation planning process was reviewed to include requirements for public involvement and the use of data collection guides. The planning committee reviewed the list of hazards to be used as a part of the regional plan. Mrs. Belt explained that the State Hazard Mitigation Team had decided with the current update of the State Plan to profile the hazard Civil Disorder as a separate hazard rather than including it as a part of the Terrorism hazard. The group discussed mitigation actions and the availability of grant programs during the meeting. The meeting concluded with a discussion of the next steps in the planning process. The formal presentation portion of the meeting began at 9:00 am and concluded at 11:30 am.

Attendees

Name	Organization	County
Natalie Auguiano	Building Inspections City of Ulysses	Grant
Richard Banes	Building Inspections City of Ulysses	Grant
Dusty Brillhart	Morton County Emergency Management	Morton
Jeanne Bunting	Kansas Division of Emergency Management	N/A (State of KS)
Don Button	Grant County Emergency Management	Grant
Vivian Button	Grant County Emergency Management	Grant
Bailey Esarey	Stevens County Fire Department	Stevens
Matt Eyer	Blue Umbrella	N/A (contractor)
Joshua Grubbs	City of Hugoton	Stevens
Cathy Hernandez	Kansas Division of Emergency Management	N/A (State of KS)
Larry Holt	USD 209 Stevens County	Stevens
Brent Inkelaar	Stevens County Fire Department	Stevens
Rodney Kelling	Stevens County Emergency Management	Stevens
Courtney Leslie	Hugoton Police Department	Stevens
John Moser	USD 210 Stevens County	Stevens
Harold Nelson	Atmos Energy	N/A
Alan Olson	City of Ulysses	Grant
Eddie Rodgers	Atmos Energy	N/A
Mike Salsbury	Pioneer Electric	N/A
Steve Samuelson	KDA, Division of Water Resources	N/A (State of KS)

Introductions

Susan Belt with AMEC Environment & Infrastructure, Inc., began the meeting by welcoming and thanking the attendees. Participants introduced themselves and identified what jurisdiction they represented.

Introduction to Hazard Mitigation Planning

Mrs. Belt presented information on the purpose and requirements of the Disaster Mitigation Act of 2000. The attendees were reminded that this is a regional planning effort which will combine all of the current local mitigation plans in Region "C." Those plans include: Grant, Greeley, Hamilton, Kearny, Morton, Scott, Stanton, Stevens, and Wichita Counties. Once the regional plan is approved, it will supersede the previous plans. The presentation also addressed the benefits for jurisdictions participating in this mitigation plan update, including eligibility for federal hazard mitigation assistance funding programs. Historically, the region has received about $750,000 in Hazard Mitigation Assistance grants. The group also discussed the Siren grant program that began in 2011. Although the region did not receive any funding for warning sirens following that grant program, methods to remain eligible for future programs was discussed.

Mrs. Belt described the benefits of participating in a multi-jurisdictional plan as improving coordination and communication among local jurisdictions and that these hazards do not stop at jurisdictional boundaries thus this multi-jurisdictional plan allows for a more comprehensive approach. The group also heard information regarding the significant cost savings being realized by the regional approach to planning. There are currently insufficient funds available to provide the full cost of updates to each county plan. The regional approach now being used allows planning services to be provided to each county for the update at no cost to the county. Matt Eyer with Blue Umbrella will be completing the Region "C" mitigation plan for committee review.

Mrs. Belt also described the role of the Hazard Mitigation Planning Committee (HMPC).Each jurisdiction participating in development of the plan must meet the following minimum requirements:

- Designate a representative to serve on the Region "C" Hazard Mitigation Planning Committee, which will meet **twice** during the planning process,
- Provide data for and assist in the development of the updated risk assessment that describes how various hazards impact your jurisdiction,
- Provide data to describe current capabilities,
- Develop/update mitigation actions (at least one) specific to your jurisdiction,
- Provide comments on plan drafts as requested,
- Inform the public, local officials, and other interested parties about the planning process and provide opportunities for them to comment on the plan, and
- Formally adopt the mitigation plan.

Planning for Public Involvement

The local/regional hazard mitigation plan requirements state that the public must have the opportunity to comment on the plan. The public will be given two opportunities to comment on the plan, once during the drafting stage and another when the plan is complete in the final draft stage. KDEM is planning to utilize a questionnaire on SurveyMonkey.com to ask the public's opinion about hazards that affect them during the drafting stage. The SurveyMonkey.com link was provided on the agenda and as a part of the power point presentation. Emergency managers were asked to post on their county website or emergency management agency Facebook page and to share with all the HMPC members. The HMPC members in the county are also requested to post the SurveyMonkey.com link on their websites and newsletters to the public and to distribute the survey as widely as possible.

Data Collection Process

The participating jurisdictions at the meeting were provided hard copies of Data Collection Guides. KDEM will follow-up after the meeting with electronic copies emailed to the attendees. Local County Emergency Management Agencies will follow-up with jurisdictions that were not in attendance at this meeting to provide an overview of the process being used and copies of data collection guides for completion. The Data Collection Guides are specific for local units of government and schools. There are two different guides, one for local governments, and one for schools and universities. The jurisdictions were requested to provide data regarding hazards that had occurred in their jurisdiction since the last plan update (2009 to 2014) for the 22 hazards that are in the Regional Plan. The Data Collection Guides were requested to be returned to Jeanne Bunting by November 10, 2014. Mrs. Belt reminded the group that copies of photos and newspaper articles are also helpful in putting the plan together.

Plan Format/ Regional and Countywide Risk Assessment

Mrs. Belt, with the help of Blue Umbrella staff, reviewed the process for integrating the plans. The list of hazards in the State of Kansas plan is the list that is being used for the regional plans. Several of the hazards included in the State Plan were not included in the current plan for most of the counties in Region C. Those counties will need to provide additional information for the risk assessment. Most of the plans in Region C did not utilize the same methodology for ranking hazards that is used by the State Plan and that will be used for the Regional Plans. Blue Umbrella staff will be updating the regional hazard ranking using the State Plan methodology for hazards in their current plan and the new Civil Disorder hazard.

Hazard Mitigation Assistance Grants Available Linked to Approved Plan

The following three Hazard Mitigation Assistance grant programs were outlined, priority activities discussed, deadline of grants, and current funds available for:

- Hazard Mitigation Grant Program (HMGP)
- Pre-disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)

Other state and federal grant programs for mitigation projects were also mentioned.

Mitigation Actions

The planning committee was provided an introduction to update and development of mitigation actions. Each jurisdiction was provided with a copy of the actions included in the current plan. Jurisdictional representatives were requested to provide updates as to: (1) action status – "completed," "pending/on-going," "deleted," or "modified"; (2) updates to the text and a description of the progress for any pending actions. The group was reminded that each participating jurisdiction must have at least one action and that all NFIP jurisdictions must have an NFIP-related action. Participants were also given a copy of sample actions and forms for adding new actions to the plan. Information regarding actions for utility providers was also provided. Individual utilities were encouraged to check on their participation status and action status in each of the counties in which they have resources. The updates on the current actions and any new actions were requested to be returned to Jeanne Bunting by November 10, 2014. The date for the final planning meeting will be sent to each agency. At that final meeting, the mitigation actions for the plan will be prioritized.

Next Steps

The meeting concluded with a discussion of the remaining steps to complete the planning process as follows:

- **November 10, 2014 — Data Collection Guides Due to KDEM**
- **November 10, 2014 — Mitigation Action Updates + New Actions Due to KDEM**
- **January 14, 2015 – Meeting #2 for Emergency Management Officials**
- **TBD (March timeframe) – Meeting #3 All Committee Members – Action Priorities**
- **April/May 2015 — Submit Plan to FEMA**
- **July 2015 — Anticipate FEMA's Approval Pending Adoption**

REGION C MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN – KICKOFF MEETING, SIGN-IN SHEET

Project:	Region C Hazard Mitigation Plan – Kickoff Meeting	**Meeting Date:**	10/7/14 0900-1130
Facilitator:	Susan Reilt	**Place/Room:**	Hugoton EMS Training Facility

Name	Department/Agency	County	Email	Phone #	Signature
Steve Samuelson	KDA/DWR	State	steve.samuelson@kda.ks.gov	785-296-4622	[illegible]
Rodney Kelling	Stevens Co. EM	Stevens	svem207@pld.com	620 544 2052	[illegible]
Bailey Esarey	Stevens Co. F...	Stevens	kbesarey@hotmail.com	620 544 2082	[illegible]
John Moser	USD 210	Stevens	john.moser@usd210.org	6204288228	John Moser
Harold E. Nelson	Atmos Energy		harold.nelson@atmosenergy.com	816-718-3897	HE Nelson
Eddie Rodgers	Atmos Energy		eddie.rodgers@atmosenergy.com	620-315-9201	[illegible]
Jeanne Bunting	KDEM	State	—	—	Jeanne Bunting
Vivian Button	Grant Co EMA	Grant	gtemub@pld.com	620-356-4430	Vivian Button
Don Button	Grant Co EMA	Grant	gtecem@pld.com	620-356-4430	Don Button
Alan Olson	City of Ulysses	Grant	cityadmn@pld.com	620 356 4600	[illegible]
Rusty Bullhart	Morton Co EM	Morton	mtcoem@elkhart.com	620-697-2803	[illegible]
Mike Salsbury	Pioneer-Elec.	Grant	MSalsbury@pioneerelectric.coop	356 1211	Michael Salsbury
Joshua Grubbs	City of Hugoton	Stevens	inspect@pld.com	620-544-3126	Joshua Grubbs
Matt Eyer	Blue Umbrella	–	Matt@BlueUmbrella.co	3??-55?-????	[illegible]

Region C Multi-Jurisdictional Hazard Mitigation Plan – Kickoff Meeting, SIGN-In Sheet

Project:	Region C Hazard Mitigation Plan – Kickoff Meeting	**Meeting Date:**	10/7/14
Facilitator:	Susan Belt	**Place/Room:**	Hugoton EMS Training Facility

Name	Department/Agency	County	Email	Phone #	Signature
Larry Holt	USD 209	Stevens	lholt@pld.com	620-598-2205	[signature]
Courtney Leslie	Hugoton PD	Stevens	hpd401@pld.com	620-453-0223	C. Leslie
Natalie Anguiano	Ulysses KS	Grant	bldginsp@pld.com		N. Anguiano
Richard Bines	Ulysses KS	Grant	inspectr@pld.com	620.356.4600	
Cathy Hernandez	KDEM	SW Region		620 355 4785	[signature]
Brent Inkelaar	Stevens Co fire	Stevens	brent.inkelaar@bioenergy.abengoa.com	812-760-22[illegible]	[signature]

amec

To	**Region "C" Hazard Mitigation Planning Committee**
From/ Through	**Matt Eyer, Blue Umbrella Solutions** **Kansas Division of Emergency Management**
Date	**01/14/2015**
Subject	**Minutes from the Region "C" Mid-Term Meeting held in Garden City, KS.**

This document is a summary of the issues discussed during the above meeting. Topics covered during the meeting included: (1) a review of available grants with a mitigation plan, (2) a review of participation requirements and to date participating jurisdictions, (3) a review of hazards and assigned CPRIs (4) a review of mitigation goals, (5) a review of the plan (6), a discussion of to date public feedback, and (5) a discussion of next steps.

Attendees

A complete list of attendees may be found on the attached meeting sing-in forms.

Introductions

Matt Eyer, Blue Umbrella Solutions, began the meeting by welcoming and thanking the attendees.
Matt Eyer, Blue Umbrella Solutions, provided the formal portion of the presentation.

Review of Available Grants

Attendees were reminded of the grant funding streams that were open and available with an approved mitigation plan.

Review of Participation Requirements and Participating Jurisdictions

Mr. Eyer presented information on the requirements imposed on jurisdictions in order to be considered participating. In addition, each county was presented with a review of what was required, if anything, from each jurisdiction within that county. Participating counties were provided with a handout that detailed the above discussion.

Review of Hazards and Assigned CPRIs

Each of the 22 identified hazards was briefly discussed along with the rationale for each CPRI rating. Participating counties were provided with a handout that detailed both their County specific CPRI for each hazard and the aggregate CPRI for the region. Agreement on the hazards and CPRIs was achieved.

Review of Mitigation Goals

Attendees were presented with the derived mitigation goals for the region. Attendees were asked to review each of the four goals and provide any suggestions for modification. All were in agreement that the goals presented were ideal.

Review of Plan

Attendees were presented with an overview of each plan section, including data contained within.

Review of Public Feedback

The local/regional hazard mitigation plan requirements state that the public must have the opportunity to comment on the plan. Meeting attendees were asked to continue providing an avenue for public feedback by making the surveymonkey.com link available over participating jurisdiction websites if possible. Additionally, attendees were reminded of the two week open comment period when the draft plan is complete. To date public feedback was presented to the attendees.

Next Steps

The meeting concluded with a discussion of the remaining steps to complete the planning process as follows:

County emergency managers receive Draft Plan for mid-term review
Incorporation of changes and finalization of plan
Two week public comment period
Submission to KDEM for review and approval
Submission to FEMA for review and approval pending adoption
Adoption by participating jurisdictions

Location: Garden City, Kansas
Date: January 14, 2015
Start: 1:3[illegible]pm

Name	Organization	County	Phone and Email
Don Button	Emergency Management	Grant	620-356-4430 gtocem@pld.com
Vaughn Lorenson	Emergency Management	Stanton	620 492 6892 stcoem@pld.com
Don Robertson	Emergency Management	Kearny	620 271 4769 lakinvfd@pld.com
LARRY TURPIN	Emergency Management	Scott	620-874-8547 ems@wbsnet.org
Dusty Brillhart	EM	Morton	620-697-2803 mtcoem@elkhart.com
Rodney Kelling	EM	Stevens	620 544 2052 svem207@pld.com
[illegible] HERNANDEZ	KDEM	SW REGION	

To	**Region "C" Hazard Mitigation Planning Committee**
Through	**Jeanne Bunting, Mitigation Planner** **Kansas Division of Emergency Management (KDEM)**
From	**Matthew Eyer, Blue Umbrella Solutions**
Tel / E-mail	**303-552-1181 / Matt@blueumbrella.co**
Date	**03/02/15**
Subject	**Minutes from the Region "C" Final Meeting held in Leoti, KS.**

This document is a record of attendance and a summary of the issues discussed during the above meeting. Topics covered during the meeting included: (1) a final review of plan participating jurisdictions, (2) a final review of mitigation goals, (3) a review of final hazards and CPRIs, (4) a review of available grants with a mitigation plan, and (5) incorporation of final edits. The meeting concluded with a discussion of the next steps in the planning process.

Attendees

A complete list of attendees may be found on the attached meeting sing-in forms.

Introductions

Matt Eyer, Blue Umbrella Solutions, began the meeting by welcoming and thanking the attendees.
Matt Eyer, Blue Umbrella Solutions, provided the formal portion of the presentation.

Review of Plan Participating Jurisdictions

Mr. Eyer presented information on highlighting participating jurisdictions by county. Attendees were present with a series of slides showing the participating jurisdictions. Attendees were given the opportunity to review each jurisdiction to ensure all were included in the plan. In addition, attendees were provided with information concerning special districts, such as rural Water Districts or Fire Districts. They were informed that while these districts were not required to formally adopt the plan, in doing so they are given the opportunity to oversee awarded grant funding rather than have the county oversee the funding.

Review of Mitigation Goals

Attendees were presented with the final regional mitigation goals for the region.

Review of Hazards and Assigned CPRIs

Each of the 22 identified hazards was briefly discussed along with the rationale for each CPRI rating.

Review of Available Grants

Attendees were reminded of the grant funding streams that were open and available with an approved mitigation plan.

Incorporation of Final Edits

Attendees were given an opportunity to review the completed draft plan. Any changes or additions were noted to be included in the final plan edit.

Next Steps

The meeting concluded with a discussion of the remaining steps to complete the planning process as follows:

- **March 2015 — Make plan available to public for two week final review**
- **April 2015 — Submit Plan to KDEM**
- **April 2015 — Submit Plan to FEMA**
- **July 2015 — Plan approval and availability for adoption**

Location: Leoti
Date: 3/2015
Start: 9:00 Am

Name	Organization	County	Phone and Email
Joel Landis	City of Leoti	Wichita	(620) 874-4286 Leoticitysuperintendent@bmail.com
Paul Kasselman	City of Scott City	Scott	620-874-8165 sc103p@pld.com
Luther Keith	Greeley Co EM	Greeley	316-213-8733 greeleyem@fairpoint.net
Jeanne Dunting	KDEM	State	
Mindi Brewer	WCHC	Wichita	620-375-2233 mbrewer.wchc@gmail.com
Ted Cherry	City of Leoti	Wichita	620-378-2341 leoticityadmin@wbnet.org
Marvel Brandt	WCHD (Health Dept)	Wichita	620-375-2289 wchcohd@sunflowertelec.com
MIKE Wilson	Wichita Co. EM	Wichita	620 451-0467 mwilson402@hotmail.com
CATHY HERNANDEZ	KDEM		620-375-4085

To	**Region "C" Hazard Mitigation Planning Committee**
Through	**Jeanne Bunting, Mitigation Planner** **Kansas Division of Emergency Management (KDEM)**
From	**Matthew Eyer, Blue Umbrella Solutions**
Tel / E-mail	**303-552-1181 / Matt@blueumbrella.co**
Date	**03/02/15**
Subject	**Minutes from the Region "C" Final Meeting held in Hugoton, KS.**

This document is a record of attendance and a summary of the issues discussed during the above meeting. Topics covered during the meeting included: (1) a final review of plan participating jurisdictions, (2) a final review of mitigation goals, (3) a review of final hazards and CPRIs, (4) a review of available grants with a mitigation plan, and (5) incorporation of final edits. The meeting concluded with a discussion of the next steps in the planning process.

Attendees

A complete list of attendees may be found on the attached meeting sing-in forms.

Introductions

Matt Eyer, Blue Umbrella Solutions, began the meeting by welcoming and thanking the attendees.
Matt Eyer, Blue Umbrella Solutions, provided the formal portion of the presentation.

Review of Plan Participating Jurisdictions

Mr. Eyer presented information on highlighting participating jurisdictions by county. Attendees were present with a series of slides showing the participating jurisdictions. Attendees were given the opportunity to review each jurisdiction to ensure all were included in the plan. In addition, attendees were provided with information concerning special districts, such as rural Water Districts or Fire Districts. They were informed that while these districts were not required to formally adopt the plan, in doing so they are given the opportunity to oversee awarded grant funding rather than have the county oversee the funding.

Review of Mitigation Goals

Attendees were presented with the final regional mitigation goals for the region.

Review of Hazards and Assigned CPRIs

Each of the 22 identified hazards was briefly discussed along with the rationale for each CPRI rating.

Review of Available Grants

Attendees were reminded of the grant funding streams that were open and available with an approved mitigation plan.

Incorporation of Final Edits

Attendees were given an opportunity to review the completed draft plan. Any changes or additions were noted to be included in the final plan edit.

Next Steps

The meeting concluded with a discussion of the remaining steps to complete the planning process as follows:

- **March 2015 — Make plan available to public for two week final review**
- **April 2015 — Submit Plan to KDEM**
- **April 2015 — Submit Plan to FEMA**
- **July 2015 — Plan approval and availability for adoption**

Location: Hugoton
Date: 3/2/15
Start: 1:00 PM

Name	Organization	County	Phone and Email
Rusty Ballhart	Morton Co EM	Morton	6206972803 mtcoem@elkhart.com
Irwin Button	Grant Co EMA	Grant	gtemb@pld.com
Don Button	Grant County Emergency Management	Grant	gtcoem@pld.com
Mike Salsbury	Pioneer Electric	GRANT	msalsbury@pioneerelectric.coop
Danny Law	Pioneer Electric	Grant	dlaw@pioneerelectric.coop
Kathy Hernandez	KDEM	—	620 255 4785
Jeanne Bunting	KDEM	State	
Kristy Drozel	Grant Co Health	Grant	gthealth@pld.com
Rodney Kelling	Stevens Co. EM	Stevens	svem207@pld.com
Alan Olsen	City of Ulysses	Grant	cityadmn@pld.com
Richard Baus	City of Ulysses	Grant	620-356-4600 inspector@pld.com

To	**Region "C" Hazard Mitigation Planning Committee**
Through	**Jeanne Bunting, Mitigation Planner** **Kansas Division of Emergency Management (KDEM)**
From	**Matthew Eyer, Blue Umbrella Solutions**
Tel / E-mail	**303-552-1181 / Matt@blueumbrella.co**
Date	**03/03/15**
Subject	**Minutes from the Region "C" Final Meeting held in Syracuse, KS.**

This document is a record of attendance and a summary of the issues discussed during the above meeting. Topics covered during the meeting included: (1) a final review of plan participating jurisdictions, (2) a final review of mitigation goals, (3) a review of final hazards and CPRIs, (4) a review of available grants with a mitigation plan, and (5) incorporation of final edits. The meeting concluded with a discussion of the next steps in the planning process.

Attendees

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Introductions

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Review of Plan Participating Jurisdictions

Mr. Eyer presented information on highlighting participating jurisdictions by county. Attendees were present with a series of slides showing the participating jurisdictions. Attendees were given the opportunity to review each jurisdiction to ensure all were included in the plan. In addition, attendees were provided with information concerning special districts, such as rural Water Districts or Fire Districts. They were informed that while these districts were not required to formally adopt the plan, in doing so they are given the opportunity to oversee awarded grant funding rather than have the county oversee the funding.

Review of Mitigation Goals

Attendees were presented with the final regional mitigation goals for the region.

Review of Hazards and Assigned CPRIs

Each of the 22 identified hazards was briefly discussed along with the rationale for each CPRI rating.

Review of Available Grants

Attendees were reminded of the grant funding streams that were open and available with an approved mitigation plan.

Incorporation of Final Edits

Attendees were given an opportunity to review the completed draft plan. Any changes or additions were noted to be included in the final plan edit.

Next Steps

The meeting concluded with a discussion of the remaining steps to complete the planning process as follows:

- **March 2015 — Make plan available to public for two week final review**
- **April 2015 — Submit Plan to KDEM**
- **April 2015 — Submit Plan to FEMA**
- **July 2015 — Plan approval and availability for adoption**

Location: Syracuse, Ks
Date: 3/3/15
Start: 9:00 AM

Name	Organization	County	Phone and Email
Vaughn Lorenson	Stanton County EM	Stanton	620 952 1302 stcoem@pld.com
Ron Robertson	Kearny Co EM	LAKIN	620 271 4769 Lakinvfd@pld.com
Kenny Bridges	USD #494	Hamilton	620-384-7872 kbridges@usd494.
Brian Boyd	City of Syracuse	HM	620-451-0154 brianb@pld.com.org
Steve Phillips	HM Co EM	HM	620 384 5835 hmcoem@pld.com
CATHY WERMANIEK	KDEM	SW REGION	620 355 4715
[illegible]	KDEM	State	— —

Dear Matt,

Due to budgetary and time constraints not all of my participating jurisdictions were able to attend the scheduled meetings. I reached out via phone and email to those jurisdictions to discuss the mitigation project and to solicit any required input and information. As such, I consider them to be fully participating.

Thanks and Take Care,

Dusty Brillhart
Emergency Manager
Morton County KS
Office: 620-697-2803
Cell: 620-360-3600
mtcoem@elkhart.com

EMERGENCY MANAGEMENT
MORTON COUNTY KANSAS

PLAN TO BE A DISASTER SURVIVOR WITH OR WITHOUT THE GOVERMENTS HELP! PLANNING IS NOT HARD, IT JUST TAKES FOCUS AND A LITTLE EFFORT.

Dear Matt,

Due to budgetary and time constraints not all of my participating jurisdictions were able to attend the scheduled meetings. I reached out via phone and email to those jurisdictions to discuss the mitigation project and to solicit any required input and information. As such, I consider them to be fully participating.

Best,

Rodney Kelling, KCEM
Emergency Services Coordinator
Stevens County Emergency Services
109 Northwest Avenue (mail)
426 S Jackson (office)
Hugoton Kansas, 67951
620-544-2052 (Office)
620-544-6908 (Cell)
620-544-7841 (Fax)
svem207@pld.com (email)

GRANT COUNTY EMERGENCY MANAGEMENT
108 SOUTH GLENN,
GRANT COUNTY COURTHOUSE
ULYSSES, KS 67880
620-356-4430 FAX: 620-356-2884
gtocem@pld.com
DONALD BUTTON, COORDINATOR

March 10, 2015

Dear Matt Eyer,

Due to budgetary and time constraints not all of my participating jurisdictions were able to attend the scheduled meetings. I reached out via phone, face to face, and email to those jurisdictions to discuss the mitigation project and to solicit any required input and information. As such, I consider them to be fully participating.

If you have any questions or need any thing else please call 620-356-4430 or e-mail gtocem@pld.com.

Sincerely,

Don Button

Don Button
Coordinator

APPENDIX C

PUBLIC SURVEY

Region C Mitigation Plan Public Input

*** 1. What County and Jurisdiction do you live in?**

*** 2. In the Region consisting of Greeley, Wichita, Scott, Hamilton, Kearny, Stanton, Grant, Morton, and Stevens Counties, the planning committee has 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.**

	Negligible	limited	Moderate	Critical	Catastrophic
Tornado	○	○	○	○	○
Winter Storm	○	○	○	○	○
Flood	○	○	○	○	○
Windstorm	○	○	○	○	○
Lightning	○	○	○	○	○
Wildfire	○	○	○	○	○
Hailstorm	○	○	○	○	○
Drought	○	○	○	○	○
Extreme Temperatures	○	○	○	○	○
Agricultural Infestation	○	○	○	○	○

*** 3. In the Region, the planning committee has determined that a Flood event is a high hazard. How important is it to you that your community participate or continue to participate in the National Flood Insurance Program?**

- ○ Very Important
- ○ Somewhat Important
- ○ Not Important
- ○ No Opinion

*** 4. Funding request for FEMA Hazard Mitigation Grant Program Funds are currently reviewed initially by the Kansas Division of Emergency Management. Listed below are their current funding priorities. Please check those that could benefit your community.**

- ☐ Power Line Upgrades
- ☐ Acquisition/Demolition/Elevation of Flood Prone Properties
- ☐ Community Shelters, Shelters for Schools and Public Buildings
- ☐ Protection of Critical Facilities

*** 5. Have you had an opportunity to read your current Hazard Mitigation Plan?**

- ○ Yes
- ○ No
- ○ Did not know we had one

*** 6. Do you know where the mitigation plan can be found for your county if you wanted to look at it?**

- ○ yes
- ○ no

7. Your input is valuable to this planning process. Please comment on any other issues that the planning committee should consider in developing a strategy to reduce future losses caused by natural hazard events.

8. Do you have any mitigation projects you would like to see implemented and what are they?

Done

Region C - Cuestionario Publico para el Plan de Mitigacion

*** 1. ¿El cual Condado y Jurisdicción vive usted?**

*** 2. En la región que consiste de los condados Greeley, Wichita, Scott, Hamilton, Kearny, Stanton, Grant, Morton, y Stevens; el comité de planeamiento ha determinado que los peligros que aparecen enseguida son peligros significantes en esta área. Por favor indique el nivel de riesgo, o el alcance de potencial de impactos, en la región, que usted percibe por cada peligro.**

	Insignificante	Limitado	Moderado	Critico	Catastrófico
Tornado	○	○	○	○	○
Tormenta Invernal	○	○	○	○	○
Inundaciones	○	○	○	○	○
Tormenta de Viento	○	○	○	○	○
Rayos	○	○	○	○	○
Incendios Forestales	○	○	○	○	○
Granizada	○	○	○	○	○
Sequia	○	○	○	○	○
Temperaturas Extremas	○	○	○	○	○
Infestación de Agricultura	○	○	○	○	○

*** 3. En su región, el comité de planeamiento ha determinado que un evento de inundaciones es un peligro de alto riesgo. ¿Qué tan importante es para usted que su comunidad participe o continúe participando en el Programa Nacional de Seguros para Inundaciones?**

- ○ Muy importante
- ○ Algo importante
- ○ No importante
- ○ No tengo opinión

*** 4. Las solicitudes de financiación de los Fondos del Programa de Mitigación de Riesgos de FEMA son inicialmente revisados por la División de Manejo de Emergencias de Kansas. Enseguida aparecen las prioridades de financiación. Por favor marque las que puedan beneficiar su comunidad.**

- ☐ Actualizaciones de las líneas electicas
- ☐ Adquisición/demolición/elevación de propiedades propensas a inundaciones
- ☐ Albergues comunitarios, albergues para escuelas y edificios públicos
- ☐ Protección de instalaciones criticas

*** 5. ¿Ha tenido la oportunidad de leer el actual Plan para Mitigación de Peligros?**

- ○ Si
- ○ No
- ○ No sabía que tenemos uno

*** 6. ¿Sabe usted donde puede encontrar el Plan de Mitigación para su condado si quisiera verlo?**

- ○ Si

7. Su opinión es valiosa para este proceso de planificación. Por favor comente sobre cualquier otro asunto que le comité de planificación debe tener en cuenta en el desarrollo de una estrategia para reducir las pérdidas futuras causadas por desastres naturales.

8. ¿Tiene usted proyectos de mitigación que le gustaría ver implementados y lo que son?

Done

Emergency Management History Page

Emergency Management is responsible for preparing and implementing set of guidelines that the Cities of Satanta and Sublette and Hask County will use to respond to any type of emergency that they may fa Whether that emergency is man made, the act of God, or an illness bas pandemic that effects humans or animals, Haskell County Emergen Management is prepared.

Every five years the State of Kansas requires a review and update of the Haskell County Mitigation plan. During that time it is open to a public hearing. The following link will allow you to view and print your copy for your review. Hazard Mitigation Plan. If you have any concerns or questions please feel free to contact the Haskell County Emergency Management Office by call (620) 675-2485

Debbie Brown

HELPFUL EMERGENCY PREPAREDNESS PAMPHLETS

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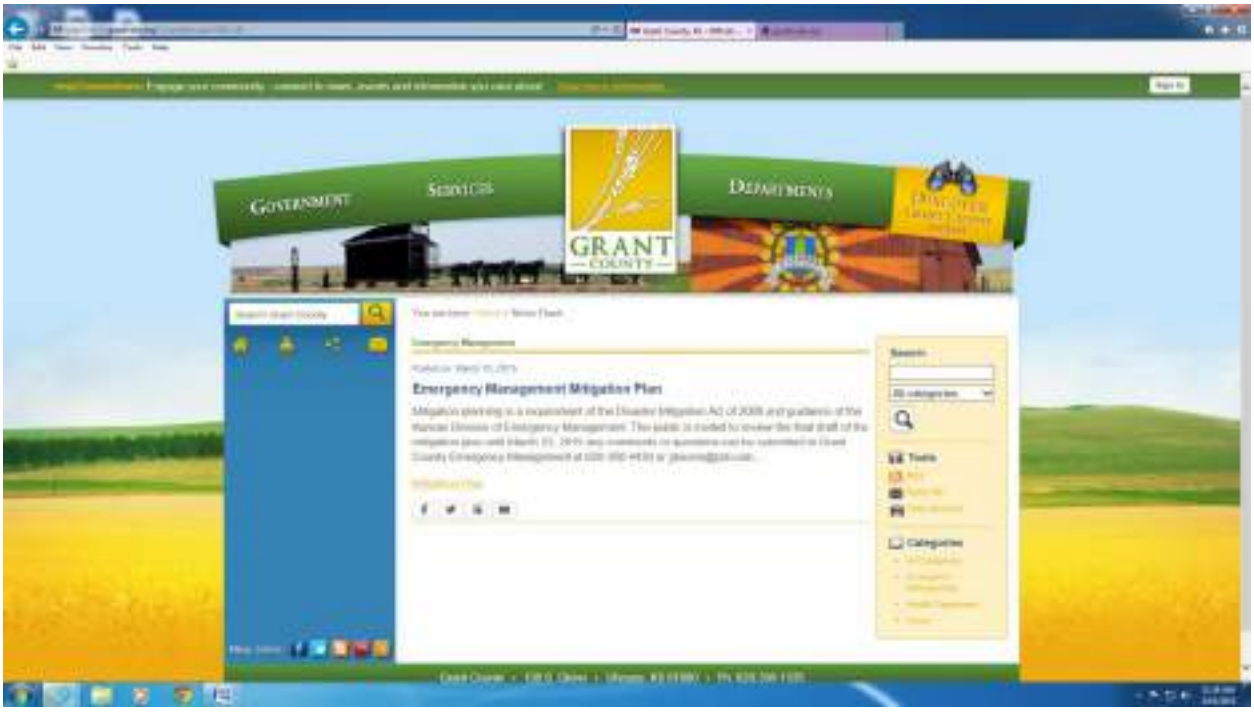
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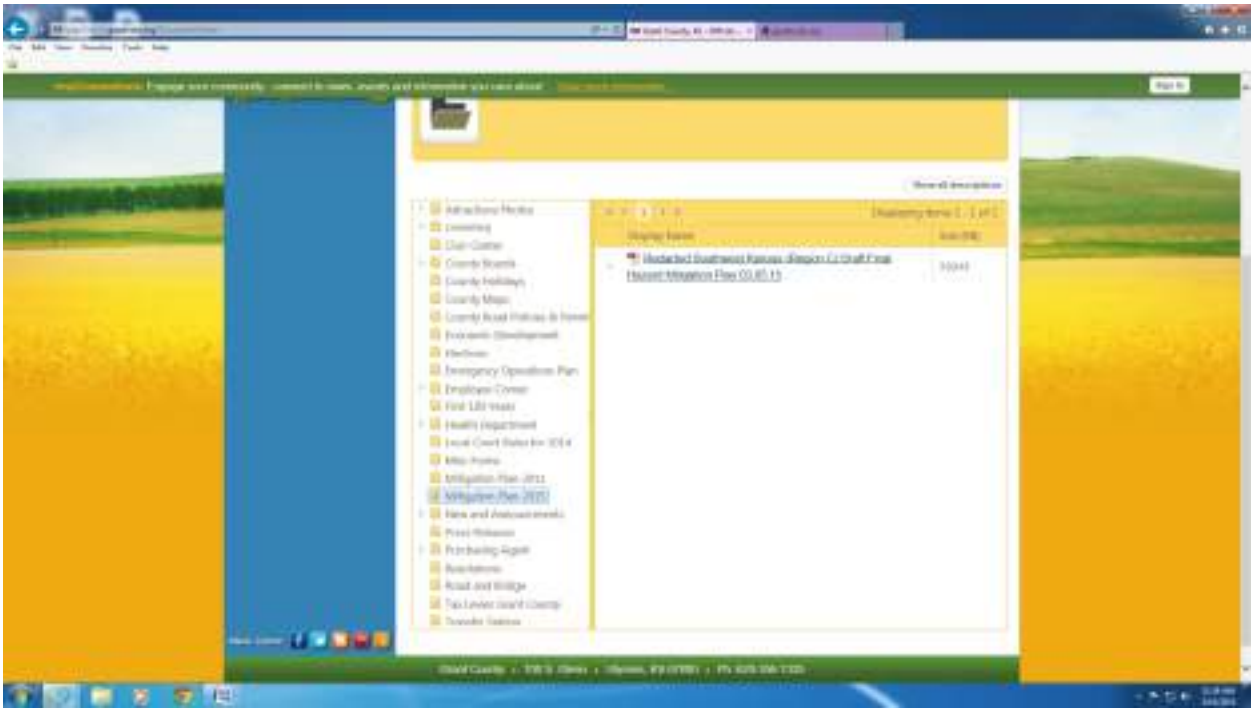

APPENDIX D

CRITICAL FACILITIES

RESTRICTED

APPENDIX E

FEMA APPROVAL DOCUMENTATION