



2011 -2016 Republic County Multi-Jurisdiction Hazard Mitigation Plan

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Republic County Hazard Mitigation Planning Committee

Republic County Emergency Management
Raymond Raney, Beth Reed
Republic County
LEPC – Lewis Novak, Stephen Zukowski, David McMullen
Board of County Commissioners – Frank Rytch
Sheriff – David Cox, Gary Thomon, Andrew Bates, Jimmy Shepek, Ron Blad, Brandi Larson
EMS – Trevor Lieb, Don Lieb, Jeff Novak, David Strnad, Dawn Novak, David Kadavy, Pam Smith
Republic County Hospital – Stephanie Swiercinsky, Tom Hiatt
Republic County Health Department – Marcia Hansen
Cities
City of Agenda – Kent Kalivoda
City of Belleville – Randy Hansen
City of Courtland – Janet Weir
City of Cuba – Jay Beam
City of Munden – Leroy Splichal
City of Narka – Roger Stephens, Nathan Svoboda
City of Republic – Dennis Wilkins
City of Scandia – Gary Cline
Unified School Districts
Republic County USD 109
Pike Valley USD 426 – Chris Vignery
Rural Electric Cooperatives
Rolling Hills Electric Cooperative – Mike Liggett
Fire Districts
Belleville Fire Department – Tim Royer, Don Slaughter, Eric Nondorf
Courtland Volunteer Fire Department – Ronald Allen, Trevor Lieb, Don Peterson, Wes Clark, Brian Freeman
Cuba Fire Department – Tom Skucius, Jay Beam, Trenton Skucius
Munden - Narka Rural Fire District #3 – Roger Stephens, Nathan Svoboda, Mickey Edwards
Republic County Fire District #11 - Jay Carlgren, James Bohling
Scandia Republic Fire District #9 – Evan Swanson, Jeffrey Swanson, Gary Cline, Dana Larson
Special Districts
Belleville Police Department – Gary Frint, Steven Zukowske, Jeffry Smith, Brian Schulz

Other agencies involved in the Republic County Multi-Jurisdiction planning process include:

- National Weather Service
- Kansas Department of Agriculture – Division of Water Resources
- Kansas Department Highway Patrol
- State & Local Emergency Management Consultants

Overview

According to the Federal Emergency Management Agency (FEMA), “hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.” Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended by the Disaster Mitigation Act of 2000 (DMA 2K) requires States, Tribes, and local governments to embark on a risk-based approach to reducing risks to natural hazards through mitigation planning. In Section 201.2 of 44 CFR defines Local Government as:

Any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State Law), regional or interstate government entity, or agency or instrumentality of a local government.

FEMA requires a State Mitigation Plan as a condition of pre- and post-disaster assistance. Local governments must have a FEMA-approved Local Hazard Mitigation Plan in order to apply for and/or receive project grants under the following hazard mitigation assistance programs:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Severe Repetitive Loss (SRL)

In accordance with FEMA requirements, Republic County developed this Multi-Jurisdictional Hazard Mitigation Plan for the purpose of reducing or eliminating long-term risks to citizens and property from hazard events before they occur.

Participation Requirements

The most successful mitigation plans have a wide range of stakeholders who play a key role in identifying and implementing mitigation actions. Therefore, in order to ensure jurisdictions played an active role in the planning process, the Hazard Mitigation Planning Committee (HMPC) decided during the first planning meeting that jurisdictions must:

- a) must assign a representative,
- b) attend at least one HMPC meeting,
- c) complete data collection worksheets,
- d) assist in the risk assessment process,
- e) develop and/or adopt at least one mitigation action item,
- f) review and comment on the draft plan,
- g) promote public awareness about the planning process, and
- h) formally adopt the plan.

A complete list of participating jurisdictions is in Chapter 1 – Planning Process: Participating Jurisdictions. All of the jurisdictions listed are considered to be official participants and have met all of these requirements. Please see Appendices 6-9 for documentation of plan representation at the hazard mitigation planning meetings.

The Republic County Multi-Jurisdiction Hazard Mitigation Plan is divided into four chapters following this Introduction:

- Chapter 1 – Planning Process
- Chapter 2 – Risk Assessment
- Chapter 3 – Jurisdiction Profiles
- Chapter 4 – Mitigation Strategy and Plan Maintenance

Prerequisites

FEMA requires local hazard mitigation plans to include documentation that the plan has been formally adopted by the governing body that is requesting approval of the plan. Multi-jurisdictional plans must document that each

jurisdiction requesting approval of the plan has formally adopted it. Adoption by the local government illustrates the jurisdiction’s commitment to implementing the mitigation goals and objectives. The adoption legitimizes the plan and authorizes responsible agencies to carry out their responsibilities.

Each jurisdiction that participated in the plan must have its governing body adopt the plan prior to FEMA approval. The following entities have been involved in the development process and have formally adopted this multi-jurisdictional hazard mitigation plan. Adoption Resolutions are attached in Appendix 15.

Note: After this plan has been reviewed and approved pending adoption by FEMA Region VII, the adoption resolutions will be signed by the following participating entities and attached in Appendix 16.

Republic County Adoption Resolutions

Plan Adoptions Include
Republic County
City of Agenda
City of Belleville
City of Courtland
City of Cuba
City of Munden
City of Narka
City of Republic
City of Scandia
Republic County USD 109
Pike Valley USD 426
Rolling Hills Electric Cooperative

44 CFR §201.6(d)(3) states that hazard mitigation plans must be reviewed, revised, and resubmitted for approval within five years in order to continue to be eligible for grant project funding . The plan approval date begins the five-year approval period and sets the expiration date for the plan. The official approval date is identified on the signed FEMA approval letter, along with the expiration date of the plan.

In the event the plan is not adopted by a participating jurisdiction, that jurisdiction would not be eligible for project grants under the hazard mitigation assistance programs previously mentioned.

CHAPTER 1 – PLANNING PROCESS

Republic County utilized the *Local Multi-Hazard Mitigation Planning Guidance (2008)* developed by FEMA in order to structure the planning process for the local hazard mitigation plan. According to the planning guidance the planning process should do the following:

1. Indicate how the public was given the opportunity to comment on the plan during the drafting stage and prior to plan approval;
2. Include a discussion of the opportunity provided to neighboring communities, governmental agencies, businesses, academia, and other relevant private and non-profit interests to be involved in the hazard mitigation planning process; and
3. Describe the review of any existing plans, studies, reports, and technical information, and how these are incorporated into the plan.

The planning process is described in this chapter. Chapter 1 is divided into the following sections:

- Project Leader and Contractual Support
- Public Participation
- Neighboring County Participation
- Participating Jurisdiction
- Hazard Mitigation Planning Meetings
 - Schedule of Republic County HMPC meetings
 - Hazard mitigation meeting participants
 - Summary of hazard mitigation planning meetings
- Review and integration of existing plans, data reports, and studies
- Obstacles encountered during the planning process

The objective of this plan is to assess the impact of the hazards and define mitigation goals and strategies to reduce the impact of hazard events. Studies have shown post-disaster costs are reduced greatly by pre-disaster mitigation planning. The plan identifies mitigation measures to protect critical facilities, reduce liability of exposure, minimizes the overall risks for the community. The information in this plan will help guide and coordinate mitigation activities in the future.

Contractual Support

Republic County Emergency Management and the County Commissioners contracted with a consulting firm to assist in the development of the plan. Republic County retained the services of State and Local Emergency Management, LLC in November 2009. The contractor's role was to:

- Facilitate hazard mitigation meetings.
- Assist in data collection and analysis of hazards that threaten the planning area.
- Develop a written draft and final hazard mitigation plan.
- Coordinate the Kansas Division of Emergency Management and FEMA Region VII plan reviews.
- Conduct a HAZUS Level 1 analysis for a 100-year flood event.

Project Leader

This project was led by the Republic County Emergency Management. Their role was to coordinate planning meetings and invite the public, participating entities and stakeholders. They were responsible for ensuring the draft and final copy of this plan were placed in a location accessible to individuals to review.

The Emergency Management invited various entities and stakeholders including unincorporated areas, incorporated cities, unified school districts, rural electric cooperatives, fire districts, several county departments, such as the Republic County Clerk, Sheriff, Health Department, LEPC, townships, police departments, farmer cooperatives, health care agencies, railroad companies, and neighboring counties. Federal, State, and Regional agencies were also invited to participate in the planning process. The meeting announcements that were sent to each entity are attached in Appendices 2-5. A meeting announcement distribution list is attached in Appendix 1.

Public Participation

Federal regulations require the planning process to include at least two opportunities for public input: one during the drafting stage of the plan and the second prior to plan approval by the Federal Emergency Management Agency (FEMA).

The initial public participation opportunity was provided on March 18, 2010 when the public was invited to attend the third hazard mitigation planning meeting. The meeting was held in conjunction with the local storm spotter training meeting. The announcement for the public meetings was advertised in the local newspaper, *The Belleville Telescope*. The news release regarding the meeting announcement is included in Appendix 15.

The next opportunity for public comment on the plan was during the draft a stage of the plan development. It was placed at the Republic County Courthouse in the Emergency Management Office for review. A press release was again placed in the local newspaper, *The Belleville Telescope* on June 30, 2011 requesting public input on the plan draft.

Neighboring County Participation

In order to develop a more comprehensive approach to decreasing the community’s vulnerability to natural disasters, the *Mitigation Planning Guidance* states the planning process should include an opportunity for neighboring communities to be involved in the planning process.

With the purpose of complying with Federal guidelines, the Republic County Emergency Management invited neighboring counties to attend the hazard mitigation planning meetings and/or provide comments on the plan draft. The neighboring counties consist of Jewell, Cloud, and Washington in Kansas and Jefferson, Nuckolls, and Thayer in Nebraska.

Jurisdictions that Participated in the Planning Process

The Republic County Hazard Mitigation Plan is a multi-jurisdictional hazard mitigation plan. Federal guidelines state a multi-jurisdictional plan is acceptable as a Local Mitigation Plan provided all the jurisdictions in the planning area have participated in the development process. The following jurisdictions are considered to be official participants and have met all of the participation requirements discussed in the plan Overview on page 5:

- | | |
|---|--|
| 1. Republic County (unincorporated areas and townships) | 7. City of Narka |
| 2. City of Agenda | 8. City of Republic |
| 3. City of Belleville | 9. City of Scandia |
| 4. City of Courtland | 10. Republic County Unified School District #109 |
| 5. City of Cuba | 11. Pike Valley Unified School District #426 |
| 6. City of Munden | 12. Rolling Hills Electric Cooperative |

Documentation of participation is provided through meeting sign-in sheets in Appendices 7-10.

Hazard Mitigation Planning Meetings

There were a total of four hazard mitigation planning meetings. The following table identifies the date of each planning meeting.

Table 1. 1 – Schedule of Republic County HMPC Meetings

Meeting	Date
Republic County HMPC Meeting #1	November 19, 2009
Republic County HMPC Meeting #2	February 22, 2010
Republic County HMPC Meeting #3	March 18, 2010
Republic County HMPC Meeting #4	June 15, 2010

Table 1.2 identifies the organizations that were represented at the hazard mitigation planning meetings.

Table 1. 2 – Meeting Participants

Organizations Represented	Meeting 1	Meeting 2	Meeting 3	Meeting 4	Provided Data	Participated in the Development of Mitigation Actions
	November 19, 2009	February 22, 2010	March 18, 2010	June 15, 2010		
Republic Co (unincorporated areas & townships)	X	X	X		X	X
City of Agenda			X	X	X	**
City of Belleville	X				X	**
City of Courtland	X		X		X	**
City of Cuba		X			X	X
City of Munden	X	X		X	X	X
City of Narka	X				X	**
City of Republic	X		X		X	**
City of Scandia	X		X	X	X	**
Republic County USD 109	X				X	**
Pike Valley USD 426	X			X	X	**
Rolling Hills Electric Cooperative		X			X	X
The county or city can function as a sub-applicant or sub-grantee on behalf of the following entities to apply for or administer hazard mitigation grants as long as the proposed mitigation actions or projects are consistent with the plan’s goals and objectives. These entities do not have individual profiles, risk assessments, or action items in the mitigation plan; however, they did participate in the Hazard Mitigation Planning Meetings.						
Republic County Hospital	X		X			
Belleville Fire Department		X	X			X
Cuba Fire Department	X	X	X			X
Munden-Narka Rural Fire District #3	X		X			

Organizations Represented	Meeting 1	Meeting 2	Meeting 3	Meeting 4	Provided Data	Participated in the Development of Mitigation Actions
	November 19, 2009	February 22, 2010	March 18, 2010	June 15, 2010		
Courtland Volunteer Fire Department			X			
Republic County RFD #11	X	X				X
Republic Fire District #9 (Scandia)			X			
Republic County LEPC	X		X			
Emergency Management	X	X	X	X	X	X
Board of County Commissioners			X			
County Highway Department			X			
Sheriff			X			
Belleville Police Department	X		X			
Republic County Health Department	X					
Republic County EMS			X			
Other Organizations Represented at Meetings						
Kansas Highway Patrol			X			
Kansas Department of Transportation	X					
National Weather Service			X			
Reinke Manufacturing			X			
State & Local Emergency Management Consultants	X	X	X	X		

Hazard Mitigation Planning Meeting Summaries

Meeting #1 Summary

The first HMPC meeting occurred on November 19, 2009. Republic County Emergency Manager, Raymond Raney began the meeting by providing a brief overview of the planning process in Republic County. The overview included an explanation of the basic goals of hazard mitigation planning. Mr. Raney explained State and Local Emergency Management Consultants (SLEMC) role as a consultant and then turned the meeting over to them.

The meeting included an explanation of the Disaster Mitigation Act of 2000 and funds available through the mitigation grant programs after the plan has been approved. The HMPC’s role during the planning process and the criteria for entities to be a considered a participating jurisdiction was defined.

SLEMC explained the need for a public participation strategy and the process for identifying hazards that affect the planning area identification. During the discussion of the public participation strategy, the HMPC came up with possible methods for promoting public participation. The discussion included utilizing the County’s website to keep the community informed of the mitigation activities, conducting town meetings, and promoting awareness of the plan on radio programs and newspaper advertisements.

All stakeholders do not have the authority to levy taxes and are not considered eligible applicants. Stakeholders that do not have taxing authority must have participating municipalities to submit mitigation projects on their behalf and are not required to adopt the plan but are encouraged to be part of the planning process. This ensures

their needs and priorities are considered when the HMPC defines mitigation strategies, goals, objectives and activities.

During the first meeting the HMPC also evaluated and ranked the hazards that pose a threat to the Republic County planning area. They determined the same hazards identified in the State of Kansas Hazard Mitigation Plan, with the exception of landslides, also have the potential to have a negative impact on the Republic County planning area. Each hazard is profiled in Chapter 2: Risk Assessment.

The risk assessment methodology required by the State of Kansas was adopted by the HMPC. Each hazard was identified and assigned a Risk Index number, using the Calculated Priority Risk Index (CPRI). Please see Chapter 2: Risk Assessment for more information on the hazard identification process.

Meeting #2 Summary

The Republic County Multi-Jurisdictional Hazard Mitigation Planning Committee held the second planning meeting on February 22, 2010. A vital stage in the mitigation planning process is to develop goals and objectives. Goals should convey the community's need to protect people and structures, reduce costs associated with disaster response and recovery, and minimize the disruption to the community following a disaster.

Goals should not identify specific mitigation actions but identify the overall improvements the community wants to accomplish. Goals are broad statements that describe the community's intentions. Communities are then encouraged to include objectives to achieve the goals as objectives enable plan reviewers to understand the connection between goals, objectives, and actions.

In order to ensure the goals and objectives are consistent with the ones of the State of Kansas, the HMPC reviewed the 2007 Kansas Hazard Mitigation Plan goals and objectives. Republic County determined several of the State of Kansas mitigation goals and objectives were consistent with the County's goals. As a result, they were used as a basis for the goals developed in the second meeting. Please refer to Chapter 4: Mitigation Strategy and Plan Maintenance for the goals and objectives developed for the planning area.

The next thing on the agenda was to develop a comprehensive list of possible mitigation actions. Mitigation actions should address existing and new buildings and infrastructure. The comprehensive list included various mitigation actions/projects for each hazard posing a threat to the planning area.

In order to assist the HMPC with the development of a comprehensive list of potential mitigation actions, State and Local Emergency Management Consultants presented the following worksheet with sample mitigation actions to be considered for implementation.

The HMPC was asked to determine the relevance of each action item by completing the worksheet during the meeting. They rated the sample mitigation actions by order of importance, with 1 being least important, 2 somewhat important and 3 most important. The handouts were collected and analyzed. The results from the mitigation action exercise are attached in the meeting minutes in Appendix 11.

Federal regulations state the local hazard mitigation plan must be updated and resubmitted to FEMA for approval every five (5) years. FEMA will not disperse funds from program grants for projects located in jurisdictions with a lapsed local mitigation plan. The lapsed period for local mitigation plans is defined as beginning on the first day after the mitigation plan expires and ending on the last date before the updated plan is approved.

Therefore, State and Local Emergency Management proposed a maintenance schedule for the hazard mitigation plan. The HMPC accepted the proposed maintenance schedule. The maintenance schedule is detailed in Chapter 4: Mitigation Strategy and Plan Maintenance.

Meeting #3 Summary

In order to promote public awareness of the hazard mitigation planning process, the HMPC decided a small presentation should be given at the storm spotter training meeting. An explanation of hazard mitigation and the planning process was provided along with a drawing for a NOAA Weather Radio. The drawing for the weather radio was for the individuals willing to complete a survey. The survey was used to determine the level of understanding of hazards that pose a threat to the community.

Hazard Mitigation Overview

Definition of hazard mitigation: *“Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects.”*

PRE-disaster mitigation connects emergency management, economic development, planning and code enforcement functions with critical infrastructure owners (80-90% in private sector), stakeholders and elected officials. National studies have shown hazard mitigation has the potential to save \$4 for every \$1 spent on preventing and diminishing recurring hazards.

Hazard Mitigation Grant Programs

According to Federal guidelines local governments must have a FEMA approved local mitigation plan in order to apply for and/or receive project grants under the following hazard mitigation assistance programs:

- Hazard Mitigation Grant Program (HMGP) - provides grants to States and Local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.
 - States with an approved Standard State Mitigation Plan will qualify for HMGP funding based on 15 percent for amounts not more than \$2,000,000,000; 10 percent for amounts of more than \$2,000,000,000; and 7.5 percent on amounts of more than \$10,000,000,000; and not more than \$35,333,000,000 of the total estimated eligible Stafford Act disaster assistance.
- Pre-Disaster Mitigation (PDM) Grant Program – provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds
- Flood Mitigation Assistance (FMA) Program – The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).
- Severe Repetitive Loss (SRL) Program – The SRL was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to Severe Repetitive Loss (SRL) structures insured under the NFIP. The definition of SRL is:
 - a property 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;
 - a property 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
- Repetitive Flood Claims (RFC) Program - The RFC grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004. Up to \$10 million is available annually for FEMA to provide RFC funds to assist States and communities reduce flood damages to insured properties that have

had one or more claims to the NFIP. FEMA may contribute up to 100 percent of the total amount approved under the RFC grant award to implement approved activities, if the Applicant has demonstrated that the proposed activities cannot be funded under the Flood Mitigation Assistance (FMA) program.

After the overview of hazard mitigation and the drawing for the NOAA weather radio, the storm spotter training was conducted. The meeting minutes for the 3rd planning meeting are attached in Appendix 12.

Meeting #4 Summary

The HMPC requested State and Local Emergency Management meet on an individual basis with the participating jurisdictions in the planning area to go discuss their mitigation actions. Republic County Emergency Manager, Raymond and SLEMC employees met with the participating jurisdictions.

The individual meetings consisted of evaluating and prioritizing mitigation actions. The technique used to analyze and prioritizing the mitigation actions was the STAPLEE method. An emphasis was put on cost effectiveness and the protection of human lives while analyzing and ranking the mitigation actions. A combined list of action items and their priority ranking is provided in the meeting minutes attached in Appendix 13.

Review and Incorporation of Existing Plans, Data Reports, and Studies

Various agencies participated in the planning process to ensure the mitigation actions adopted compliment the objectives outlined in other plans and documents. Coordination with other organizations is essential for the success of this plan.

In order to be consistent with the objectives of other organizations, the Republic County HMPC gathered and assessed various existing plans, data reports, and studies. Some of the other plans utilized in the development of this plan include:

- *Local Multi-Hazard Mitigation Planning Guidance (2008)*
- 2007 Kansas Hazard Mitigation Plan
- 2010 Kansas Hazard Mitigation Plan
- Kansas Water Plan
- Emergency Preparedness Guidebook
- Kansas Association of Conservation Districts Five Year Strategic Plan 2009-2013
- 2010 Managing the Risk Report by the Kansas Commission on Emergency Planning and Response
- National Flood Insurance Program's Community Information System reports
- 2010 Kansas Severe Weather Awareness Week Information Packet by the National Weather Service, Kansas Emergency Management Association (KEMA), and Kansas Division of Emergency Management
- 2010 Kansas Department of Transportation Quick Facts Report

This hazard mitigation plan provides a structure for ongoing efforts to achieve Republic County's mitigation goals and objectives identified in Chapter 4. It should be used by decision-makers as they prepare budgets, prioritize capital improvements, review development proposals and establish regulations for land use and development.

Planning Process Obstacles

Obstacles encountered during this planning process include data limitations. Data limitations were encountered while developing the risk assessment. Historical events for agricultural infestation and fog hazards were difficult to obtain. These are areas where more data will need to be provided in future updates.

CHAPTER 2 - RISK ASSESSMENT

Hazard Identification Analysis

The risk assessment in this chapter was developed in order to identify and prioritize appropriate mitigation actions to minimize losses from identified hazards. Each hazard was discussed in depth. The discussion included the number of historical hazard events and the magnitude of impact each hazard had on the planning area. After discussing the past, the HMPC rated the probability, magnitude, duration, and warning time for future events. After ranking each hazard the HMPC came up with an action plan for each hazard. The action plan included the actions already being done, as well as the actions to be implemented in the future.

During the assessment stage of planning data was gathered from various sources; including the Republic County Hazard Mitigation Planning Committee, Republic County Health Department, Republic County Emergency Management, Republic County Fire Districts, Unified School Districts, the Rural Electric Cooperative, Kansas Geological Survey, Kansas Department of Agriculture - Division of Water Resources, Kansas Center for Community Economic Development, National Weather Service, National Climatic Data Center, U.S. Department of Agriculture, and the Kansas Department of Health and Environment.

This hazard mitigation plan, as well as future editions of it, will be used to make the community more resistant to the impacts of future disasters. It will continue to be updated and expanded upon in the future to ensure it reflects the changing conditions in the planning area and the characteristics of the hazards that threaten it. It will be used to continue informing and involving the general public of hazards that threaten the planning area and the mitigation actions being taken to reduce the impact of those impending hazards.

The HMPC identified the hazards that pose a threat to Republic County. The hazards are listed in alphabetical order and divided into the following sections:

- **Hazard Identification** – identifies and defines the hazards likely to affect the planning area.
- **Past Hazard Events** – includes the date the event occurred, magnitude of the event, duration, and cost of damages that were incurred.
- **Magnitude of Hazard** – the potential impact the hazard may have on the community. The probability for future occurrence is also discussed in this portion of the risk assessment.
- **Hazard Risk Summary** – gives an overview of the HMPC ranking of probability, magnitude/severity, duration, and warning time. It also provides a comparison with the State's ranking for each hazard.
- **Hazard Vulnerability** – assesses the vulnerability and potential loss to key facilities and infrastructure from the more significant hazards. For individual jurisdictional vulnerability please refer to "Chapter 3 – Jurisdiction Profiles."

Defining the Hazards

Federal Hazard List

Table 2.1 is a list of possible hazards and emergencies according to FEMA classifications. These hazards and emergencies have the potential to affect the nation. They are divided into three categories: natural hazards, technological hazards, and terrorism.

Table 2. 1 - FEMA Classifications of Hazards and Emergencies

Natural Hazards	
Avalanche	Landslides and Debris Flow
Coastal Erosion	Thunderstorms and Lightning
Coastal Storm	Tornadoes
Earthquakes	Tsunamis
Extreme Heat	Volcanoes
Fires	Wildfires
Floods	Winter Storms and Extreme Cold
Hurricanes	
Terrorism	Technological Hazards
Explosions	Hazardous Materials Incidents
Biological Threats	Nuclear Power Plants
Chemical Threats	
Nuclear Blasts	
Radiological Dispersion Device (RDD)	

State of Kansas Hazard List

The Kansas Hazard Mitigation Team has identified the following hazards with the potential to affect the state of Kansas. These hazards are profiled in the 2010 Kansas Hazard Mitigation Plan. Federal planning standards require that these hazards be considered by every municipality in Kansas, when developing their own plan. Below is a list of the State Identified Hazards. They are divided into two categories: natural and manmade or technological.

Table 2. 2 – State of Kansas Identified Hazards

Natural Hazards			
Agricultural Infestation	Extreme Temperatures	Landslide	Windstorm
Dam and Levee Failure	Flood	Lightning	Winter storm
Drought	Fog	Soil Erosion and Dust	
Earthquake	Hailstorm	Tornado	
Expansive Soils	Land Subsidence	Wildfire	
Manmade/Technological Hazards			
Major Disease Outbreak			
Hazardous Materials			
Radiological			
Terrorism/Agro -Terrorism/Civil Disorder			
Utility/Infrastructure Failure			

Disaster Declaration and Damage Assessment Processes

Federal Disaster Declarations and Hazard Mitigation

A federal disaster declaration can be issued by the President for an impending or actual disaster. There are magnitude guidelines that indicate to state and federal officials if the impact is likely to call for a presidential declaration.

Presidential Declaration – The Federal Robert T. Stafford Act, otherwise known as the Stafford Act requires that all requests for a declaration by the President be made by the Governor of the affected state (Federal Emergency Management Agency). The Governor’s disaster declaration request is made through FEMA Region VII office in Kansas City, Missouri.

The Governor’s makes disaster declarations and requests for federal assistance based on State damage assessment reports. The Governor must take appropriate action under state law in order to execute the State’s Emergency Response Plan. The declaration request must be documented with the nature of the disaster, the amount of state and local funds that will be dedicated to the disaster, and a cost estimate of the damage. The request must also state the magnitude of the impact on the public and private sectors and estimate of the amount and type of assistance needed under the Stafford Act. The Governor will also need to attest that state and local government obligations and expenditures will comply with all applicable cost-sharing requirements.

Based on the Governor’s request, the President may declare that a major disaster or emergency exists. Once the President has declared a major disaster or emergency has occurred, a number of Federal programs would be activated to assist in the response and recovery effort. The Kansas Division of Emergency Management customarily requests the implementation of the Federal Hazard Mitigation Grant Program in all Presidential disasters declared for Kansas. Table 2.3 is the presidential disaster declarations for Republic County, Kansas (Public Entity Risk Institute (PERI)). The costs shown are statewide for each incident in year 2009 dollar, not for Republic County specifically.

Table 2.3 – Presidential Disaster Declarations Involving Republic County

Designation Number	Description	Date	Total Cost of Disaster (2009 \$)	President the Declared Disaster
88	Floods	11/6/1958	874,692	Eisenhower
229	Tornadoes, Severe Storms & Flooding	7/18/1967	5,297,033	Johnson
378	Severe Storms & Flooding	5/2/1973	9,297,033	Nixon
403	Tornadoes, Severe Storms & Flooding	9/28/1973	19,843,454	Nixon
1000	Severe Storms & Flooding	7/22/1973	144,818,186	Clinton
1741	Severe Winter Storms	2/1/2008	296,528,846	GW Bush
1776	Severe Storms, Flood and Tornadoes	7/9/2008	45,133,474	GW Bush

A state of emergency is a governmental declaration that may suspend certain normal functions of government, alert citizens to alter their normal behaviors, or order government agencies to implement emergency preparedness plans. Such declarations usually come during a time of natural disaster or during periods of civil disorder. Table 2.4 is the presidential emergency declarations declared that have involved Republic County (Public Entity Risk Institute (PERI)). The costs shown are the statewide costs associated with the declarations in year 2009 dollar, not for Republic County specifically.

Table 2. 4 – Emergency Declarations Involving Republic County

Declaration Number	Description	Date	Total Cost of Disaster (2009 \$)	President the Declared Disaster
3236	Hurricane Katrina Evacuation	9/10/2005	174,569	GW Bush
3282	Severe Winter Storms	12/12/2007	1,953,793	GW Bush

State Disaster Declaration Process

A state disaster declaration is issued by the Governor when the circumstances are considered to exceed local (city and county) resources. Such declarations, pursuant K.S.A. 48-924 activates the disaster response and recovery portion of the Kansas Response Plan and any local and inter-jurisdictional disaster plans applicable to the affected area. The County Emergency Managers will submit damage reports to the Kansas Division of Emergency Management to help determine the affected areas to be included in the state disaster declaration.

State disaster declarations do not activate emergency funds or programs to aid with the response and recovery. The only emergency funds available are limited to reimbursing state agencies for disaster related losses. There are no hazard mitigation provisions implemented by the state disaster declaration. The hazard mitigation funds are for pre-disaster work. State disaster declarations must be filed quickly with the Kansas Division of Emergency Management, the Office of the Secretary of State, and each city or county clerk in the affected area. The following table is the State Disaster Declarations for Republic County.

Declaration Number	Description	Date
M4010	Severe Storms, Straight-line Winds, Tornadoes, and Flooding	5/19-6/4/2011

Local Disaster Declaration Process

The local government, meaning counties and cities, are designated under Kansas law with the authority to issue disaster declarations, under Kansas Statutes Annotate (K.S.A.) 48-932. When such declarations are made, it activates the local emergency response plan. The local emergency response plan addresses response and recovery plans for the area, including emergency assistance.

Damage information is collected by the County Emergency Managers from local officials, local response agencies, extension agents, voluntary organizations, local media, business owners and residents. The damage information is utilized to determine the level of response required. Emergency Managers report to the Board of County Commissioners on the emergency status. They request the issuance of a local disaster declaration if deemed necessary. Local disaster declarations must be filed promptly with the county or city clerk. The county or city clerk keeps a record of all local disasters declarations. The record of local disaster declarations is critical for documenting repetitive losses. The repetitive loss information is used when municipalities and special districts submit requests for hazard mitigation funds to the local government and FEMA. Damage levels do not need to reach state or federal disaster status to count toward repetitive loss consideration.

Methodology

Mitigation plans are based on an analysis of potential risk. The analysis of risk is measured by:

- Defining the planning area.
- Identifying the hazards most and least common in the planning area.
- Rating the vulnerability for people, buildings, and infrastructure in the planning area.

There are two state requirements specific to mitigation risk assessment. One is the pre-defined list of hazards that impact Kansas, which is the basis for evaluating the threats to the planning area. The second is the implementation of the MitigationPlan.com methodology for risk assessment. That process is the Calculated Priority Risk Index (CPRI). The CPRI includes the rating of hazards based on four hazard-specific features, which are probability, magnitude, duration, and warning time. An independent numerical value is assigned to each of these features, and the multiplication of the rating times the value yields the measure for each of the four characteristics of each hazard.

In order to incorporate the MitigationPlan.com methodology into this plan, the risk assessment was based on historic hazard events that have occurred and the probability that hazard events will occur in the future. The information on previous occurrences was collected and evaluated to determine the frequency and magnitude of hazard events. Some of the historical information in the plan was based on the information contained in the Republic County Hazard Analysis and the Republic County Emergency Operations Plan. The National Climatic Data Center (NCDC) was also a vital source of information.

The frequency of past occurrences and the magnitude of those events were then analyzed to predict the probability of a future hazard event. This analysis was also used to predict the severity of a possible hazard event. The methodology was applied to each of the 22 hazards profiled.

The HAZUS-MH MR4 tool was also used to evaluate the potential risk to the planning area due to dam/levee breaches and floods. The software was developed for the Federal Emergency Management Agency, and is available free of charge at <http://www.fema.gov>.

HAZUS is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of HAZUS is to provide methodology and software application to develop multi-hazard loss at a regional scale. These loss estimates would be used in planning efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

A Level 1 assessment was performed using the default parcel data provided by HAZUS. The use of this software provides data more specific to each jurisdiction in the planning area. Chapter 3 – Jurisdiction Profiles provides more detailed information on critical infrastructure and vulnerabilities for each jurisdiction.

Republic County Hazard Identification Process

The Republic County HMPC agreed that all hazards identified by Kansas Hazard Mitigation Team in the State Hazard Mitigation Plan of 2007 also pertain to their planning area.

The focus of the planning effort was placed on natural hazards because of the funding stream attached to existing mitigation programs. However, some manmade/technological hazards are recognized as posing a significant threat to the area, and therefore profiled in this risk assessment. Using Calculated Priority Risk Index (CPRI) in Table 2.5 the HMPC ranked each hazard.

Table 2. 5 - Calculated Priority Risk Index (CPRI) Element Definitions

Probability (Probability x .45)	
4 - Highly Likely	Event is probable within one calendar year
	Event has up to 1 in 1 year chance in 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 in occurring (1/3 = 33%)
	History of event is greater than 20% but less than or equal to 33% likely per year
	Event is "Likely" to occur
2 - Possible	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
Magnitude/Severity** (Magnitude/Severity x .30)	
4 - Catastrophic	Multiple deaths
	Complete shutdown of critical facilities for 30 or more days
	More than 50% of property is severely damaged
3 - Critical	Injuries and/or illnesses result in permanent disability
	Complete shutdown of critical facilities for at least 2 weeks
	25-50% 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 1 week
	10-25% 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% of property is severely damaged
Warning Time (Warning Time x .15)	
4	Less than 6 Hours
3	6-12 Hours
2	12-24 Hours
1	24+ Hours
Duration (Duration x .10)	
4	More than 1 Week
3	Less than 1 Week
2	Less than 1 Day
1	Less than 6 Hours

**According to the severity associated with past events or the probable worst case scenario possible in the state

The formula used to determine each hazard’s CPRI is as follows:

$$(Probability \times .45) + (Magnitude \times .30) + (Warning \ Time \times .15) + (Duration \times .10) = CPRI$$

Based on the CPRI the hazards were separated into three categories of planning significance. The categories are: High (3.0-4.0), Moderate (2.0-2.9), and Low (1.0-1.9).

The hazard ranking was based on the CPRI for the county as a whole. The ranking is not always the same for individual jurisdictions in the planning area. The jurisdictions may have different rankings based on the impact past hazard events have had on their specific community. Please refer to Chapter 3: Jurisdiction Profiles for the hazard ranking and planning significance for each jurisdiction.

Below is the hazards ranking for the entire planning area in comparison to the hazard’s ranking for the State of Kansas from the 2010 Hazard Mitigation Plan. The two columns in yellow are the hazard ranking and planning significance for Republic County. The last two columns are the hazard ranking and planning significance for the State of Kansas.

Table 2. 6 - Hazard Vulnerability Assessment - Republic County Compared to the State of Kansas

Hazard	Probability	CPRI Outcome	Magnitude	CPRI Outcome	Warning Time	CPRI Outcome	Duration	Republic County CPRI Outcome	Republic County CPRI Hazard Ranking	Republic County Planning Significance	Kansas CPRI	State of Kansas Planning Significance	State of Kansas Probability
Winter Storm	4	1.80	4	1.20	4	0.60	4	0.40	4.00	High	3.3	High	Highly Likely
Tornado	4	1.80	4	1.20	4	0.60	2	0.20	3.80	High	3.4	High	Highly Likely
Windstorm	4	1.80	3	0.90	4	0.60	3	0.30	3.60	High	3.35	High	Highly Likely
Flood	4	1.80	3	0.90	3	0.45	3	0.30	3.45	High	3.45	High	Highly Likely
Utility/Infrastructure Failure	4	1.80	2	0.60	4	0.60	3	0.30	3.30	High	2.85	Moderate	Likely
Hailstorm	4	1.80	2	0.60	4	0.60	1	0.10	3.10	High	2.95	Moderate	Highly Likely
Drought	4	1.80	2	0.60	1	0.15	4	0.40	2.95	Moderate	2.35	Moderate	Possible
Extreme Temperatures	4	1.80	2	0.60	1	0.15	4	0.40	2.95	Moderate	2.4	Moderate	Likely
Major Disease Outbreak	4	1.80	2	0.60	1	0.15	4	0.40	2.95	Moderate	3.25	High	Highly Likely
Soil Erosion and Dust	4	1.80	2	0.60	1	0.15	4	0.40	2.95	Moderate	1.75	Low	Possible
Terrorism/Agro-Terrorism/Civil Disorder	4	1.80	2	0.60	1	0.15	4	0.40	2.95	Moderate	2.65	Moderate	Unlikely
Wildfire	4	1.80	1	0.30	4	0.60	2	0.20	2.90	Moderate	3.2	High	Highly Likely
Lightning	4	1.80	1	0.30	4	0.60	1	0.10	2.80	Moderate	2.5	moderate	Highly Likely
Expansive Soils	3	1.35	1	0.30	4	0.60	4	0.40	2.65	Moderate	2.65	Moderate	Highly Likely
Agricultural Infestation	3	1.35	2	0.60	1	0.15	4	0.40	2.50	Moderate	2.95	Moderate	Highly Likely
Hazardous Materials	2	0.90	1	0.30	4	0.60	2	0.20	2.00	Moderate	2.9	Moderate	Highly Likely
Fog	3	1.35	1	0.30	1	0.15	1	0.10	1.90	Low	1.6	Low	Possible
Earthquake	1	0.45	1	0.30	4	0.60	1	0.10	1.45	Low	1.75	Low	Unlikely
Dam and Levee Failure	1	0.45	2	0.60	1	0.15	1	0.10	1.30	Low	2.35	Moderate	Unlikely
Land Subsidence	1	0.45	1	0.30	1	0.15	4	0.40	1.30	Low	2.2	Moderate	Likely
Landslide	1	0.45	1	0.30	1	0.15	4	0.40	1.30	Low	2.2	Moderate	Likely
Radiological	1	0.45	1	0.30	1	0.15	4	0.40	1.30	Low	1.95	Low	Unlikely

HAZARD DESCRIPTIONS

Agricultural Infestation

Hazard Definition

The term “Agricultural Infestation” refers to naturally occurring threats to agricultural production including the infestation by insects or diseases to crops and livestock. Potentially diminishing or eliminating their marketability and/or value.

Certain levels of plant and animal diseases are common in the planning area, the problem occurs when the infestation becomes an epidemic. An epidemic refers to the outbreak and rapid spread of a disease that affects a large number of plants or animals in a relatively short period of time.

The primary concern regarding agricultural infestation is the possible introduction to foreign animal disease, such as foot and mouth disease or bovine spongiform encephalopathy (BSE). Both of these diseases could have enormous economical consequences. Republic County is a large cattle producing county. The potential for highly contagious diseases is a significant threat.

Crops are also economically important to Republic County and are vulnerable to disease infestations, such as chinch bugs, leaf rust, wheat streak mosaic, barley yellow dwarf, strawbreaker and tan spot.

Chinch Bugs are small lygaeid bug, *Blissus leucopterus*, which feeds on corn, wheat, and other grains. They live above the soil and feed on living plants by means of a piercing mouthpart called a stylet (similar to a mosquito). The insect inserts its stylet into the leaves, stems or crowns and sucks the juices out of the plant. The damage looks quite similar to drought symptoms.

History of Agricultural Infestations

Past Livestock Infestations

According to the 2010 State of Kansas Hazard Mitigation Plan, in 2002 the State of Kansas experienced a foot and mouth scare, which was later determined to not be foot and mouth.

The first confirmed domestic case of BSE was in reported in the State of Washington. Several herds of cattle had to be quarantined and/or destroyed.

Past Crop Infestations

April 22, 2010	Strip Rust was observed in low levels in research plots near Belleville, Kansas. The disease was present in the varieties Jagalene, Jagger, and Santa Fe (K-State Department of Plant Pathology Extension).
May 23-26, 2010	A low level of leaf rust was found in wheat fields. Most fields in north central are now past the flowering season and the disease is not expected to cause serious yield loss. Both stripe rust and leaf rust were observed in Republic County (Bob Hunger).
2010	The HMPC reported chinch bugs have recently been a problem for the planning area. Damage estimates were not provided.

Probability and Magnitude of Agricultural Infestation

The HMPC determined it is probable that an agricultural infestation will occur within the next three years. Therefore, the probability for agricultural infestation is “likely”.

Although the HMPC determined it is likely for agricultural infestation to occur, they determined the magnitude for such an occurrence is “limited”. The magnitude is limited because 10 to 25 percent of the agricultural property would be affected. An extremely severe outbreak could potentially have enormous economical ramifications, but most likely a minor outbreak would result in a lower yield to the wheat production or lower cattle production.

Agricultural Infestation Risk Summary

Table 2.7 is a risk summary for agricultural infestation for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 7 –Agricultural Infestation Risk Summary

Agricultural Infestation	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	3	4
Magnitude	2	NA*
Warning Time	1	NA*
Duration	4	NA*
Planning Significance	Moderate	Moderate
Risk Index	2.50	2.95
Ranking	15 out of 22	8 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality used the aforementioned CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 8 - Agricultural Infestation Planning Significance by Jurisdiction

Jurisdiction	Past Occurrence	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Yes	Likely	Limited	24 + hr	> 1 week	Moderate
Agenda	None Reported	Unlikely	Limited	24 + hr	> 1 week	Low
Belleville	Yes	Highly Likely	Limited	24 + hr	> 1 week	High
Courtland	None Reported	Unlikely	Limited	24 + hr	> 1 week	Low
Cuba	None Reported	Unlikely	Limited	24+ hr	>1 week	Low
Munden	None Reported	Unlikely	Limited	24 + hr	> 1 week	Low
Narka	None Reported	Unlikely	Limited	24 + hr	> 1 week	Low
Republic	None Reported	Unlikely	Limited	24 + hr	> 1 week	Low
Scandia	None Reported	Unlikely	Limited	24 + hr	> 1 week	Low

Agricultural Infestation Vulnerability

Many experts fear that intentional, criminal introduction of a disease such as foot and mouth to one or more of Kansas stockyards would result in a rapid spread of the disease throughout the nation and could have severe economic consequences. According to the 2010 Kansas Hazard Mitigation Plan, Republic County is slightly susceptible to agricultural infestation. Figure 2.1 is from the 2010 Kansas State Hazard Mitigation Plan identifying the regions with confined animal feeding operations facilities (Kansas Hazard Mitigation Team). Republic County has four feedlots, making it a potential target for agri-terrorism. The feedlots are located in Agenda, Cuba, Belleville, and Scandia.

Figure 2. 1 – Kansas Confined Animal Feeding Operations Facilities



Agriculture infestation does not target any specific geographical section of the county. It does not affect any structures; however the entire county is still vulnerable to agriculture related outbreaks due to economic factors.

Agricultural infestations are a concern for the planning area also because there are 406,745 acres of land used for agricultural production in Republic County. The agricultural sales from those farms have an annual market value of \$148,058,000, which is an average of \$217,094 per farm. Crop sales account for 54 percent of the total sales and livestock accounts for 46 percent of the total sales (USDA).

Certain climatic factors, such as heavy rains or extended periods of drought, can also be conducive to the spread of disease or infestations. Other natural disasters, such as windstorms and tornadoes, have the potential to disperse disease and pests into areas not previously affected. With the favorable weather conditions the probability of a major outbreak could rise.

Dam Failure

Hazard Definition

A dam is an artificial barrier usually constructed across a stream channel to impound water. A dike or levee is any artificial barrier together with appurtenant works that will divert or restrain the flow of a stream or other body of water for the purpose of protecting an area from inundation by floodwaters.

Dams

A state-regulated dam is defined as “any artificial barrier including appurtenant works with the ability to impound water, wastewater, 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” (Association of State Dam Safety Officials).

According to FEMA, there are three hazard classifications for dams, low, significant, and high. These classifications are risk-based and do not reflect the physical condition of dams. They are listed in order of increasing adverse consequences.

The hazard potential classification should be used with the understanding that the failure of any dam or water-retaining structure, no matter how small, could represent a danger to downstream life and property. The classification system categorizes dams based on the probable loss of human life and the impacts on the economy, environment, and lifeline interests.

Low Hazard Potential – dam failure results in no likely loss of human life and the potential economic and/or environmental losses are low.

Significant Hazard Potential – dam failure results in no probable loss of human life but can cause economic loss, environmental damage, or disruption of lifeline facilities. Significant hazard potential classification dams are often located in primarily rural or agricultural areas but could be located in areas with population and significant infrastructure.

High Hazard Potential - dam failure results in will probably cause loss of human life.

Since 1983, any dam classified as high hazard is required to have a breach inundation map prepared to identify the extent of downstream flooding that would occur if the dam were breached during a catastrophic event. These maps are available to be used by local governments to limit development of houses or other structures in these inundation zones.

According to the National Inventory of Dams and Kansas Department of Agriculture - Water Structures Program, Division of Water Resources there are 126 dams in Republic County; none of them are high hazard dams, one is a significant hazard dam, 37 are low hazard, and 87 have not been classified. The dams that have not been issued a hazard classification were permitted prior to hazard classification definitions were included in the regulations.

Table 2.9 lists all of the dams in Republic County. Storage is measured in acre-feet, which is defined as the total storage space in a reservoir below the normal retention level, including dead and inactive storage and excluding any flood control or surcharge storage. The one significant hazard dam is highlighted in yellow.

Table 2. 9 – Republic County Dams

NID ID	STATE ID	DAM NAMES	STREAM NAME	CURRENT HAZARD CLASSIFICATION	DOWNSTREAM CITY	YEAR COMPLETED	TOP OF DAM STORAGE	DRAINAGE AREA ACRES	OWNER NAME
KS00100	DRP-0084	KSNONAME 100	NORTH FORK MILL CREEK-TR	LOW	HADDAM	N/A	61	N/A	PRIVATE

NID ID	STATE ID	DAM NAMES	STREAM NAME	CURRENT HAZARD CLASSIFICATION	DOWNSTREAM CITY	YEAR COMPLETED	TOP OF DAM STORAGE	DRAINAGE AREA ACRES	OWNER NAME
KS00567	DRP-0124	KSNONAME 567	DRY CREEK-TR	LOW	VINING	1974	70	N/A	PRIVATE
KS00577	DRP-0118	KSNONAME 577	CHERRY CREEK-TR	LOW	HADDAM	1977	41	145	PRIVATE
KS00599	DRP-0125	KSNONAME 599	RILEY CREEK-TR	LOW	BELLEVILLE	1970	50	N/A	PRIVATE
KS00791	DRP-0108	KSNONAME 791	GRAVE CREEK-TR	LOW	CONCORDIA	1970	62.7	115	PRIVATE
KS00793	DRP-0126	KSNONAME 793	LOST CREEK-TR	LOW	CONCORDIA	1962	50	N/A	PRIVATE
KS00966	DRP-0127	KSNONAME 966	DRY CREEK-TR	LOW	SCANDIA	1975	80	N/A	PRIVATE
KS01188	DRP-0128	KSNONAME 1188	OTTER CREEK-TR	LOW	REPUBLIC	1965	50	N/A	PRIVATE
KS01191	DRP-0129	KSNONAME 1191	ST JOHNS CREEK-TR	LOW	CONCORDIA	1965	55	N/A	PRIVATE
KS01784	DRP-0060	KSNONAME 1784	DRY CREEK-TR	LOW	SCANDIA	N/A	64	N/A	PRIVATE
KS01786	DRP-0063	KSNONAME 1786	WEST CREEK-TR	LOW	HOLLIS	N/A	73	N/A	PRIVATE
KS01788	DRP-0080	KSNONAME 1788	ROSE CREEK-TR	LOW	HUBBELL NEBRASKA	N/A	97	N/A	PRIVATE
KS01790	DRP-0089	KSNONAME 1790	WEST CREEK-TR	LOW	HOLLIS	N/A	38	N/A	PRIVATE
KS01791	DRP-0090	KSNONAME 1791	WEST FORK ELK CREEK-TR	LOW	CLYDE	N/A	55	N/A	PRIVATE
KS01792	DRP-0091	KSNONAME 1792	WEST FORK SALT CREEK-TR	LOW	HOLLIS	N/A	76	N/A	PRIVATE
KS01793	DRP-0093	KSNONAME 1793	UPTON CREEK-TR	LOW	CLYDE	N/A	113	N/A	PRIVATE
KS01794	DRP-0094	KSNONAME 1794	LOST CREEK-TR	LOW	CONCORDIA	N/A	54	N/A	PRIVATE
KS01795	DRP-0095	KSNONAME 1795	NORTH FORK MILL CREEK-TR	LOW	HADDAM	N/A	95	N/A	PRIVATE
KS01796	DRP-0096	KSNONAME 1796	SOUTH FORK MILL CREEK-TR	LOW	HADDAM	N/A	104	N/A	PRIVATE
KS01797	DRP-0097	KSNONAME 1797	WEST FORK ELK CREEK-TR	LOW	CLYDE	N/A	82	N/A	PRIVATE
KS01798	DRP-0098	KSNONAME 1798	SOUTH FORK MILL CREEK-TR	LOW	HADDAM	N/A	156	N/A	PRIVATE
KS01799	DRP-0102	KSNONAME 1799	EAST CREEK-TR	LOW	HOLLIS	N/A	53	N/A	PRIVATE
KS01800	DRP-0104	KSNONAME 1800	OAK CREEK-TR	LOW	CONCORDIA	N/A	78	N/A	PRIVATE

NID ID	STATE ID	DAM NAMES	STREAM NAME	CURRENT HAZARD CLASSIFICATION	DOWNSTREAM CITY	YEAR COMPLETED	TOP OF DAM STORAGE	DRAINAGE AREA ACRES	OWNER NAME
KS01801	DRP-0105	KSNONAME 1801	SALT CREEK-TR	LOW	HOLLIS	N/A	64	N/A	PRIVATE
KS01802	DRP-0107	KSNONAME 1802	NORTH FORK MILL CREEK-TR	LOW	HADDAM	1970	78	120	PRIVATE
KS03643	DRP-0112	KSNONAME 3643	WEST FORK ELK CREEK-TR	LOW	CLYDE	N/A	119.7	620	PRIVATE
KS03644	DRP-0130	KSNONAME 2981	OTTER CREEK-TR	LOW	REPUBLIC	1947	50	N/A	PRIVATE
KS03646	DRP-0123	ROCKY POND DAM	SALT CREEK-TR	SIGNIFICANT	BELLEVILLE	1910	446	1606	LOCAL GOVERNMENT
KS03647	DRP-0131	KSNONAME 3647	EAST CREEK-TR	LOW	HOLLIS	1955	90	N/A	PRIVATE
KS05163	DRP-0083	N/A	N/A	LOW	N/A	N/A	29.89	N/A	PRIVATE
KS05168	DRP-0076	N/A	N/A	LOW	N/A	N/A	67.6	75	PRIVATE
KS05169	DRP-0116	N/A	SALT CREEK-TR	LOW	N/A	1977	74	350	PRIVATE
KS05170	DRP-0106	N/A	N/A	LOW	N/A	N/A	36.46	70	PRIVATE
KS05171	DRP-0120	N/A	MILL CREEK-TR	LOW	N/A	1980	32	62	PRIVATE
KS05376	DRP-0122	N/A	SCHOOL CREEK-TR	LOW	N/A	1983	42	71	PRIVATE
KS07501	DRP-0119	N/A	N/A	LOW	N/A	1980	55	165	PRIVATE
KS07680	DRP-0111	N/A	N/A		N/A	1973	45.39	365	PRIVATE
KS07748	DRP-0135	N/A	LOST CREEK-TR	LOW	N/A	1997	100	320	PRIVATE
KS07853	DRP-0136	N/A	ROSE CREEK-TR	LOW	N/A	1998	68	200	PRIVATE
N/A	DRP-0001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0006	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0007	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0008	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE

NID ID	STATE ID	DAM NAMES	STREAM NAME	CURRENT HAZARD CLASSIFICATION	DOWNSTREAM CITY	YEAR COMPLETED	TOP OF DAM STORAGE	DRAINAGE AREA ACRES	OWNER NAME
N/A	DRP-0011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0013	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0016	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0025	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0026	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0027	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0028	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0029	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0030	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0031	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0033	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0035	N/A	N/A	N/A	N/A	N/A	N/A	N/A	LOCAL GOVERNMENT
N/A	DRP-0036	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0037	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0038	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE

NID ID	STATE ID	DAM NAMES	STREAM NAME	CURRENT HAZARD CLASSIFICATION	DOWNSTREAM CITY	YEAR COMPLETED	TOP OF DAM STORAGE	DRAINAGE AREA ACRES	OWNER NAME
N/A	DRP-0039	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0040	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0041	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0042	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0043	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0044	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0045	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0046	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0047	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0048	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0049	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0050	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0051	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0052	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0053	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0054	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0055	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0056	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0057	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0058	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0059	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0061	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0062	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0064	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0065	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0066	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0067	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0068	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE

NID ID	STATE ID	DAM NAMES	STREAM NAME	CURRENT HAZARD CLASSIFICATION	DOWNSTREAM CITY	YEAR COMPLETED	TOP OF DAM STORAGE	DRAINAGE AREA ACRES	OWNER NAME
N/A	DRP-0069	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0070	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0071	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0072	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0073	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0074	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0075	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0077	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0078	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0081	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0082	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0085	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0086	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0087	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0092	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0099	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0109	N/A	N/A	N/A	N/A	1969	21	50	PRIVATE
N/A	DRP-0110	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE
N/A	DRP-0132	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PRIVATE

The one significant hazard dam in Republic County is the Rocky Pond Dam. It is located on the Salt Creek Tributary. It was completed in 1910 and is owned by the City of Belleville. It was constructed of earthen materials and has a structural height of 28 feet. The storage capacity is 446 acre feet. It is a state regulated dam by Kansas Division of Water Resources. An Emergency Action Plan is currently not required for significant hazard dams; however it is inspected every five years.

History of Dam Failure

There have not been any dam failures in Republic County in the past.

Probability and Magnitude of Dam and Levee Failure

There are not any high hazard dams in Republic County. For that reason the HMPC determined the probability of a dam failure occurring is “unlikely”.

In the unlikelihood of a dam failure the HMPC determined the magnitude would be “limited” only about 10 percent of the properties would be damaged.

Dam Failure Risk Summary

Table 2.10 is a risk summary for dam failure for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 10 – HMPC Dam Failure Risk Summary

Dam Failure Risk Summary	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	1	1
Magnitude	2	NA*
Warning Time	1	NA*
Duration	1	NA*
Planning Significance	Low	Moderate
Risk Index	1.30	2.35
Ranking	19 out of 22	17 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 11 – Dam and Levee Failure Planning Significance by Jurisdiction

Hazard	Past Occurrences	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	No	Unlikely	Limited	24+ Hours	<6 Hours	Low
Agenda	No	Unlikely	Limited	24+ Hours	<6 Hours	Low
Belleville	No	Unlikely	Limited	24+ Hours	<6 Hours	Low
Courtland	No	Unlikely	Limited	24+ Hours	<6 Hours	Low
Cuba	No	Unlikely	Limited	24+ Hours	<6 Hours	Low
Munden	No	Unlikely	Limited	24+ Hours	<6 Hours	Low
Narka	No	Unlikely	Limited	24+ Hours	<6 Hours	Low
Republic	No	Unlikely	Limited	24+ Hours	<6 Hours	Low
Scandia	No	Possible	Limited	6-12 Hours	>1 Week	Moderate

Dam Failure Vulnerability

There are not any high hazard dams in Republic County. There is only one significant hazard dam, Rocky Pond Dam, in the planning area and if there is a dam breach the City of Belleville could potentially experience minor flooding.

Although there is only one significant hazard dam in Republic County, the planning area is also concerned about the Lovewell Dam in Jewell County. The Lovewell Dam could have an impact on Republic County if a dam breach were to occur. Lovewell Reservoir is 4.59 miles on the White Rock Creek. The dam is constructed of earthen materials and has a structural height of 93 feet. It was constructed in 1956. There is an emergency action plan in place for the dam. The City of Scandia is located 25 miles downstream from the dam. Although, exact damage estimates were not available, it is expected the community could experience minor to moderate damage as a result of the dam breach.

Drought

Hazard Definition

According to the National Drought Mitigation Center, drought is defined as a deficiency of precipitation over an extended period of time, resulting in a water shortage. Drought is different from other hazards because the onset is gradual rather than resulting from a particular incident. Drought conditions may also vary over a short distance, even within a single county. Keeping track of regional conditions can help alert the community to the possible development of drought in the area. The U.S. Drought Monitor is vital in this regard.

There are actually four different ways that drought can be defined.

Meteorological - a measure of departure of precipitation from normal. Due to climatic differences, what might be considered a drought in one location of the country may not be a drought in another area.

Agricultural - refers to a situation where the amount of moisture in the soil no longer meets the needs of a particular crop.

Hydrological - occurs when surface and subsurface water supplies are below normal.

Socioeconomic - refers to the situation that occurs when physical water shortages begin to affect people.

The U.S. Drought Monitor provides an overview of conditions across the nation. Five categories of drought ranging from abnormally dry to exceptional drought are depicted on a map that is updated each Thursday. Dominant regional drought impacts such as agricultural and hydrological are also shown. The general trend in conditions for your area may be determined by comparing the latest map with those for several previous weeks.

The Kansas Water Office is responsible by law (K.S.A. 74-2608) for monitoring drought conditions within the state and notifying the Governor when such conditions exist. At the onset of a drought the Governor's Drought Response Team is also assembled, as well as other times when necessary. This interagency group coordinates a phased approach to state drought response keyed to three county drought stages as declared by the Governor: Drought Watch, Drought Warning and Drought Emergency.

These drought stages provide an additional warning to local officials regarding conditions in their area. According to the U.S. Drought Monitor, as of June 7, 2011 there are several counties in Kansas experiencing drought conditions. However, Republic County is not one of those counties. Currently, Republic County is not under a drought advisory. Figure 2.2 is the drought conditions for the State of Kansas.

Figure 2. 2 – U.S. Drought Monitor

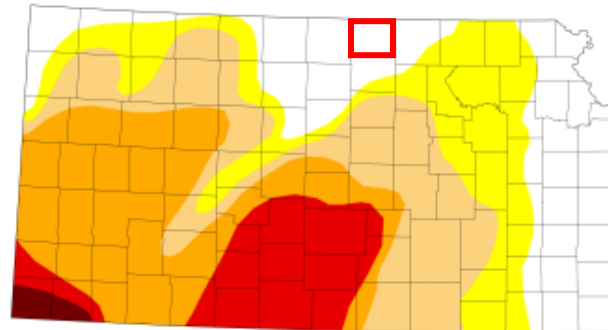
U.S. Drought Monitor

Kansas

June 7, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	23.44	76.56	57.35	35.82	12.67	1.05
Last Week (05/31/2011 map)	24.53	75.47	57.17	35.80	11.60	1.05
3 Months Ago (03/08/2011 map)	20.48	79.52	38.30	3.55	0.00	0.00
Start of Calendar Year (12/28/2010 map)	17.82	82.18	43.85	3.48	0.00	0.00
Start of Water Year (09/28/2010 map)	83.23	16.77	0.00	0.00	0.00	0.00
One Year Ago (06/01/2010 map)	100.00	0.00	0.00	0.00	0.00	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, June 9, 2011
Matthew Rosencrans, NOAA/NWS/NCEP/CPC

A description of impacts at each drought stage follows. These stages are provided by the Governor’s Drought Response Team and are roughly comparable to the to the drought categories shown in the U.S. Drought Monitor (e.g. Drought Watch = Moderate Drought).

- **Drought Watch:** U.S. Drought Monitor stage “Moderate Drought”. Some crop and pasture damage. High rangeland fire danger. Likelihood of serious public water supply shortages is growing.
- **Drought Warning:** U.S. Drought Monitor stage “Severe Drought”. Crop or pasture losses likely. Some stock water shortages. Very high rangeland fire danger. Public water supply shortages present. Some streamflow targets not being met.
- **Drought Emergency:** U.S. Drought Monitor stage “Extreme or Exceptional Drought”. Widespread major crop and pasture losses. Extreme rangeland fire danger. Widespread stock water shortages. Widespread, severe public water supply shortages. Many streamflow targets not being met

During the last century, Kansas has experienced precipitation changes accompanied by more severe storms and higher temperatures. In the future a changing climate could result in increased economic impacts on Kansas. The most recent climate modeling predicts warmer temperatures and possibly reduces water resources for much of Kansas. Water resources and agriculture are expected to be affected in a variety of ways, and Kansas could see losses of more than \$1 billion. (National Conference of State Legislatures)

Currently Kansas struggles to allocate limited water resources between irrigated farms and increasing urban areas. The majority of western Kansas relies on groundwater from the Ogallala Aquifer for irrigation and drinkable water. Ever-increasing demands from the agriculture community for irrigation water are depleting aquifer reserves. This

has caused a decrease in groundwater levels of more than 60 feet in parts of western Kansas since 1980 (National Conference of State Legislatures). Eastern Kansas, include most of the urban areas and livestock farms in the state, relies mainly on surface water for its water supply. A drier and warmer climate in western Kansas will elevate tension among water rights holders.

History of Drought Events

Republic County has experienced several droughts during its history, some of a short term nature and others more long-term. According to the National Climatic Data Center (NCDC) the county has experience four drought events.

- November 1-30, 1999 Northeast Kansas experienced extreme dry conditions and above normal temperatures throughout the month. Topeka recorded the warmest November on record with an average monthly temperature of 51.3 degrees, 8.3 degrees above normal. Outdoor activities, normally brought to an end by this time of year, continued through most of the month. The extreme dryness caused a serious problem for crops, particularly winter wheat. The dryness also contributed to an above normal number of grass fires in rural areas. Rivers and streams also ran at below normal levels.
- July-September, 2002 Many crops and pasturelands over the area were greatly affected by the drought conditions that occurred from July through September. Many farm ponds went dry causing water shortages for livestock and crops. The crops were either plowed up or made into fodder for farm animals. No actual crop damage figures were available for Republic County but estimates for all of northeast Kansas were likely to exceed 25 million dollars.
- November 1-30, 2002 After a brief interval from an unusually wet October the dry weather of this past Summer returned in November. Although temperatures averaged near normal over the area, precipitation amounts averaged 1.5 to 2 inches below normal. Only 0.03 of an inch was recorded all month at Concordia while only 0.27 of an inch fell at Topeka.
- December 1-31, 2002 The drought conditions of the past Summer and Autumn continued into December. Only .05 of an inch of rain was recorded at Topeka which tied the second driest December on record. Further to the west, Concordia recorded only .11 of an inch of rain which was three quarters of an inch below normal. Except for isolated areas in east central Kansas where moisture was received from several snow storms (discussed separately) monthly precipitation amounts over the area were less than 2 tenths of an inch.

Probability and Magnitude for Drought

Adrought is probable witin on calendar year, it has a 100 percent of occurring. Therefore, the HMPC determined the probability for a drought to occur is “highly likely.”

Approximately 10 to 25 percent of the property in Republic County would be severely damaged in a severe drought. Therefore, the HMPC determined the magnitude is limited.

Drought Risk Summary

Table 2.15 is a risk summary for drought for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 15 – Drought Risk Summary

Drought Risk Summary	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	2
Magnitude	2	NA*
Warning Time	1	NA*

Drought Risk Summary	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Duration	4	NA*
Planning Significance	Moderate	Moderate
Risk Index	2.95	2.80
Ranking	7 out of 22	16 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 12 – Drought Planning Significance by Jurisdiction

Hazard	Historical Occurrence	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Yes	Highly Likely	Limited	24 + hr	> 1 week	Moderate
Agenda	None Reported	Highly Likely	Limited	24 + hr	> 1 week	Moderate
Belleville	None Reported	Highly Likely	Limited	24 + hr	> 1 week	Moderate
Courtland	None Reported	Highly Likely	Limited	24 + hr	> 1 week	Moderate
Cuba	None Reported	Highly Likely	Limited	24 + hr	> 1 week	Moderate
Munden	None Reported	Highly Likely	Limited	24 + hr	> 1 week	Moderate
Narka	None Reported	Highly Likely	Limited	24 + hr	> 1 week	Moderate
Republic	None Reported	Highly Likely	Limited	24 + hr	> 1 week	Moderate
Scandia	None Reported	Highly Likely	Limited	24 + hr	> 1 week	Moderate

Vulnerability for Drought

Although structures are not directly affected by drought conditions, the entire planning area is vulnerable to this hazard as drought conditions can adversely affect water supplies (reservoirs or aquifers) and stream levels.

Republic County is in the Kansas-Lower Republican River Basin. According to the Kansas Water Plan, the basin contains a total of 27,629 stream miles. This water basin has 2.7 stream miles per square mile. The basin has five major federal reservoirs, Clinton, Perry, Tuttle Creek, and Milford Lakes.

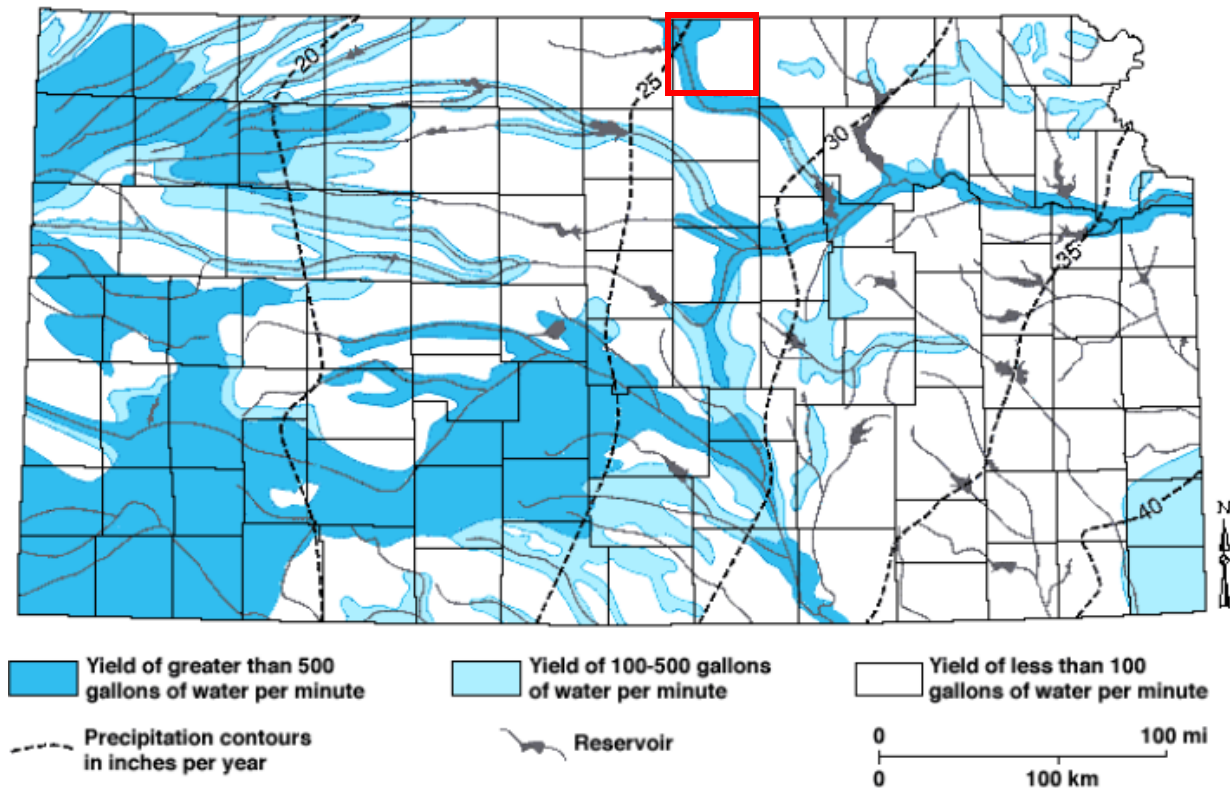
Ground water is available throughout the entire basin and is mainly located in three aquifers, Dakota, Glacial Drift and Alluvial. The Dakota is found in Washington and Clay Counties and westward. The Glacial Drift aquifer occupies the area north of the Kansas River and east of the Big Blue River. The alluvial aquifers occupy the valleys of the Kansas, Republican, Blue Rivers and some tributaries. Forty-five percent of the water use is for irrigation, which is the largest water use in the basin. Municipal uses account for 39 percent, while industrial uses account for more than 8 percent of the water used. Approximately 53 percent of the water used in the Kansas-Lower Republican River Basin comes from surface water.

There are approximately 190 public water suppliers in the basin; most of them use ground water as the source for water. However, in terms of the population served, the majority of the residents get water from surface water (streams and reservoirs). There is an active Kansas River Water Assurance District in the basin. The Corps reservoirs are operated to meet eligible water right holder needs during periods of low flow through arrangements with the Water Assurance District and Kansas Water Office (KWO).

The average annual precipitation for Republic County is 28.96 inches. A severe drought would not only impact the water supply but it also causes damage to crop quality, which can lead to income loss for farmers to reduced crop yields, plant diseases, and insect infestation. In 2007, there were 682 farms in Republic County that could potentially be impacted by a severe drought. There were \$79,639,000 in crop sales and \$68,419,000 in livestock

sales in that same year (USDA). The Kansas Geological Survey records show there are 683 wells in Republic County (Kansas Geological Survey). Figure 2.3 illustrates the general availability of ground water in Kansas (Kansas Geological Survey). Portions of Republic County yields more than 500 gallons of water per minute.

Figure 2.3 – General Availability of Ground Water in Kansas



Earthquake

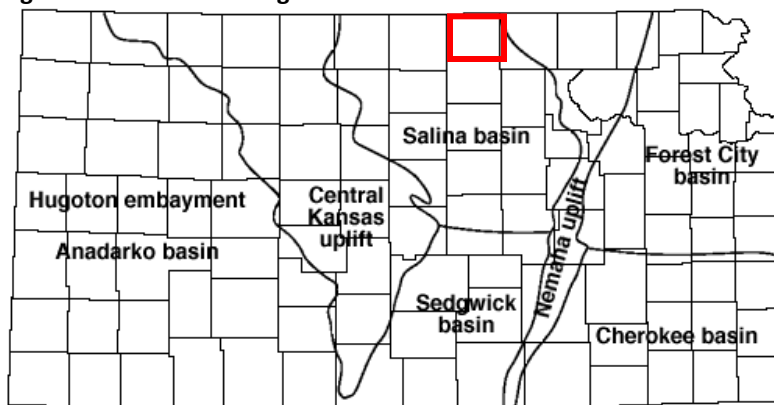
Hazard Definition

An earthquake is the shaking of the Earth’s surface caused when energy stored within the Earth’s crust, usually in the form of strain in rocks, suddenly releases. This energy is transmitted to the surface of the Earth by seismic waves. The destruction an earthquake causes depends on its magnitude and duration, or the amount of shaking that occurs. Earthquakes vary from small, hardly noticeable shaking to large shocks felt over thousands of kilometers. Earthquakes can deform the ground; make buildings and other structures collapse, and cause soil liquefaction.

Some Kansas earthquakes are associated with the Nemaha Ridge, a buried granite “mountain range” that extends about 400 miles in length from roughly Omaha, Nebraska, to Oklahoma City. This subsurface range was formed about 300 million years ago with peak to valley elevations ranging from 2,300 to 3,300 feet near Manhattan. The Nemaha is broken by cross faults, apparent shears of northwest trend, and evidence of reverse faulting. Faults that bound it are still slightly active today, especially the Humboldt fault zone that forms the eastern boundary of the Nemaha Ridge, passing near Wamego, east of Manhattan, and near El Dorado, east of Wichita.

Figure 2.3 illustrates the relative locations of the basins and uplifts beneath the surface of Kansas (Kansas Geological Survey).

Figure 2. 4 – Nemaha Ridge



History of Earthquakes in Republic County

Between 1867 and 1976, at least 25 earthquakes shook the state of Kansas (Kansas Geological Survey, Public Outreach). Most of them were micro earthquakes, an earthquake that is too small to be felt. The largest earthquake recorded in Kansas was centered in Manhattan on April 24, 1867 at a Richter scale magnitude of 5.5 and a 1931 Modified Mercalli Intensity (MMI) scale of VII. The affected area reportedly covered 500,000 square kilometers east of the epicenter. Moderate earthquakes near Topeka, Kansas, in 1867 and 1906, caused MMI scales of VIII and VII, in the epicenter area and Intensities VI and IV, respectively, in both Kansas City and St. Joseph, Missouri. There have not been any reports of earthquakes in Republic County

Between August 1977 and August 1989 the Kansas Geological Survey recorded more than 100 earthquakes in Kansas. Most of them were micro earthquakes.

- May 13, 1999 A magnitude 3.0 earthquake located in Kansas City, Kansas, caused damage to two medical buildings.

- July 24, 2001 An earthquake measuring 3.0 on the Richter scale was reported in Butler County near the City of Augusta. It was located west of the Humboldt fault zone in the Nemaha Ridge.

- January 1, 2008 An earthquake measuring 2.7 was felt in Kansas. The shock could be felt 15 miles west of Arkansas City, KS, 25 miles North West of Ponca City, OK, 45 miles south of Wichita, KS and 165 miles south west of Topeka, KS.

- April 15, 2010 A 3.2 earthquake was reported in Oklahoma. The shock could be felt 15 miles east of Ada, OK, 35 miles west south west of McAlester, OK, 80 miles south east of Oklahoma City, OK, and 140 miles north of Dallas, TX.

- April 21, 2010 An earthquake measuring 2.5 on the Richer scale was reported in Oklahoma. The earthquake was felt in the Choctaw area.

Probability and Magnitude of Earthquakes

The US Geological Survey database shows there is a 0.435% chance of a major earthquake occurring within a 50 mile radius of Republic County. For that reason, the HMPC determined the probability of having an earthquake of significant magnitude is “unlikely” because the probability of occurrence is one every 25 years or less.

The HMPC determined the magnitude of an earthquake would be “negligible” because the largest earthquake within a 100 mile radius of Republic County was a 3.6 Magnitude in 1988. Less than 10 percent of the area was impacted by the earthquake.

Risk Summary for Earthquakes

Table 2.14 is a risk summary for earthquakes for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 13 – HMCP Earthquake Risk Summary

Earthquake Risk Summary	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	1	1
Magnitude	1	NA*
Warning Time	4	NA*
Duration	1	NA*
Planning Significance	Low	Low
Risk Index	1.75	1.75
Ranking	18 out of 22	21 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 14 – Earthquake Planning Significance by Jurisdiction

Hazard	Historical Occurrence	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	No	Unlikely	Negligible	< 6hrs	< 6hrs	Low
Agenda	No	Unlikely	Negligible	< 6hrs	< 6hrs	Low
Belleville	No	Unlikely	Negligible	< 6hrs	< 6hrs	Low
Courtland	No	Unlikely	Negligible	< 6hrs	< 6hrs	Low
Cuba	No	Unlikely	Negligible	< 6hrs	< 6hrs	Low
Munden	No	Unlikely	Negligible	< 6hrs	< 6hrs	Low
Narka	No	Unlikely	Negligible	< 6hrs	< 6hrs	Low
Republic	No	Unlikely	Negligible	< 6hrs	< 6hrs	Low
Scandia	No	Unlikely	Negligible	< 6hrs	< 6hrs	Low

Vulnerability for Earthquakes

Table 2.16 is a hazard vulnerability summary for earthquake. The number of structures is based on the existing building count, infrastructure, and critical facilities located in the hazard area. The value of the structures and

number of people is based on data obtained from the 2000 U.S. Census, HAZUS data, and information provided in the jurisdictional profiles in Chapter 3.

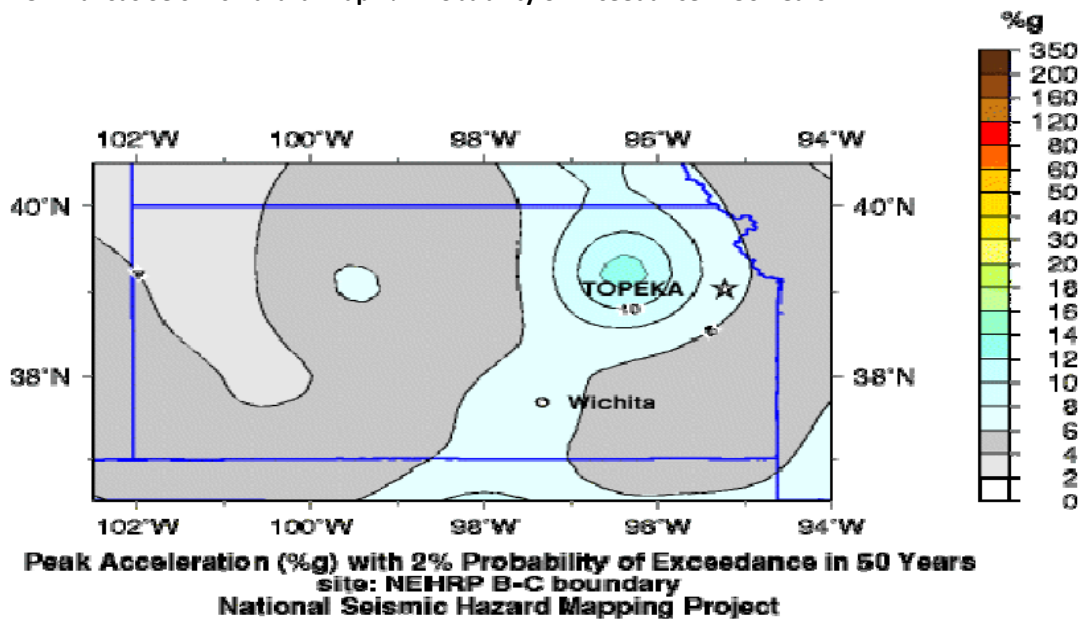
Table 2. 15 – Republic County Earthquake Vulnerability

Type of Structure	Number of Structures			Total Value of Structures	Number of People
	# in County	# in Hazard Area	Extent of Damage	\$ in County (2006 Dollars)	# in County (2000 Census)
Residential	5542	5542	Minor	\$311,556,000	N/A
Commercial	146	146	Minor	\$57,092,000	N/A
Industrial	7	7	Minor	\$10,608,000	N/A
Agricultural	27	27	Minor	\$19,341,000	N/A
Religion	30	30	Minor	\$10,756,000	N/A
Government	13	13	Minor	\$4,805,000	N/A
Education	7	7	Minor	\$7,305,000	N/A
Total	5840	5840		\$421,463,000	5835

Damage would depend greatly on the epicenter of the earthquake. It is difficult to measure the extent of damage that would occur due to lack of historic events to measure the extent of damage. Therefore damage estimates are not available for this hazard.

According to the State of Kansas 2010 Hazard Mitigation Plan, Republic County is among the counties in the highest zone of peak horizontal acceleration. Damage incurred would be primarily to contents and non-structural elements of the buildings. Figure 2.5 is a worst case scenario. It shows the level of shaking has a 2% probability of being exceeded over a 50 year period. It does not show any significant damage. Significant damage generally occurs when accelerations are more than 30% of gravity .

Figure 2. 5 – Kansas Seismic Hazard Map 2% Probability of Exceedance in 50 Years



Expansive Soils

Hazard Definition

The Kansas State Hazard Mitigation Plan characterizes “expansive soils” as a relatively widespread geological hazard for Kansas. Expansive soils contain minerals that are capable of absorbing water, such as smectite clays. Their volume increases with the more water they absorb. It is not uncommon for them to expand more than ten percent. The change in volume can exert enough force on buildings or other structures to cause damage. Expansive soils are known by many different names such as shrink-swell soils, expandable soils, expansive clays, and heavable soils. Typical types of damage done by expanding soils include cracked foundations, floors, and basement walls.

Expansive soils shrink when they become dry. The shrinkage can remove support from structures and result in damaging subsidence. Fissures in the soil can also develop. These fissures allow deep penetration of water when rain or runoff occurs. This creates a cycle of shrinking and swelling which places repetitive stress on structures.

Expansive soils are present throughout the world and are known in every US state. Every year they cause billions of dollars in damage. The American Society of Civil Engineers estimates that 1/4 of all homes in the United States have some damage caused by expansive soils. In a typical year in the United States they cause a greater financial loss to property owners than earthquakes, floods, hurricanes and tornadoes combined (Geology.com).

Although an enormous amount of damage is caused by expansive soils, most people don’t know what they are because the damage is done slowly over time and cannot be attributed to a specific event. Therefore, the damage is either thought to be the result of poor constructions practices or the misconception that all buildings experience this type of damage as they age.

Soils are made up of a mixture of materials, most of which do not expand in the presence of water. A number of clay minerals are expansive including smectite, bentonite, montmorillonite, beidellite, vermiculite, attapulgite, nontronite, illite, and chlorite. Some sulfate salts will also expand with changes in temperature. Soils that contain a vast amount of expansive materials have the potential to swell significantly. Soils that contain a small amount of expansive materials have little expansive potential.

Expansive soils generally will not cause a problem if the water content remains constant. However, when there are significant or repeated moisture content changes in expansive soils that is when the greatest amount of damage occurs.

History of Expansive Soil Events

Damage from expansive soils to foundations, parking areas and public sidewalks throughout the planning area is attributed largely to the composition of the soils, in conjunction with prolonged and common periods of drought. The following events are the more notable events in Kansas.

- 1950s Minor damage to scores of homes and buildings in the Kansas City metropolitan area experienced. The estimated cost of damage was \$30-\$40 million.
- 1985 Several areas in Kansas City experienced damage due to expansive shale. The buildings damaged were the Kansas City Public Library Country Club Plaza Branch, St. Teresa’s Academy, 7th Church of Christ, and the University of Missouri.
- 1995 A house in Overland Park, Kansas was damaged by a center lift. A center lift is when soils along the foundation shrink, lowering outer walls while the soils in the center stay wet.

Probability and Magnitude of Expansive Soils

Although there have not been any documented cases of damage from expansive soils in Republic County, areas within the planning area have experienced some possible damage. Therefore, the HMPC has determined the probability of expansive soil is “likely”. It is difficult to quantify the damage from expansive soils due to the fact

damage occurs over an extended period of time. For that same reason the HMPC determined the magnitude of expansive soils is “negligible”.

Expansive Soil Risk Summary

Table 2.17 is a risk summary for expansive soil for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 16 – Expansive Soil CPRI Ranking

Expansive Soils	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	3	4
Magnitude	1	NA*
Warning Time	4	NA*
Duration	4	NA*
Planning Significance	Moderate	Moderate
Risk Index	2.65	2.65
Ranking	14 out of 22	13 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 17 – Expansive Soil Planning Significance by Jurisdiction

Hazard	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Likely	Negligible	24 + hr	> 1 week	Moderate
Agenda	Likely	Negligible	24 + hr	> 1 week	Moderate
Belleville	Likely	Negligible	24 + hr	> 1 week	Moderate
Courtland	Likely	Negligible	24 + hr	> 1 week	Moderate
Cuba	Likely	Negligible	24 + hr	> 1 week	Moderate
Munden	Likely	Negligible	24 + hr	> 1 week	Moderate
Narka	Likely	Negligible	24 + hr	> 1 week	Moderate
Republic	Likely	Negligible	24 + hr	> 1 week	Moderate
Scandia	Likely	Negligible	24 + hr	> 1 week	Moderate

Expansive Soil Vulnerability

Table 2.19 is a hazard vulnerability summary for expansive soils. The number of structures is based on the existing building count, infrastructure, and critical facilities located in the hazard area. The value of the structures and number of people is based on data obtained from the 2000 U.S. Census, HAZUS data, and information provided in the jurisdictional profiles in Chapter 3.

Table 2. 18 – Expansive Soils Vulnerability

Type of Structure	Number of Structures			Total Value of Structures	Number of People
	# in County	# in Hazard Area	Extent of Damage	\$ in County (2006 Dollars)	# in County (2000 Census)
Residential	5542	5542	Moderate	\$311,556,000	N/A
Commercial	146	146	Moderate	\$57,092,000	N/A
Industrial	7	7	Moderate	\$10,608,000	N/A

Agricultural	27	27	Moderate	\$19,341,000	N/A
Religion	30	30	Moderate	\$10,756,000	N/A
Government	13	13	Moderate	\$4,805,000	N/A
Education	7	7	Moderate	\$7,305,000	N/A
Total	5840	5840		\$421,463,000	5835

It is difficult to measure the extent of damages that would occur in each jurisdiction as a result of expansive soils due to data limitations. Soil expansion is not a rapid occurring hazard, but its potential to cause damage over time can be significant if not sufficiently mitigated. Expansive soils do not create large areas of destruction in Republic County. However, they have the potential for disruption of critical infrastructure (i.e. roads, power lines, railways, and bridges) as well as damage to buildings.

Many homes in Kansas are built on expansive soil. There would be some structural damage as a result of shrinking and expanding soils. Utility lines such as water and sewer pipes may be at risk there is no specific data to support damages and costs associated with this hazard at this time. Roads and structures with unreinforced concrete would be affected the most by expansive soils. However, due to data limitations the estimated value for damages incurred as a direct result of expansive soils are not available at this time. Expansive soils are a moderate risk that is uniform across the county. The entire planning area is vulnerable to, soil expansion and contraction.

Extreme Temperatures

Hazard Definition

Extreme temperature refers to both, hot and cold temperatures. Unusually high and low temperatures have a significant effect on human health, agriculture, the environment, infrastructure, and the economy. Extreme temperatures are generally coupled with other hazards. For instance, extreme temperatures that are high are often associated with a drought, while extreme temperatures that are cold are sometimes coupled with a severe winter storm.

Due to its location in North Central Kansas, Republic County is subject to various extremes in weather. Temperature extremes in Republic County can range from well over 100 degrees in the summer months to well below zero in winter. Temperature extremes such as these can adversely affect many people, some due to age or infirmity, others due to secondary hazards such as infrastructure failures caused by the extreme heat or cold. Record temperatures in Narka have ranged from -24° F (December 22, 1989) to 112° F (June 30, 1980 and July 11, 1995) since 1950. Each of these is understood to be the record for recent history, as these records may have been exceeded before modern weather instrumentation was invented.

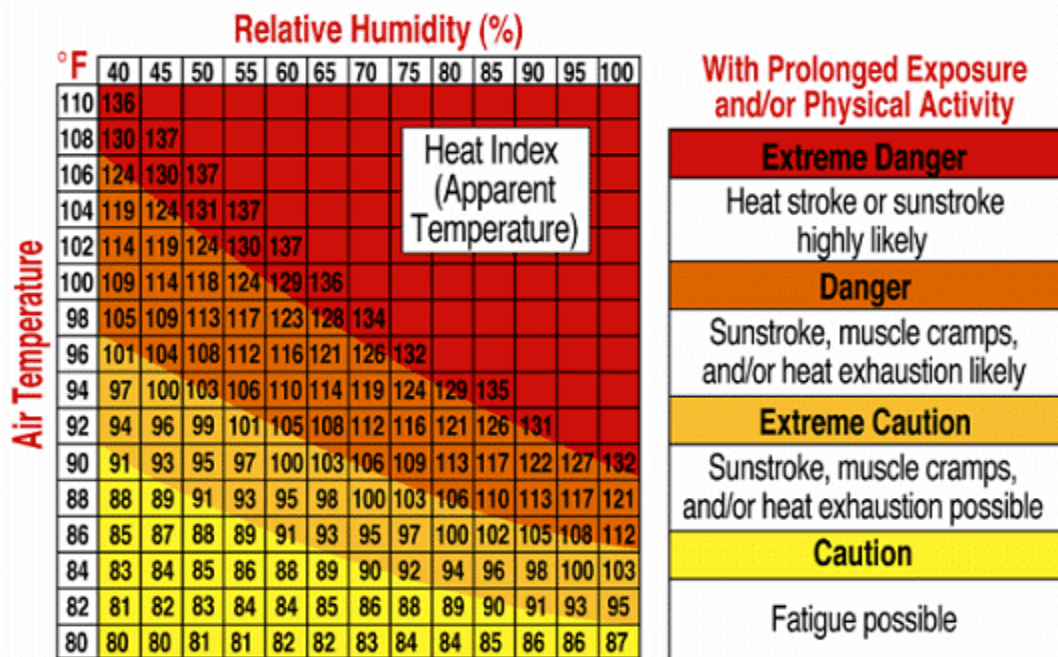
Extreme Heat

Extreme heat is described as temperatures that linger at 10 degrees or more above the average high temperature for the region and last for prolonged periods of time. Three consecutive days of temperatures of 90° F and above, is considered to be a heat wave according to the National Weather Service (NWS). High temperatures generally occur from June through September, but are most prevalent in the months of July and August.

A heat wave can be a very dangerous situation due to the health problems that can occur when dormant atmospheric conditions trap pollutants in cities. It can be especially dangerous for individuals with respiratory conditions, such as asthma. Young children, the elderly, and individuals who have health conditions or overweight are more likely to develop health problems from the extreme heat.

High humidity is another factor that needs to be considered when assessing the effects of a heat wave. Relative humidity must also be considered, along with exposure, wind and activity. According to NWS the heat index combines air, temperature and relative humidity, this is also known as the apparent temperature. The heat index is a measure of how hot it feels outside. For example, if air temperature is 102° Fahrenheit and the relative humidity is 55 percent, then it feels like 130 degrees; 28 degrees hotter than the actual ambient temperature. Figure 2.5 is a heat advisory chart, along with a heat index chart identifying the possible effects of prolonged exposure to the heat and/or physical activity.

Figure 2. 6- Heat Advisory Chart

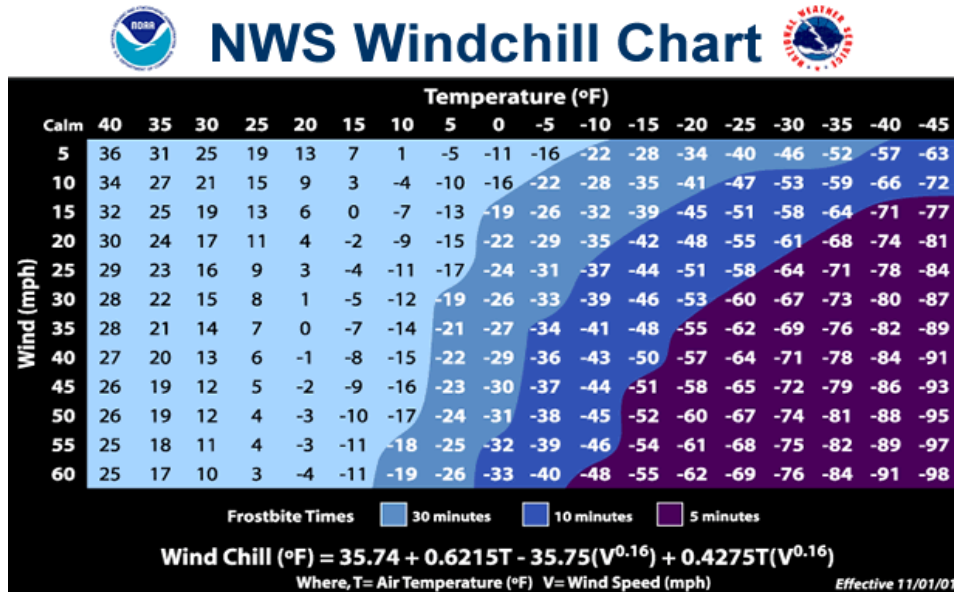


Extreme Cold

Extreme cold is when temperatures drop considerably below normal. Windchill is an important factor when discussing extreme cold. Windchill is the rate of heat loss from the human body resulting from the combined effect of low temperature and wind. As winds increase, heat is carried away from the body at a faster rate. Both the skin temperature and eventually the internal body temperature decrease.

The Wind Chill index is the temperature your body feels when the air temperature is combined with the wind speed. The following table is a wind chill chart from the National Weather Service. It shows the difference between actual air temperature and perceived temperature, it also shows the amount of time until frostbite occurs.

Figure 2. 7 – Windchill Chart



History of Extreme Temperature Events

Extremely cold temperatures often accompany a winter storm. Please refer to the winter storm profile for more information. The NCDRC had several extreme temperature events recorded for Republic County from 1950 to 2010. They were as follows:

- | | |
|--------------------|--|
| November 24, 1993 | An extreme cold event covered all of Northwest and parts of west central Kansas and lasted until midday on the 25th. Several record low minimum and record low maximum temperatures were set. One previous record dated back to 1895. Temperatures ranged between minus 5 degrees to plus 10 degrees and combined with wind speeds of 15 to 25 mph to produce wind chill temperatures of minus 45 to minus 35 degrees. |
| September 22, 1995 | The earliest freeze on record hit most of north central and northeast Kansas causing widespread and heavy damage to immature crops. Temperatures dropped as low as the mid 20s, especially near the Nebraska border, and persisted from three to six hours. Total dollar damage amounts are estimated based on reports from a few counties. The City of Courtland reported the temperature at 30° Fahrenheit. Damage across the region was estimated at \$25 million. |
| February 1, 1996 | Extreme cold temperatures covered northeast and north central Kansas from the 1st through the 4th. Daytime highs in some areas failed to reach zero. These readings were quite extreme and rare for the local area where little if any snow was on the ground during the coldest time. Low temperatures plunged to between 10 below and 20 below zero with wind chills of 40 below to 60 below zero. These extreme readings caused water pipes to burst, water meters to freeze, inoperative vehicles, overworked heating systems and a host of other problems associated with prolonged extreme cold. Most schools, especially rural areas, cancelled classes while many businesses and activities were curtailed or cancelled. Some people thought it was the coldest in about 25 years. |
| January 2, 1999 | Strong winds and temperatures in the single digits and teens combined to produce wind chills as cold as 34 degrees below zero in some locations. |
| July 15, 1999 | Excessive heat occurred over the area throughout the month. But an approximate 2 week string of days during the last half of the month seemed to be the worst. Temperatures during this two week period exceeded 100 degrees in many areas on many days. The excessive heat was also accompanied by very high heat indices that exceeded 110 degrees at times. A Lyon county man in his 20's suffered dehydration and died from heat stroke. |
| August 1, 2000 | Temperatures rose at or above 95 degrees from as few as 15 days at Horton to as many as 29 days at Minneapolis. The last half of the month was especially hot with nearly all of the monthly highest temperatures reached during this time period. There were at least 14 people treated for heat related illnesses, but fortunately there were no fatalities. |
| September 1, 2000 | The excessive heat of August continued into the first 3 days of September. Temperatures soared well above 100 degrees in many locations. Topeka recorded a high of 109 degrees on the 2nd, the highest temperature of the summer and the highest temperature in 16 years. Fortunately there were no deaths or injuries reported from the heat. |
| December 11, 2000 | Very cold arctic air spread over the area starting on the 11th and remained entrenched through the end of the month. A number of days the mercury fell to below zero readings. Strong winds on several days also sent wind chill readings to as low as 30 |

degrees below zero. It was the second coldest December in Topeka since records began in 1887 surpassed only by the infamous December of 1983.

- January 1, 2001 The extreme cold of December continued the first 2 days of January. There were many locations that recorded below zero readings. On the 2nd Abilene recorded a low of -7, Ottawa a low of -12, and Topeka a low of -10.
- July 1, 2002 July 2002 was one of the hotter and drier months on record for northeast Kansas. Monthly temperatures averaged well above normal over the whole area with many days of high temperatures above 95 degrees and quite a few over 100 degrees. Precipitation was well below normal over the area although not the driest of record.
- February 17, 2006 Winds of 10 to 20 mph combined with temperatures in the single digits resulted in wind chill readings of 15 to 20 below zero.
- July 16, 2006 Afternoon high temperatures across the area rose above 100 degrees at many locations during the 5 day span. Heat Index readings climbed to 105 to 115 degrees at some locations. Topeka reached 100 degrees on the 16th for the first time in three years. Two Westar Energy transformers exploded on the 16th in Clay Center. About 5000 people lost power. Electricity usage had a record one day peak in Northeast Kansas according to Westar Energy on the 17th. Newspapers reported that crops were feeling extreme stress because of the heat. Railroad tracks near St. Mary's (Pottawatomie County) buckled in the heat on the 17th, and 30 cars derailed. On Tuesday, the 18th, twelve railroad cars derailed nine miles east of Emporia due to buckling of the rails. Concordia in Cloud County reported a record high temperature of 109 degrees on the 19th which broke the previous record of 108 degrees set in the dust bowl year of 1934. On the 20th, Topeka set a record high minimum temperature of 82 degrees. Only three persons were specifically mentioned as needing medical treatment for heat-hyperthermia during the event. However, several newspapers were less specific about actual numbers but indicated "several" or "a handful" of people were treated for heat related illnesses at area hospitals.
- July 29, 2006 Heat Index readings climbed to 105 to 110 degrees in some locations. This was the second extended heat episode of the month and it continued into early August. Topeka recorded a record high minimum temperature of 81 degrees on the 31st.
- August 1, 2006 The heat seen across northeast Kansas in late July extended into the first part of August. Afternoon temperatures climbed to near 100 degrees, and heat indices reached 105 to 110 degrees at many locations. A day after the heat wave ended on the 2nd of August, an indirect fatality occurred when a 23-month-old boy died in an overheated vehicle in Topeka. Temperatures were still in the upper 90s.
- February 14, 2007 A frigid arctic air mass pushed into the area. A few counties experienced very cold wind chill readings of 15 to 20 below zero with winds around 10 mph. These readings began in the predawn hours and lasted through much of the forenoon.
- February 15, 2007 A persistent arctic air mass brought another episode of frigid wind chill values to a few counties. Although this episode was not quite as extreme as the night before, chill indices still reached 15 below zero for a few hours and winds hovered around 10 mph.
- April 4, 2007 The passage of a cold front April 3rd drove cold arctic air into the Central Plains States, and forced temperatures to plummet to some of the coolest readings ever recorded during early April. Topeka and Concordia both saw their coldest ever April 4th through

April 8th average temperatures, with readings of 33.5F degrees at Topeka, and 30.3F degrees at Concordia. Record low maximum temperatures were recorded at Topeka, 38F degrees, and Concordia, 31F degrees on April 5th. Concordia also had a record low maximum temperature of 37F degrees on April 6th. Temperatures dipped down into the middle to upper teens overnight the 6th and the 7th across Northeast Kansas, which brought a hard freeze to much of the state. Early season crops, including wheat, alfalfa, berries, spinach, and apples were significantly damaged by the cold. Cool weather and below normal temperatures continued for the next week, before a second round of very cold temperatures settled over Northeast Kansas the weekend of the 13th-15th, primarily across far Northeast and East Central Kansas. North Central portions of the state stayed above freezing during this time period. But, the prolonged cold, and the second wave of freezing temperatures exacerbated the crop problems already evident across the region. Unfortunately, the end of March recorded unseasonably warm temperatures. Crops had responded positively to the spring heat and flourished. The cold snap, though, left many of these same crops heavily damaged. But because of warm March temperatures, this late spring freeze left many farmers out in the cold. The Kansas State Farm Services Agency reported that all 23 counties in the Topeka County Warning Area recorded a 30% or greater loss of the wheat and alfalfa crops in each respective county. Fruit trees and strawberries were some of the hardest hit crops by the late freeze. In addition, orchard and vineyard owners were likely to suffer the greatest economic losses. A Secretarial Natural Disaster was declared for northeast Kansas as a result of the prolonged spring freeze. The average latest date for the spring freeze across the Topeka County Warning area ranges from April 3rd to April 23rd. Also, due to the extent and impact of the freeze, qualifying farmers in Anderson, Coffey, Douglas, Franklin, Osage and Shawnee counties were declared eligible to make emergency loan applications to the Farm Service Agency.

August 6, 2007

A heat wave struck during the heart of summer across northeast Kansas. A high pressure region remained fairly stationary over the southeast US, while a lee trough sat over the high plains of Colorado. During the early part of the period, a stationary boundary established itself just south of the Kansas/Nebraska border, keeping much of the Topeka CWA in the warm, moist flow regime, and induced moisture pooling to the south of the boundary. The west edge of the front lifted to the north by the 10th, while the east side of the boundary sagged southward over Missouri, again leaving the Topeka CWA a prime target for warm Gulf moisture advection. The same scenario re-established itself the evening of the 11th, and led to the continuation of the hot, humid weather. Heat indices across the region were above the 105 degree for three hour criteria over the course of several days during the event, measured by 6 local ASOSs and reported in local newspapers. A peak heat index reading of 113 degrees was recorded at Manhattan at 6pm CST on August 7th. Newspapers reported that several individuals were treated in local emergency rooms and hospitals for heat-related illnesses. One fire fighter died as a result of fighting a building fire on a 100 degree afternoon in the city of Topeka.

August 20, 2007

The heat indices calculated by the ASOS at Concordia recorded readings at or above 105 degrees from 11am to 2pm CST. Convection on August 19th sufficiently saturated the low level atmosphere, and gusty southerly winds that prevailed across northeast Kansas during the morning and afternoon hours of the 20th helped to reinforce the hot and humid air mass in place over the region, south of a surface stationary boundary over Nebraska. Temperatures over the western half of the county warning area quickly warmed under sunny skies early in the day. Sites further east followed suit after debris clouds from the overnight convection dissipated. Heat indices from 105 to 109 degrees were recorded across northeast Kansas between 11am and 4pm CST, and between 12pm and 5pm CST further east.

August 10, 2010 A prolonged 3 day period of heat indices in the 106 to 114 degree range occurred across much of Northeast Kansas between Monday August 9th and Friday August 13th. An excessive heat watch was issued on Friday August 6th that outlined what was expected to occur during the work week. No fatalities were reported and no information regarding the presence or number of any heat related illnesses were noted during the event. The heat finally ended when a cold front moved through the area later Friday August 13th into Saturday August 14th.

Probability and Magnitude of Extreme Temperatures

The Republic County HMPC has determined the probability for an extreme temperature event is “highly likely” because an extreme temperature event is probable within one calendar year.

Although it is highly likely the community will experience extreme temperatures, the HMPC determined the magnitude for extreme temperatures is “limited” because injuries and/or illnesses from extreme temperatures do not result in permanent disability.

Extreme Temperature Risk Summary

Table 2.25 is a risk summary for extreme temperatures for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 19 – Extreme Temperature Risk Summary

Extreme Temperatures	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	3
Magnitude	2	NA*
Warning Time	1	NA*
Duration	4	NA*
Planning Significance	Moderate	Moderate
Risk Index	2.95	2.40
Ranking	8 out of 22	5 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 20 – Extreme Temperature Planning Significance by Jurisdiction

Hazard	Historical Occurrence	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Yes	Highly Likely	Limited	24+ Hrs	>1 week	Moderate
Agenda	Yes	Highly Likely	Limited	24+ Hrs	>1 week	Moderate
Belleville	Yes	Highly Likely	Limited	24+ Hrs	>1 week	Moderate
Courtland	Yes	Highly Likely	Limited	24+ Hrs	>1 week	Moderate
Cuba	Yes	Highly Likely	Limited	24+ Hrs	>1 week	Moderate
Munden	Yes	Highly Likely	Limited	24+ Hrs	>1 week	Moderate
Narka	Yes	Highly Likely	Limited	24+ Hrs	>1 week	Moderate
Republic	Yes	Highly Likely	Limited	24+ Hrs	>1 week	Moderate
Scandia	Yes	Highly Likely	Limited	24+ Hrs	>1 week	Moderate

Vulnerability to Extreme Temperatures

Although, structures are not directly affected by the extreme temperature hazard, 100 percent of the residents, livestock and crops in Republic County are vulnerable. Both extreme heat and extreme cold can cause serious health conditions in the susceptible populations. The susceptible populations are classified as the elderly, young children, individuals who are sick or overweight, individuals without shelter or those that live in a home that is without heat or air conditioning. Weather-related conditions can potentially lead to serious health conditions or even death. Table 2.27 identifies the susceptible population groups for Republic County. The City of Munden has the largest percentage of population under the age of 5 years old and people living below poverty level. The City of Belleville has the largest percentage of people over 65 years of age. Therefore these two cities are the most vulnerable to extreme heat conditions.

Table 2. 21 – Extreme Temperatures Vulnerability

Jurisdiction	Total Population (2000)	Under 5 Years (%)	Over 65 Years (%)	Families Below Poverty Level (%)	Individuals Below Poverty Level (%)
Agenda	76	6.2	30.9	0	5.9
Bellville	2,224	5.4	35.1	5.4	8.7
Courtland	334	6.6	29.0	6.3	11.3
Cuba	231	4.3	29.4	3.1	6.8
Munden	122	7.4	18.9	11.4	16.2
Narka	93	4.3	22.6	4.3	22.6
Republic	160	3.1	27.3	8.7	9.7
Scandia	436	4.8	20.0	8.1	12.8
Unincorporated Areas & Townships	2,159	N/A	N/A	N/A	N/A
Republic County Total	5,835	4.4	27.4	5.9	9.6

Extreme heat pushes the human body beyond its limits. Under normal conditions, the body produces perspiration that evaporates and cools the body. In extreme heat and high humidity, evaporation is slowed and the body must work harder to maintain a normal body temperature.

Extreme cold can cause hypothermia, frostbite and death. Exposure to a low windchill can be life threatening to both humans and animals. Weather-related conditions may lead to serious health conditions. It can lead to health emergencies in susceptible people, such as individuals without shelter or those that live in a home that is poorly insulated or without heat.

The crops and livestock in Republic County are also vulnerable to extreme temperatures. They can be killed or injured due to extended periods of severe cold temperatures. Livestock and crops are vital to the economy in Republic County, making the farming communities at risk to extreme temperatures.

Flood



The photograph above was taken on June 24, 1947 when the Republican River flooded on the border of Jewell and Republic County, just south of Nebraska Highway 8 and Kansas County Road 1. The normal flood stage for the river is at the tree line in the foreground (Connor).

Hazard Definition

A flood is a natural occurrence for rivers and streams. According to the National Oceanic and Atmospheric Administration (NOAA) the term flood reflects “any high flow, overflow, or inundation by water which causes or threatens damage.” The National Weather Service (NWS) classifies the magnitude of flood events into the following categories are:

- Minor Flooding - Property damage is minimal or none at all, but possibly some public threat.
- Moderate Flooding – There is some inundation of structures and roads near stream. Some people need to be evacuated and/or transfer of property to higher elevations.
- Major Flooding – There is extensive inundation of structures and roads. A significant amount people need to be evacuated and/or property to higher elevations.
- Record Flooding - flooding which equals or exceeds the highest stage or discharge at a given site during the period of record keeping.

Flooding can generally be defined an accumulation of too much water in a short amount of time within a small area. It can also be characterized by type. They types of flooding are riverine, flash, ice-jam, storm surge, and dam or levee failure. According to the Kansas Water Plan, Kansas is primarily concerned with riverine, flash flooding, and dam or levee failure.

Riverine flooding - occurs as a result of persistently wet weather conditions, causing stream channel capacity to be exceeded and the water flows over the banks onto the adjacent floodplain. The warning time prior to this type of flooding is often quite long, allowing for mitigation measures to occur.

Flash flooding - is characterized by a rapid rise in water level, fast-moving water and flood debris. Hilly terrain is particularly vulnerable to flash flooding.

Dam or Levee Failure - almost 6,000 dams have been built in Kansas for flood control. Many of the dams were built quite some time ago and are showing signs of aging. In some of these cases, development downstream from these dams has resulted in a higher dam hazard classification requiring upgrades to the dam.

Flood Insurance Rate Maps (FIRMs)

The 100-year floodplain is the area which has a one percent chance of being flooded in any given year. The FEMA identified flood hazard areas have been mapped on a series of maps known as Flood Insurance Rate Maps (FIRM), and the community number for Republic County on the FIRM maps is 200286. The current county policy discourages more intensive development (rezoning and subdivision) in the floodplain or Special Flood Hazard Areas (SFHA), but people are not denied the right to build in the floodplain or floodway if they have the development rights under current zoning and if they meet current floodplain regulations regarding flood proofing. Republic County has a process that encourages the transfer of development rights out of the floodplain, and in that process, new construction cannot be located in the SFHA.

A Flood Insurance Rate Map (FIRM) is an official map of a community, which the Federal Emergency Management Agency (FEMA) has identified the special hazard areas and the risk premium zones applicable to the community (FEMA). The FIRM can be used to locate properties and building in flood insurance risk areas. Community officials also use them to administer floodplain management regulations and to mitigate flood damage. Lending institutions and federal agencies use the FIRM to identify properties and buildings in relation to mapped flood hazards and to determine if flood insurance is necessary when providing loans or grants following a disaster.

National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) is administered by FEMA. Standard homeowners insurance does not cover flooding, therefore, congress created the NFIP to help provide a way for property owners to protect themselves from flood damage. Communities that participate in the NFIP agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. Community participation is required in order for the NFIP to offer flood insurance.

The NFIP administered by FEMA, works closely with private insurance companies to offer flood insurance to property owners and renters. The NFIP is a federal program which offers flood insurance that can be bought through property and casualty agents. The rates are a fixed rate and do not vary from company to company. The rates are determined by a number of factors, including the communities risk level according to the FIRMs.

Congress mandated federally regulated lenders to require flood insurance on properties located in high risk flood areas. Structures in the high risk flood areas with mortgages are required to have flood insurance. The high risk areas have a one percent or greater chance of flooding in any given year. Structures located in moderate to low risk areas that have mortgages are not required to have flood insurance. However, it is highly recommended to have flood insurance because 25 percent of all flood claims occur in moderate to low risk areas (FEMA, National Flood Insurance Program).

Under Section 202(b) of Public Law 93-234, if a presidentially declared disaster occurs as a result of flooding in a non-participating community, no Federal financial assistance can be provided for the permanent repair or reconstruction of insurable buildings in SFHAs. Eligible applicants may receive those forms of disaster assistance that are not related to permanent repair and reconstruction of building. If the community applies and is accepted into the NFIP within 6 months of a Presidential disaster declaration, these limitations on Federal disaster assistance are lifted.

Republic County participates in the National Flood Insurance Program, including the Cities of Belleville, Courtland, and Scandia. The residents in these cities are eligible to buy flood insurance through the NFIP because they have adopted flood plain ordinances. The Cities of Cuba, Republic, Agenda, Munden, and Narka currently do not participate in the program. Table 2.28 is the 2010 NFIP insurance report for Republic County.

Table 2. 22 – Republic County NFIP Insurance Report

CID	Community Name	Total Premium	V-Zone	A-Zone	Number of Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978
200287#	City of Belleville	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200399A	City of Courtland	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200286#	City of Scandia	\$2,984	0	2	9	\$776,900	4	\$86,633
200289#	Republic County	N/A	N/A	N/A	N/A	N/A	N/A	N/A

History of Flood Events

The NCDC had several flood events recorded for Republic County from 1950 to 2011. They were as follows:

- May 10, 1983 This flood event began on 5/10/93 and ended 5/14/93. During this period, there were numerous reports across central Kansas of mainly agricultural and low land flooding. Many wheat fields were underwater as well as numerous county roads closed. Most rivers and creeks in this area remained at or above banks as heavy rains continued to fall. There was approximately \$500,000 in property damage between Marshall, Nemaha, and Republic Counties.
- July 8, 1996 Three to five inches of rain caused flooding of many streets in the town of Belleville and on U.S. Highway 36 four miles east of Belleville. The engines of two farm combines also stalled after water from lowland flooding reached the engines.
- June 22, 2003 Thunderstorms persisted over north and west parts of Republic County the night of the 22nd. Rainfall amounts in excess of 12 inches were reported in some areas. The resulting runoff caused flash flooding. Water was 3 to 4 feet deep on some roadways and vehicles were washed off roadways and rescue efforts made of the vehicles occupants. Several roads were completely washed out. Two homes were destroyed by the floodwaters. Deer and cattle were reported swimming. Some people were stranded in homes and in need of rescue. Fields were flooded and there was severe crop damage. The runoff caused the Republican River to rise quickly and overflow. It was reported to be 1 mile wide in places. The river crested at 15 feet at Scandia early in the morning of the 23rd. Flood stage is 10 feet. Property damage was estimated at \$3.4 million and crop damage was \$750,000.
- May 26, 2006 Heavy rains produced flash flooding with water reported over the roadway at the junction of highways 81 and 36 near Belleville.
- September 10, 2003 Water was reported briefly over the roadway south of Courtland. Damage estimates were not available.
- May 29, 2004 Heavy rains of 2 to 4 inches produced runoff that flooded many roads for a time.
- June 12, 2004 Water was reported over a number of roads throughout Republic County.
- June 5, 2005 At least 6 inches of fast flowing water across several rural roads western part of the county.
- August 17, 2005 Fast flowing water over secondary roads.
- May 31, 2006 Up to 4.5 inches of rain produced fast flowing water over a road on the west side of town, and the highway department was barricading the road. There was approximately \$5,000 in property damage.

July 6, 2006	A deputy reported fast flowing water up to 6 inches deep over HWY 266 about 2 miles Northeast of Courtland. Also a deputy reported fast flowing water up to 6 inches deep over several county roads 1 to 2 miles northwest of Courtland. The flash flooding occurred with up to 4.75 inches of rain. Property damage was estimated at \$50,000.
May 23, 2007	Street flooding reported in Munden occurred with about 18 inches of water running over 220 Road near Munden. There was 8 to 10 inches of water over all of Main Street in south Belleville. Several other streets flooded in Belleville. Some cars stalled in the water. There was \$20,000 in property damage.
May 31, 2007	A strong thunderstorm produced isolated flash flooding in parts of Republic county during the late afternoon and early evening. Water was reported flowing over Fir road one-half mile east of the City of Republic, as well as 2 miles west of Highway 81 on Fir Road.
July 31, 2007	Another round of heavy thunderstorms brought areas of flooding to portions of north central and east central Kansas. There was water over State Highway 148 in Agenda, estimated at 1 to 2 feet deep. Property damage was estimated at \$70,000. Six inches of water was reported flowing over the roadway in Munden causing \$30,000 in property damage.
August 2, 2007	Thunderstorms developed in the vicinity of a weak outflow boundary across central Kansas during the afternoon hours of August 1st. Heavy rainfall in Marshall County, the evening of the 1st, and Republic County, the morning of the 2nd, resulted in local flash flooding problems. Water one foot deep reported to be flowing over Lincoln Road.
June 1, 2009	Severe thunderstorms developed and produced hail and damaging winds across parts of northeast Kansas. Reports of flooding also occurred. Slow moving thunderstorms produced heavy rains and flash flooding across parts of Republic County. An estimated 3 feet of water was over old Hwy 81 near Timber Road. There was \$1,000 in property damage reported.
June 19, 2010	A powerful storm system moved across northern Kansas on Saturday morning, producing winds of 60 to 80 mph or greater from north central Kansas well into Missouri. Some of the strongest winds were experienced along a swath extending from Concordia through Barnes, Blue Rapids and Vermillion along Highway 9, and between highway 16 and 36 over extreme northeast Kansas. Later that evening another round of severe weather brought damaging winds, large hail, and flash flooding. Water flowed over Courtland Road at Highway 148. The city of Courtland also experienced flash flooding across streets in town. In Scandia Water flowed over the streets at Pawnee Road from Highway 36. Water flowed over streets on highway K148 at County 100 Road and Count 110 Road.

Probability and Magnitude of Floods

The HMPC determined the probability for a flood is “highly likely” because there is about a 33 percent chance for a severe flooding event to occur based on historical events in the county.

In the past flooding has not resulted in deaths or injuries in Republic County, as a result the HMPC determined the magnitude for flooding is “critical”.

Flood Risk Summary

Table 2.29 is a risk summary for flooding for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 23 – Flood Risk Summary

Flood	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	4
Magnitude	3	NA*
Warning Time	3	NA*
Duration	3	NA*
Planning Significance	High	High
Risk Index	3.45	3.45
Ranking	4 out of 22	1 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table. The City of Narka determined they could possible experience a flood event but the magnitude would be negligible. There are not any SFHAs in the city.

Table 2. 24 – Flood Planning Significance by Jurisdiction

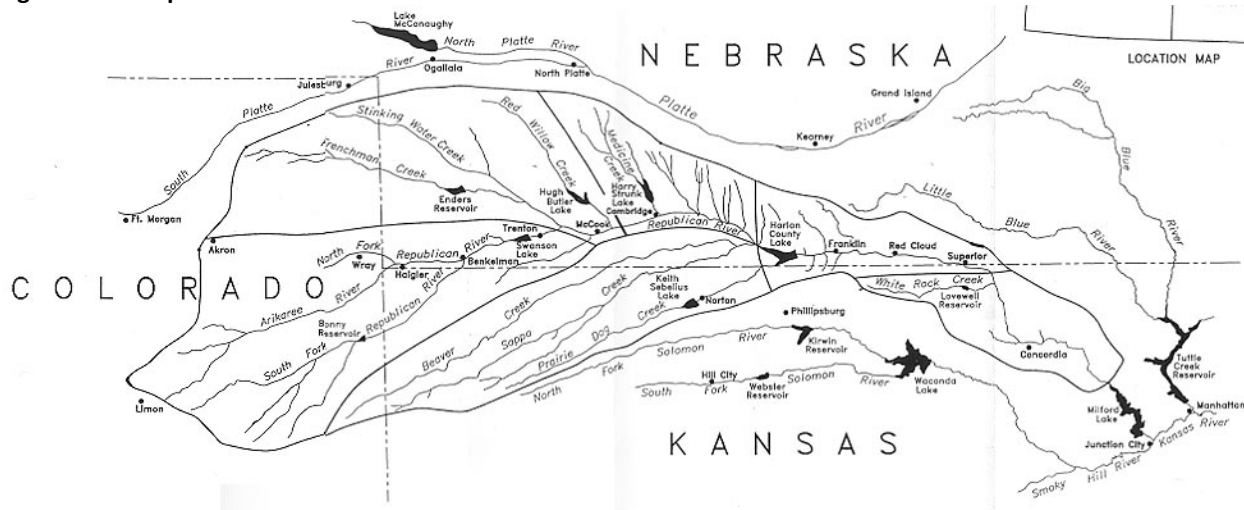
Hazard	Historical Occurrence	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Yes	Highly Likely	Critical	< 6hrs	< 1 week	High
Agenda	Yes	Highly Likely	Critical	< 6hrs	< 1 week	Low
Belleville	Yes	Highly Likely	Critical	< 6hrs	< 1 week	High
Courtland	Yes	Highly Likely	Critical	< 6hrs	< 1 week	High
Cuba	Yes	Highly Likely	Critical	< 6hrs	< 1 week	High
Munden	Yes	Highly Likely	Critical	< 6hrs	< 1 week	High
Narka	Yes	Possible	Negligible	< 6hrs	< 1 week	Low
Republic	Yes	Highly Likely	Critical	< 6hrs	< 1 week	High
Scandia	Yes	Highly Likely	Critical	< 6hrs	< 1 week	High

Vulnerability of Flooding

There is only one major river in Republic County, which is the Republican River. The Republican River is a river in the central Great Plains of North America. It flows 453 miles through Kansas and Nebraska. The Republican River is formed by the convergence of the North Fork Republican River and the Arikaree River just north of Haigler in Dundy County, Nebraska. It joins with the South Fork Republican River immediately southeast of Benkelman, Nebraska. All three tributaries originate in the High Plains of northeastern Colorado. From the confluence, the river flows generally eastward along the southern border of Nebraska, passing through Swanson Reservoir and Harlan County Reservoir before curving southward into the Smoky Hills region of Kansas. The Republican River joins the Smoky Hill River at Junction City, Kansas to form the Kansas River.

Some cities along the river are McCook, Nebraska, Clay Center, Kansas, Scandia, Kansas and Junction City, Kansas. Near Concordia is the Republican River Program Truss, a bridge that goes over the Republican River that is listed on the National Register of Historic Places. Figure 2.7 is a map of the Republican River and its tributaries.

Figure 2. 8 – Republican River and Tributaries



HAZUS Report

HAZUS is a regional multi-hazard loss estimation tool that was developed by FEMA and the National Institute of Building Sciences (NIBS). The main purpose of HAZUS is to provide a method and software application to develop multi-hazard losses at a regional level. In this section the HAZUS run did not take into consideration the level of protection offered by the levee. The estimation is under the assumption the levee is not present. For information on the level of protection provided by the levee system please refer to the Levee Vulnerability section previously discussed in this chapter.

Tables 2.31 through 2.35 are the HAZUS flood loss estimations that were compiled by using FEMA’s HAZUS-MH MR4 software program. It was used for estimating potential losses from flooding. The following table is a hazard vulnerability summary for flooding for the entire planning area. The geographical size of the region is 716 square miles and contains 1,405 census blocks. There are over 3 thousand households in the region and has a total population of 5,835 people (2000 Census Bureau data). There are an estimated 5,840 buildings in the region with a total building replacement value (excluding contents) of 421 million dollars (2006 dollars). Approximately 94.90% of the buildings (and 73.92% of the building value) are associated with residential housing.

Table 2. 25 – Flood Vulnerability for the Entire Planning Area

Type of Structure	Number of Structures			Value of Structures			Number of People
	# in County	# in Hazard Area	% in Hazard Area	\$ in County (\$1,000)	\$ in Hazard Area (\$1,000)	% of Total Damage	# in County
Residential	5,542			\$311,556,000	\$68,657,000	81.6	N/A
Commercial	146			\$57,092,000	\$12,977,000	15.4	N/A
Industrial	7			\$10,608,000	\$728,000	0.9	N/A
Agricultural	27			\$19,341,000	\$322,000	0.4	N/A
Religious/ Non-Profit	30			\$10,756,000	\$1,501,000	1.8	N/A
Government	10			\$4,805,000	\$0	0	N/A
Education	7			\$7,305,000	\$0	0	N/A
Total	5,840			\$421,463,000	\$84,185,000		5,835

The following table is a hazard vulnerability summary for flooding by jurisdiction. The number of structures is based on the existing building count, infrastructure, and critical facilities located in the hazard area. The value of

the structures and number of people is based on data obtained from the 2000 U.S. Census and HAZUS. The section labeled Republic County is for the unincorporated and incorporated areas.

Table 2. 26 – Flood Vulnerability by Jurisdiction

Jurisdiction	Total Number of Structures	Number of Structures in Hazard Area	Total Assessed Value	Estimated Cost of Damage	Estimated Damage %
Republic County*					
Residential	3434	15	\$236,482,326	\$340,882	33%
Commercial	0	0	\$0	0	0
Industrial	0	0	\$0	0	0
Agricultural	1	0	\$716,333	0	0
Religion/Non-Profit	1	0	\$10,756,000	0	0
Government	0	0	\$0	0	0
Education	0	0	\$0	0	0
Agenda					
Residential	54	0	\$540,000	0	0
Commercial	3	0	\$800,355	0	0
Industrial	0	0	\$0	0	0
Agricultural	2	0	\$1,432,667	0	0
Religion/Non-Profit	0	0	\$0	0	0
Government	2	0	\$739,231	0	0
Education	0	0	\$0	0	0
Belleville					
Residential	1259	2	\$55,144,200	\$8,760	10%
Commercial	168	0	\$44,819,888	0	0
Industrial	4	0	\$6,061,714	0	0
Agricultural	9	0	\$6,447,000	0	0
Religion/Non-Profit				0	0
Government	4	0	\$1,478,462	0	0
Education	4	0	\$4,174,286	0	0
Courtland					
Residential	174	0	\$5,011,200	0	0
Commercial	15	0	\$4,001,776	0	0
Industrial	1	0	\$1,515,429	0	0
Agricultural	7	0	\$5,014,333	0	0
Religion/Non-Profit	0	0	\$0	0	0
Government	2	0	\$739,231	0	0
Education	1	0	\$1,043,571	0	0
Cuba					
Residential	148	0	\$2,812,000	0	0
Commercial	5	0	\$1,333,925	0	0
Industrial	0	0	\$0	0	0

Jurisdiction	Total Number of Structures	Number of Structures in Hazard Area	Total Assessed Value	Estimated Cost of Damage	Estimated Damage %
Agricultural	0	0	\$0	0	0
Religion/Non-Profit	0	0	\$0	0	0
Government	2	0	\$739,231	0	0
Education	0	0	\$0	0	0
Munden					
Residential	71	0	\$709,929	0	0
Commercial	2	0	\$533,570	0	0
Industrial	1	0	\$1,515,429	0	0
Agricultural	2	0	\$1,432,667	0	0
Religion/Non-Profit	0	0	\$0	0	0
Government	0	0	\$0	0	0
Education	0	0	\$0	0	0
Narka					
Residential	55	0	\$549,945	0	0
Commercial	0	0	\$0	0	0
Industrial	0	0	\$0	0	0
Agricultural	1	0	\$716,333	0	0
Religion/Non-Profit	0	0	\$0	0	0
Government	1	0	\$369,615	0	0
Education	0	0	\$0	0	0
Republic					
Residential	108	7	\$2,754,000	\$17,850	10%
Commercial	4	0	\$1,067,140	0	0
Industrial	0	0	\$0	0	0
Agricultural	2	0	\$1,432,667	0	0
Religion/Non-Profit	0	0	\$0	0	0
Government	0	0	\$0	0	0
Education	0	0	\$0	0	0
Scandia					
Residential	239	79	\$7,552,400	\$624,100	25%
Commercial	17	2	\$4,535,346	\$88,039	33%
Industrial	1	0	\$1,515,429	0	0
Agricultural	3	1	\$2,149,000	\$716,333	100% of feed
Religion/Non-Profit	0	0	\$0	0	0
Government	2	1	\$739,231	\$184,808	25%
Education	2	0	\$2,087,143	0	0

Republic County* = all incorporated and unincorporated areas within the Republic County's jurisdictional boundaries.

HAZUS estimates that about 16 buildings will be at least moderately damaged. This is over 7 percent of the total number of buildings in Republic County. There are not any buildings in Republic County that will be completely destroyed. Table 2.33 summarizes the expected damage by general occupancy for the buildings in the region.

Table 2. 27 – Expected Building Damage for the Entire Planning Area

	1-10% Damage	11-20% Damage	21-30% Damage	31-40% Damage	41-50% Damage	Over 51% Damage
Occupancy	# of Buildings Damaged	# of Buildings Damaged	# of Buildings Damaged	# of Buildings Damaged	# of Buildings Damaged	# of Buildings Damaged
Residential	0	9	79	15	0	0
Commercial	0	0	0	2	0	0
Industrial	0	0	0	0	0	0
Agricultural	0	0	0	0	0	1
Religion	0	0	0	0	0	0
Government	0	0	1	0	0	0
Education	0	0	0	0	0	0

Table 2.34 describes the extent of damage the critical facilities for the entire planning area would experience as a result of a 100-year flood event.

Table 2. 28 – Expected Damage to Critical Facilities

Critical Facility	Total in County	At Least Moderate Damage	At Least Substantial Damage	Loss of Use
Fire Stations	6	1	0	0
Hospitals	1	0	0	0
Police Stations	3	0	0	0
Schools	7	0	0	0

Debris Generation

HAZUS estimated the amount of debris that would be generated by a 100-year flood event. The model divides debris into three general categories because of the different types of material handling equipment required to handle the debris. The categories are:

1. Finishes – dry wall, insulation, etc.
2. Structural – wood, brick, etc.
3. Foundations – concrete slab, concrete block, rebar, etc.

The HAZUS model estimated that there would be a total of 1,027 tons of debris generated by a 100-year flood event. Finishes consists of 58 percent of the total amount of debris and Structural comprises 23 percent of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 41 truckloads, at 25 tons per truck to remove the debris generated by the flood.

Shelter Requirements

HAZUS estimates the number of households that are expected to be displaced from their home due to a 100-year flood event. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters. The model estimated that 82 households will be displaced. Displacement includes households evacuated from within or very near the inundated area. Out of the displaced households, it is estimated that 38 people will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for a 100-year flood event is \$5.83 million, which represents 6.93 percent of the total replacement value of the buildings in Republic County.

Republic County Severe Repetitive Loss Properties

FEMA defines severe repetitive loss properties as “a residential property that is covered under an NFIP flood insurance policy and 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 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. In both cases at least two of the claims must have occurred within any 10-year period and must be greater than 10 days apart. There are not any repetitive loss properties in Republic County.

The following maps are from HAZUS-MH MR4

- Figure 2.8 identifies the 100-year flood zones for Republic County
- Figure 2.9 identifies the 100-year flood zones for the City of Agenda
- Figure 2.10 identifies the 100-year flood zones for the City of Belleville
- Figure 2.11 identifies the 100-year flood zones for the City of Courtland
- Figure 2.12 Identifies the 100-year flood zones for the City of Cuba
- Figure 2.13 identifies the 100-year flood zones for the City of Munden
- Figure 2.14 identifies the 100-year flood zones for the City of Narka
- Figure 2.15 identifies the 100-year flood zones for the City of Republic
- Figure 2.16 identifies the 100-year flood zones for the City of Scandia

Figure 2. 9 – Republic County 100-year Flood Zone

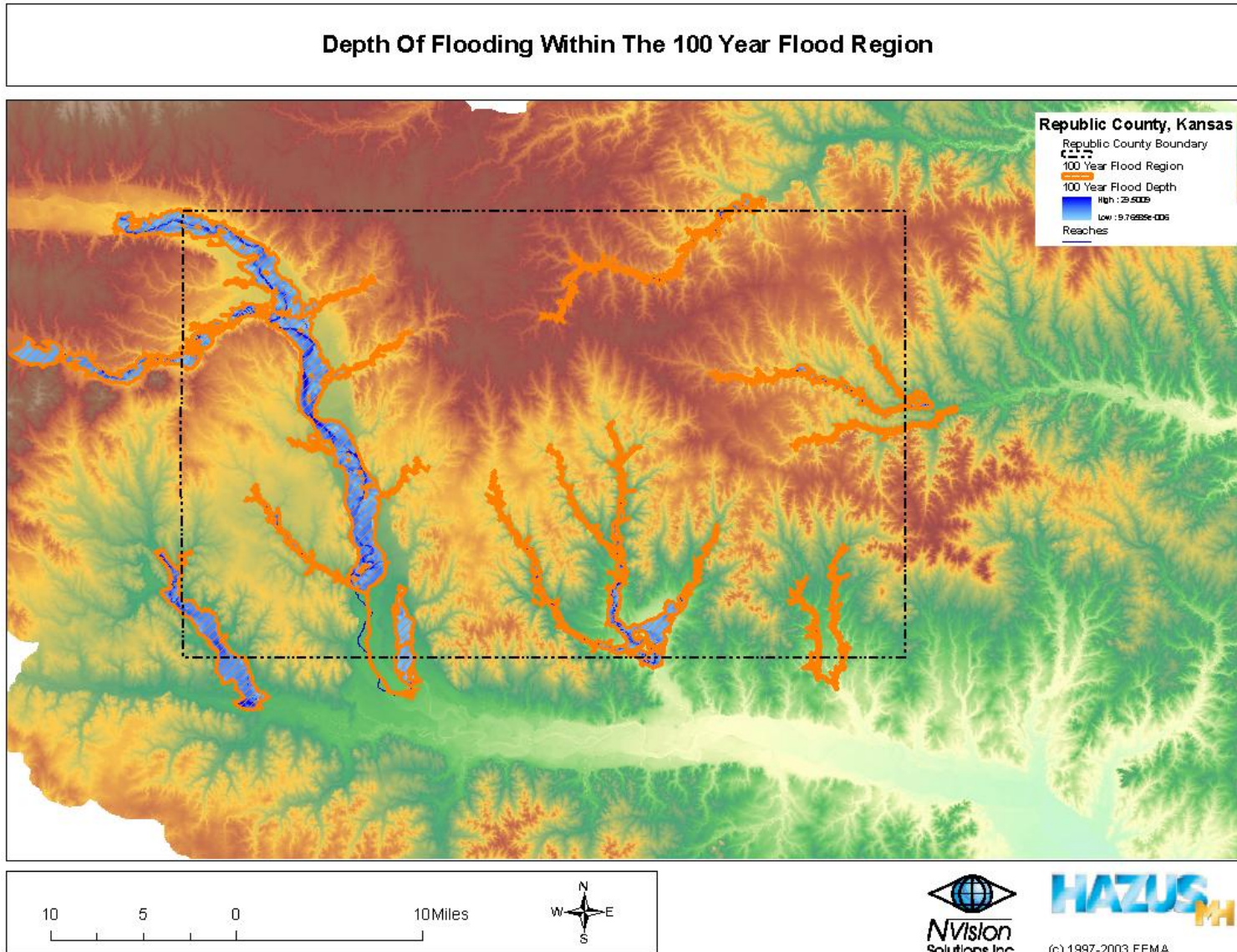


Figure 2. 10 – City of Agenda 100-year Flood Zone

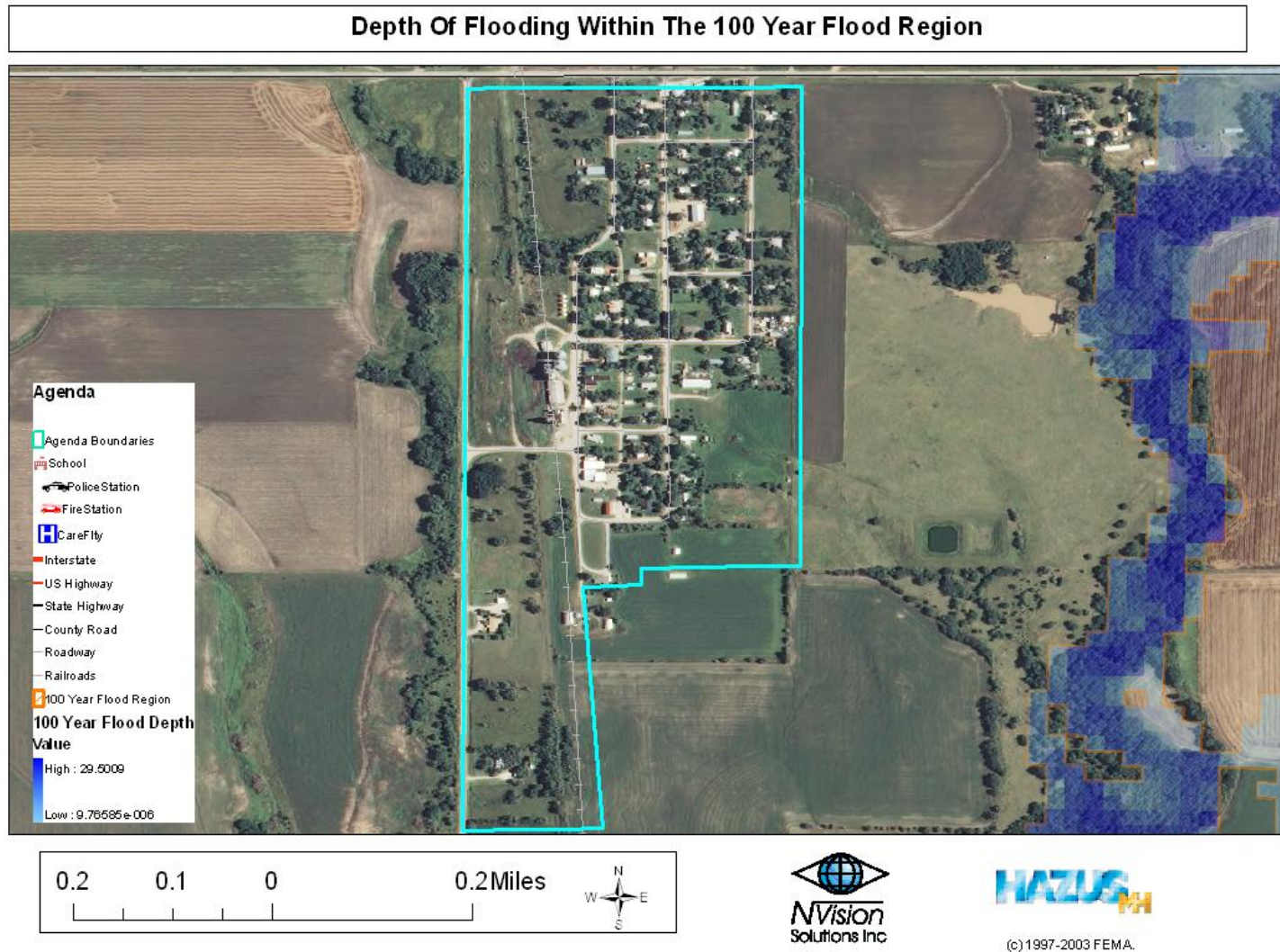


Figure 2. 11 – City of Belleville 100-year Flood Zone

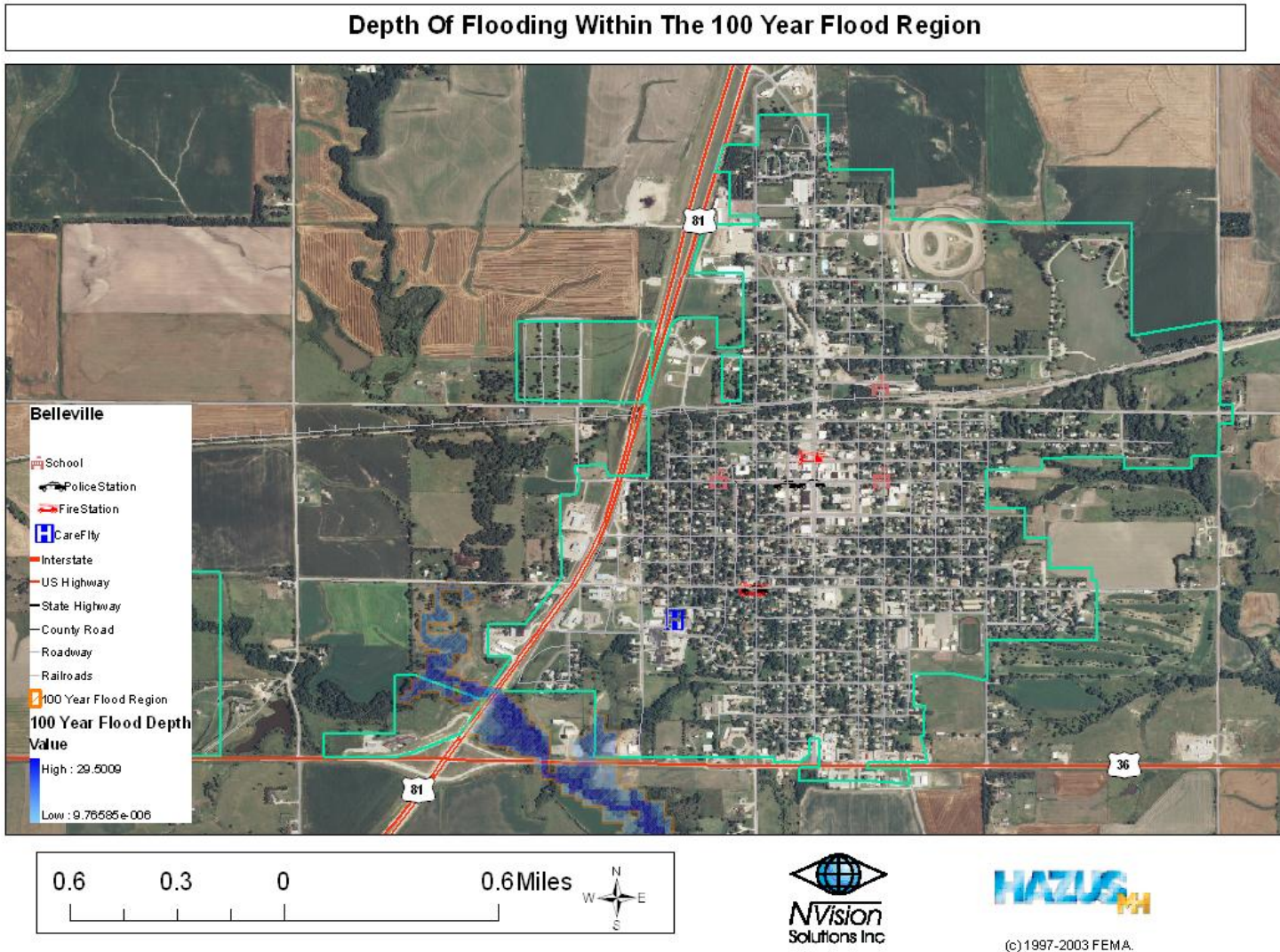


Figure 2. 12 – City of Courtland 100-year Flood Zone

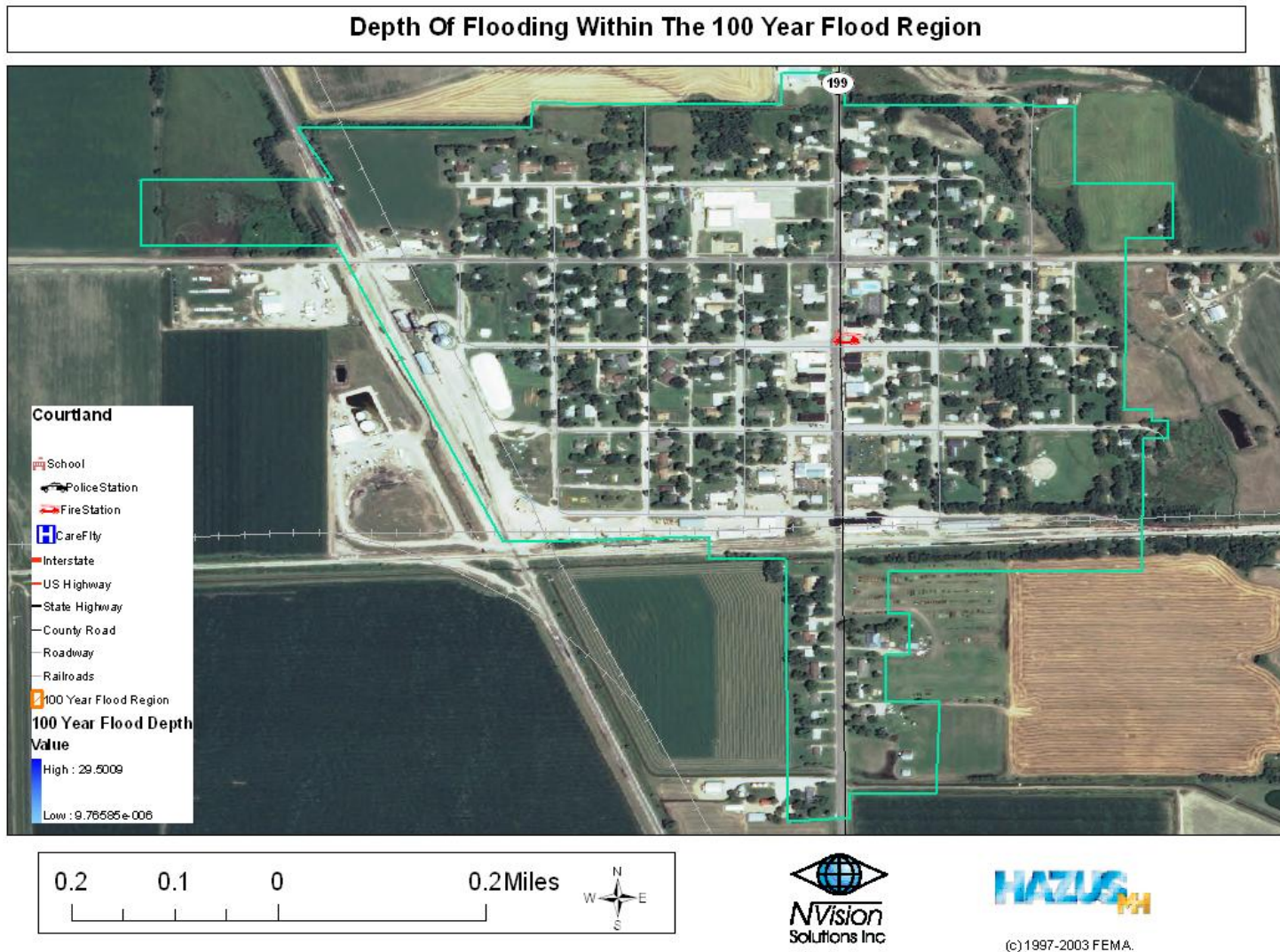


Figure 2. 13 – City of Cuba 100-year Flood Zone

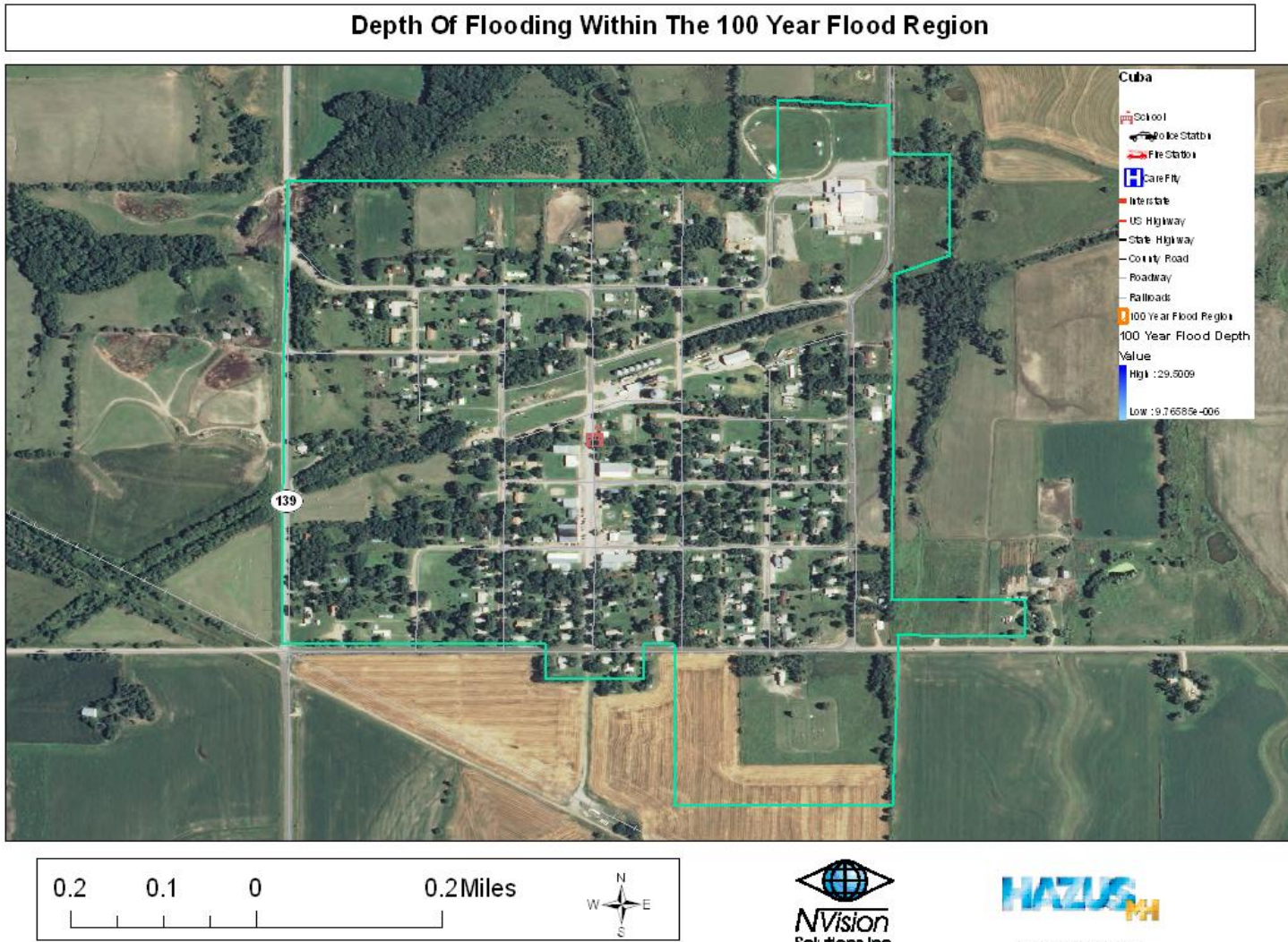


Figure 2. 14 – City of Munden 100-year Flood Zone

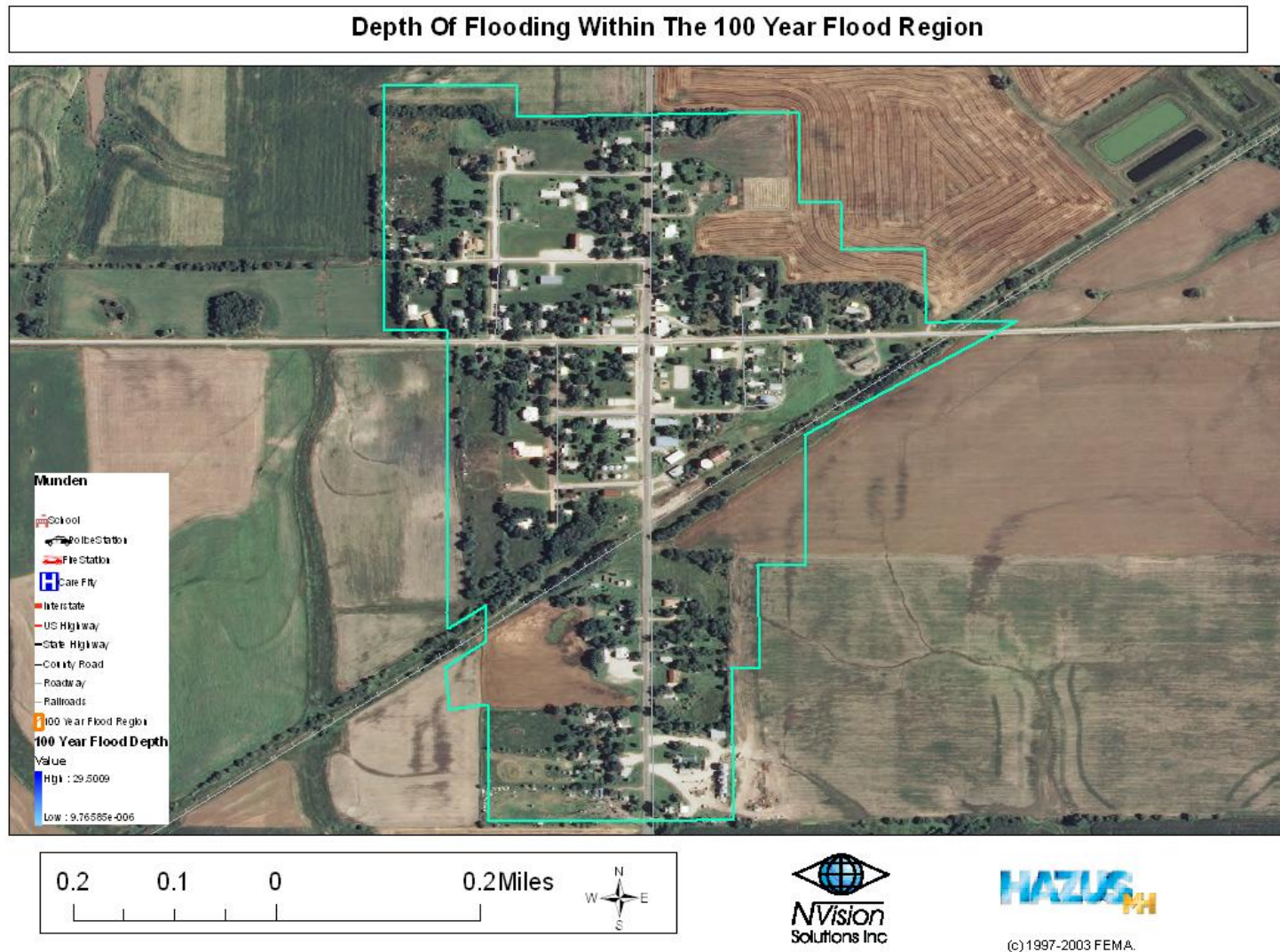


Figure 2. 15 – City of Narka 100-year Flood Zone

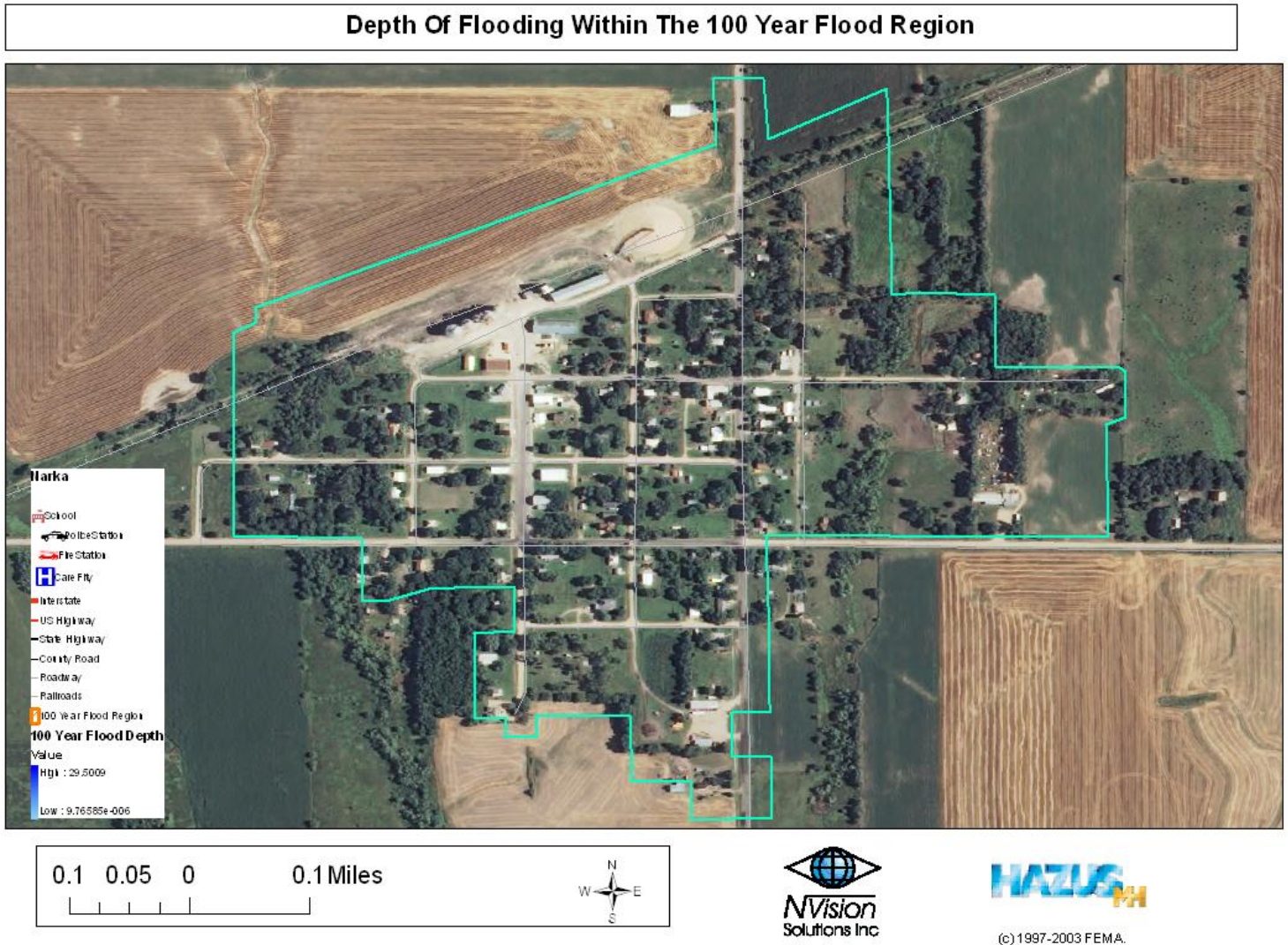


Figure 2. 16 – City of Republic 100-year Flood Zone

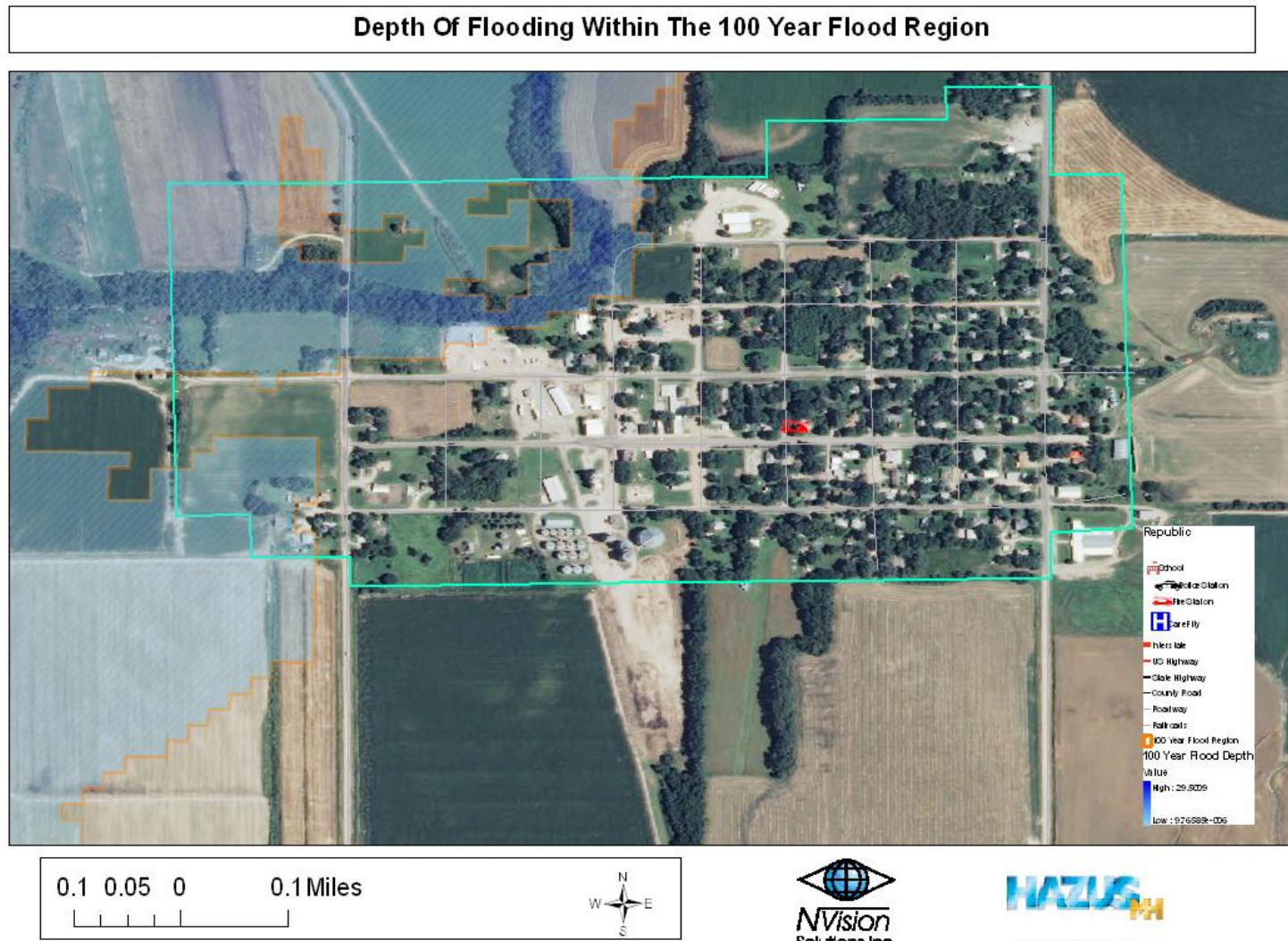
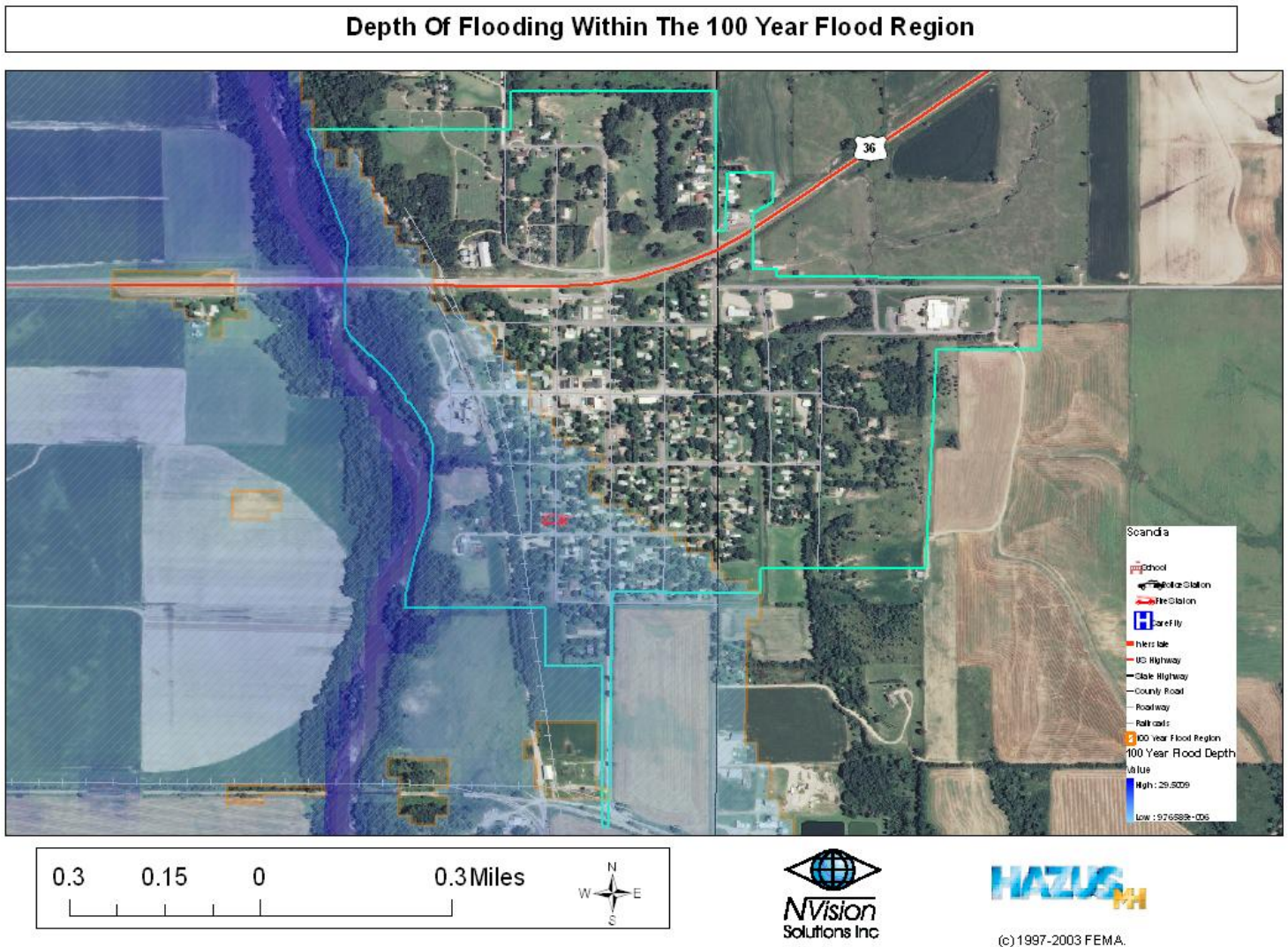


Figure 2. 17 – City of Scandia 100-year Flood Zone



Fog

Hazard Definition

Vapor condensed to fine particles of water suspended in the lower atmosphere that differs from cloud only in being near the ground. There are different types of fog, radiation fog, advection fog, upslope fog, ice fog, freezing fog, and evaporation or mixing fog (National Weather Service).

Radiation Fog – This type of fog forms at night under clear skies with calm winds when the heat is absorbed by the earth’s surface during the day is radiated into space. As the earth’s surface cools and there is a deep enough layer of moist air near the ground, the humidity will reach 100 percent and fog will form. This fog varies in depth from 3 feet to about 1,000 feet, is always at ground level, and usually remains stationary. It can reduce visibility to near zero at times and make driving very hazardous.

Advection Fog – This type of fog looks like radiation fog and is also caused by condensation. The difference is, in this case the condensation is not caused by a reduction in surface temperature, but by the horizontal movement of warm moist air over a cold surface. Advection fog can be distinguished from radiation fog by its horizontal motion along the ground.

Upslope Fog – This fog forms when light winds push moist air up a hillside to a level where the air becomes saturated and condensation occurs. This fog usually forms a good distance from the peak of a hill or mountain and covers a large area. This fog occurs in all mountain ranges in North America and usually occurs in the winter months.

Ice Fog – It forms when the air temperature is below freezing and is composed entirely of tiny ice crystals that are suspended in the air. Ice fog will only occur in cold Arctic air. Generally the temperature has to be 14° Fahrenheit or lower for ice fog to occur.

Freezing Fog – This fog happens when the water droplets that the fog is comprised of are super cooled. The super cooled water droplets remain in a liquid state until they come into contact with a surface upon which they can freeze. As a result, the objects that freezing fog comes into contact with will be coated with ice.

Evaporation or Mixing Fog – This fog forms when sufficient water vapor is added to the air by evaporation and the moist air mixes with cooler, drier air. The two common types are steam fog and frontal fog. Steam fog forms when cold air moves over warm water. As the cool air mixes with the warm moist air over the water, the moist air cools until its humidity reaches 100 percent and fog forms. This type of fog looks like smoke rising off the surface of the water. Frontal fog forms when warm raindrops evaporated into a cooler drier layer of air near the ground. Once enough rain has evaporated into the layer of cool surface, the humidity of the air reaches 100 percent and fog forms.

History Fog Events

There were seven major fog events reported by the NCDC or NWS for Republic County during the period of January 1, 1950 through February 28, 2011.

January 10, 2003	Dense fog reduced visibilities to a quarter mile or less for a time during the morning hours.
February 14, 2003	Dense fog reduced visibility to a quarter mile or less from mid morning to mid afternoon.
November 10, 2003	Dense fog developed over the mentioned counties during the late evening of the 10 th and continued to near dawn of the 11 th . Visibilities were reported as low as a few yards in some areas. No vehicle accidents resulted because of the fog.
February 17, 2004	Dense fog reduced visibilities to a few yards in many places before dissipating after sunrise.

- May 27, 2004 Dense fog resulted in two vehicle accidents in the Belleville area. Two vehicles collided at a road intersection when the driver of one of the vehicles apparently did not see a stop sign. Both vehicles suffered damage. The second accident occurred shortly after the first accident and near the same location when one vehicle entered the roadway near the first accident and was struck by another vehicle. In the second accident the vehicles also suffered damage and in addition a passenger in one of the vehicles was injured.
- January 23, 2006 Widespread dense fog brought occasional visibilities below a quarter mile and hazardous driving conditions. Temperatures below freezing also caused some black ice which only added to the treacherous travel conditions.
- August 25, 2007 Fairly widespread dense fog developed across north central and central portions of Kansas during the morning hours of August 25th. Calm winds and an exceptionally moist boundary layer combined to promote fog development.

Probability and Magnitude of Fog

The probability for a fog event was ranked as “likely” because there are multiple fog events each year. However, the HMPC determined the magnitude of a fog event is “negligible” because less than 10 percent of property is severely damaged.

Fog Risk Summary

Table 2.38 is a risk summary for fog for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 29 – Fog Risk Summary

Fog	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	3	2
Magnitude	1	NA*
Warning Time	1	NA*
Duration	1	NA*
Planning Significance	Low	Low
Risk Index	1.90	1.60
Ranking	17 out of 22	22 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 30 – Fog Planning Significance by Jurisdiction

Hazard	Historic Occurrence	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	No	Likely	Negligible	24+ hrs	< 6hr	Low
Agenda	No	Likely	Negligible	24+ hrs	< 6hr	Low
Belleville	No	Likely	Negligible	24+ hrs	< 6hr	Low
Courtland	No	Likely	Negligible	24+ hrs	< 6hr	Low
Cuba	No	Likely	Negligible	24+ hrs	< 6hr	Low
Munden	No	Likely	Negligible	24+ hrs	< 6hr	Low
Narka	No	Likely	Negligible	24+ hrs	< 6hr	Low

Hazard	Historic Occurrence	Probability	Magnitude	Warning	Duration	Planning Significance
Republic	No	Likely	Negligible	24+ hrs	< 6hr	Low
Scandia	No	Likely	Negligible	24+ hrs	< 6hr	Low

Fog Vulnerability

Fog does not have an impact on buildings and other structures. Yet it is still a high risk for Republic County, because of the safety risks it poses for the transportation industry. All highways and roadways in Republic County are vulnerable to traffic accidents as a result of fog. Fog related traffic accidents can potentially cause deaths and injuries.

The airline industries are particularly vulnerable to fog conditions. Airplanes are grounded until fog conditions clear. According to the NTSB between 1994 and 2003, there were 19,562 aircraft accidents in the United States. Fog was a contributing factor in 336 of those accidents.

Hailstorm

Hazard Definition

Hail is associated with thunderstorms. Hail is produced by intense thunderstorms as water droplets are picked up by strong updrafts and can be carried well above the freezing level. As the frozen droplets fall, the updraft can carry them back up to the top of the storm adding more ice layers. Typically the stronger the updraft, the more times a hailstone repeats this cycle and consequently, the larger it grows. Once the hail stone becomes too heavy to be supported by the updraft, it falls out of the cloud toward the surface. The hailstone reaches the ground as ice.

Hail consists of balls or irregular lumps of ice called hailstones. Most hail is generally small, less than 2 inches in diameter. Hail is measured on an intensity scale called the TORRO Hailstorm Intensity Scale. The scale ranges from H0 to H10 with its increments or damage potential related to hail size, texture, numbers, fall speed, speed of storm translation, and strength of the accompanying wind (Tornado and Storm Research Organisation).

Maximum hailstone size is the most important parameter relating to structural damage, especially towards the more severe end of the scale. Hailstone shapes are also an important feature. Spiked or jagged hailstones can also increase some aspects of damage. The following table is the TORRO Hailstorm Intensity Scale in relation to the typical damage and hail size codes (Tornado and Storm Research Organisation). The size codes are in the second table.

Table 2. 31 - TORRO Hailstorm Intensity Scale

Intensity Scale	Intensity Category	Typical Hail Diameter in millimeters	Typical Hail Diameter in inches	Probable Kinetic Energy, J-m ²	Typical Damage Impacts
H0	Hard Hail	5	0.196	0-20	No damage
H1	Potentially Damaging	5-15	0.2-0.6	>20	Slight general damage to plants, crops
H2	Significant	10-20	0.4-0.79	>100	Significant damage to fruit, crops, vegetation
H3	Severe	20-30	0.79-1.18	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-40	0.98-1.57	>500	Widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50	1.18-1.97	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60	1.57-2.36	N/A	Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50-75	1.97-2.95	N/A	Severe roof damage, risk of serious injuries
H8	Destructive	60-90	2.36-3.54	N/A	(Severest recorded in the British Isles) Severe damage to aircraft bodywork
H9	Super Hailstorms	75-100	2.95-3.94	N/A	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>100	3.94	N/A	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Table 2.41 is the hail size code, diameter, and description of shape in relation to the TORRO Hailstorm Intensity Scale (Tornado and Storm Research Organisation).

Table 2. 32 - Hail Size In Relation to the TORRO Scale

Size code	Diameter (mm)	Diameter (in)	Description
H0	5-9	0.2-0.35	Pea
H1	10-15	0.4-0.6	Mothball
H2	16-20	0.63-0.79	Marble, grape
H3	21-30	0.83-1.18	Walnut
H4	31-40	1.22-1.57	Pigeon's egg
H5	41-50	1.61-1.97	Golf ball
H6	51-60	2.01-2.36	Hen's egg
H7	61-75	2.40-2.95	Tennis ball
H8	76-90	2.99-3.54	Soft ball
H9	91-100	3.58-3.94	Grapefruit
H10	>100	>3.94	Melon

The largest recorded hailstone fell on June 23, 2003 in Aurora, Nebraska and it had a diameter of 7.0 inches, a circumference of 18.75 inches, and weighed 1 pound (National Weather Service). The heaviest recorded hailstone fell in Coffeerville, Kansas on September 3, 1970. It weighed 1.67 pounds; the diameter was 5.7 inches and a circumference of 17.5 inches.

Past Hailstorm Events

The following events were from the NCDC. Only the hailstorm events with hail at least .75 inches in diameter since January 1, 1955 are listed in the following table.

Table 2. 33 – Republic County Hailstorm Events

Date	Time	Diameter (Inches)	Property Damage (\$)	Crop Damage (\$)
09/22/1955	1801	0.75	0	0
10/01/1959	2235	2.50	0	0
04/21/1961	2341	1.00	0	0
06/02/1961	0705	1.00	0	0
08/05/1961	1720	1.00	0	0
05/08/1962	1800	3.00	0	0
05/19/1962	1830	2.50	0	0
05/19/1962	1920	0.75	0	0
05/24/1962	1729	0.75	0	0
05/24/1962	2100	1.75	0	0
05/31/1962	1716	1.00	0	0
07/16/1963	2345	2.00	0	0
04/20/1964	1620	0.75	0	0
06/08/1964	1941	1.25	0	0
06/30/1964	1513	2.75	0	0
06/11/1967	1710	0.75	0	0
04/03/1968	2200	3.00	0	0
06/19/1970	0110	1.00	0	0
05/21/1971	1433	1.00	0	0
05/21/1971	1600	2.00	0	0
05/21/1971	1654	1.75	0	0
09/25/1973	1710	2.75	0	0

Date	Time	Diameter (Inches)	Property Damage (\$)	Crop Damage (\$)
05/13/1974	1440	1.75	0	0
05/18/1974	1640	1.50	0	0
05/18/1974	1730	1.75	0	0
05/25/1975	2115	1.75	0	0
08/17/1975	1420	1.75	0	0
03/29/1976	1400	1.75	0	0
06/13/1976	2029	1.00	0	0
06/28/1976	1810	2.75	0	0
05/16/1977	1720	1.75	0	0
07/30/1977	1545	1.75	0	0
08/04/1977	2310	1.75	0	0
08/31/1977	1730	1.75	0	0
05/31/1978	1545	1.75	0	0
06/21/1979	2345	1.00	0	0
08/05/1980	1828	1.75	0	0
08/05/1980	1905	1.75	0	0
08/31/1980	1705	1.75	0	0
05/26/1982	1500	0.75	0	0
06/21/1982	1505	1.75	0	0
05/13/1983	1735	0.75	0	0
05/27/1983	1703	1.75	0	0
05/27/1983	1750	0.75	0	0
06/10/1983	1815	1.00	0	0
06/09/1984	0001	1.75	0	0
07/10/1984	2157	1.00	0	0
05/13/1985	1934	0.75	0	0
05/13/1985	1934	0.75	0	0
06/21/1985	1645	0.75	0	0
08/03/1985	1750	0.75	0	0
08/24/1985	0508	1.75	0	0
04/25/1986	2121	0.75	0	0
08/17/1986	1920	1.75	0	0
08/17/1986	1935	0.75	0	0
08/18/1986	2130	0.75	0	0
08/18/1986	2157	0.75	0	0
06/17/1987	1509	0.75	0	0
06/17/1987	1511	1.75	0	0
07/07/1987	2100	0.75	0	0
08/17/1987	2052	1.00	0	0
08/17/1987	2100	0.75	0	0
09/09/1987	2000	1.75	0	0
07/15/1988	2056	1.75	0	0
04/27/1989	2052	0.75	0	0
05/21/1989	0905	2.00	0	0
05/21/1989	0920	0.75	0	0
05/21/1989	0952	0.75	0	0
03/11/1990	1828	0.75	0	0
06/14/1990	1530	1.00	0	0
06/14/1990	1740	0.75	0	0
06/14/1990	1825	0.75	0	0
05/13/1991	1708	0.75	0	0
05/11/1992	1230	1.00	0	0

Date	Time	Diameter (Inches)	Property Damage (\$)	Crop Damage (\$)
05/11/1992	1245	1.00	0	0
07/09/1992	0010	0.75	0	0
07/15/1992	1845	0.75	0	0
07/22/1992	1856	0.75	0	0
07/22/1992	1911	0.75	0	0
07/22/1992	1942	1.75	0	0
07/29/1992	2140	0.75	0	0
03/29/1993	2105	0.75+	5,000	5,000
06/07/1994	0430	0.75	0	0
06/07/1994	0430	1.00	0	0
05/16/1995	1733	0.75	0	0
05/16/1995	1740	1.50	0	0
05/16/1995	2038	1.00	0	0
07/03/1995	0007	0.75	0	0
07/03/1995	1923	1.75	0	0
07/03/1995	1948	1.75	0	0
07/04/1995	0015	0.75	0	0
05/07/1996	0405	1.75	0	0
05/17/1996	1843	1.00	0	0
05/17/1996	1848	1.00	0	0
05/31/1996	1819	1.75	0	0
05/31/1996	1854	1.00	0	0
05/31/1996	1915	2.00	0	0
06/06/1998	0600	1.75	0	0
07/13/1996	1530	0.88	0	0
05/07/1997	1713	0.75	0	0
05/07/1997	1715	1.75	0	0
05/07/1997	1741	1.75	0	0
05/07/1997	1745	2.75	0	0
05/07/1997	1800	0.75	0	0
05/17/1997	1622	1.75	0	0
05/17/1997	1624	1.00	0	0
05/17/1997	1627	1.50	0	0
05/17/1997	1628	1.75	0	0
05/11/1998	2027	1.75	0	0
06/22/1998	2115	0.75	0	0
06/28/1998	1925	0.75	0	0
06/28/1998	2010	1.00	0	0
06/28/1998	2017	1.00	0	0
06/28/1998	2105	2.75	300,000	0
05/16/1999	2312	0.88	0	0
05/30/1999	1823	1.00	0	0
05/30/1999	1829	0.75	0	0
05/30/1999	1845	1.75	0	0
05/30/1999	1850	1.75	0	0
05/30/1999	1852	1.75	0	0
05/30/1999	1915	1.75	0	0
05/30/1999	1928	0.75	0	0
05/31/1999	2120	1.75	0	0
06/09/1999	1729	1.75	0	0
06/28/1999	1712	1.00	0	0
08/10/1999	1900	0.75	0	0

Date	Time	Diameter (Inches)	Property Damage (\$)	Crop Damage (\$)
09/04/1999	1619	1.00	0	0
05/26/2000	1450	0.75	0	0
06/13/2000	1514	0.88	0	0
06/13/2000	1550	0.88	0	0
04/14/2001	1329	0.75	0	0
04/14/2001	1330	0.75	0	0
04/14/2001	1414	0.75	0	0
04/14/2001	1439	0.75	0	0
04/14/2001	1505	1.00	0	0
04/14/2001	1521	0.75	0	0
04/14/2001	1525	0.88	0	0
04/14/2001	1616	1.00	0	0
04/14/2001	1620	0.75	0	0
04/20/2001	1952	1.00	0	0
04/20/2001	2000	1.00	0	0
04/20/2001	2014	0.88	0	0
04/20/2001	2021	1.00	0	0
04/20/2001	2030	1.75	0	0
04/20/2001	2048	1.75	0	0
04/20/2001	2050	1.00	0	0
04/20/2001	2247	0.75	0	0
04/20/2001	2350	1.00	0	0
04/30/2001	1905	1.00	0	0
04/30/2001	1906	0.75	0	0
04/30/2001	1946	1.00	0	0
04/30/2001	1950	0.75	0	0
04/30/2001	1953	1.00	0	0
04/30/2001	2000	1.75	0	0
06/16/2001	1740	1.75	0	0
06/16/2001	1755	1.25	0	0
06/16/2001	1809	1.75	0	0
06/16/2001	1856	1.75	0	0
06/19/2001	2027	0.88	0	0
06/19/2001	2027	0.88	0	0
06/19/2001	2135	0.75	0	0
06/19/2001	2257	0.75	0	0
06/19/2001	2300	1.00	0	0
08/23/2001	1950	0.88	0	0
09/07/2001	1600	1.00	0	0
09/07/2001	1945	1.00	0	0
03/08/2002	1931	0.75	0	0
03/08/2002	1935	0.75	0	0
04/16/2002	2004	1.00	0	0
04/16/2002	2025	0.75	0	0
04/17/2002	2213	0.75	0	0
04/17/2002	2240	0.75	0	0
04/18/2002	2242	0.75	0	0
05/05/2002	1926	1.00	0	0
05/05/2002	1940	0.88	0	0
05/06/2002	1800	1.00	0	0
05/06/2002	1807	1.00	0	0
06/11/2002	1750	0.75	0	0

Date	Time	Diameter (Inches)	Property Damage (\$)	Crop Damage (\$)
06/11/2002	1750	0.75	0	0
06/11/2002	1838	0.75	0	0
07/09/2003	1620	0.75	0	0
07/09/2003	1640	0.75	0	0
07/09/2003	1650	0.75	0	0
07/09/2003	1656	1.00	0	0
08/28/2003	1617	0.75	0	0
03/27/2004	1649	1.25	0	0
05/18/2004	1520	1.00	0	0
05/29/2004	2320	0.75	0	0
09/17/2004	0833	0.88	0	0
09/17/2004	0839	0.75	0	0
05/08/2005	1556	0.88	0	0
05/08/2005	1637	1.00	0	0
05/08/2005	1652	0.75	0	0
05/12/2005	1330	0.75	0	0
06/04/2005	1512	1.75	0	0
03/30/2006	1310	0.88	0	0
04/06/2006	1430	0.75	0	0
04/06/2006	1440	0.88	0	0
04/06/2006	1445	1.75	0	0
04/23/2006	1904	1.00	0	0
04/23/2006	1908	1.25	0	0
05/29/2006	2202	1.00	0	0
05/29/2006	2305	1.25	0	0
05/29/2006	2307	1.00	0	0
06/21/2006	2100	0.88	0	0
08/18/2006	1700	1.00	0	0
08/25/2006	1852	1.00	0	0
08/25/2006	1930	0.88	0	0
02/24/2007	1300	1.00	0	0
02/24/2007	1303	1.75	0	0
05/23/2007	1117	1.75	0	0
06/11/2008	2039	2.75	0	0
06/11/2008	2040	3.50	500,000	0
06/11/2008	2041	1.75	0	0
06/11/2008	2043	2.75	600,000	0
06/11/2008	2045	1.75	0	0
06/11/2008	2053	1.75	0	0
09/23/2008	1545	0.75	0	0
09/23/2008	1648	0.75	0	0
09/23/2008	1730	1.00	0	0
09/23/2008	1815	0.88	0	0
09/23/2008	1830	1.75	0	0
09/23/2008	1834	1.00	0	0
03/23/2009	1659	1.00	0	0
03/23/2009	1659	1.00	0	0
06/09/2009	0857	0.75	0	0
06/25/2009	1807	1.00	0	0
06/25/2009	1828	1.00	0	0
06/25/2009	1839	1.75	0	0
06/25/2009	1851	2.00	0	0

Date	Time	Diameter (Inches)	Property Damage (\$)	Crop Damage (\$)
07/20/2009	2119	0.75	0	0
Totals:			1.405 Million	5,000

Probability and Magnitude of Hailstorms

Hailstorms have caused widespread losses in Republic County, damaging property, crops, killing and injuring livestock. All of these losses are possible in the planning area. The following is a table of hail size and the number of corresponding events.

Table 2. 34 – Summary of Hailstorm Events in Republic County

1962 - 2010	
Hail Size	Number of Events
4.50	0
4.25	0
4.00	1
3.75	0
3.50	1
3.25	0
3.00	1
2.75	5
2.50	3
2.25	0
2.00	7
1.75	49
1.50	3
1.25	10
1.00	51
0.88	24
0.75	84

Based on data in Table 2.42 and 2.43 the HMPC determined the probability that at least two hail events will occur in Republic County in any given year is “highly likely”.

Although hailstorms resulted in \$1.405 million in property damage and \$5,000 in crop damage over the last 60 years in Republic County, the HMPC determined the magnitude for hailstorms is “limited” because there have not been any deaths or injuries as a result of the storms.

Hailstorm Risk Summary

Table 2.44 is a risk summary for hailstorms for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 35 – Hailstorm Risk Summary

Hailstorms	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	4
Magnitude	2	NA*
Warning Time	4	NA*
Duration	1	NA*
Planning Significance	High	Moderate
Risk Index	3.10	2.95
Ranking	6 out of 22	7 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 36 – Hailstorm Planning Significance by Jurisdiction

Hazard	Historical Occurrence	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High
Agenda	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High
Belleville	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High
Courtland	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High
Cuba	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High
Munden	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High
Narka	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High
Republic	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High
Scandia	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High

Hailstorm Vulnerability

The following table is a hazard vulnerability summary for hailstorms by jurisdiction. The actual damage costs may be less than the estimates in Table 2.46 depending on the number of structures actually damaged. The estimated damages are based on the average cost of hail damage repairs on 100% of the residential buildings with 2% damage and 0.5% damage on all other building types. These damage estimates are also based on the reported damages associated with historic events, such as roof repair, broken windows, etc.

Table 2. 37 – Hailstorm Vulnerability by Jurisdiction

Jurisdiction	Total Number of Structures	Total Assessed Value	Estimated Damage
Republic County*			
Residential	3434	\$236,482,326	\$236,482,326
Commercial	0	\$0	\$0
Industrial	0	\$0	\$0
Agricultural	1	\$716,333	\$358
Religion/Non-Profit	1	\$10,756,000	\$5,378
Government	0	\$0	\$0
Education	0	\$0	\$0

Agenda			
Residential	54	\$540,000	\$540,000
Commercial	3	\$800,355	\$400
Industrial	0	\$0	\$0
Agricultural	2	\$1,432,667	\$716
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$370
Education	0	\$0	\$0
Belleville			
Residential	1259	\$55,144,200	\$55,144,200
Commercial	168	\$44,819,888	\$22,410
Industrial	4	\$6,061,714	\$3,031
Agricultural	9	\$6,447,000	\$3,224
Religion/Non-Profit			\$0
Government	4	\$1,478,462	\$739
Education	4	\$4,174,286	\$2,087
Courtland			
Residential	174	\$5,011,200	\$5,011,200
Commercial	15	\$4,001,776	\$2,001
Industrial	1	\$1,515,429	\$758
Agricultural	7	\$5,014,333	\$2,507
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$370
Education	1	\$1,043,571	\$522
Cuba			
Residential	148	\$2,812,000	\$2,812,000
Commercial	5	\$1,333,925	\$667
Industrial	0	\$0	\$0
Agricultural	0	\$0	\$0
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$370
Education	0	\$0	\$0
Munden			
Residential	71	\$709,929	\$709,929
Commercial	2	\$533,570	\$267
Industrial	1	\$1,515,429	\$758
Agricultural	2	\$1,432,667	\$716
Religion/Non-Profit	0	\$0	\$0
Government	0	\$0	\$0
Education	0	\$0	\$0
Narka			
Residential	55	\$549,945	\$549,945
Commercial	0	\$0	\$0
Industrial	0	\$0	\$0
Agricultural	1	\$716,333	\$358
Religion/Non-Profit	0	\$0	\$0
Government	1	\$369,615	\$185
Education	0	\$0	\$0

Republic			
Residential	108	\$2,754,000	\$2,754,000
Commercial	4	\$1,067,140	\$534
Industrial	0	\$0	\$0
Agricultural	2	\$1,432,667	\$716
Religion/Non-Profit	0	\$0	\$0
Government	0	\$0	\$0
Education	0	\$0	\$0
Scandia			
Residential	239	\$7,552,400	\$7,552,400
Commercial	17	\$4,535,346	\$2,268
Industrial	1	\$1,515,429	\$758
Agricultural	3	\$2,149,000	\$1,075
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$370
Education	2	\$2,087,143	\$1,044

Republic County* = all unincorporated areas and townships within the Republic County's jurisdictional boundaries.

Every year hailstorms cause damage to structures, crops, livestock, and vehicles. Losses due to hail are a huge concern for Republic County because of its large agriculture industry. In 2005, hail and wind damage made up 45 percent of the homeowners insurance losses (Kansas Hazard Mitigation Team). Much of the hail damage was done to crops. Even small hail can destroy plants in a matter of minutes.

It can also cause major damage to vehicles, roofs of building, homes, and landscaping. The extent of hail damage can range from very minor dents to holes in vehicles, siding, and roofs. Hail can create hairline cracks and punctures in the asphalt that are hard to see and won't show up for a while. The cracks allow a tiny bit of water in, but not enough to get into the building. In the sun, this small amount of water steams back out and can cause the granules on the shingles to pop off.

Hazardous Materials

Hazard Definition

Hazardous materials are chemical substances, which if released or misused can pose a threat to the environment or health. These chemicals are used in industry, agriculture, medicine, research, and consumer goods. Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials.

Many products containing hazardous materials are used and stored in homes on a regular basis. These products are also shipped daily on the nation’s highways, railroads, waterways, and pipelines.

According to Subpart A, Part 105, Subchapter A, Chapter I, Subtitle B of Title 49 of the Code of Federal Regulations (CFR), The U.S. Department of Transportation defines a hazardous material as a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has designated as hazardous under section 5103 of Federal hazardous materials transportation law (49 U.S.C. 5103). The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions in part 173 of subchapter C of this chapter.

Pipeline accidents can be caused by both natural and man-made events. Corrosion may cause an area of a line to become weakened and leak or, when combined with extreme pressure in the line, rupture. Man-made events include striking or cutting the line with a backhoe or other heavy equipment or purposely causing a rupture in the line through vandalism, other criminal acts or terrorism.

Republic County has experienced several pipeline accidents in its history. Most have been minor, involving backhoes rupturing natural gas lines to homes or businesses. To date, we have not had a major pipeline accident involving one of the main lines crisscrossing the county.

Types of hazardous materials classes:

- Explosive, compressed gases, flammable liquids and solids (flammable and combustible), oxidizers and organic peroxides, toxic materials (poisonous and infectious), radioactive material, corrosive material, and miscellaneous materials.

Sources of hazardous materials:

- Manufacturer and processing facilities, storage and warehouse facilities, and transportation (aircraft, vehicular, rail, and pipelines)

Effects of release:

- Environmental pollution (soil, air, and water), and public safety

History of Hazardous Material Releases

There were not any reports of hazardous material releases.

Probability and Magnitude for Hazardous Materials

There are not any oil or gas production fields in Republic County. However there are major highways that transverse through the planning area; therefore, the HMPC determined the probability of a hazardous materials release is “possible.”

The HMPC determined that there is a potential for the magnitude of a hazardous materials spill is “negligible”.

Hazardous Materials Risk Summary

Table 2.47 is a risk summary for hazardous materials for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 38 – Hazardous Materials Risk Summary

Hazardous Materials	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	2	4
Magnitude	1	NA*
Warning Time	4	NA*
Duration	2	NA*
Planning Significance	Moderate	Moderate
Risk Index	2.00	2.95
Ranking	16 out of 22	9 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 39 – Hazardous Materials Planning Significance by Jurisdiction

Hazard	Historical Occurrence	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	No	Possible	Negligible	< 6hrs	<1day	Moderate
Agenda	No	Possible	Negligible	< 6hrs	<1day	Moderate
Belleville	No	Possible	Negligible	< 6hrs	<1day	Moderate
Courtland	No	Possible	Negligible	< 6hrs	<1day	Moderate
Cuba	No	Possible	Negligible	< 6hrs	<1day	Moderate
Munden	No	Possible	Negligible	< 6hrs	<1day	Moderate
Narka	No	Possible	Negligible	< 6hrs	<1day	Moderate
Republic	No	Possible	Negligible	< 6hrs	<1day	Moderate
Scandia	No	Possible	Negligible	< 6hrs	<1day	Moderate

Vulnerability to Hazardous Materials

Damage estimates for structures is not available because a hazardous materials incident due to the nature of the hazard. However, it does directly impact individuals. It can cause death, serious injury, and long-lasting health effects. Many products containing hazardous chemicals are used and stored in homes routinely.

Railroad accidents are often times the source of hazardous materials incidents. Republic County is serviced by four railroads. The Union Pacific Railroad line is a Class 1 railroad. In 2005, Union Pacific’s freight consisted of some 52% coal, 10% farm products, 9% food products, 7% chemicals and 23% all other products combined.

The Kyle Railroad, a Class 3 railroad. The commodities shipped by Kyle Railroad include: aggregates, building materials (shingles), corn, fertilizer, millet, milo, petroleum (asphalt), sunflowers, sunflower oil, sunflower seeds and wheat.

The Central Kansas Railway was a short-line railroad operating 900 miles of tracks in Kansas. The Watco Companies of Pittsburg, Kansas purchased all of CKR’s lines in 2001 and formed Kansas and Oklahoma Railroad.

Missouri Pacific Railroad also known as MoPac. It was one of the first railroads in the United States. MoPac was a Class I railroad. In 1980 the MoPac Railroad was purchased by Union Pacific Railroad but because of lawsuits filed by various competing railroads, the merger was not approved 1982. However, due to outstanding bonds of the Missouri Pacific, the merger with Union Pacific did not become official until 1997.

Figure 2.35 is a pie graph illustrating the commodities that originate on railroad lines in Kansas. Figure 2.36 illustrates the amount of commodities that terminate in Kansas.

Figure 2. 18 – Commodities that Originate on Railroad Lines in Kansas

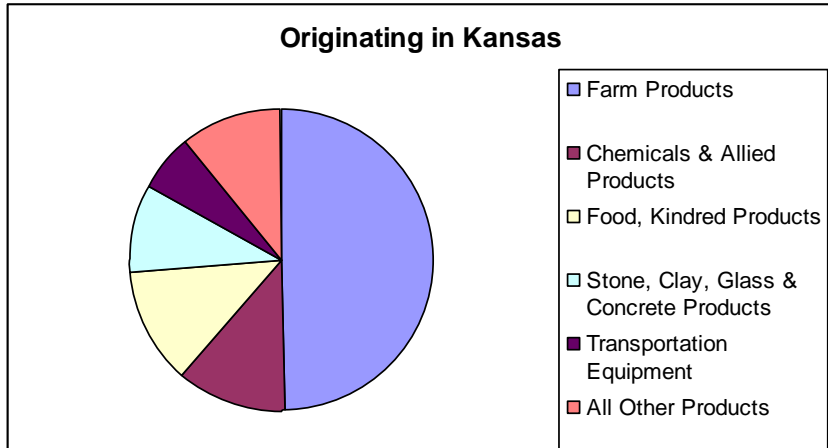
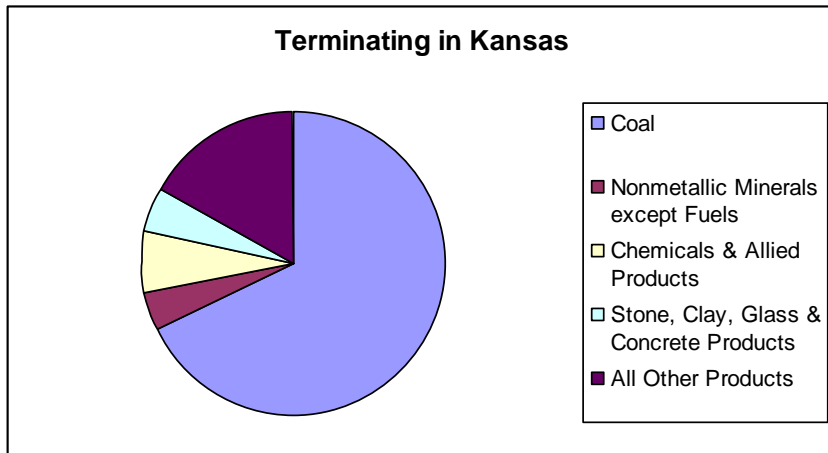


Figure 2. 19 – Commodities that Terminate on Railroad Lines in Kansas



According to the US Geological Survey, Republic County does not have any oil or gas production.

Land Subsidence

Hazard Definition

Land subsidence and sinkholes are generally associated with mineral mining activities, oil and gas searching, and natural subsidence and sinkhole areas that have affected ground and surface water quality. Development of land subsidence and sinkhole areas can be grouped into three major categories:

- natural dissolution of soluble minerals (causing the development of sinkholes),
- the extraction of minerals by either solution mining or shaft mining, resulting in a void space where subsidence can occur, and
- Fresh water drains by way of a drill hole or unplugged oil or gas well, which wears down a soluble mineral formation creating an outlet for the solution cavity water to be disposed.

The development of subsidence and sinkhole areas are of concern. Potential subsidence areas that develop in places associated with oil and gas production require a fresh groundwater source, mineral formation (like salt), and a connection to a disposal formation capable of disposing or storing the solution water. All three conditions must be present in order for a subsidence to develop. The potential area that could be affected by this type of subsidence could be very large because of the wide distribution of the Blaine, Cimarron, and Hutchinson salt members and the presence of numerous groundwater aquifers. The subsidence areas can be grouped into three categories (Kansas Department of Health and Environment). The characteristics for each category are as follows:

Category I (High Risk) Source material is very soluble, thickness may leave large voids, and depth of source material is less than 100 feet in depth. Mining operations as left a large vertical void space (4-300 feet), with vertical shafts or bore holes. The mined area has a large void space to pillar ratio. The void space in the mine has filled with water. Mine floor is susceptible to collapse or loading failure. Cap rock is not competent for long term support. Mine pillars are susceptible to deterioration and future collapse. The mine roof is less than 60 feet in thickness. The bedrock material making up the roof is not competent material for long-term stability. The mine has horizontal or inclined mine shafts with shallow or thin overburden. The areas in the subsurface where the support pillars in columns have been mined or removed.

Category II (Medium Risk) The mine floor has a depth greater than 125 feet. The void space to pillar ratio is 80 - 90 percent. The vertical opening is four feet or greater. Water filled void increases subsidence risk. The overlying bedrock material is very competent. There are numerous mine shafts or boreholes associated with the mining technique. The support columns or pillars are susceptible to serious deterioration when the void space is filled with water.

Category III (Low Risk) There is a small vertical void space and the void space to pillar ratio is good, 70-80 percent. The vertical shafts and boreholes are in good condition. The depth of the mined material is relatively deep, around 150 feet. The cap rock over the void space is competent. Long wall mining method allows slow subsidence with minimal vertical opening; surface substance is minimal to undetected. Mine opening is dry and there is no pillar deterioration. The mine area has little risk of sudden subsidence.

History of Land Subsidence

Republic County does not have a history of land subsidence.

Probability and Magnitude of Land Subsidence

The HMPC determined the probability of land subsidence occurring is “unlikely”. The HMPC determined the magnitude of land subsidence is “negligible”.

Land Subsidence Risk Summary

Table 2.49 is a risk summary for land subsidence for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 40 – Land Subsidence CPRI Ranking

Land Subsidence	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	1	3
Magnitude	1	NA*
Warning Time	1	NA*
Duration	4	NA*
Planning Significance	Low	Moderate
Risk Index	1.30	2.20
Ranking	20 out of 22	18 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 41 – Land Subsidence Planning Significance by Jurisdiction

Hazard	Historical Occurrence	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	No	Unlikely	Negligible	24+ Hours	>1 week	Low
Agenda	No	Unlikely	Negligible	24+ Hours	>1 week	Low
Belleville	No	Unlikely	Negligible	24+ Hours	>1 week	Low
Courtland	No	Unlikely	Negligible	24+ Hours	>1 week	Low
Munden	No	Unlikely	Negligible	24+ Hours	>1 week	Low
Narka	No	Unlikely	Negligible	24+ Hours	>1 week	Low
Republic	No	Unlikely	Negligible	24+ Hours	>1 week	Low

Land Subsidence Vulnerability

Twenty-six out of 105 Counties in Kansas have reported sinkholes. Land surface subsidence is caused by natural or induced dissolving of the thick underground Hutchinson salt bed.

There are currently not any areas of Republic County that are showing signs of land subsidence.

Landslide

Hazard Definition

According to the Kansas Geological Survey, a landslide is the downhill movement of masses of soil and rock by gravity. Landslides develop because of a combination of gravity, susceptible soil or rock, sloping ground, and water. There are several different types of landslides. They are rock falls, block slides and slumps, earth flows, and creeps.

Rock falls occur next to cliffs and outcrops where chunks of rock break off and fall down the slope. Block slides and slumps happen where blocks or masses of intact soil or rock move down a slope along a failure surface. A failure surface is a surface at the base of a landslide along which motion has occurred. The moved material is separated from the stationary material by the failure surface. Block slides have straight failure surfaces and the landslide mass slides down a ramp. Slumps, on the other hand, have a concave failure surface. The landslide mass moves along the curved surface, rotating and tilting trees and other objects as it moves so that they point uphill. Earth flows are landslides in soil. The landslide mass breaks apart instead of remaining intact as with the slump or block slide. The earth flow is a mixture of soil and water oozing down the slope. A creep landslide is a slow, barely visible movement of soil and rock. Creep landslides rarely fracture the ground surface; therefore, tilted trees, telephone poles, or walls must be used to identify the affected areas. Creep landslides are widespread on hillsides throughout Kansas.

Landslides occur in hilly terrain. As the slope angle increases, so does the potential for landslides. If anything increases the slope angle, it can trigger a landslide. An example of an area that has the potential for a landslide is a stream that is actively eroding a hill. While slope steepness is the primary factor determining slope stability, soil and rock types are also important. The most common rocks found in Kansas are shale, limestone, and sandstone. Shale—rocks composed of clay- and silt-sized grains—are most often associated with landslides. When shale is near the ground surface where the water content fluctuates, it weathers into a clayey soil that could be landslide prone.

Recently active landslides can be identified by scarps, tension gashes, and lobes. A scarp is a steep, nearly vertical, area of exposed soil and rock at the upslope portion of the landslide where the failure surface ruptures the ground surface. Tension gashes are breaks in the ground surface that are parallel to the scarp and are found throughout the landslide mass. Lobes are bulges in the ground surface where the landslide mass builds up at the downslope portion of the landslide.

There are early warning signs of a potential landslide. They are:

- Saturated soil, seeps, or springs in areas that were previously dry
- Reeds and wetland vegetation growth on the lower portions of the slope
- Fresh breaks and cracks in the ground surface
- There are bulges in the ground surface of the lower portion of the slope
- Defects in new structures, including roads and sidewalks that are out of alignment, cracked foundations, cracked walls, and doors and windows that are out of plumb
- Retaining walls, trees, and telephone poles that are tilted
- Leaking water and sewer lines

History of Landslide Events

There is no history of landslide events in Republic County, but there have been several in other areas near Republic County.

May 1995	A landslide caused a collapse of a \$400,000 home in Overland Park, Kansas. That same month a landslide near Manhattan closed McDowell Creek Road and cost Riley County \$880,000 to stabilize the slope and repair the road (Kansas Geological Survey, Public Outreach).
July 2001	A 180 foot wide landslide occurred in Mission, Kansas along the north side of Foxridge Drive. The slope initially moved laterally and downward approximately 2 feet. The

stability of the road was compromised by the landslide. It is believed the landslide was caused by a rise in the groundwater level because of the wetter than normal spring weather. A geogrid reinforced earth system was designed to repair the slope (The Geological Society of America). Repairs were completed September 2002.

Probability and Magnitude of Landslides

According to the U.S. Geological Survey, the areas of Kansas that are most prone to landslides are the Missouri River Corridor in northeastern Kansas, including the Kansas City metropolitan area (Johnson, Leavenworth, and Wyandotte counties); the Smoky Hills in northern and central Kansas; and northwestern Hamilton County. The region along the Kansas River and its tributaries from Kansas City to Junction City are also landslide-prone. This includes the cities of Lawrence, Manhattan, and Topeka. Although landslides are more likely to occur in the regions previously mentioned; they can occur anywhere in the state. Although, Republic County is in an area that is moderately prone to landslides, the HMPC rated the probability for a landslide to occur as “unlikely” because there have not been any landslides to occur in the past.

Landslides in Kansas have the capability of damaging or destroying houses, roads, and disrupted transportation systems. Structures must be repaired and landslide debris removed from highways and railroad tracks every year. Landslides are responsible for an estimated \$1.5 billion in property losses throughout the United States (Kansas Geological Survey, Public Outreach).

Landslides can potentially cause damage to man-made structures, including retaining walls that lean downslope, broken utility lines, cracked foundations and walls, sidewalks and roads out alignment, and doors and windows out of plumb. Other geological hazards, such as land subsidence and expansive soils can also cause similar damage. Please refer to the land subsidence and expansive soil profile for more information on those hazards. The risk for injury during a landslide in the planning area is very minimal and less than 10 percent of property would be severely damaged. Consequently, the HMPC determined the magnitude of a landslide would be “negligible.”

Risk Summary for Landslides

Table 2.54 is a risk summary for landslide for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 42 – Landslide Risk Summary

Land Subsidence/Sinkholes	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	1	3
Magnitude	1	NA*
Warning Time	1	NA*
Duration	4	NA*
Planning Significance	Low	Moderate
Risk Index	1.30	2.20
Ranking	21 out of 22	16 out of 22

NA* = Ranking Not Stated in the 2007 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 43 - Landslide Planning Significance by Jurisdiction

Hazard	Historical Occurrences	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	No	Unlikely	Negligible	24+ hrs	> 1 week	Low
Agenda	No	Unlikely	Negligible	24+ hrs	> 1 week	Low
Belleville	No	Unlikely	Negligible	24+ hrs	> 1 week	Low
Courtland	No	Unlikely	Negligible	24+ hrs	> 1 week	Low
Munden	No	Unlikely	Negligible	24+ hrs	> 1 week	Low
Narka	No	Unlikely	Negligible	24+ hrs	> 1 week	Low
Republic	No	Unlikely	Negligible	24+ hrs	> 1 week	Low

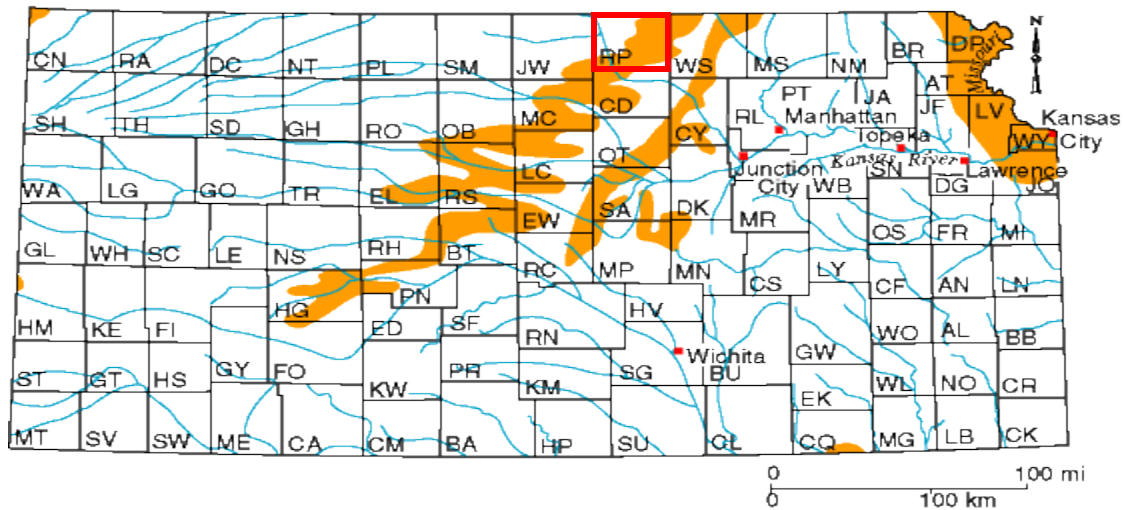
Vulnerability to Landslide

There are some small localized areas in Republic County where land slippage may present some concerns for the placement of buildings and other physical improvements. Very local and relatively small landslides may occur during wet years in the hilly country in Republic County.

Exposed areas in cliffs and road cuts that consist of limestone and sandstone are prone to landslide. They can pose a risk for rock fall, especially when they overlie shale. Roads and structures built close to river banks would be the areas that are most vulnerable to landslides. Landslides may occur when soil on hillsides are saturated. Landslides can damage or destroy structures, roadways, and utilities as well as block roadways with debris.

Figure 2.23 shows the landslide prone areas in Kansas that the U.S. Geological Survey identified in 1982. The shaded areas are the areas of moderate risk, 1.5% to 15% of the area is prone to a landslide. The areas that are not shaded have a low landslide risk, less than 1.5% of the area is prone landslide prone. The northwestern and southwestern portions of Republic County are in the shaded area that has a moderate risk.

Figure 2. 20 – Kansas Landslide Prone Areas



Lightning



The photo above was taken of a severe thunderstorm on May 30, 2004 in Narka, Kansas.

Hazard Definition

Severe thunderstorms strike Kansas on a regular basis. Lightning often accompanies thunderstorms and can cause death, injury, property damage, and wildfires.

Lightning is created in thunderstorms when many small pieces of ice collide into each other and creates an electrical charge in the clouds. After the electrical fields become large enough, a giant spark takes place between them, like static electricity. The protons (positive charges) form at the top of the cloud and the electrons (negative charges) form at the bottom of the cloud. The lightning strike can occur between clouds, between the cloud and the air, or between the cloud and the ground.

The National Oceanic and Atmospheric Administration's National Severe Storms Laboratory has a formula for judging the distance of lightning. When a lightning flash is seen, count the seconds until you hear the thunder. Divide the seconds between lightning strike and thunder by five to judge the distance of the lightning. If the time between lightning strike and thunder is 30 seconds or less - suspend all outdoor activities and seek safe shelter. That means the lightning bolt is 6 miles away or less. If the time between lightning strike and thunder is 15 seconds or less, - a lightning strike could occur where you are. That means it's no more than miles away, and from that distance a bolt can arc and hit anywhere within that radius.

There's also a "30-30 Rule." If you hear thunder by the time you reach 30, you are in danger and need to find safe shelter immediately. Wait at least 30 minutes after you see the last flash of lightning or hear the last roll of thunder before resuming outdoor activities.

History of Lightning Events

Although, there have been only three lightning events listed in the NCDL database for Republic County there have been numerous other events that accompanied windstorm. The following accounts are from the NCDL database:

June 22, 1998

Lightning hit a house with little damage other than a few burned or partially melted ceiling tiles. There were no reports of deaths or injuries.

October 4, 1998 According to the Scandia Journal the farmhouse owned by Landy Hay was severely burned when lightning struck a nearby fence charger igniting a fire that burned the house. Property damage was estimated at \$25,000.

August 25, 2000 Lightning struck a house in Courtland and ignited a fire that did minor damage. Property damage was estimated at \$1,000.

Probability and Magnitude for Lightning

Although the NCDC did not have all of the lightning incidents in the database, there is a 100 percent chance for lightning events to occur every year. Therefore, the HMPC ranked the probability for lightning as “highly likely.”

There have not been any deaths associated with a lightning event in Republic County. Therefore, the HMPC determined the magnitude for a lightning strike is “negligible.”

Risk Summary for Lightning

Table 2.53 is a risk summary for lightning for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 44 – Lightning Risk Summary

Lightning	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	4
Magnitude	1	NA*
Warning Time	4	NA*
Duration	1	NA*
Planning Significance	Moderate	Moderate
Risk Index	2.80	2.50
Ranking	13 out of 22	14 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 45 – Lightning Planning Significance by Jurisdiction

Hazard	Historic Occurrences	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	None Reported	Highly Likely	Negligible	< 6hrs	< 6hrs	Moderate
Agenda	None Reported	Highly Likely	Negligible	< 6hrs	< 6hrs	Moderate
Belleville	None Reported	Highly Likely	Negligible	< 6hrs	< 6hrs	Moderate
Courtland	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High
Cuba	None Reported	Highly Likely	Negligible	< 6hrs	< 6hrs	Moderate
Munden	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High
Narka	None Reported	Highly Likely	Negligible	< 6hrs	< 6hrs	Moderate
Republic	None Reported	Highly Likely	Negligible	< 6hrs	< 6hrs	Moderate
Scandia	Yes	Highly Likely	Limited	< 6hrs	< 6hrs	High

Vulnerability to Lightning

All of the structures in the county are vulnerable to lightning damage. NCDC only had three historic occurrences for the last fifty-six years with damage estimates of \$26,000. However, that damage estimates are likely to be much higher because all damages have not been reported in the past.

Although the urban areas are most vulnerable to lightning strikes due to the high population density and building exposure; farmers and livestock are also vulnerable. According to the National Weather Service, lightning causes an average of 80 deaths and 300 injuries in the U.S. each year. In 2008, Kansas made 12 reports of buildings and humans being struck by lightning, resulting in one fatality and ten injuries.

Lightning strikes cause a tremendous number of losses each year. According to the Department of Geography and Earth Sciences at the University of North Carolina, a home owner can expect a damaging lightning strike once every 100 to 200 years. The study they performed revealed that the majority of lightning strikes occurred in areas of suburban growth (Cao, Xiang and Wilson).

The risk of fire, especially fire associated with lightning, is often overlooked and underrated as a potential threat. Lightning associated with thunderstorms can pose a variety of fire hazards. The massive power of lightning's electrical charge and intense heat can induce destructive power surges through home circuitry, burn holes in CSST gas piping, explode brick and roofing materials, and ignite house fires.

An analysis of homeowner's insurance data by the Insurance Information Institute (I.I.I.) found there were 185,789 lightning claims nationally in 2009 costing \$798 million, with an average claim totaling \$4,296. These losses ranged from damage to expensive electronic equipment to structural fires that destroyed entire homes (Lightning Safety Alliance).

Major Disease Outbreak

Hazard Definition

An outbreak of communicable disease is described in the Kansas State Mitigation Plan as 2 or more cases of disease which are linked by time, place, or person. Threats of illness and disease (viral and bacteriological), community infections, early diagnosis and treatment of illnesses and diseases, or any other health related mechanism that can cause harm to individuals, whether intentional or accidental. This includes the potential for widespread (epidemic) outbreak of a disease, or a large number of cases of a disease in a single community or relatively small area. An epidemic may be restricted to one locale or may even be global (pandemic).

The following diseases have been designated as contagious by Kansas Department of Health and Environment and are required to be reported within seven days in accordance with K.S.A. 65-118 and K.S.A. 65-128:

- Anthrax (needs to be reported within 4 hours to the Secretary)
- Arboviral disease, including West Nile
- Botulism (needs to be reported within 4 hours to the Secretary)
- Brucellosis
- Campylobacter infections
- Chlamydia trachomatis genital infection
- Cholera
- Diphtheria
- Ehrlichiosis
- Giardiasis
- Gonorrhea
- Haemophilus influenza, invasive disease
- Hemolytic uremic syndrome, post diarrheal
- Hepatitis B in pregnancy
- Hepatitis, viral
- Hantavirus pulmonary syndrome
- Influenza deaths in children under 18 years of age
- Legionellosis
- Leprosy or Hansen's disease
- Listeriosis
- Lyme disease
- Malaria
- Measles or rubeola (needs to be reported within 4 hours to the Secretary)
- Meningitis, Bacterial (needs to be reported within 4 hours to the Secretary)
- Mumps (needs to be reported within 4 hours to the Secretary)
- Pertussis or Whooping Cough (needs to be reported within 4 hours to the Secretary)
- Plague or Yersinia Pestis (needs to be reported within 4 hours to the Secretary)
- Psittacosis
- Rabies, animal and human (needs to be reported within 4 hours to the Secretary)
- Rocky Mountain spotted fever
- Rubella, including congenital rubella syndrome (needs to be reported within 4 hours to the Secretary)
- Salmonellosis, including typhoid fever
- Severe acute respiratory syndrome (SARS) - (needs to be reported within 4 hours to the Secretary)
- Shigellosis
- Streptococcal invasive, drug-resistant disease from group A Streptococcus or Streptococcus pneumonia
- Syphilis, including congenital syphilis
- Tetanus
- Toxic –shock syndrome, streptococcal and staphylococcal
- Any transmissible spongiform encephalopathy (TSE) or prion disease (indicate causative agent, if known);
- Trichinosis;
- Tuberculosis, active and latent (report active disease by telephone within four hours to the secretary);
- Tularemia;
- Varicella or chickenpox;
- Yellow fever

Bioterrorism act is “a dispersion of biological or chemical agents with the intention to harm.” (Kansas Department of Health and Environment) Each bioterrorism act needs to be reported within four hours by telephone to the secretary. The following diseases can be used in a bioterrorism act:

- Anthrax
- Plague
- Smallpox
- Tularemia
- Botulism
- Viral hemorrhagic fever
- Q fever or Coxiella burnetii
- Brucellosis, and



During the planning period for this mitigation plan, the primary concern was focused on H1N1 (Swine Flu). Novel H1N1 (referred to as “swine flu” early on) is a new influenza virus causing illness in people. This new virus was first detected in people in the United States in April 2009. Other countries, including Mexico and Canada, have reported people sick with this new virus. This virus is spread from person-to-person, probably in much the same way that regular seasonal influenza viruses spread. The World Health Organization (WHO) elevated the situation and raised the worldwide pandemic alert level to Phase 6 in response to the ongoing global spread of the novel influenza A (H1N1) virus. A Phase 6 designation indicates that a global pandemic is underway.

The 2009 H1N1 flu pandemic was declared a national emergency on October 23, 2009. This declaration removes obstacles and makes it easier for patients to receive medical treatment. It also allows medical facilities to waive certain standard requirements for Medicare, Medicaid and other federal health insurance programs.

Cases of human infection with novel H1N1 influenza virus were first confirmed in the U.S. in Southern California and near Guadalupe County, Texas. The outbreak intensified rapidly from that time and more and more states have been reporting cases of illness from this virus. As of June 11, 2009, more than 70 countries reported cases of human infection with novel H1N1 flu of which the United States had 21, 449 confirmed and probable cases with 87 deaths.

Since the 2009 H1N1 influenza A virus pandemic started in April of this year the Kansas Department of Health and Environment (KDHE) has started ILINet. ILINet is a network of outpatient clinics coordinated by the State Health Departments and the U.S. Centers for Disease Control and Prevention. Kansas has traditionally maintained 25 ILINet sites for typical influenza seasons, but this year they have expanded to include 74 sites.

History of Major Disease Outbreak

September 1998 Kansas Department of Health and Environment was notified of an outbreak of *C. jejuni* infections in Narka. Initial interviews identified several persons with culture-confirmed *C. jejuni* infection who had at a “Grandparents Day” luncheon at an elementary school. Illness was reported among students, staff members, and grandparents who attended the luncheon (Sonja J. Olsen).

January 2006 An increase in the number of mumps cases in Kansas was detected by routine surveillance. From January 2006 to December 2006 there were 986 cases of mumps affecting 73 counties. The peak of cases occurred in April and May of 2006 and many college campuses were affected throughout the state of Kansas. KDHE issued 35 press

releases from April through July of 2006 and held a news conference on 4/11/06. In addition, KDHE held frequent conference calls with local health departments to assist in these investigations. To assist with control of this outbreak KDHE provided 10,000 doses of MMR to local health departments at no charge. During this same time period other states in the United States were reporting similar increases in mumps cases. During 2006, 6,584 cases of mumps were reported (Michael McNolty, Kansas Department of Health and Environment)

May, 2008

Kansas was part of the *Salmonella* Saintpaul multistate outbreak investigation. This multistate outbreak was reported in May 2008 with cluster of cases in both New Mexico and Texas. At the end of the investigation there were 1463 cases reported from 43 states with onset of illness ranging from 4/16/08 to 8/23/08. In Kansas, 22 cases were investigated from 13 counties with onset of illness ranging from 5/12/08 until 7/13/08. Tomatoes were implicated as the food vehicle early in the outbreak. However, *Salmonella* Saintpaul was never isolated from any tomatoes. Additional investigation revealed that jalapenos and Serrano peppers were both associated with illness and *Salmonella* Saintpaul was isolated from jalapeno peppers. Multiple food vehicles are thought to have caused this outbreak. KDHE issued a press release on June 4, 2008 after the warning was issued from FDA about consumption of tomatoes. A second press release was issued by KDHE on July 9 after the warning from FDA changed to include jalapeno and Serrano peppers. KDHE did not publish a report, but CDC published an MMWR on August 29, 2008 (Michael McNolty, Kansas Department of Health and Environment).

October 2008

On October 30, 2008, the Kansas Department of Health and Environment, Office of Surveillance and Epidemiology (KDHE-OSE) was notified by a Nebraska resident that fourteen members of her extended family had stayed at a Motel located in Narka, KS on October 10 – 12. Ten members subsequently became ill with gastrointestinal symptoms. This outbreak of *C. hominis* was associated with swimming at a motel pool. The odds of becoming ill were 50 times higher among those who swam in the pool compared to those who did not swim in the pool, and this finding was statistically significant. Two clinical specimens tested positive for *Cryptosporidium* spp., and one was sub-typed as *C. hominis*. The water sample tested negative for *Cryptosporidium*, most likely because of the delay in notification and sample collection. KDHE-OSE was notified of the outbreak 18 days after the last ill person had swum in the pool. During those 18 days, the chlorine levels measured 5 ppm or higher. With a CT inactivation value of 15,300, *Cryptosporidium* would have been inactivated within 51 hours at that chlorine level (Salina-Salina County Health Department).

May 2009 to Present

H1N1 Influenza Type A Pandemic – Global pandemic of influenza-like illness with subsequent vaccination for H1N1 Influenza A virus. All response activities were directed

Health outcomes are the primary ranking used to rank the overall health of counties. The county ranked number 1 is considered the healthiest county in the state. Republic County was ranked 36 out of 98 counties for overall health (County Health Rankings). Each county was ranked based on mortality (how long people live) and morbidity (how healthy people feel while alive).

Probability and Magnitude For Major Disease Outbreak

The Republic County HMPC determined that the probability for a major disease outbreak in the planning area is “highly likely”. It is probable that Republic County will experience a disease outbreak within one calendar year.

The HMPC determined the magnitude for a major disease outbreak is “limited”. Although a disease outbreak is highly likely to occur, the resulting illnesses are unlikely to result in death or permanent disability.

Major Disease Outbreak Risk Summary

Table 2.58 is a risk summary for major disease outbreak for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 46 – Major Disease Risk Summary

Major Disease Outbreak	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	4
Magnitude	2	NA*
Warning Time	1	NA*
Duration	4	NA*
Planning Significance	Moderate	High
Risk Index	2.95	3.25
Ranking	9 out of 22	5 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 47 – Major Disease Planning Significance by Jurisdiction

Hazard	Historic Occurrences	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Yes	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Agenda	No	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Belleville	No	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Courtland	No	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Cuba	No	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Munden	No	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Narka	No	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Republic	No	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Scandia	No	Highly Likely	Limited	24+ hrs	> 1 week	Moderate

Vulnerability to Major Disease Outbreak

Buildings and other structures are not vulnerable to major disease outbreak, but the individuals within those structures are vulnerable. All of the residents of Republic County are vulnerable to a disease outbreak; however, urban areas are generally more vulnerable to disease outbreak due to the population density. Health care workers and other first responders may be at greater risk of exposure and illness than the general public.

The Kansas Department of Health and Environment states that if a new and severe strain of influenza A were to begin to spread around the world, Kansas would feel the impact. They estimate that a medium-level pandemic could cause 2,500 deaths in Kansas, with 5,000 hospitalizations, 500,000 outpatient visits, and 1 million cases of the illness (Kansas Department of Health and Environment (KDHE)).

Radiological

Hazard Definition

Radiation is a process of emission of energy or particles. Various forms of radiation may be distinguished, depending on the type of the emitted energy/matter, the type of the emission source, properties and purposes of the emission, etc. There are several different types of radiological threats. They are as follows:

Radiation – High-energy particles or gamma rays that are emitted by an atom as the substance undergoes radioactive decay. Particles can be either charged alpha or beta particles or neutral neutron or gamma rays.

Nuclear Weapons – Nuclear fission is used to produce energy for nuclear power and to drive the explosion of nuclear weapons. Nuclear fusion of light elements releases the energy that causes nuclear weapons to explode. For a low altitude atmospheric detonation of a moderate sized weapon in the kiloton range, the energy is distributed roughly as follows: 50% as blast; 35% as thermal radiation; and, 15% as nuclear radiation of which 5% is initial ionizing radiation within the first minute after detonation, and 10% as residual nuclear radiation (fallout).

Surface Burst - An explosion in which a weapon is detonated on or slightly above the surface of the earth so that the fireball actually touches the land or water surface.

Subsurface Burst - An explosion in which the point of the detonation is beneath the surface of land or water.

High Altitude Burst - The weapon is exploded at such an altitude (above 30 km) that the fireball is much larger and expands much more rapidly. The ionizing radiation from the high altitude burst can travel for hundreds of miles before being absorbed. Significant ionization of the upper atmosphere (ionosphere) can occur. Severe disruption in communications can occur following high altitude bursts. They also lead to generation of an intense electromagnetic pulse (EMP) that can significantly degrade performance of or destroy sophisticated electronic equipment. There are no known biological effects of EMP; however, indirect effects may result from failure of critical medical equipment.

Radiological Dispersal Device (RDD) - Also known as the “dirty bomb,” combines a conventional explosive, such as dynamite, with radioactive material. In most instances, the conventional explosive itself would have more immediate lethality than the radioactive material. At the levels created by most probable sources, not enough radiation would be present in a dirty bomb to kill people or cause severe illness. Contamination caused by the use of certain types of radioactive materials would be the main concern in the release of an RDD.

Electromagnetic Radiation Pulse - The electromagnetic radiation from an explosion (especially nuclear explosions) or an intensely fluctuating magnetic field caused by Compton-recoil electrons (increase in wavelength decrease in energy) which occurs when X-ray (or gamma ray) photons with energies of around 0.5 MeV to 3.5 MeV interact with electrons in a material) and photoelectrons from photons scattered in the materials of the electronic or explosive device or in a surrounding medium. An EMP acts like a stroke of lightning but is stronger, faster, and shorter. It can seriously damage electronic devices connected to power sources or antennas. This includes communication systems, computers, electrical appliances, and automobile or aircraft ignition systems. The damage could range from a minor interruption to actual burnout of components. Battery-powered radios with short antennas generally would not be affected. A nuclear burst of approximately 20 megatons over the central part of the United States at an altitude of 500 kilometers would produce an EMP field that would incapacitate all communications systems in the continental United States.

Solar Radiation – The National Weather Service’s Space Environment Center monitors solar activity from the sun to determine the effects of geomagnetic storms, solar radiation storms, and radio blackouts that may occur. Intensities of each of these solar effects are measured on a scale from 1 (minor) to 5 (extreme).

- Geomagnetic Storm Effects (G) - Category G5 – Extreme – can occur on average four times in an 11-year period and can last up to four days per event. This type of storm can affect power systems in the following manner: widespread voltage control problems and protective system problems can occur; some

grid systems may experience complete collapse or blackouts. Transformers may experience damage. Pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for one to two days, satellite navigation may be degraded for days, and low-frequency radio navigation can be out for hours. An example of a G5 storm is one that occurred in 1989 that made currents on the ground that caused a failure in the Hydro-Quebec electric power system. This prevented 6 million people in Canada and the US from having electricity for over 9 hours.

- **Solar Radiation Storm Effects (S) – Category S5 – Extreme** - occurs less than once every 11 years and can cause the following effects on satellites: satellites may be rendered useless, memory impacts can cause loss of control, may cause serious noise in image data, star-trackers may be unable to locate sources; permanent damage to solar panels possible. Global Positioning System (GPS) would also be impacted by this type storm.
- **Radio Blackout Effects (R) – Category R5 – Extreme** - occurs less than once every 11 years and can cause the following effects: Complete HF (high frequency) and other frequency radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and en route aviators in this sector.

History of Radiological Events

There were not any reports of radiological events.

Probability and Magnitude for Radiological Events

Although the highways and railroads in Republic County are used to transport certain types of radioactive materials, the HMPC determined the probability for future occurrence was ranked as “unlikely”. This decision was based on the fact there has not been a history of events in the county.

A radiological incident could be very detrimental to the County, but Republic County has an Emergency Operations Plan (EOP) in place to isolate the effects on the county. Therefore, the HMPC determine the magnitude for a radiological threat is “negligible.”

Radiological Risk Summary

Table 2.57 is a risk summary for radiological for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 48 – Radiological Risk Summary

Radiological	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	1	1
Magnitude	1	NA*
Warning Time	1	NA*
Duration	4	NA*
Planning Significance	Low	Low
CPRI	1.30	1.95
Ranking	22 out of 22	19 out of 22

NA* = Ranking Not Stated in the 2007 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 49 – Radiological Planning Significance by Jurisdiction

Hazard	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Unlikely	Negligible	24+ Hours	> 1 week	Low
Agenda	Unlikely	Negligible	24+ Hours	> 1 week	Low

Hazard	Probability	Magnitude	Warning	Duration	Planning Significance
Belleville	Unlikely	Negligible	24+ Hours	> 1 week	Low
Courtland	Unlikely	Negligible	24+ Hours	> 1 week	Low
Munden	Unlikely	Negligible	24+ Hours	> 1 week	Low
Narka	Unlikely	Negligible	24+ Hours	> 1 week	Low
Republic	Unlikely	Negligible	24+ Hours	> 1 week	Low

Radiological Vulnerability

Buildings and other structures are not directly damaged by radiological incidents. Individuals that reside or work within close proximity to interstates and railroads are the most vulnerable due to the shipment of certain types of radioactive materials. The areas that are near major highways have an increased risk of transportation accidents.

Damage estimates are not available for this hazard due to the fact there have not been any significant radiological incidents in Republic County.

Soil Erosion and Dust

Hazard Definition

Soil erosion is the wearing away of the land surface by physical forces such as rainfall, flowing water, wind, ice, temperature change, gravity or other natural or human-caused activities or agents that abrade, detach and remove soil or geological material from one point on the earth's surface to be deposited elsewhere.

Soil erosion is normally a natural process occurring over geological timescales; but where (and when) the natural rate has been significantly increased by human activity, accelerated erosion becomes an identifiable threat to soil. There are different types of erosion. They are as follows:

- Geologic Erosion – A natural erosion process occurring over long time spans.
- Accelerated Erosion – Erosion that exceeds what is presumed to be naturally occurring levels, and is a direct result of human activities like cultivation.
- Gully Erosion – Water concentrates in narrow channels and over short periods of time, removes the soil from this narrow area to considerable depths, ranging from one to two feet and as much as 75 to 100 feet.
- Sheet and Rill Erosion – A thin layer of soil removed by runoff water often accompanied by the formation of many small eroding channels. Rills are only a few inches deep and do not impede farm machinery. Tillage of the land removes them, but they tend to reappear after heavy rain during the growing season.
- Water Erosion – The process of detachment, transport and deposition of soil by water. This can include sheet, rill, and gully erosion.
- Wind Erosion – It shows wind erosion of an unprotected cultivated field in Manhattan, Kansas. The process of detachment, transport and deposition of soil by wind. This includes sheet, rill, and gully erosion.

According to the Natural Resources Conservation Service (NRCS), the loss of farmland, wildlife habitats, and open space has accelerated over the last two decades. The National Resources Inventory data shows that the rate of development between 1997 and 2001 averaged 2.2 million acres per year, which is up from 1.4 million acres per year between 1982 and 1992. The increased rate of conversion is due to a number of factors, including increase in population, and inadequate land-use planning zoning and land-use laws.

In the United States, land-use decisions are primarily the responsibility of local governments. Many times these local governments do not have the resources to develop comprehensive land-use plans to guide growth and development. The Natural Resources Conservation Service (NRCS) is working in partnership with local conservation districts and Resource Conservation and Development (RC&D) Councils to provide local jurisdictions with natural resource information, land use planning tools and other technical assistance that can help communities develop comprehensive growth management plans.

History of Soil Erosion and Dust Events

1930s Dust Bowl– Republic County, along with most of Kansas, suffered a drought for about 10 years. Prolonged drought conditions led to wind erosion. About 21.5 million acres were lost because of erosion. Many adults and children suffered from dust induced tuberculosis, some cases resulted in death.

Probability and Magnitude of Soil Erosion and Dust

Wind and water erosion is a concern to producers in Republic County. Erosion removes the most fertile part of the soil and lowers the soil productivity, which in turn, causes poorer grade pastures and reduces crop yields. Soil erosion and dust continues to be an ongoing problem for Kansas. Thus, the HMPC determined the probability for soil erosion and dust is “highly likely.”

Even though the probability of an event occurring is highly likely, the HMPC determined the magnitude for soil erosion and dust is “limited.” The determination was made because Republic County takes active measures in reducing the impact of this hazard.

Soil Erosion Risk Summary

Table 2.62 is a risk summary for soil erosion for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 62 – Soil Erosion Risk Summary

Soil Erosion	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	3
Magnitude	2	N/A*
Warning Time	1	N/A*
Duration	4	N/A*
Planning Significance	Moderate	Low
Risk Index	2.95	1.75
Ranking	10 out of 22	19 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 50 – Soil Erosion and Dust Planning Significance by Jurisdiction

Hazard	Historic Occurrences	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	None Reported	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Agenda	None Reported	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Belleville	None Reported	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Courtland	None Reported	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Munden	None Reported	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Narka	None Reported	Highly Likely	Limited	24+ hrs	> 1 week	Moderate
Republic	None Reported	Highly Likely	Limited	24+ hrs	> 1 week	Moderate

Vulnerability to Soil Erosion and Dust

The entire planning area is prone to soil erosion; however, the farmland is at an increased risk due to the croplands and pastures.

Terrorism/Agri-terrorism/Civil Disorder

Hazard Definition

Terrorism

FEMA defines terrorism as “the use of force or violence against persons or property in violation of the United States for the purpose of intimidation, coercion, or ransom.” Terrorist acts are often done to create fear among the public in order to try to convince citizens that the government is powerless to prevent terrorism. Domestic terrorism involves groups or individuals who are based and operate entirely within the United States and U.S. territories without foreign direction and whose acts are directed at elements of the U.S. government or population.

Act of terrorism include, assassinations, kidnappings, hijackings, bomb threats and bombings, cyber attacks, and the use of chemical, biological, nuclear, and radiological weapons. High-risk targets include government facilities, international airports, large cities, and high-profile landmarks. Large public gatherings, water and food supplies, utilities, and corporate centers are also targets. Terrorists also have sent explosives or chemicals and biological agents through the mail to cause wide-spread fear.

Explosive devices are one of the most common weapons used by terrorists. An explosive is a sudden rapid violent release of mechanical, chemical, or nuclear energy from a confined region; especially such a release that generates a radial transmitting shock wave accompanied by a loud, sharp report, flying debris, heat, light and fire. Explosive devices are very portable, using vehicles and humans as a means of transport and can be easily detonated from remote locations or by suicide bombers. Terrorists have used bombs in the past to damage and destroy financial, political, social, and religious institutions. Explosive devices include:

- **Nuclear Blast** – An explosion with intense light and heat, a damaging pressure wave, widespread dispersal of radioactive material. The radioactive material can contaminate the air, water, and ground surface. A nuclear device can be extremely dangerous because even if people are not close enough to be directly impacted, they still may be affected by radioactive fallout. Fallout from a nuclear blast may be carried by the wind.
- **Radiological Dispersion Device (RDD)** – This device is often referred to as a “dirty nuke” or “dirty bomb.” This bomb is more likely to be used than a nuclear explosive device. It combines conventional explosive devices with radioactive material. It is designed to scatter radioactive material over an area.

Terrorists also use biological threats to attack people. Biological agents are organisms or toxins that can kill or debilitate people, livestock, or crops. Biological agents can be dispersed by spraying them into the air, infecting animals, and contaminating the food and water supply. The agents can be delivered via aerosols, animals, food and water contamination, and person-to-person. Some of the diseases that can potentially be used as biological weapons include:

- **Anthrax**: Grazing livestock can become infected by anthrax spores in the soil, and humans can contract the disease by handling products (cutaneous transmission) from infected animals, by breathing (inhalation transmission) anthrax spores from infected animal products (i.e. wool from sheep), or eating (digestive transmission) undercooked meat from infected animals. In the United States, 22 cases of anthrax infection were reported from a higher grade form of anthrax and delivered through the mail system to intentionally contaminate individuals for terrorist purposes.
- **Botulism**: There are three main kinds of botulism: foodborne botulism is caused by eating foods that contain the botulism toxin; wound botulism is caused by toxin produced from a wound infected with *Clostridium botulinum*; and, infant botulism is caused by consuming the spores of the botulinum bacteria, which then grow in the intestines and release toxin. In the United States an average of 110 cases of botulism are reported each year of which 25% are foodborne and 72% are infant botulism.
- **Plague**: Plague is an infectious disease of animals and humans caused by a bacterium named *Yersinia pestis*. Fleas feeding on infected animals transmit the disease to humans and mammals. The disease can also be transmitted through handling infected animals or exposure to persons or animals with plague

pneumonia and cough. Human plague in the United States has occurred as mostly scattered cases in rural areas (an average of 5 to 15 persons each year). About 14% (1 in 7) of all plague cases in the United States are fatal.

- **Smallpox:** Smallpox is a serious, contagious, and sometimes fatal infectious disease. The last case of smallpox in the United States was in 1949. The last naturally occurring case in the world was in Somalia in 1977. Smallpox also can be spread through direct contact with infected bodily fluids, direct and fairly prolonged face-to-face contact, or contaminated objects such as bedding or clothing.
- **Tularemia:** Tularemia is one of the most infectious pathogenic bacteria known that occurs naturally in the United States and is caused by the bacterium *Francisella tularensis* which is especially found in rodents, rabbits, and hares. Humans can become infected through diverse environmental exposures to include bites by infected arthropods; handling infectious animal tissues or fluids; direct contact with or ingestion of contaminated food, water, or soil; and inhalation of infective aerosols. It is. Between 1985 and 1992, 1409 cases and 20 deaths were reported in the U.S., a case fatality rate of 1.4%.
- **Viral Hemorrhagic Fever:** Generally, this group of illnesses cause severe multisystem syndrome (multiple organ systems in the body are affected), the overall vascular system is damaged, and the body's ability to regulate itself is impaired. For the most part, rodents and arthropods are the main reservoirs for the viruses. This includes Argentine hemorrhagic fever, Bolivian hemorrhagic fever, Sabia-associated hemorrhagic fever, Venezuelan hemorrhagic fever, Lassa fever, Lymphocytic choriomeningitis (LCM), Crimean-Congo hemorrhagic fever (CCHF), Hantavirus Pulmonary Syndrome (HPS), hemorrhagic fever with renal syndrome (HFRS), Rift Valley fever, Ebola hemorrhagic fever, Marburg hemorrhagic fever, Kyasanur Forest disease, Omsk hemorrhagic fever, tick-borne encephalitis, Hendra virus disease, and Nipah virus encephalitis.

Another form of attack used by terrorists includes chemical agents. Chemical agents are poisonous vapors, aerosols, liquids, and solids that have toxic effects on people, animals, or plants. The chemical agents can be dispersed via bombs, or sprayed from airplanes, boats, or vehicles. Some chemical agents are odorless and tasteless. Many have an immediate effect, but some of a delayed effect. A chemical attack can occur with no warning.

Ever since the 9-11 attacks, the United States government devised the Homeland Security Advisory System (HSAS). The system is designed to provide communication to public safety officials and the public. The Color-coded Threat Level System is used to communicate with public officials and the public through a threat-based color coded system to ensure protective measures can be implemented to reduce the impact or likelihood of an attack. The National Terrorism Advisory system (NTAS) replaced the color-coded HSAS.

The new system will more effectively communicate information about terrorist threats by providing timely, detailed information to the public, government agencies, first responders, airports and other transportation hubs, and the private sector.

DHS issued an intelligence message on May 5, 2011 to its federal, state, local and tribal partners about potential Al-Qa'ida contemplation in February 2010 of plots against the U.S. rail sector. For the same reason, the Transportation Security Administration will issue a bulletin to rail sector stakeholders. There was not information of any imminent terrorist threat to the U.S. rail sector, but wanted to make our partners aware of the alleged plotting; it is unclear if any further planning has been conducted since February of last year.

As of June 14, 2011 the Security of Homeland Security has not issued an elevated or immanent alert. The United States remains in a heightened level of vigilance.

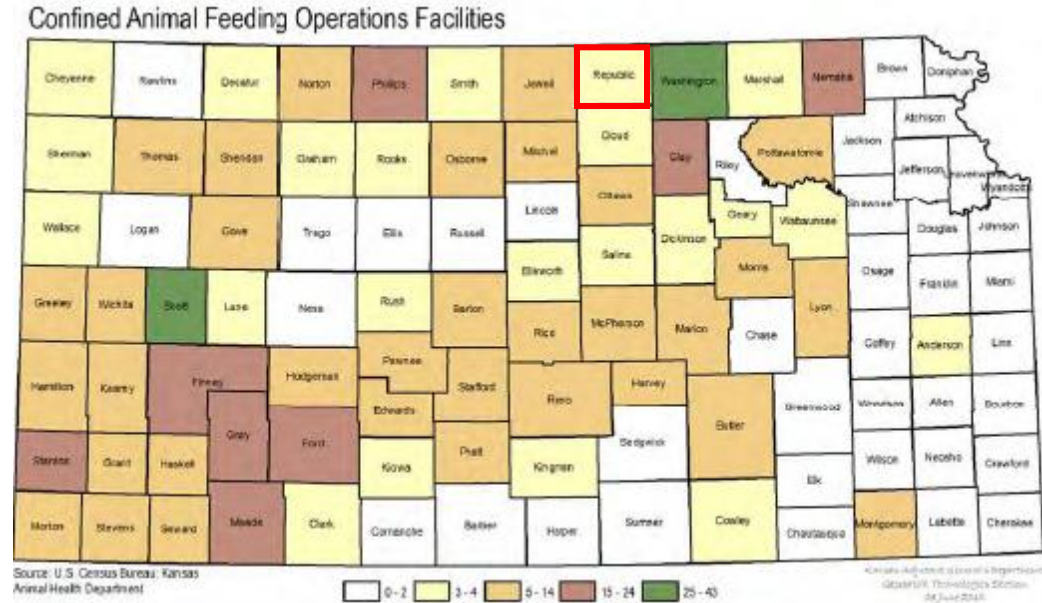
Agri-terrorism

Agri-terrorism is the deliberate use of plant or animal pathogens to cause devastating disease in the agricultural industries in order to undermine socioeconomic stability and generate fear. Kansas, including Republic County, is particularly vulnerable agri-terrorism attacks through agricultural infestations, such as foot and mouth disease. A deliberate introduction of such disease in the stockyards in Republic County would result in a rapid spread of the disease throughout the country. The economic ramifications would be immense.

Hundreds trucks go through Kansas everyday transporting cattle. Some of the cattle will graze in the Flint Hills pastures, while others are taken to feedlots or a Kansas slaughter house. It is estimated that 800 to 1,000 trucks travel on the roads of Kansas carrying about 50,000 head of cattle each day (Cattlenetwork).

The following map shows number of confined Animal Feeding Operation Facilities in Republic County in relation to the rest of the State of Kansas. According to the 2010 Kansas State Hazard Mitigation Plan, Republic County has two feed lots and one sale barn.

Figure 2. 21- Kansas Confined Animal Operations



Civil Disorder

Civil disorder is also known as civil unrest. According to Webster’s Dictionary, the definition for civil disorder is a “public disturbance by three or more people involving acts of violence that cause immediate danger, damage, or injury to others or their property. Civil disturbances can be riots, protests, demonstrations, or bomb threats.

Civil disturbances can be riots, protests, demonstrations, etc. Republic County has not had an incident that could be classified as a “Civil Disturbance” in the past 40+ years, however, there is always the potential for such an incident arising.

History of Terrorism

Republic County has not had any incidents that could be classified as “Terrorism” in the past; however, there is always the potential for such an incident arising. Republic County is concerned about terrorism because there is a White Supremacist Group, Aryan Nations. There are also two feedlots and one livestock sale barn in the Republic County.

Probability and Magnitude for Terrorism

Although historically there have not been any terroristic attacks in Republic County, the HMPC determined the probability of a future occurrence is “highly likely”. The event is probable with the next five years.

The HMPC determined the magnitude for this hazard is “limited”.

Terrorism Risk Summary

Table 2.61 is a risk summary for terrorism for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 51 – Terrorism/Agri-terrorism/Civil Disturbance CPRI Ranking

Terrorism	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	1
Magnitude	2	NA*
Warning Time	1	NA*
Duration	4	NA*
Planning Significance	Moderate	Moderate
Risk Index	2.95	2.65
Ranking	18 out of 22	11 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 52 – Terrorism Planning Significance by Jurisdiction

Hazard	Historic Occurrences	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	No	Highly Likely	Negligible	24+ Hours	<1 day	Moderate
Agenda	No	Highly Likely	Negligible	24+ Hours	<1 day	Moderate
Belleville	No	Highly Likely	Negligible	24+ Hours	<1 day	Moderate
Courtland	No	Highly Likely	Negligible	24+ Hours	<1 day	Moderate
Cuba	No	Highly Likely	Negligible	24+ Hours	<1 day	Moderate
Munden	No	Highly Likely	Negligible	24+ Hours	<1 day	Moderate
Narka	No	Highly Likely	Negligible	24+ Hours	<1 day	Moderate
Republic	No	Highly Likely	Negligible	24+ Hours	<1 day	Moderate
Scandia	No	Highly Likely	Negligible	24+ Hours	<1 day	Moderate

Vulnerability to Terrorism

Although terrorism is another hazard that does not have a direct impact on buildings and other infrastructure, it could potentially have enormous economical impact on the entire planning area. Many businesses would be affected by disruption of service that would come with a terrorist attack. The farming communities in Republic County would be financially devastated by an agri-terrorism attack.

Due to the nature of the hazard it is not feasible to predict the losses from this hazard. Losses could range from minor to catastrophic depending on the magnitude of the attack.

Tornado



Photograph was taken on May 24, 2004 near Belleville, Kansas.

Hazard Definition

The definition of “tornado” is a violently rotating column of air, extending between a cloud and the ground. In order for a vortex to be classified as a tornado, it must be in contact with the ground *and* the cloud base. Tornadoes are generally spawned by thunderstorms.

Tornado wind speeds are estimated after they occur based on the damage produced. Tornadoes are categorized on a Fujita Scale from 0 (weakest) to 5 (strongest). The Fujita Scale was developed in 1971 by Theodore Fujita of the University of Chicago. The following table is the Fujita Scale with associated wind speeds and typical damage.

Table 2. 53 – The Fujita Scale

SCALE	WIND ESTIMATE *** (MPH)	TYPICAL DAMAGE
F0	< 73	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.

SCALE	WIND ESTIMATE *** (MPH)	TYPICAL DAMAGE
F3	158-206	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	261-318	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

In February 2007, forecasters adopted the Enhanced Fujita Scale, which modified the way tornadoes are rated but continued to rank them on a 0 to 5 scale. The following table is the Enhanced Fujita Scale in comparison to the Fujita Scale.

Table 2. 54 – The Enhanced Fujita Scale

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

History of Tornado Events

Since 1860, there have been at least 56 reported tornadoes in Republic County causing 1injury. The strongest tornadoes to date have had winds exceeding 207 mph (F4 rating on the previously used Fujita Scale) and the largest was close to ½ mile wide. The following events are from the NCDC database, due to the large number of events only the events with injuries and/or damage are detailed below.

- May 25, 1951 A F2 tornado touched down in Republic County causing \$2,500 in property damage.
- June 1, 1951 A F3 tornado touched down in Republic County causing \$2,500 in property damage.
- May 21, 1952 A F3 tornado touched down in Republic County causing \$25,000 in property damage.
- May 31, 1961 A F3 tornado touched down in Republic County causing \$25,000 in property damage.
- May 14, 1976 A F2 tornado touched down in Republic County causing 1 injury and \$250,000 in property damage.
- June 1979 A F2 tornado touched down in Republic County causing \$25,000 in property damage.
- April 13, 1986 A F2 tornado touched down in Republic County causing \$250,000 in property damage.
- September 18, 1986 A F3 tornado touched down in Republic County causing \$2.5 million in property damage.
- March 13, 1990 A F1 tornado touched down in Republic County causing \$250,000 in property damage.

June 15, 1992	A F0 tornado touched down causing \$2,500 in property damage.
April 11, 2001	A F1 tornado moved from east central Jewell County into Republic County and struck the town of Courtland before dissipating near the town of Republic. Considerable damage occurred to power lines and farm outbuildings along the path of the tornado. Considerable damage occurred to several buildings in the town of Courtland as well. Property damage was estimated at \$60,000. The same tornado also touched down south of Belleville and moved northeast doing intermittent damage along a 10 mile path before dissipating causing approximately \$20,000 in property damage.
June 13, 2001	A F1 tornado formed just north of Munden and moved northeast doing considerable damage to several farmsteads before moving into Nebraska. Thunderstorms developed over north central Kansas and became severe producing large hail strong winds and 2 tornadoes. The property damage was estimated at \$120,000.
June 22, 2003	A tornado touched down in rural areas near Courtland and moved northeast about one half mile and struck a farm before dissipating. Several outbuildings at the farm were damaged. The property damage was estimated at \$50,000.
May 22, 2004	A tornado touched down briefly at a farm and damaged a barn. The property damage was estimated at \$9,000.
May 29, 2004	A tornado touched down southwest of Norway and moved over 3 miles northeast before dissipating. Along the path of the tornado extensive damage was done, including significant crop damage. A number of power poles were downed. Many farm houses were severely damaged. Many farm implements and outbuildings were damaged or destroyed. Near Norway irrigation equipment was wrapped around a utility pole. In Norway a grain bin was blown over. Many homes in Norway sustained considerable damage. Many trees were downed along the tornado path. Property damage was estimated at \$3.2 million and crop damage was estimated at \$100,000.
May 29, 2008	The tornado crossed from Jewell County into Republic County South Southwest of Courtland. There, tree damage was noted, and several outbuildings were destroyed at a residence. An old rock home was also destroyed. Significant tree, power pole, and power line damage was reported along the path. Several of these trees had been uprooted and thrown for several hundred feet. Irrigation units were destroyed. Several homes, a newspaper reported at least six, were damaged along the path. The home that sustained the most significant damage had portions of the roof removed, and it's eastern wall blown out. Barns, outbuildings, and grain bins were destroyed at the residence as well. The old Union Valley Schoolhouse was demolished, and several headstones and trees in the Union Valley Cemetery were blown down. The tornado was rated EF-3 when it entered the county. Local Emergency Management reported that several residents had to be rescued after the tornado because of debris and damage to their homes. Highway 36 was closed through Friday morning because of power poles and power lines on the roadway. Between Hwy 81 and a point two miles south of the state line along the path, EF-2 damage was surveyed. Thereafter, EF-1 damage was noted. The tornado exited Republic County and entered Thayer County 5 miles west northwest of Narka. EPISODE NARRATIVE: A supercell that tracked across much of north central Kansas spawned a long-lived tornado that tracked from Jewell County, KS (Hastings CWA) into Republic County, KS (Topeka CWA) into Thayer County, NE (Hastings CWA) and finally into Jefferson County, NE (Omaha CWA) before dissipating. The bulk of the damage that occurred in Republic County happened within a few minutes of crossing the county line. Damage there was rated EF-3. Six residences were reported to have been significantly damaged. A few residents of these homes needed to be rescued, as they were trapped by debris. Other damage occurred to trees, power lines, and farm related buildings. Property damage was estimated at \$1 million.

Probability and Magnitude of Tornadoes

The NCDC only reported 56 tornado events from 1955 to 2010. For that reason, the HMPC determined the probability is “highly likely.”

Approximately 59 percent of all tornadoes in Republic County occur during the months of May and June. The following table shows the number of tornadoes occurring each month for 2008 in the State of Kansas (Kansas Emergency Management Association).

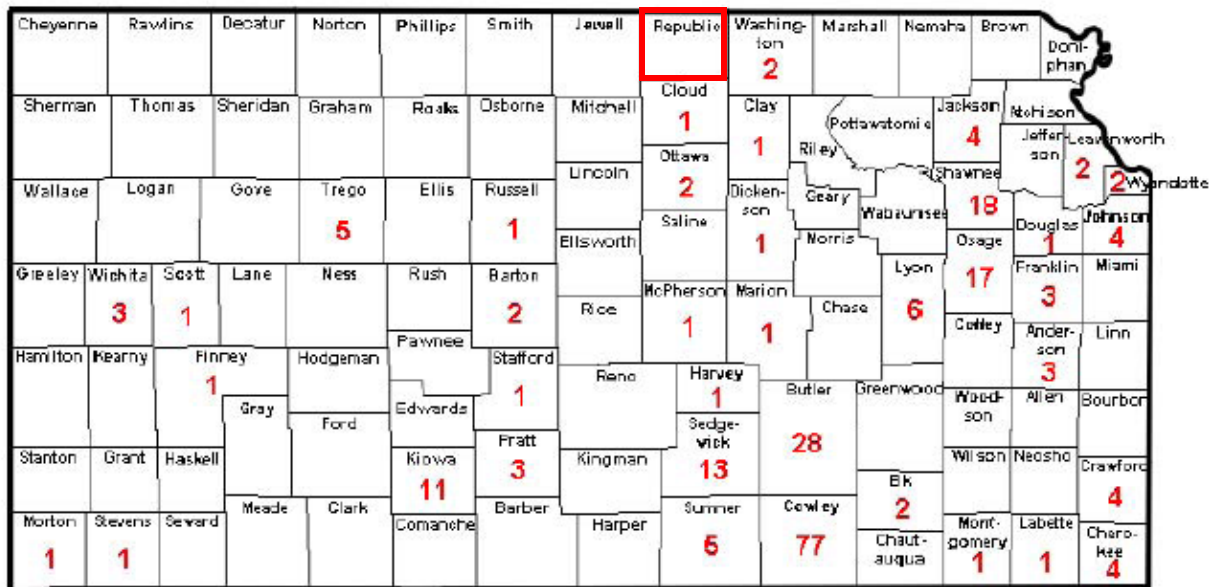
Table 2. 55 - 2008 Monthly Tornado Totals for Kansas

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
Total	0	0	1	4	127	39	7	0	7	1	1	0	187	100%
Percent	0%	0%	.5%	2%	68%	21%	4%	0%	4%	.5%	.5%	0%		
EF5	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
EF4	0	0	0	0	1	1	0	0	0	0	0	0	2	1%
EF3	0	0	0	0	7	2	0	0	0	0	0	0	9	5%
EF2	0	0	0	1	11	1	0	0	0	0	0	0	13	7%
EF1	0	0	0	0	31	6	0	0	1	0	0	0	38	20%
EF0	0	0	1	3	77	29	7	0	6	1	1	0	125	67%

Weak (EF0, EF1) tornadoes shaded green, strong (EF2, EF3) shaded yellow, violent (EF4, EF5) shaded red.

Figure 2.33 identifies the number of fatalities that each county has experienced due to tornadoes from 1950 through 2008 (Kansas Emergency Management Association). Republic County has not experienced any fatalities during that time frame as a result of a tornado.

Figure 2. 22 - Kansas Tornado Fatalities 1950-2008



The HMPC determined the magnitude of a F5 is “catastrophic”. A tornado of this magnitude has the potential to cause multiple deaths and injuries. It also has the capability of severely damaging or destroying over 50 percent of the property.

Tornado Risk Summary

Table 2.66 is a risk summary for tornadoes for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 56 – Tornado Risk Summary

	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	4
Magnitude	4	NA*
Warning Time	4	NA*
Duration	2	NA*
Planning Significance	High	High
Risk Index	3.80	3.40
Ranking	2 out of 22	2 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 57 – Tornado Planning Significance by Jurisdiction

Hazard	Historic Occurrences	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Yes	Highly Likely	Catastrophic	<6hrs	<1 Day	High
Agenda	Yes	Highly Likely	Catastrophic	<6hrs	<1 Day	High
Belleville	Yes	Highly Likely	Catastrophic	<6hrs	<1 Day	High
Courtland	Yes	Highly Likely	Catastrophic	<6hrs	<1 Day	High
Cuba	Yes	Highly Likely	Catastrophic	<6hrs	<1 Day	High
Munden	Yes	Highly Likely	Catastrophic	<6hrs	<1 Day	High
Narka	Yes	Highly Likely	Catastrophic	<6hrs	<1 Day	High
Republic	Yes	Highly Likely	Catastrophic	<6hrs	<1 Day	High
Scandia	Yes	Highly Likely	Catastrophic	<6hrs	<1 Day	High

Vulnerability to Tornadoes

There is a potential of 100 percent damage from an EF3 tornado. However, in order to get a realistic idea of the amount of damage caused by tornados in Republic County, the HMPC decided to use the annualized approach to determining the vulnerability. The damage estimates are based on historic events. There have been 13 tornadoes reported in Republic County in the past 57 years with the total damage equaling \$7,891,500. The average total damage per tornadic event is \$493,219 and the average damage per year is \$8,653.

Areas with a higher population density, such as cities, have a greater chance of fatalities and injuries occurring during a major tornado event. The city would also experience more property damage due to the greater number of buildings and utility infrastructure.

The EF Scale previously discussed uses observed Degrees of Damage (DOD) to develop wind speed ranges, which are then used to classify tornadoes. The following table was developed by Texas Tech University showing DOD for 23 different building types and gives wind speed ranges for each of the DOD. The ranges list lower-bound, upper-bound, and expected wind speed. All of the wind speeds are 3-second gusts to match with the ASCE engineering loads standards. To utilize the EF Scale, the degree of observed damage to buildings was compared to the DOD for the appropriate building type, thus yielding a probable wind speed range.

The table below illustrates an example of the EF Scale tables and extent of damage that can be expected. The range of wind speeds is a function of variations in the wind resistance of specific buildings (due to design,

construction, and maintenance variations) and uncertainty in the wind speed necessary to cause a specific type of damage. The wind speed values are expressed in miles per hour (URS Group, Inc).

Table 2. 58 – Example of EF Scale Table: DOD Scale for Single-Family and Two-Family Residences

Degree of Damage (DOD)	Damage Description	Expected Wind Speed (Exp)	Lower-bound Wind Speed (LB)	Upper-bound Wind Speed (UP)
1	Threshold of visible damage	65	53	80
2	Loss of roof covering material (<20%), gutter and/or awning; loss of vinyl or metal siding	79	63	97
3	Broken glass in doors and windows	96	79	114
4	Uplift of roof deck and loss of significant roof covering material (>20%), collapse of chimney; garage doors collapse inward or outward; failure of porch or carport	97	81	116
5	Entire house shifts off foundation	121	103	141
6	Large sections of roof structure removed; most walls remain standing	122	104	142
7	Top floor exterior walls collapsed	132	113	153
8	Most interior walls of top story collapsed	148	128	173
9	Most walls collapsed in bottom floor, except small interior rooms	152	127	178
10	Total destruction of entire building	170	142	198

Utility/Infrastructure Failure



Hazard Definition

This hazard as described by the Kansas State Hazard Mitigation Plan includes transportation systems, power systems, natural gas and oil pipelines, water and sewer systems, storage networks, and telecommunication facilities. Another part of the infrastructure included in this hazard is the State and locally designated critical facilities, including hospitals and government centers. Disruption of these services can be the result of most of the hazards described in this plan.

Power outages typically occur several times per year in small areas in Republic County with on-line capabilities within hours to several days depending on the extent of damage to utilities. These outages are significant enough to call all available crews to duty for more than a 24-hour period. Causes of the power failures are largely due to high winds that damage power lines. Lightning, ice storms, and heavy rain or snowstorms have also contributed to the cause of power outages. Rural electric companies are more susceptible to long duration outages due to population density over a large area resulting in longer electric power transfer or switching time. Natural gas and electric companies have internal dispatch centers to maintain service.

Modern society relies extensively on certain services and facilities for efficiency and convenience. They are so pervasive and reliable that they are taken for granted, being given the generic term "infrastructure". Infrastructure commonly requires major investment and long periods to build.

Common examples include power, gas, water, sewer, fuel, roads, bridges, transportation and communications. Short-term unavailability of infrastructure results in significant inconvenience, but a prolonged failure can cause serious problems for people, businesses and government. In addition to an inability of users to perform many

everyday functions, long-term outages could result in loss of wages for workers and profits for shareholders. This would cause severe hardship and substantially slow down the economy.

Special measures are therefore necessary to protect key components of infrastructure - "critical infrastructure" - from damage and destruction from a variety of agents. These include natural events, such as earthquakes, floods and fires as well as malicious attack from a small section of society, such as vandals, criminals and terrorists.

Most infrastructure failures occurring in the history of Republic County have been due to weather events such as windstorms, ice storms, etc. and have been repaired in less than two weeks.

History of Utility/Infrastructure Failure

Utility and Infrastructure is generally a secondary hazard as a result of other hazard events. Water systems are particularly vulnerable to drought. The following events are examples of that. The following events were from the NCDC database.

- April 14, 1999 Synoptic-scale high winds of 39-61kts ripped across most of Central Kansas during the afternoon and evening. Sustained winds of 39-52kts with gusts to around 61kts whipped across South-Central Kansas later in the evening. Property damage was estimated at \$125,000.
- November 15, 2005 A powerful storm system brought high winds to north central Kansas which caused widespread moderate damage. In Republic County, the high winds caused tree limbs to fall into power lines, knocking them down. There were also reports of downed trees in roads and at least one power pole downed. Narka Airport recorded a 51 mph peak wind. There were no reports of deaths or injuries.
- June 6, 2007 A low pressure and its associated tight pressure gradient resulted in very strong surface winds from generally along and west of Interstate 135. Winds were generally in the 50 to 55 mph range for the counties. High winds knocked tree limbs into power lines and caused small out buildings to move around. A large hackberry tree was downed. Numerous other trees were also downed across the county. Property damage was estimated at \$10,000.
- March 23, 2009 Widespread very strong southerly winds affected much of central and south-central Kansas. Numerous power outages occurred from the high winds, likely due to downed power poles and lines. Property damage cost \$10,000.

Probability and Magnitude of Utility/Infrastructure Failure

The HMPC determined the probability of future utility/infrastructure failure is "highly likely" because there is a 100 percent chance that the planning area will experience utility or infrastructure failure every year.

The HMPC determined the magnitude for utility/infrastructure failure is "critical" because infrastructure failure can potentially cause many problems for businesses and residents in the community, especially for the special needs populations.

Utility/Infrastructure Failure Risk Summary

Table 2.73 is a risk summary for utility/infrastructure for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 59 - Utility/Infrastructure Failure Risk Summary

Utility/Infrastructure Failure	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	3
Magnitude	2	NA*

Utility/Infrastructure Failure	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Warning Time	4	NA*
Duration	4	NA*
Planning Significance	High	Moderate
Risk Index	3.30	2.85
Ranking	5 out of 22	10 out of 22

NA* = Ranking Not Stated in the 2007 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 60 – Utility/Infrastructure Failure Planning Significance by Jurisdiction

Hazard	Historic Occurrences	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Yes	Highly Likely	Limited	< 6hrs	<1 Week	High
Agenda	Yes	Highly Likely	Limited	< 6hrs	<1 Week	High
Belleville	Yes	Highly Likely	Limited	< 6hrs	<1 Week	High
Courtland	Yes	Highly Likely	Limited	< 6hrs	<1 Week	High
Cuba	Yes	Highly Likely	Limited	< 6hrs	<1 Week	High
Munden	Yes	Highly Likely	Limited	< 6hrs	<1 Week	High
Narka	Yes	Highly Likely	Limited	< 6hrs	<1 Week	High
Republic	Yes	Highly Likely	Limited	< 6hrs	<1 Week	High
Scandia	Yes	Highly Likely	Limited	< 6hrs	<1 Week	High

Vulnerability to Utility/Infrastructure Failure

The entire County is vulnerable to utility and infrastructure failure. Utility and infrastructure failure is generally a secondary hazard that is a result of other hazards, including but not limited to earthquakes, expansive soils, flood, hailstorms, sinkholes, lightning, tornado, windstorm, and winter storms. This hazard can have an enormous economic impact on the planning area.

Water supply and wastewater facilities are vulnerable to drought, flooding, power failure. Flooding and power failure can cause wastewater facilities to become inoperable causing wastewater to backup into homes, businesses, and critical facilities. Critical facilities, such as schools, hospitals, nursing homes and daycare centers are responsible for ensuring the overall safety and well-being of their students, patients, residents, staff and visitors to their facilities and lack of clean water can jeopardize their safety.

Power lines and telephone lines are vulnerable to high winds, lightning, tornadoes, and winter storms, causing power and telephone failure. Generally residents have experienced uninterrupted service in the county with minimal delays in service restoration. On rare occasions, customers may be without service for up to one week if the extent of damage of utility lines and equipment caused by lightning, ice storms, and heavy rain or snowstorms exceeds normal repairs. These outages are occasionally significant enough to call all available crews to duty for more than a 24-hour period.

Power outages can be extremely dangerous to individuals with medical conditions requiring electricity. Possible losses could include repair or replacement of damaged power lines and economic costs of business interruption. Precise loss estimates are not available due to a number of variables associated with this hazard.

Wildfire

Hazard Definition

The National Wildfire Coordinating Group describes “Wildland Fire” as: “Any non-structure fire that occurs in the wildland.” In Republic County the types of Wildland fire that are commonly encountered include fires in fields, pastures and trees. During certain times of the year, when the weather is extremely dry, the risk for Wildland fire increases dramatically.

Nearly 95% of the land in Republic County is either crop or grassland. As a result there is a very high risk of a large Wildland fire occurring. Republic County’s Fire Districts average over 500 calls for service a year with approximately 70% of those being Wildland fires.

History of Wildfire Events

Table 2.72 is the wild fires that were reported by Republic County Rural Fire Department #11.

Table 2. 61 – Republic County Wildfires 1995-2009

Year	Total # of Calls	# of Structure Fire Calls	# of Wildfire Calls	Acres Burned as a Result of Wildfire	Structures Burned as a Result of Wildfire	Deaths due to Wildfire	Injuries as a Result of Wildfire
1995	11	0	11	30	None	None	None
1996	8	0	8	40	None	None	None
1997	7	0	7	50	None	None	None
1998	10	0	10	30	None	None	None
1999	8	1	7	15	None	None	None
2000	7	0	7	20	None	None	None
2001	10	0	10	40	None	None	None
2002	8	0	8	5	None	None	None
2003	11	0	11	40	None	None	None
2004	9	0	9	3	None	None	None
2005	10	0	10	20	None	None	None
2006	7	0	7	10	None	None	None
2007	8	0	8	5	None	None	None
2008	9	1	8	30	None	None	None
2009	12	1	11	10	None	None	None

Probability and Magnitude of Wildfire

According to data from the Rural Fire Department, between 1995 and 2009, Republic County experienced 132 wildland and/or crop fires across 348 acres. Therefore, the HMPC determined the probability of a wildfire occurrence is “highly likely.”

Although the HMPC ranked the probability for future occurrence as highly likely, they determined the magnitude for wildfire is “limited” because there were not any deaths and injuries as a result of wildfire.

Wildfire Risk Summary

Table 2.73 is a risk summary for wildfires in Republic County. These are the overall vulnerabilities for the entire planning area. The individual jurisdictions may vary due to specific hazard events. Please refer to the individual jurisdiction profiles in Chapter 3 – Jurisdiction Profiles for the specific ranking information.

Table 2. 62 – Wildfire CPRI Ranking

Wildfires	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	4
Magnitude	1	NA*
Warning Time	4	NA*
Duration	2	NA*
Planning Significance	High	High
Risk Index	2.90	3.20
Ranking	12 out of 22	6 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Wildfire Vulnerability

Development in the wildland/urban interface (WUI) area is a growing trend. Wildland urban/interface areas pose a great challenge to the fire districts. Firefighting techniques for wildfires are different from the techniques used to fight structure fires. Access to rural areas is often limited, due to unpaved roads and isolated water supply.

The homes and structures that are located in the WUI area within the County are most vulnerable to this hazard. The WUI is the area where people build structures in an area that comes in contact with the wildland. Many people want to live on a few acres of land and have a secluded home outside of town. The areas in which people are living near the wildland area, the threat of wildfire is present.

Windstorm



Hazard Definition

Windstorm is defined by the NWS as “a storm with sustained winds of 40 miles per hour (mph) or gusts of 58 mph or greater, not caused by a thunder storm, expected to last more than 1 hour.” Other terms which can be associated with windstorms include:

- Straight-line winds – These winds are generally any thunderstorm wind that is not associated with rotation (i.e. is not a tornado). These winds 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 tornadoes, the associated wind damage can be extensive and affect entire (and multiple) counties. 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.
- Derecho - A widespread and long lived windstorm that is associated with a band of rapidly moving showers or thunderstorms. Derechos are associated with a band of showers or thunderstorms that are often "curved" in shape. These bowed out storms are called "bow echoes". A derecho can be associated with a single bow echo or multiple bow echoes. The bow echoes may vary in scale and may die out and redevelop during the course of derecho evolution. Further, derecho winds can be enhanced on a smaller scale by embedded super cells within the derecho producing storm system. By definition winds in a derecho must meet the National Weather Service criterion for severe wind gusts (greater than 57 mph) at most points along the derecho path. In the stronger derecho events winds can exceed 100 mph. The winds associated with derechos are not constant and may vary considerably along the derecho path,

sometimes being below severe limits (57 mph or less) and sometimes being very strong (from 75 mph to greater than 100 mph). The patches of stronger winds embedded within the general derecho path are called downbursts and they are often in clusters. A derecho is made up of a "family of downburst clusters" and by definition must be at least 240 miles in length.

The Beaufort Wind Scale is an empirical measure for describing wind speed based mainly on observed conditions. Its full name is the Beaufort Wind Force Scale. The scale was created in 1806 by Sir Francis Beaufort, an Irish-born British admiral and hydrographer.

The initial scale of thirteen classes (zero to twelve) did not reference wind speed numbers but related qualitative wind conditions to effects on the sails of a man-of-war, then the main ship of the Royal Navy, from "just sufficient to give steerage" to "that which no canvas sails could withstand." At zero, all his sails would be up; at six, half of his sails would have been taken down; and at twelve, all sails would be stowed away.

The Beaufort scale was extended in 1946, when Forces 13 to 17 were added. However, Forces 13 to 17 were intended to apply only to special cases, such as tropical cyclones. Nowadays, the extended scale is only used in Taiwan and mainland China, which are often affected by typhoons.

Wind speed on the 1946 Beaufort scale is based on the empirical formula: $v = 0.836 B^{3/2}$ m/s

The letter v in the equation above is the equivalent wind speed at 10 meters above the sea surface and B is Beaufort scale number. For example, $B = 9.5$ is related to 24.5 m/s which is equal to the lower limit of "10 Beaufort". Using this formula the highest winds in hurricanes would be 23 in the scale. Table 2.75 is the Beaufort Wind Scale.

Table 2. 63 – The Beaufort Wind Scale

Beaufort Number	Wind Speed (Knots)	Wind Speed (mph)	Description	Conditions
0	<1	<1	Calm	Calm, Smoke rises vertically.
1	1-2	1-3	Light air	Wind motion visible in smoke, still wind vanes
2	3-6	3-7	Light breeze	Wind felt on exposed skin, leaves rustle, wind vanes begin to move
3	7-10	8-12	Gentle breeze	Leaves and smaller twigs in constant motion, light flags extended
4	11-15	13-17	Moderate breeze	Dust, leaves, and loose paper lifted, small tree branches move
5	16-20	18-24	Fresh breeze	Branches of moderate size move. Small trees begin to sway.
6	21-26	25-30	Strong breeze	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic garbage cans tip over.
7	27-33	31-38	High wind, moderate gale, near gale	Whole trees in motion. Effort needed to walk against the wind. Swaying of skyscrapers may be felt, especially by people on upper floors.
8	34-40	39-46	Fresh gale	Twigs broken from trees. Cars veer on road.
9	41-47	47-54	Strong gale	Larger branches break off trees, and some small trees blow over. Damage to tents and canopies.
10	48-55	55-63	Whole gale/Storm	Trees are broken off or uprooted, saplings bent and deformed, poorly attached asphalt shingles and shingles in poor condition blown peel off roofs.
11	56-63	64-72	Violent storm	Widespread vegetation damage. More damage to most roofing surfaces, asphalt tiles that have curled up and/or fractured due to age may break away completely.
12	>64	>73	Hurricane force	Considerable and widespread damage to vegetation, a few windows broken, structural damage to mobile homes and poorly constructed sheds and barns. Debris may be hurled about.

History of Windstorm Events

The windstorm events in Table 2.76 are from the National Climatic Data Center (NCDC).

Table 2. 64 – Republic County Historic Thunderstorm Winds or Windstorm Events

LOCATION	DATE	TIME	TYPE	SPEED (KNOTS)	DEATHS	INJURIES	PROPERTY DAMAGE (\$)	CROP DAMAGE (\$)
1 REPUBLIC	4/2/1956	1930	Tstm Wind	0 kts.	0	0	0	0
2 REPUBLIC	4/22/1957	2000	Tstm Wind	0 kts.	0	0	0	0
3 REPUBLIC	7/16/1960	1900	Tstm Wind	0 kts.	0	0	0	0
4 REPUBLIC	7/11/1962	815	Tstm Wind	0 kts.	0	0	0	0
5 REPUBLIC	8/23/1964	30	Tstm Wind	52 kts.	0	0	0	0
6 REPUBLIC	7/26/1966	2100	Tstm Wind	0 kts.	0	0	0	0
7 REPUBLIC	6/8/1968	1845	Tstm Wind	0 kts.	0	0	0	0
8 REPUBLIC	6/13/1968	1945	Tstm Wind	0 kts.	0	0	0	0
9 REPUBLIC	6/13/1968	1945	Tstm Wind	0 kts.	0	0	0	0
10 REPUBLIC	8/14/1976	1925	Tstm Wind	0 kts.	0	0	0	0
11 REPUBLIC	6/19/1978	1825	Tstm Wind	0 kts.	0	0	0	0
12 REPUBLIC	7/24/1981	315	Tstm Wind	0 kts.	0	0	0	0
13 REPUBLIC	7/22/1982	300	Tstm Wind	0 kts.	0	0	0	0
14 REPUBLIC	8/4/1982	1530	Tstm Wind	0 kts.	0	0	0	0
15 REPUBLIC	8/4/1982	1550	Tstm Wind	52 kts.	0	0	0	0
16 REPUBLIC	8/4/1982	1605	Tstm Wind	52 kts.	0	0	0	0
17 REPUBLIC	9/28/1983	2105	Tstm Wind	0 kts.	0	0	0	0
18 REPUBLIC	5/13/1985	550	Tstm Wind	61 kts.	0	0	0	0
19 REPUBLIC	3/31/1986	1815	Tstm Wind	51 kts.	0	0	0	0
20 REPUBLIC	4/13/1986	1830	Tstm Wind	0 kts.	0	0	0	0
21 REPUBLIC	8/4/1986	1800	Tstm Wind	0 kts.	0	0	0	0
22 REPUBLIC	8/4/1986	2030	Tstm Wind	0 kts.	0	0	0	0
23 REPUBLIC	6/24/1987	1850	Tstm Wind	52 kts.	0	0	0	0
24 REPUBLIC	6/27/1987	2335	Tstm Wind	0 kts.	0	0	0	0
25 REPUBLIC	4/27/1989	1720	Tstm Wind	52 kts.	0	0	0	0
26 REPUBLIC	4/27/1989	1740	Tstm Wind	52 kts.	0	0	0	0
27 REPUBLIC	5/22/1989	2145	Tstm Wind	52 kts.	0	0	0	0

LOCATION	DATE	TIME	TYPE	SPEED (KNOTS)	DEATHS	INJURIES	PROPERTY DAMAGE (\$)	CROP DAMAGE (\$)
28 REPUBLIC	6/2/1989	2025	Tstm Wind	0 kts.	0	0	0	0
29 REPUBLIC	8/4/1989	1743	Tstm Wind	52 kts.	0	0	0	0
30 REPUBLIC	8/4/1989	1808	Tstm Wind	0 kts.	0	0	0	0
31 REPUBLIC	6/16/1992	2145	Tstm Wind	52 kts.	0	0	0	0
32 REPUBLIC	7/12/1992	1808	Tstm Wind	52 kts.	0	0	0	0
33 REPUBLIC	7/18/1992	2057	Tstm Wind	52 kts.	0	0	0	0
34 Concordia	4/25/1994	1419	Thunderstorm Winds	56 kts.	0	0	1K	1K
35 Belleville	4/25/1994	1435	Thunderstorm Winds	52 kts.	0	0	5K	1K
36 Courtland	6/12/1994	2336	Thunderstorm Winds	70 kts.	0	0	5K	5K
37 Courtland	6/12/1994	2340	Thunderstorm Winds	70 kts.	0	0	5K	5K
38 Republic	6/24/1994	2110	Thunderstorm Winds	60 kts.	0	0	5K	1K
39 Harbine	7/1/1994	1900	Thunderstorm Winds	60 kts.	0	0	5K	1K
40 Belleville	7/1/1994	1930	Thunderstorm Winds	70 kts.	0	0	500K	50K
41 Narka	7/1/1994	1935	Thunderstorm Winds	70 kts.	0	0	5K	5K
42 Courtland	7/1/1994	1945	Thunderstorm Winds	60 kts.	0	0	5K	1K
43 Munden	5/22/1996	10:12 PM	Tstm Wind	52 kts.	0	0	0	0
44 Belleville	7/7/1996	10:57 PM	Tstm Wind	52 kts.	0	0	0	0
45 Norway	7/8/1996	12:11 AM	Tstm Wind	52 kts.	0	0	0	2K
46 Courtland	7/22/1996	11:25 AM	Tstm Wind	61 kts.	0	0	0	0
47 Courtland	7/22/1996	11:28 AM	Tstm Wind	54 kts.	0	0	0	0
48 Scandia	7/22/1996	11:34 AM	Tstm Wind	52 kts.	0	0	0	0
49 Belleville	8/19/1996	3:05 PM	Tstm Wind	52 kts.	0	0	0	0
50 Belleville	9/8/1997	8:30 PM	Tstm Wind/hail	50 kts.	0	0	0	0
51 Belleville	6/13/1998	6:00 PM	Tstm Wind	0 kts.	0	0	775K	0
52 Wayne	8/7/1999	5:00 PM	Tstm Wind	60 kts.	0	0	5K	0
53 Narka	7/2/2000	11:26 PM	Tstm Wind	52 kts.	0	0	0	0
54 Munden	8/7/2000	3:53 PM	Tstm Wind	65 kts.	0	0	4K	0
55 Narka	8/7/2000	3:59 PM	Tstm Wind	65 kts.	0	0	6K	0
56 Scandia	8/25/2000	7:02 PM	Tstm Wind	60 kts.	0	0	2K	0

LOCATION	DATE	TIME	TYPE	SPEED (KNOTS)	DEATHS	INJURIES	PROPERTY DAMAGE (\$)	CROP DAMAGE (\$)
57 Agenda	4/6/2001	9:35 PM	Tstm Wind	61 kts.	0	0	0	0
58 Scandia	4/11/2001	12:28 AM	Tstm Wind	56 kts.	0	0	0	0
59 Belleville	4/11/2001	12:39 AM	Tstm Wind	52 kts.	0	0	0	0
60 Belleville	4/11/2001	12:39 AM	Tstm Wind	54 kts.	0	0	0	0
61 Agenda	4/11/2001	12:40 AM	Tstm Wind	65 kts.	0	0	5K	0
62 Munden	4/22/2001	6:45 PM	Tstm Wind	52 kts.	0	0	0	0
63 Scandia	5/8/2001	8:01 PM	Tstm Wind	52 kts.	0	0	2K	0
64 Rydal	5/8/2001	8:06 PM	Tstm Wind	52 kts.	0	0	2K	0
65 Belleville	6/13/2001	10:59 PM	Tstm Wind	61 kts.	0	0	0	0
66 Munden	6/13/2001	11:10 PM	Tstm Wind	52 kts.	0	0	0	0
67 Cuba	6/14/2001	12:10 AM	Tstm Wind	52 kts.	0	0	2K	0
68 Belleville	7/18/2001	5:35 PM	Tstm Wind	60 kts.	0	0	2K	0
69 Cuba	7/18/2001	5:52 PM	Tstm Wind	60 kts.	0	0	5K	0
70 Republic	9/22/2001	8:24 PM	Tstm Wind	52 kts.	0	0	0	0
71 Norway	9/22/2001	9:03 PM	Tstm Wind	52 kts.	0	0	0	0
72 Belleville	7/26/2002	5:10 PM	Tstm Wind	57 kts.	0	0	0	0
73 Belleville	7/26/2002	5:20 PM	Tstm Wind	52 kts.	0	0	0	0
74 Courtland	6/22/2003	8:00 PM	Tstm Wind	62 kts.	0	0	0	0
75 Courtland	8/18/2003	2:15 PM	Tstm Wind	52 kts.	0	0	0	0
76 Munden	8/18/2003	7:15 PM	Tstm Wind	61 kts.	0	0	0	0
77 Munden	8/18/2003	7:20 PM	Tstm Wind	52 kts.	0	0	0	0
78 Republic	8/26/2003	3:58 PM	Tstm Wind	52 kts.	0	0	0	0
79 Munden	9/10/2003	8:27 PM	Tstm Wind	52 kts.	0	0	0	0
80 Cuba	3/27/2004	4:30 PM	Tstm Wind	65 kts.	0	0	30K	0
81 Republic	5/22/2004	9:15 PM	Tstm Wind	52 kts.	0	0	0	0
82 Narka	5/29/2004	7:30 PM	Tstm Wind	52 kts.	0	0	0	0
83 Norway	7/4/2004	10:50 PM	Tstm Wind	52 kts.	0	0	0	0
84 Republic	7/4/2004	10:56 PM	Tstm Wind	63 kts.	0	0	0	0
85 Courtland	7/9/2004	12:35 AM	Tstm Wind	52 kts.	0	0	0	0
86 Republic	7/9/2004	12:50 AM	Tstm Wind	52 kts.	0	0	0	0
87 Agenda	8/8/2004	5:17 PM	Tstm Wind	52 kts.	0	0	0	0
88 Belleville	6/29/2005	3:53 PM	Tstm Wind	55 kts.	0	0	0	0
89 Belleville	6/29/2005	3:55 PM	Tstm Wind	50 kts.	0	0	0	0
90 Munden	6/29/2005	4:05 PM	Tstm Wind	65 kts.	0	0	0	0

LOCATION	DATE	TIME	TYPE	SPEED (KNOTS)	DEATHS	INJURIES	PROPERTY DAMAGE (\$)	CROP DAMAGE (\$)
91 Courtland	7/25/2005	5:43 PM	Tstm Wind	52 kts.	0	0	0	0
92 Agenda	7/25/2005	6:30 PM	Tstm Wind	57 kts.	0	0	0	0
93 Belleville	8/17/2005	11:55 AM	Tstm Wind	61 kts.	0	0	0	0
94 Republic	5/23/2006	8:31 PM	Tstm Wind	52 kts.	0	0	0	0
95 Munden	5/23/2006	8:36 PM	Tstm Wind	52 kts.	0	0	0	0
96 Courtland	5/26/2006	8:36 PM	Tstm Wind	52 kts.	0	0	0	0
97 Munden	7/13/2006	5:38 PM	Tstm Wind	52 kts.	0	0	0	0
98 Republic	7/25/2006	8:06 PM	Tstm Wind	52 kts.	0	0	0	0
99 Republic	7/25/2006	8:07 PM	Tstm Wind	65 kts.	0	0	0	0
100 Narka	8/6/2006	2:20 PM	Tstm Wind	70 kts.	0	0	0	0
101 Norway	9/16/2006	7:29 PM	Tstm Wind	52 kts.	0	0	0	0
102 Republic	5/31/2007	16:35 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
103 Republic	8/20/2007	16:21 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
104 Republic	4/24/2008	23:15 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
105 Belleville	5/24/2008	12:11 AM	Thunderstorm Wind	61 kts.	0	0	OK	OK
106 Belleville	5/25/2008	17:18 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
107 Belleville	6/1/2008	12:53 AM	Thunderstorm Wind	52 kts.	0	0	OK	OK
108 Agenda	6/2/2009	4:30 AM	Thunderstorm Wind	65 kts.	0	0	OK	OK
109 Belleville	7/14/2009	1:30 AM	Thunderstorm Wind	52 kts.	0	0	OK	OK
110 Kackley	9/3/2009	15:37 PM	Thunderstorm Wind	60 kts.	0	0	OK	OK
111 Courtland	5/6/2010	21:45 PM	Thunderstorm Wind	61 kts.	0	10	OK	OK
112 Courtland	5/6/2010	21:49 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
113 Kackley	5/6/2010	21:55 PM	Thunderstorm Wind	61 kts.	0	0	OK	OK
114 Agenda	5/6/2010	22:11 PM	Thunderstorm Wind	70 kts.	0	0	20K	OK
115 New Tabor	5/6/2010	22:12 PM	Thunderstorm Wind	61 kts.	0	0	OK	OK
116 Norway	6/19/2010	7:07 AM	Thunderstorm Wind	56 kts.	0	0	2K	OK
117 Courtland	6/20/2010	19:05 PM	Thunderstorm Wind	65 kts.	0	0	2K	OK
118 New Tabor	7/14/2010	18:29 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
119 Norway	8/31/2010	17:19 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK

Probability and Magnitude of Windstorms

The HMPC determined the probability of a major windstorm to occur is “highly likely.” The HMPC determined the magnitude for windstorm is “critical” because there have been eleven injuries as a result of windstorms.

Windstorm Risk Summary

Table 2.77 is a risk summary for lightning failure for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 65 – Windstorm Risk Summary

Windstorm	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	4
Magnitude	3	NA*
Warning Time	4	NA*
Duration	3	NA*
Planning Significance	High	High
Risk Index	3.60	3.35
Ranking	3 out of 22	3out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each jurisdiction is provided in the following table.

Table 2. 66 -Windstorm Planning Significance by Jurisdiction

Hazard	Historic Occurrences	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Yes	Highly Likely	Critical	<6hrs	<1 Day	High
Agenda	Yes	Highly Likely	Critical	<6hrs	<1 Day	High
Belleville	Yes	Highly Likely	Critical	<6hrs	<1 Day	High
Courtland	Yes	Highly Likely	Critical	<6hrs	<1 Day	High
Cuba	Yes	Highly Likely	Critical	<6hrs	<1 Day	High
Munden	Yes	Highly Likely	Critical	<6hrs	<1 Day	High
Narka	Yes	Highly Likely	Critical	<6hrs	<1 Day	High
Republic	Yes	Highly Likely	Critical	<6hrs	<1 Day	High
Scandia	Yes	Highly Likely	Critical	<6hrs	<1 Day	High

Windstorm Vulnerability

It is difficult to measure the extent of damage that would occur because of the nature of the hazard. A thunderstorm can be an isolated event or widespread. It is unpredictable what portion of the community would be most vulnerable. However, stone or brick type buildings will endure a windstorm better than a mobile home or wooden structures that are old or poorly constructed.

According to the *Journal of Wind Engineering and Industrial Aerodynamics*, the greatest amount of building damage occurs to 1-3 story buildings with windspeeds in the 43-60 sustained wind 1-minute (m/s) range. For mid-rise buildings the most damage occurs between 54-81 m/s. The study revealed that 1-3 story residential, commercial/industrial, education/government buildings do not show any pronounced differences in peak values of damage extent. Given that differences in building occupancy classes are reflected in terms of component cost

factors, the cost of damage would vary greatly. Figure 2.55 indicates the extent of damage expected to occur by building type with respective windspeeds (McDonald, Mehta and Smith).

Figure 2. 23 – Wind Damage by Building Type

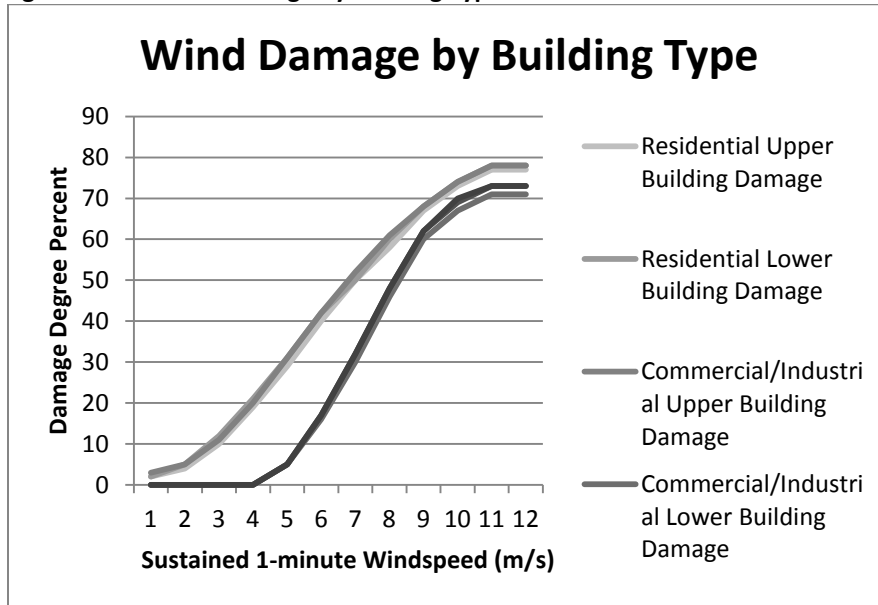


Table 2.82 is a windstorm vulnerability assessment by jurisdiction. The damage estimates are based upon the study previously mentioned and historic events.

Table 2. 67 – Windstorm Vulnerability by Jurisdiction

Jurisdiction	Total Number of Structures	Total Assessed Value	Estimated Damage
Republic County*			
Residential	3434	\$236,482,326	\$1,182,412
Commercial	0	\$0	\$0
Industrial	0	\$0	\$0
Agricultural	1	\$716,333	\$3,582
Religion/Non-Profit	1	\$10,756,000	\$53,780
Government	0	\$0	\$0
Education	0	\$0	\$0
Agenda			
Residential	54	\$540,000	\$2,700
Commercial	3	\$800,355	\$4,002
Industrial	0	\$0	\$0
Agricultural	2	\$1,432,667	\$7,163
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$3,696
Education	0	\$0	\$0

Belleville			
Residential	1259	\$55,144,200	\$275,721
Commercial	168	\$44,819,888	\$224,099
Industrial	4	\$6,061,714	\$30,309
Agricultural	9	\$6,447,000	\$32,235
Religion/Non-Profit			\$0
Government	4	\$1,478,462	\$7,392
Education	4	\$4,174,286	\$20,871
Courtland			
Residential	174	\$5,011,200	\$25,056
Commercial	15	\$4,001,776	\$20,009
Industrial	1	\$1,515,429	\$7,577
Agricultural	7	\$5,014,333	\$25,072
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$3,696
Education	1	\$1,043,571	\$5,218
Cuba			
Residential	148	\$2,812,000	\$14,060
Commercial	5	\$1,333,925	\$6,670
Industrial	0	\$0	\$0
Agricultural	0	\$0	\$0
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$3,696
Education	0	\$0	\$0
Munden			
Residential	71	\$709,929	\$3,550
Commercial	2	\$533,570	\$2,668
Industrial	1	\$1,515,429	\$7,577
Agricultural	2	\$1,432,667	\$7,163
Religion/Non-Profit	0	\$0	\$0
Government	0	\$0	\$0
Education	0	\$0	\$0
Narka			
Residential	55	\$549,945	\$2,750
Commercial	0	\$0	\$0
Industrial	0	\$0	\$0
Agricultural	1	\$716,333	\$3,582
Religion/Non-Profit	0	\$0	\$0
Government	1	\$369,615	\$1,848
Education	0	\$0	\$0

Republic			
Residential	108	\$2,754,000	\$13,770
Commercial	4	\$1,067,140	\$5,336
Industrial	0	\$0	\$0
Agricultural	2	\$1,432,667	\$7,163
Religion/Non-Profit	0	\$0	\$0
Government	0	\$0	\$0
Education	0	\$0	\$0
Scandia			
Residential	239	\$7,552,400	\$37,762
Commercial	17	\$4,535,346	\$22,677
Industrial	1	\$1,515,429	\$7,577
Agricultural	3	\$2,149,000	\$10,745
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$3,696
Education	2	\$2,087,143	\$10,436

Republic County* = all incorporated and unincorporated areas within the Republic County's jurisdictional boundaries.

Windstorms cause damage to structures and power lines causing hazardous conditions for people. Debris from high winds can shatter windows in structures and vehicles and can harm individuals that do not have adequate shelter. Although the entire planning area is vulnerable to windstorms, the areas of dense population would be most affected by windstorms. Crops can also be affected by windstorms and hail.

People involved in outdoor activities are most at risk during a severe windstorm. People camping or hiking in forested areas are very vulnerable to death or injury from falling trees, flying debris, and even lightning strikes. People in boats on lakes and streams are at risk of death or injury from the strong winds and high waves that accompany a severe thunderstorm.

Urban areas are vulnerable to windstorms due to the high population density and building exposure. Individuals in automobiles are also vulnerable to being hit by falling trees, power poles and lines. During a severe windstorm mobile homes are at risk of being blown over if they are not properly secured. Agricultural areas are also particularly vulnerable due to crop and livestock exposure. Agricultural buildings are also at risk for sustaining damage.

Winter Storm



The photo above was taken on April 5, 2007 in Narka, Kansas (Diehl).

Hazard Definition

Winter storms in Kansas usually come in the form of heavy snow or freezing rain (ice storms). A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures (see Section 3.3.6 Extreme Temperatures). The National Weather Service 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**—Measurable rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, 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.

An ice storm is a type of winter storm characterized by freezing rain. Ice storms happen when a warm cloud rains above a layer of colder air. This lowers the temperature of the droplets to below freezing temperature; however they remain in a liquid state. The super-cooled droplets freeze into ice on impact when they fall onto a surface the temperature of which is close to, or below, freezing.

This freezing rain covers everything with heavy, smooth glaze ice. Ice-covered roads become slippery and dangerous and driving becomes extremely hazardous as the ice causes vehicles to skid out of control. Pedestrians are severely affected as sidewalks become slippery, causing people to slip and fall, and outside stairs can become an extreme injury hazard.

In addition to hazardous driving or walking conditions, branches or even whole trees may break from the weight of ice. Falling branches can block roads, tear down power and telephone lines, and cause other damage. Even without falling trees and tree branches, the weight of the ice itself can easily snap power lines and also break and bring down power/utility poles; even steel frame electricity pylons have been sent crashing to the ground by the weight of the ice. This can leave people without power for anywhere from several days to a month. According to most utility companies, just one quarter of an inch of ice accumulation can add about 2,000 pounds of weight per line span. Damage from ice storms can shut down entire metropolitan areas.

History of Winter Storm Events

According to the National Climatic Data Center (NCDC), winter storms cost Republic County nearly \$14.665 million in property damage and caused thirteen deaths and twenty-eight injuries from January 1, 1950 and February 28, 2011. The following events are from the.

- March 1, 1995, Heavy Snow – 5-10” of snow fell across the area.
- March 16, 1998, Ice Storm – Low pressure moving slowly northeast across Oklahoma and southern Kansas, when combined with strong advection, produced widespread freezing rain across Central and parts of South-Central Kansas. The freezing rain combined with northeast winds of 20-30 mph to produce ½ to 1 inch of glazing across Central Kansas. There was extensive damage to trees, power lines and power poles.
- January 3, 2000, Heavy Snow – From 0700 to 1500 CST, a 40-50 mile wide swath of very heavy, convective snow buried much of Central and a small part of South-Central Kansas with 6-13 inch snows in only 5-8 hours.
- January 27, 2001, Heavy Snow – A large and very potent winter storm lifting northeast from the 4-corners region affected Kansas from the night of the 27th thru the early morning of the 28th. The storm buried much of Central Kansas with heavy snow as accumulations ranged from 6-14 inches. Accumulations of 6-8 inches were common across the area.
- February 8, 2001, Winter Storm – A winter storm crossing the southwestern U.S. lifted northeast across the central plains, bringing a mixture of freezing rain and sleet to all of Central and South-Central Kansas from the morning thru the afternoon of the 8th. The freezing rain and sleet was accompanied by north winds of 20-30 mph, resulting in ice accumulations of ¼ to ¾ inch across the region. Sleet reached depths of 2 inches. Power outages were widespread, with many Central Kansas locales without power from the late morning of the 8th thru the morning of the 9th. During the afternoon of the 8th, the freezing rain changed over to snow, with wide ranging snow accumulations resulting. By the morning of the 9th, accumulations ranged from 2-8 inches with the greater amounts, generally 4-8 inches, burying Central Kansas. As the storm continued its northeast trek across the central plains, the north winds increased to 30-40 mph resulting in a blizzard across most of Central Kansas.

- February 27, 2001, Winter Storm – A shallow, fast-moving arctic front swept across Central Kansas on the morning of the 27th. Knifing under much warmer air aloft, the resulting rain fell onto surfaces where temperatures were generally in the lower to mid 20's. Highways quickly froze, turning into skating rinks. The freezing rain was prolonged and occasionally mixed with sleet. As the morning progressed, the freezing rain and sleet quickly changed to snow which was occasionally heavy. Snow accumulations were only in the 3-6 inch range, but with a layer of ice beneath, causing travel to be treacherous with numerous accidents.
- January 29, 2002, Heavy Snow – The same winter storm that produced widespread freezing rain and sleet across South-Central and Southeast Kansas brought heavy snow to Central and part of South-Central Kansas. The greatest accumulations, 8-12 inches, buried that part of Central Kansas along, and northwest of a line from Great Bend to Narka.
- December 9, 2003, Winter Storm – An intense upper-level disturbance moving east from New Mexico, Texas and Oklahoma caused low pressure to develop resulting in a wind-driven snow that accumulated to 5-6 inches across Central Kansas. North winds reached 30-40 mph, to produce a blizzard that closed all East / West oriented highways, including Interstate 70 in Russell, Ellsworth and Republic counties.
- February 1, 2004, Winter Storm – Widespread moderate to heavy snow covered Republic County with 6-8 inch accumulations. The snow was preceded by periods of freezing rain that had begun Saturday night. Ice accumulations reaching ¼ inch prior to the onset of snow.
- January 4, 2005, Winter Storm – On January 3rd, a strong cold front surged south across Kansas & Oklahoma before stalling along/near the Red River during the afternoon of the 4th. A shallow layer of moist, sub-freezing air spread south over all but Southeast Kansas, as a cold front, oriented in a southwest to northeast manner from the Oklahoma Panhandle to near Kansas City, teamed with an inverted trough positioned over Western Kansas to enable much warmer, moisture-laden air to overrun the layer of sub-freezing air beneath. The result was what many consider to be the worst ice storm since 1982 to ravage all of Central & most of South-Central Kansas from the afternoon of the 4th thru the morning of the 5th, coating almost the entire area with ½ to 1 inch of ice. Although freezing rain was the primary culprit, the winter storm was magnified considerably by periods of sleet that accumulated to depths of up to 2 inches. In Central Kansas, the situation was further worsened by periods of light snow that accumulated to 3 to 5 inch depths Republic county. Damage to trees and power lines was major. Limbs of 6-12 inch diameter were downed at many locations blocking roads and bringing down power lines. Widespread power outages were reported with a few areas being without power for 1 ½ weeks.
- February 8, 2005, Winter Storm – A winter storm crossing the Central Plains produced 7-10 inches of snow across primarily Russell and Lincoln counties. In Republic counties accumulations of 4-6 inches were common, but the situation was compounded by significant ice accumulations resulting from the combination of sleet and freezing rain that made travel dangerous.
- December 17, 2005, Heavy Snow – A slow moving winter storm deposited 6 to 8 inches of snow across portions of Central Kansas beginning during the evening hours of December 16th and persisting through the late evening hours of December 17th.
- March 20, 2006, Winter Storm – A powerful winter storm moved across the central plains on March 20th producing 2 to 6 inches of snow across portions of Central Kansas. In addition to the snow, periods of freezing drizzle and freezing rain resulted in a thin layer of ice across portions of Central Kansas.
- December 31, 2006, Winter Storm – The back side of a strong low pressure system brought a relatively quick round of moderate to heavy snow to portions of Central Kansas during the predawn to mid-morning hours on the 31st. Snow accumulations ranged from 3 to 5 inches.
- April 5, 2007, Winter Storm – A backdoor cold front pushed southwestward into portions of Central through Southeast Kansas during the morning hours of April 5th. This front eventually stalled out and interacted with an upper level system to spawn a rather intense and narrow band of snow.

- December 10, 2007, Ice Storm – One to two inches of ice accumulated across Republic County during the storm. This resulted in approximately 500 downed power poles and 2000 downed lines. Damage to the electrical infrastructure is estimated at \$9.8 million. There was also widespread damage to trees. A devastating freezing rain event unfolded across parts of Southern and Central Kansas from December 10th through the 11th. This resulted in tens of thousands of Central and Southern Kansas residents losing power, some for more than a week.
- December 14, 2007, Heavy Snow – A strong storm system moved out of the Rockies into the Southern plains. Moisture ahead and north of this system lead to a large swath of heavy snowfall across Central Kansas, with areas northwest of the Kansas Turnpike receiving from 6 to 12 inches of snow. The heavy snowfall hampered cleanup efforts from the ice storm that occurred earlier in the week, hitting the same area.
- February 23, 2008, Winter Storm – A wintry mix of light freezing rain, sleet and light snow affected Central, South-Central and Southeast Kansas on February 23rd as an upper level disturbance moved over the area. Snow accumulated from generally central into East-Central Kansas, with accumulations ranging from 1 to 5 inches, greatest over Central Kansas. Ice and sleet accumulations were very light, but in concert with the snow was enough to cause some travel headaches.
- March 27, 2009, Winter Storm - Light snow affected the county during the morning and afternoon hours on the 27th, with occasional moderate to heavy snow developing by late afternoon and persisting through the late morning hours on the 28th. Snowfall amounts ranged from roughly 6 to 12 inches, with the least amounts across northwest portions of the county. A number of relatively minor traffic accidents occurred across the county, including numerous slide-offs. Property damage was reported at \$40,000.
- December 7, 2009. Winter Storm - A more potent low pressure area tracked along the Kansas/Oklahoma border on December 7th and 8th, 2009. Twelve inches of snow fell across the county leaving some residents home bound for a few days as frigid temperatures moved in after the storm. Even with the heavy snowfall a few accidents were reported.
- January 28, 2010, Heavy Snow - A winter storm affected the region from the late afternoon hours on the 28th through the late evening hours on the 29th Snow accumulations ranged from 5 to 7 inches across southeast portions of the county, to 2 to 5 inches elsewhere across the county. The lowest amounts were found across northern portions of the county. Numerous school districts canceled classes and activities for the 29th. Fortunately, no injury accidents were reported throughout the event, although a handful of relatively minor non-injury auto accidents did occur across the area.
- February 20, 2010, Winter Storm - Periodic areas of light wintry precipitation, including freezing drizzle, sleet, freezing rain and snow led to widespread icy roads across the county. Numerous accidents were reported countywide, several of which included injuries (indirect). Unfortunately, the exact number of injuries remains unknown. Total snow accumulations on top of the ice accumulations ranged from 1 to 2 inches countywide.
- March 19, 2010, Winter Storm - An intense late winter/early spring winter storm spread wintry precipitation and heavy snow across much of southeast Kansas from the evening hours of the 19th through the morning hours of the 21st. Precipitation started out as a brief period of sleet and freezing rain during the late afternoon and evening hours on the 19th, especially across south-central, east-central and southeast Kansas. Numerous auto accidents occurred across the region due to slick roads, some of which included injuries.

Probability and Magnitude for Winter Storm

There have been 59 major winter storm events in the past 15 years. Based on that information, the HMPC determined the probability of a future winter storm occurrence as “highly likely.”

The HMPC determined the magnitude for winter storms is “catastrophic” because there have been thirteen fatalities, twenty-eight injuries, and almost \$15 million in property damage associated with winter storms in the past.

Winter Storm Risk Summary

Table 2.80 is a risk summary for winter storms for the entire planning area. These are the overall vulnerabilities for all jurisdictions in the planning area.

Table 2. 68 – Winter Storm Risk Summary

Winter Storm	Republic County Rankings	State of Kansas Rankings (Kansas Hazard Mitigation Team)
Probability	4	4
Magnitude	4	NA*
Warning Time	4	NA*
Duration	4	NA*
Planning Significance	High	High
Risk Index	4.00	3.30
Ranking	1 out of 22	4 out of 22

NA* = Ranking Not Stated in the 2010 Kansas Hazard Mitigation Plan

Unincorporated Republic County and each municipality also used the CPRI to determine the planning significance for each hazard. The planning significance for each of those jurisdictions is provided in the following table.

Table 2. 69 – Winter Storm Planning Significance by Jurisdiction

Hazard	Historic Occurrences	Probability	Magnitude	Warning	Duration	Planning Significance
Republic County	Yes	Highly Likely	Catastrophic	<6 Hours	>1 Week	High
Agenda	Yes	Highly Likely	Catastrophic	<6 Hours	>1 Week	High
Belleville	Yes	Highly Likely	Catastrophic	<6 Hours	>1 Week	High
Courtland	Yes	Highly Likely	Catastrophic	<6 Hours	>1 Week	High
Cuba	Yes	Highly Likely	Catastrophic	<6 Hours	>1 Week	High
Munden	Yes	Highly Likely	Catastrophic	<6 Hours	>1 Week	High
Narka	Yes	Highly Likely	Catastrophic	<6 Hours	>1 Week	High
Republic	Yes	Highly Likely	Catastrophic	<6 Hours	>1 Week	High
Scandia	Yes	Highly Likely	Catastrophic	<6 Hours	>1 Week	High

Winter Storm Vulnerability

There have been thirteen fatalities, twenty-eight injuries, and almost \$15 million in property damage associated with winter storms in the past. Any year has the potential to cause the same amount of damage. However, on average actual damage to structures in any given year is low. Therefore, the HMPC determined it would be more accurate for planning proposes to base the damage estimates at less than one percent building damage annually. Damage to utility lines, roads, vehicles, and loss of life is much higher. It is also very costly for snow and ice removal on highways and roads in the planning area. Table 2.70 is the winter storm vulnerability for Republic County based on the average of 1 percent damage.

Table 2. 70 – Republic County Winter Storm Vulnerability

Jurisdiction	Total Number of Structures	Total Assessed Value	Estimated Damage
Republic County*			
Residential	3434	\$236,482,326	\$2,364,823
Commercial	0	\$0	\$0
Industrial	0	\$0	\$0
Agricultural	1	\$716,333	\$7,163
Religion/Non-Profit	1	\$10,756,000	\$107,560
Government	0	\$0	\$0
Education	0	\$0	\$0
Agenda			
Residential	54	\$540,000	\$5,400
Commercial	3	\$800,355	\$8,004
Industrial	0	\$0	\$0
Agricultural	2	\$1,432,667	\$14,327
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$7,392
Education	0	\$0	\$0
Belleville			
Residential	1259	\$55,144,200	\$551,442
Commercial	168	\$44,819,888	\$448,199
Industrial	4	\$6,061,714	\$60,617
Agricultural	9	\$6,447,000	\$64,470
Religion/Non-Profit	7		\$0
Government	4	\$1,478,462	\$14,785
Education	4	\$4,174,286	\$41,743
Courtland			
Residential	174	\$5,011,200	\$50,112
Commercial	15	\$4,001,776	\$40,018
Industrial	1	\$1,515,429	\$15,154
Agricultural	7	\$5,014,333	\$50,143
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$7,392
Education	1	\$1,043,571	\$10,436
Cuba			
Residential	148	\$2,812,000	\$28,120
Commercial	5	\$1,333,925	\$13,339
Industrial	0	\$0	\$0
Agricultural	0	\$0	\$0
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$7,392
Education	0	\$0	\$0

Jurisdiction	Total Number of Structures	Total Assessed Value	Estimated Damage
Munden			
Residential	71	\$709,929	\$7,099
Commercial	2	\$533,570	\$5,336
Industrial	1	\$1,515,429	\$15,154
Agricultural	2	\$1,432,667	\$14,327
Religion/Non-Profit	0	\$0	\$0
Government	0	\$0	\$0
Education	0	\$0	\$0
Narka			
Residential	55	\$549,945	\$5,499
Commercial	0	\$0	\$0
Industrial	0	\$0	\$0
Agricultural	1	\$716,333	\$7,163
Religion/Non-Profit	0	\$0	\$0
Government	1	\$369,615	\$3,696
Education	0	\$0	\$0
Republic			
Residential	108	\$2,754,000	\$27,540
Commercial	4	\$1,067,140	\$10,671
Industrial	0	\$0	\$0
Agricultural	2	\$1,432,667	\$14,327
Religion/Non-Profit	0	\$0	\$0
Government	0	\$0	\$0
Education	0	\$0	\$0
Scandia			
Residential	239	\$7,552,400	\$75,524
Commercial	17	\$4,535,346	\$45,353
Industrial	1	\$1,515,429	\$15,154
Agricultural	3	\$2,149,000	\$21,490
Religion/Non-Profit	0	\$0	\$0
Government	2	\$739,231	\$7,392
Education	2	\$2,087,143	\$20,871

Republic County* = all incorporated and unincorporated areas within the Republic County's jurisdictional boundaries.

A winter storm is generally a widespread event. It is unpredictable what portion of the community would be most affected by it. Damage would depend on wind speed, wind chill, ice level, snow amount, and duration.

Winter weather-related property damage is a very broad topic that covers damage to such items as dwellings, structures, roadways, cars, trucks, equipment, trees, wires, and pipes. Combinations of storm damage, wind damage, weight or load damage, and exposure damage all are very common situations that can affect and damage physical property during the winter. Wind damage is very common in situations of fallen trees or limbs, downed

power lines, blowing debris, equipment damage, structural damage, and roof damage. Load damage from accumulated snow and ice also may cause similar failures. Damage from exposure or extreme winter temperatures can cause damage to underground pipes, underground cables, exposed pipes or wiring during construction, exposed structures during renovation or construction, or in situations where heating is inadequate or faulty. Blizzard conditions generally cause property damage due to the weight of the snow combined with the force of the high winds.

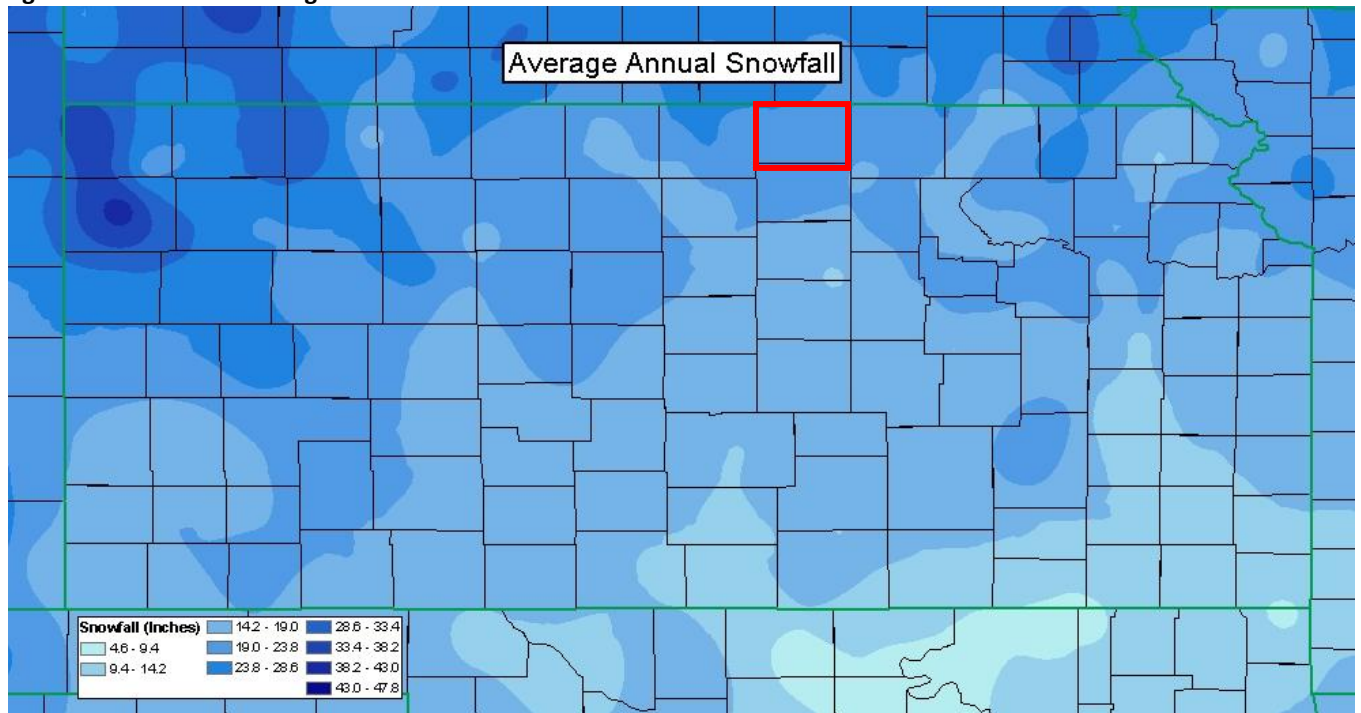
The type of building would have a great impact on the extent of damage incurred as a result of winter storms. A building with a flat or low-pitched roof could potentially sustain greater damage than a steeper-pitched roof because of the weight of snow or ice. Significant ice buildup in one area of the roof could cause load issues.

Due to a roof's design, there could be places where snow could accumulate in abnormal levels. If a foot of snow falls there could be places on the roof where there are five feet of snow, just because of the way snow tends to blow and accumulate. Areas where the roof adjoins a solid wall, or where there is a lower roof such as awnings or canopies, are especially susceptible to accumulation.

Snow and ice on tree branches can cause them to break or bend from the extra weight. High winds will compound the damage. Broken tree limbs can land on utility lines causing utility outages. Large amounts of ice build-up on the power lines will also cause the power lines and poles to become brittle and break.

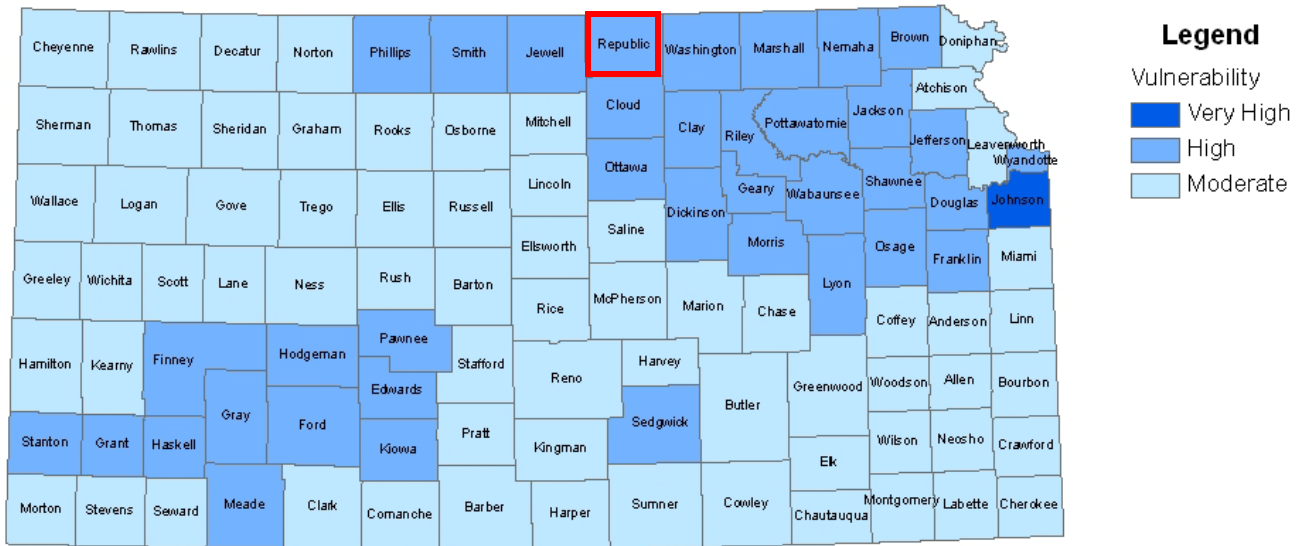
The following map shows the average annual snowfall for the State of Kansas. Republic County receives between 19.0 and 23.8 inches of snowfall each year (Kansas Hazard Mitigation Team). Republic County is indicated by the red box.

Figure 2. 24 – Kansas Average Annual Snowfall



According to the Kansas State Hazard Mitigation plan, Republic County is highly vulnerable to winter storms. The following map shows the vulnerability of the counties in Kansas.

Figure 2. 25 - Kansas Winter Storm Vulnerability



CHAPTER 3 – JURISDICTION PROFILES

Multi-Jurisdiction & Other Local Organizations

FEMA has identified procedures for entities to follow in order to ensure eligibility requirements are met. Under 44 CFR §201.6 FEMA requires all participating jurisdictions meet the requirements for mitigation plans. The requirements are as follows:

- Participate in the planning process, including attending meetings, contributing research, data, or other information, comment on drafts of the plan, etc.
- Participate in the analysis of the hazards.
- Participate in the development of goals for the planning area.
- Participate in the development of the maintenance strategy.
- Identify the risks, where they differ from the general planning area.
- Each jurisdiction must develop and implement mitigation actions.
- Each jurisdiction must formally adopt the plan.

Despite the fact that, there are certain aspects of this hazard mitigation plan that are common to all participating jurisdictions (e.g. planning process, hazards, goals and maintenance), there are some elements that are unique to the individual participating jurisdiction. According to the *Local Multi-Hazard Mitigation Planning Guidance*, the multi-jurisdictional hazard mitigation plan should include for each jurisdiction:

- Risks, where they differ from the general planning area;
- Mitigation actions (actions must be identified for each participating jurisdiction);
- Participation in the planning process (e.g. attending planning meetings, contributing to research or data, commenting on the drafts of the plan, etc.); and
- Adoption (each participating jurisdiction must formally adopt the plan).

A public college or university may be an active participant in a FEMA-approved State, Tribal, or Local Mitigation Plan; or they may have an approved plan of their own that meets the requirements to be eligible for mitigation project grants. If a college/university has completely participated in the development and review of a plan in accordance with 44 CFR §201.6(b), it is not necessary for them to approve/adopt the plan, as long as it is adopted by the appropriate State, Tribal, or Local government.

School districts, independent school districts, or other special districts are defined as local governments and are required to follow the regulations under 44 CFR Part 201.2, which states that they must have a FEMA-approved local mitigation plan to be eligible for project grants under the FEMA hazard mitigation assistance programs. School districts are not considered private nonprofit organizations.

Private nonprofit (PNP) organizations are not considered governmental entities. This distinction is important because 44CFR part 201 provides only for governments (State, Tribal or Local), not PNPs, to meet the planning requirement for having a FEMA-approved Mitigation Plan in order to receive project grant funds. Under Hazard Mitigation Grant Program (HMGP) regulations at 206.434(a)(1), certain PNPs are eligible as sub-applicants. However, in those cases, the local jurisdiction in which the PNP project is located must have a FEMA-approved Mitigation Plan to be eligible for grant funds. FEMA strongly recommends that PNPs participate in the development of Local Mitigation plans to ensure that projects funded are consistent with the mitigation strategies of the jurisdiction.

Republic County Participating Jurisdictions

In this chapter are the profiles of the jurisdictions that have met the FEMA requirement to be considered to be a participating jurisdiction. The profiles in this chapter include:

- Republic County (unincorporated & townships)
- City of Agenda
- City of Belleville
- City of Courtland
- City of Cuba
- City of Munden
- City of Narka
- City of Republic
- City of Scandia
- Republic County Unified School District 109
- Pike Valley Unified School District 426
- Rolling Hills Rural Electric Cooperative

In order to ensure compliance with the regulations set forth in 44 CFR §201.6, each participating jurisdiction profile is divided into the following sections:

- Location
- History
- Governance
- Population and Demographics
- Economy
- Capabilities
- Vulnerabilities
- 2011 Mitigation Actions

Jurisdiction: Republic County	
NFIP Participation	Yes
Date of FEMA Maps	12/17/2010
CRS Participation	No
Number of Repetitive Loss Properties	0

Figure 3.1.1 identifies the geographic planning area for Republic County. The incorporated cities and the unincorporated towns are also identified.

Figure 3.1. 1 - Republic County Planning



Description of the Planning Area

The geographical size of Republic County is 720 square miles, which has 716 square miles of land and almost 4 square miles of water. According to the 2000 Census There are 5,835 census blocks, 2,557 households and 1,685 families in the planning area. There are an estimated 14,509 buildings in the county. Over 90 percent of the buildings are associated with residential housing.

Incorporated Cities

According to the U.S. Census Bureau, the total population for Republic County in 2000 was 5,835. There are eight incorporated cities, 7 third class and 1 second class. The City of Belleville is the county seat.

- Agenda (3rd Class) – 76 residents
- Belleville (2nd Class) – 2,224 residents
- Courtland (3rd Class) - 334 residents
- Cuba (3rd Class) – 231 residents
- Munden (3rd Class) -122 residents
- Narka (3rd Class) – 93 residents
- Republic (3rd Class) – 160 residents
- Scandia (3rd Class) - 436 residents

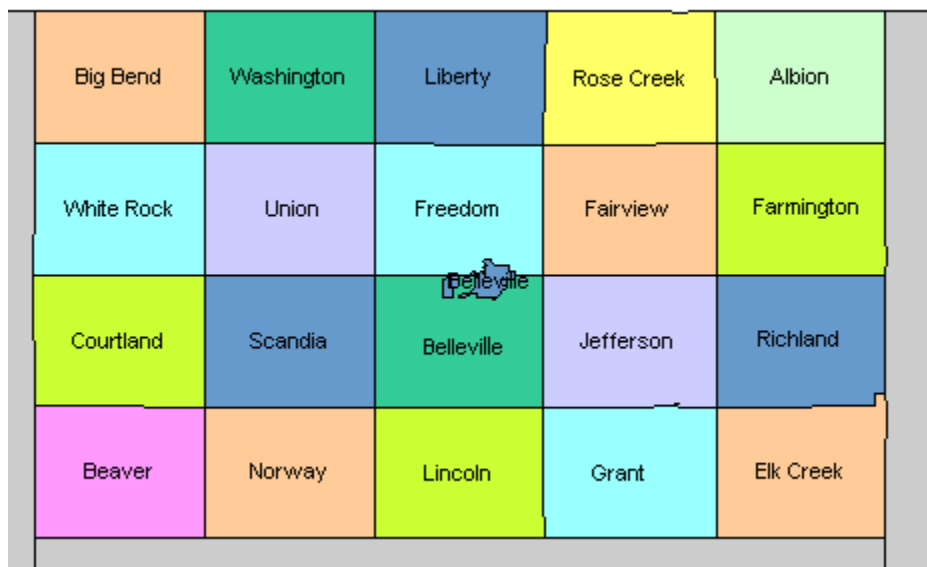
Unincorporated Areas and Townships

There are four unincorporated cities in Republic County; Kackley, Norway, Talmo, and Wayne.

Figure 3.1.2 identifies the location of each township in Republic County. The city of Belleville is considered governmentally independent and is excluded from the census figures for the townships. Nearly every county in Kansas has townships. Ninety-five of 104 Kansas counties have active townships. Republic County is divided into 20 townships, which are:

- Big Bend
- Washington
- Liberty
- Rose Creek
- Albion
- White Rock
- Union
- Freedom
- Fairview
- Farmington
- Courtland
- Scandia
- Belleville
- Jefferson
- Richland
- Beaver
- Norway
- Lincoln
- Grant
- Elk Creek

Figure 3.1. 2 - Republic County Townships



School Districts and Colleges

Three types of school districts in Kansas are counted as separate governments for census purposes; unified school districts, community college districts, and municipal universities. An elected board of education, also known as a “school board,” governs each unified school district. An elected board of trustees governs each community college district.

All school district governments in Kansas may levy ad valorem school taxes and issue bonds with the approval of the voters. There are five unified school districts in Republic County:

- Pike Valley – USD 426
- Republic County – USD 109

There are not any colleges or universities in the planning area.

Cemeteries

The following types of cemetery districts are counted as governments for census purposes:

- **Cemetery district associations**—established by petition of voters to the county commissioners or by resolution of the county commissioners after a hearing; governed by elected directors.
- **Cemetery districts (joint city and township)** - composed of a second- or third-class city in conjunction with one or more townships and established by petition of voters to the county commissioners and resolution by the city governing body, with administration by a board of trustees composed of the township trustees and the city mayor.
- **Cemetery districts (township)** – established by petition of voters to the county commissioners plus resolution adopted by township; governed by elected directors.
- **Cemetery districts (abandoned cemeteries)** - established by resolution passed by the governing body upon petition of voters and governed by a board of trustees composed of township trustees and mayor.

All of the above types of cemetery districts may levy an ad valorem tax. Cemetery district associations may issue bonds. There are 6 cemetery districts in Republic County:

- | | |
|---------------------|-----------------------|
| • Ada Cemetery | • Ida Creek Cemetery |
| • Rosehill Cemetery | • National Cemetery |
| • Union Cemetery | • St. George Cemetery |

Neighboring Counties

During the development of a hazard mitigation plan, it is important for the planning to take a look at the surrounding counties, especially during the mitigation action development stage. Republic County is surrounded by the following counties:

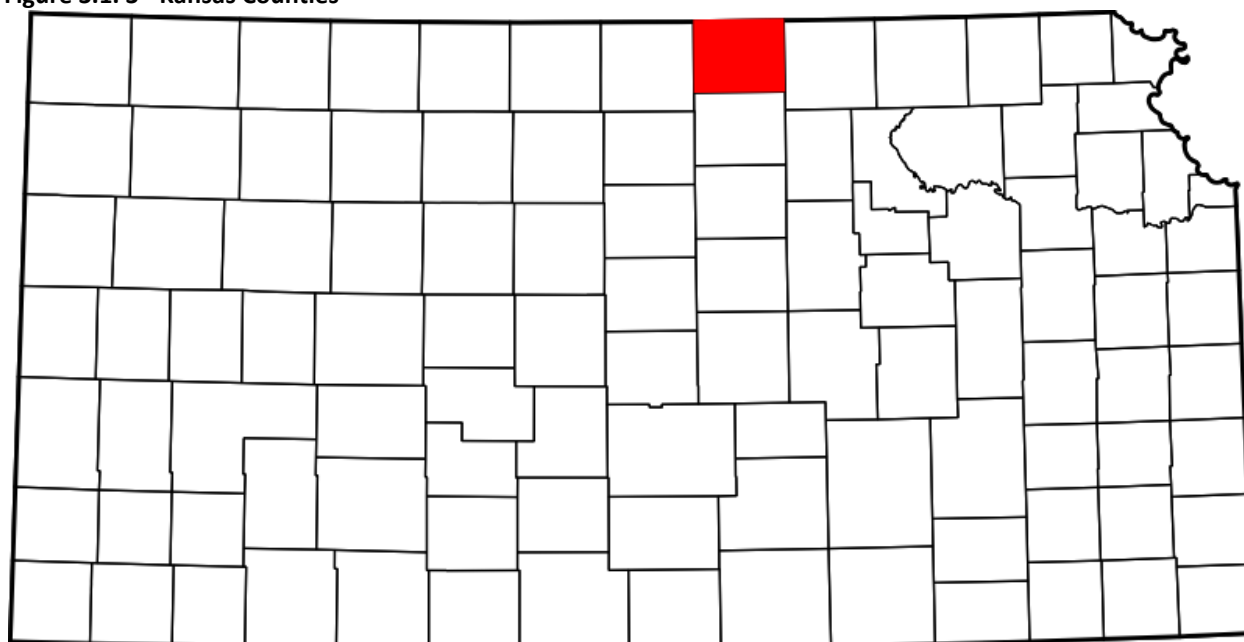
- Thayer County to the north in Nebraska
- Jefferson County to the northeast in Nebraska
- Washington County to the east in Kansas
- Cloud County to the south in Kansas
- Jewell County to the west in Kansas
- Nuckolls County to the northwest in Nebraska

Location

Republic County is located in North Central Kansas along the Nebraska border. Republic County is situated at the junction of US Highway 81 and US Highway 36. Republic County is home to many unique businesses, centered around the rich agricultural culture. Advanced Manufacturing, Life Sciences, and Agribusiness industries make up the highest traded clusters in the county. Republic County is also part of the North Central Kansas Region, increasing access to skilled workforce, extensive industry and superior markets.

Republic County is located in the northern portion of Kansas. Figure 3.1.3 identifies the geographic location of Republic County. Republic County is identified in red.

Figure 3.1. 3 - Kansas Counties



Geography and Topography

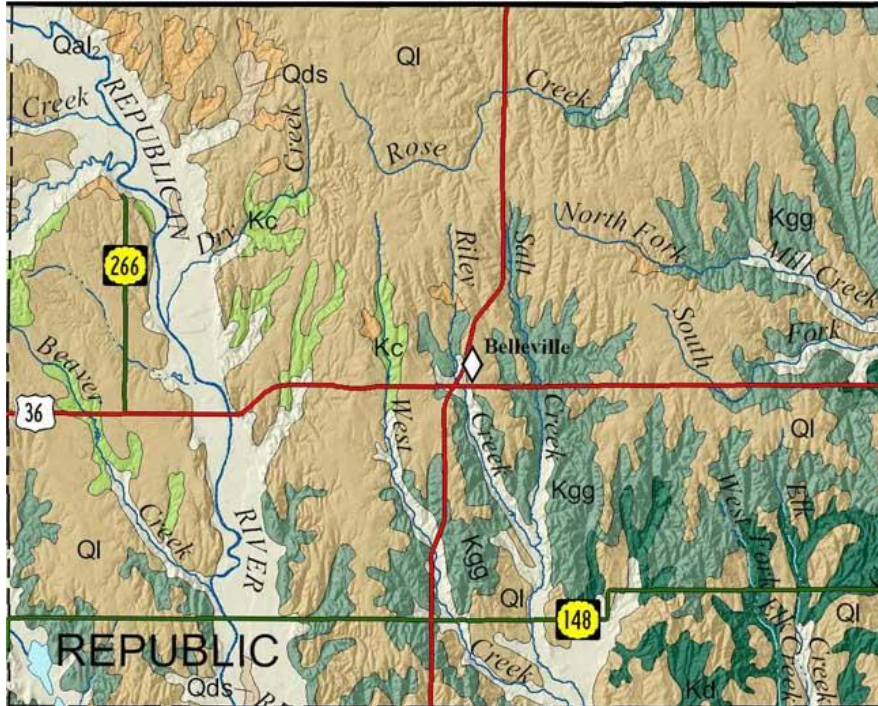
Republic County lies in the first tier of counties from the north border of the state and a short distance east of its center. It includes a rectangular area 24 by 30 miles with the longer dimension in an east-west direction. Belleville is the county seat of Republic County.

The topography of Republic County presents a wide variety of types. There are the broad flat valleys of the Solomon and Republican rivers and, between the uplands and lowlands a very rough belt consisting of deeply dissected uplands. Subordinate but interesting topographic features are the sandstone knolls, river terraces and salt marshes. River terraces, as prominently developed along the Republican, consist of flats or benches on the sides of the valley, approximately 20 feet above the lower flood plain and separated from it by a steep slope. Excavations and cuts in the terraces show that they are mainly composed of sand and gravel overlaid by silt and soil. It is the remaining part of an older and higher flood plain of the Republican left there when the river in relatively recent times cut a deeper channel and built a new flood plain at a lower elevation. Because of the rich alluvial soil, its flatness and drainage the terrace contains the best farm land in the area.

Salt marshes are found northwest of Jamestown in Salt Marsh creek and in the valley south of Wayne and Talmo. In these localities the valley is unusually wide, the valley flat is marshy and the water is salty, leaving a white coating on the surface during dry months. The marsh near Jamestown lies in the Graneros shale, while the one near Wayne is at least 100 feet lower stratigraphically, which places it in the upper shale member of the Dakota sandstone. (See description of formations.) Occurrence of marshes at these horizons and the known presence of salt in the shales suggest that easily soluble salt caused rapid erosion and unusual widening of the valleys at those points where the stream cut into the shale. The width of Buffalo creek near Yuma, six miles east of Jamestown, indicates that the stream first penetrated the salt shale at this point and that, as the creek cut its valley lower, the swamp migrated up stream until it reached its present location four or five miles northwest of Jamestown. Buffalo creek has an extremely low slope or gradient--lower than that of the Republican River into which it flows. Consequently silt and dirt washed into the valley have covered and completely hidden the old marsh throughout most of its length. Slope wash and creek fill have encroached on the marsh near Wayne to such an extent that it is

now less than one-fourth of its original size. Salt Marsh creek, north of Jamestown, has been dammed recently and the marsh converted into a broad shallow lake for hunting. The large amount of silt washed into the basin will in a relatively short time entirely fill the lake, creating a flat surface comparable to a flood plain. Figure 3.1.4 is the Republic County Geological map (Cartographic Services, Kansas Geological Survey).

Figure 3.1. 4 – Republic County Geological Map



Cenozoic Era		Paleozoic Era	
Quaternary System		Permian System	
Qal3	Alluvium (late Pleist. and Holocene)	Pbd	Big Basin Fm Day Creek Dol
Qds	Dune sand	Pwn	Whitehorse Fm Nippewalla Gp
Ql	Loess	Ps	Sumner Gp
Qal2	Alluvium (early Pleistocene)	Pc	Chase Gp
Qgd	Glacial drift	Pcg	Council Grove Gp
Neogene System		Carboniferous System	
Ntd	Terrace deposits	Pennsylvanian Subsystem	
No	Ogallala Fm	IPg	Council Grove Gp
Mesozoic Era		IPa	Admire Gp
Cretaceous System		IPw	Wabaunsee Gp
Kp	Pierre Sh	IPs	Shawnee Gp
Kn	Niobrara Clk	IPd	Douglas Gp
Kc	Carlile Sh	IPi	Lansing Gp
Kgg	Greenhorn Ls Graneros Sh	IPkc	Kansas City Gp
Kd	Dakota Fm	IPp	Pleasanton Gp
Kkc	Kiowa Fm Cheyenne SS	IPm	Marmaton Gp
Igneous rocks emplaced during Cretaceous		IPc	Cherokee Gp
K	Kimberlite	Mississippian Subsystem	
L	Lamproite	M	Warsaw Ls Burlington-Keokuk Ls
Jurassic System			
JR			

Water Resources

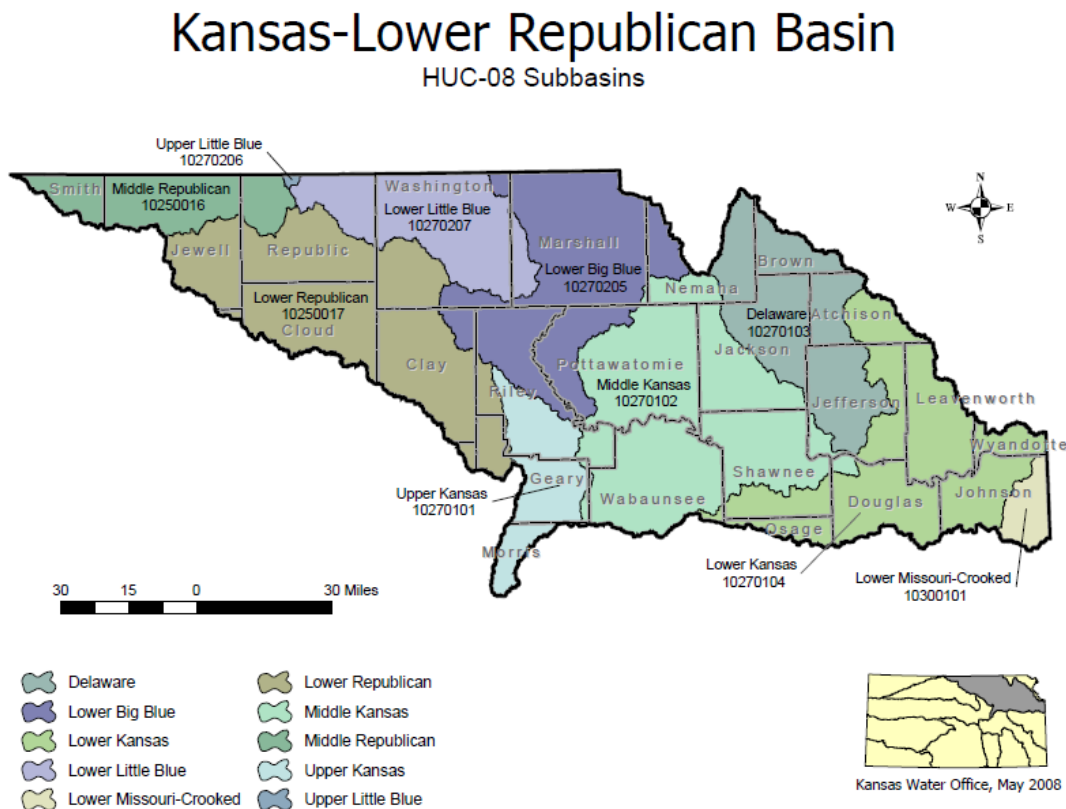
Republic County is in the Kansas-Lower Republican River Basin. According to the Kansas Water Plan, the basin contains a total of 27,629 stream miles. This water basin has 2.7 stream miles per square mile. The basin has five major federal reservoirs, Clinton, Perry, Tuttle Creek, and Milford Lakes.

Ground water is available throughout the entire basin and is mainly located in three aquifers, Dakota, Glacial Drift and Alluvial. The Dakota is found in Washington and Clay Counties and westward. The Glacial Drift aquifer occupies the area north of the Kansas River and east of the Big Blue River. The alluvial aquifers occupy the valleys of the Kansas, Republican, Blue Rivers and some tributaries. Figure 3.1.5 is a map of the Kansas-Lower Republican River Basin.

There are approximately 190 public water suppliers in the basin; most of them use ground water as a source. However, in terms of the population served, the majority of the residents get water from surface water (streams and reservoirs). There is an active Kansas River Water Assurance District in the basin. The Corps reservoirs are operated to meet eligible water right holder needs during periods of low flow through arrangements with the Water Assurance District and Kansas Water Office (KWO).

Forty-five percent of the water use is for irrigation, which is the largest water use in the basin. Municipal accounts for 39 percent and industrial water uses account for more than 8 percent of the water used. Surface water accounts for about 53 percent of the water used in the basin.

Figure 3.1. 5 – Kansas-Lower Republican Water Basin



Climate

The climate in Republic County is classified as humid continental with cold winters and hot summers. The average annual temperature of Republic County is 53° Fahrenheit. Most of the precipitation falls in the summer and spring. June is typically the wettest month of the year. The average annual precipitation is 55 inches.

History

Republic County was first mentioned by the Kansas Legislature in 1860 when it defined the county's boundaries and gave it a name.

Daniel and Conrad Myers were the first white settlers of Republic County. Daniel built the first dwelling house in September 1861, a log structure in which he lived during his entire residence in the county. John Myers, a cousin, who came with Daniel and Conrad, but didn't take up any land, was the first white settler who died in the county. He died at the end of April 1861.

The following is an Indian story that happened during the early settling of the Republic County. The winter of 1862 was very mild, no snow or rain fall, little freezing weather, and no snow or rain so spring came early. One of the settlers, James G. Tuthill, started planting a garden February 10, 1863 and had it all planted by March 10. He had a huge garden that year with melons that were ripe by July 4. On the Sunday after the 4th about 6,000 Indians, principally Pawnee, Iowa, and Otoe, camped near Mr. Tuthill's place and harvested his melons. The Indians were not violent to Tuthill and his family. After everything on the place had been stolen, the chief in command placed a double guard around the garden patch. This action of the chief was very considerate and appreciated by Mr. Tuthill after his property had been stolen. There are other Indian stories too numerous to mention here that are a part of Republic County history.

Sidney S. Way and Madora Tuthill were the first persons married in the county at Salt Marsh near the town site of Seapo. The first school district that was formed was six miles wide and twelve long in the territory occupied by the first settlers. On the division of this district, by some mistake, that part having the first school house, and where the first school was taught, was named District No. 2. District No. 1 was formed from territory lying next on the south. The first post office was established at Salt Marsh with James G. Tuthill appointed postmaster. The first minister in the county was Wm. Harshberger. The first Justice of Peace was James E. VanNatta who was appointed by Gov. Crawford. The first election was held the 4th Monday of March 1868. These are some of the firsts for Republic County, Kansas, that are recorded in the history book History of Republic County Kansas by I. O. Savage and was printed in 1901 (Belleville Chamber of Commerce).

Governance

The entire state of Kansas is encompassed by county governments. The county governing body is called the board of county commissioners. The Republic County also has the following departments in addition to the Board of County Commissioners:

- County Appraiser
- County Clerk
- County Treasurer
- Register of Deeds
- Sheriff
- Floodplain Manager
- Emergency Management
- County Health Department
- Planning & Zoning
- Economic Development
- Highway & Road
- Weed Department

Population and Demographics

The population and demographics, as well as the economic characteristics are used in the development of the risk assessment. Today, with a population estimated at 4,984, Republic Agenda is ranked 68th among Kansas incorporated cities. It ranked in the Kansas Hazard Mitigation plan among the top ten counties with greatest population losses from 2000-2009, with a 17.5 percent decrease.

According to the 2000 Census there were 2,557 households and 1,685 families residing in the county. The population density was eight people per square mile. Table 3.1.1 identifies the populations from the U.S. Census from 2000 to 2009 for each of the cities, as well as the rural areas of the county.

Table 3.1. 1 – Republic County Population 1940-2000

Jurisdiction	July 1, 2009	July 1, 2008	July 1, 2007	July 1, 2006	July 1, 2005	July 1, 2004	July 1, 2003	July 1, 2002	July 1, 2001	2000 Census
City of Agenda	67	67	68	69	70	71	72	73	74	76
City of Bellville	1,828	1,838	1,868	1,890	1,926	1,960	2,020	2,074	2,161	2,224
City of Courtland	297	299	305	309	286	292	301	310	322	334
City of Cuba	191	192	195	198	205	207	212	216	225	231
City of Munden	101	102	103	105	108	109	112	114	119	122
City of Narka	77	77	79	80	82	83	85	87	90	93
City of Republic	133	134	136	137	142	144	147	150	156	160
City of Scandia	343	345	351	356	368	375	387	399	419	436
Total Cities	3037	3054	3105	3144	3187	3241	3336	3423	3566	3676
Rural County	1,947	2,034	2,029	2,054	2,065	2,085	2,042	2,029	1,981	2,159
Entire County	4,984	5,088	5,134	5,198	5,252	5,326	5,378	5,452	5,547	5,835

Table 3.1.2 is select demographic statistics from the U.S Census Bureau. Twenty-seven percent of the population in Republic County is over the age of 65, which is about fourteen percent higher than the State of Kansas. A large elderly population puts the city at an increased risk in during hazard events due to transportation and shelter needs.

Table 3.1. 2 – Republic County 2010 Select Demographics

Jurisdiction	Under 5 Years (%)	Over 65 Years (%)	Median Age (Years)	Average Household Size
United States	6.9	12.9	36.4	2.60
Kansas	7.3	13.0	36.4	2.46
Republic County	5.1	27.0	50.6	2.14

Economy

An important population trend is the number of people employed in different employment sectors. Employment trends can indicate changes in land use or demand for land. Educational services, healthcare and social assistance accounts for the employment industry with 515 people employed. Table 3.1.3 are the statistics from the 2000 census for the employed civilian population 16 years and over for Republic County.

Table 3.1. 3 – Republic County Economic Statistics

Industry	Number of People Employed in Industry	Percent of Population Working in Industry
Educational services, and health care and social assistance	515	20.80%
Agriculture, forestry, fishing and hunting, and mining	424	17.10%
Construction	265	10.70%
Manufacturing	244	9.90%
Retail trade	234	9.50%
Transportation and warehousing, and utilities	174	7.00%
Other services, except public administration	153	6.20%

Industry	Number of People Employed in Industry	Percent of Population Working in Industry
Wholesale trade	98	4.00%
Professional, scientific, and management, and administrative and waste management services	98	4.00%
Finance and insurance, and real estate and rental and leasing	82	3.30%
Public administration	66	2.70%
Arts, entertainment, and recreation, and accommodation and food services	64	2.60%
Information	57	2.30%

Table 3.1.4 is the select economic characteristics for Republic County from the 2000 census. Republic County has a slightly lower unemployment rate than the State of Kansas average and has a little over two percent of the families and individuals are living below poverty level.

Table 3.1. 4 – Republic County Select Economic Characteristics

Jurisdiction	Individuals Below Poverty Level (%)	Median Home Value (1999\$)	Median Household Income (1999\$)	Per Capita Income (1999\$)	Unemployment Rate (%)	Population in Labor Force (%)
United States	14.3	185,400	50,221	27,041	4.2	64.7
State of Kansas	13.2	114,400	47,709	25,522	3.6	68.6
Republic County	9.6	118,500	36,510	23,494	3.2	63.0

Capabilities

Floodplain Management

According to FEMA the definition for floodplain management is “a decision-making process that aims to achieve the wise use of the nation’s floodplains. Wise use means both reduced flood losses and protection of the natural resources and function of floodplains.

Floods are one of the most common hazards in the United States, as well as Kansas, and most homeowners’ insurance policies do not cover flood damage. For that reason, in 1968 Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. In order for a community to offer flood insurance through the NFIP, the community is required to enforce certain minimum regulations on development in the floodplain. This management of the floodplain is done to ensure that flooding problems do not increase and to work towards the reduction in the risk of flooding. This work is performed by the local communities' Floodplain Administrator.

Republic County and all of the cities within the county boundaries acquired new flood maps on December 17, 2010 from FEMA, at which time the floodplain management regulations were updated.

National Flood Insurance Program (NFIP)

The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the National Flood Insurance Program. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding (Federal Emergency Management Agency). Republic County is a participant in the National Flood Insurance Program.

Table 3.1.5 is information is from the Federal Emergency Management Agency’s (FEMA) Community Status Book Report for Republic County. The table indentifies the date the initial Flood Hazard Boundary Map (FHBM) was identified. FHBM is an official map of a community issued by FEMA, where boundaries of the flood, mudflow, and related erosion areas having special hazards have been designated, which is the date the community joins the NFIP Emergency Program. The Emergency Program is defined as “the initial phase of a community’s participation in the NFIP. During this phase, only limited amounts of insurance are available under the Act. It also identifies the date the initial Flood Insurance Rate Map (FIRM) and the current effective date of the FIRM. A FIRM is an official map of the community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. The final item the table identifies is the date the community went from being in the Emergency Program into the Regular Program. A Regular Program Community is “a community where a FIRM is in effect and full limits of coverage are available under the Act”.

Table 3.1. 5 - NFIP Community Status

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Reg. – Emer. Date
200286#	Republic County	Republic	N/A	12/17/2010	12/17/2010	12/17/2010

Existing Planning Ordinances, Codes, and Plans

This section will identify an inventory of existing planning and regulatory tools available to Republic County. It is essential to ensure that proposed mitigation actions are deemed practical considering the jurisdiction’s ability to implement them. It will help build the general foundation for determining the type of mitigation strategy the jurisdiction develops and ultimately adopts. Table 3.1.6 identifies the existing planning ordinances, codes, and plans for Republic County.

Table 3.1. 6 – Republic County Existing Plans, Ordinances, and Codes

Planning ordinances, codes, plans
Floodplain Management
Local emergency operations plan

Administrative/Technical Resources

This section will identify the administrative and technical resources available to Republic County. It is vital to ensure that adequate staffing and technical resources are available to a jurisdiction for implementing proposed mitigation actions. Table 3.1.7 identifies personnel resources and warning capabilities for Republic County.

Table 3.1. 7 – Republic County Administrative/Technical Resources

Personnel Resources
Personnel skilled in GIS – Emergency Manager, Appraiser
Floodplain Manager – Emergency Manager
Emergency Manager
Grant writer – Each Department writes their own grants
Outdoor weather warning signals – Each town has their own sirens

Financial Resources

This section will identify the financial resources available to Republic County. It is necessary to ensure that adequate financial resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.1.8 identifies personnel resources and warning capabilities for Republic County. Republic County, as a government entity would have the authority to provide financial resources through the financial resources listed below. However, this has never been done before in Republic County of hazard mitigation projects.

Table 3.1. 8 – Republic County Financial Resources

Financial Resources
Capital improvements project funding
Capital improvements project funding
Authority to levy taxes for specific purposes
Impact fees for new development
Incur debt through general obligation bonds
Incur debt through special tax bonds

Vulnerabilities:

Hazards Affecting Republic County

History of Flooding

Please see Chapter 2 – Risk Assessment for the historic flooding events in Republic County.

Repetitive Flood Loss Properties

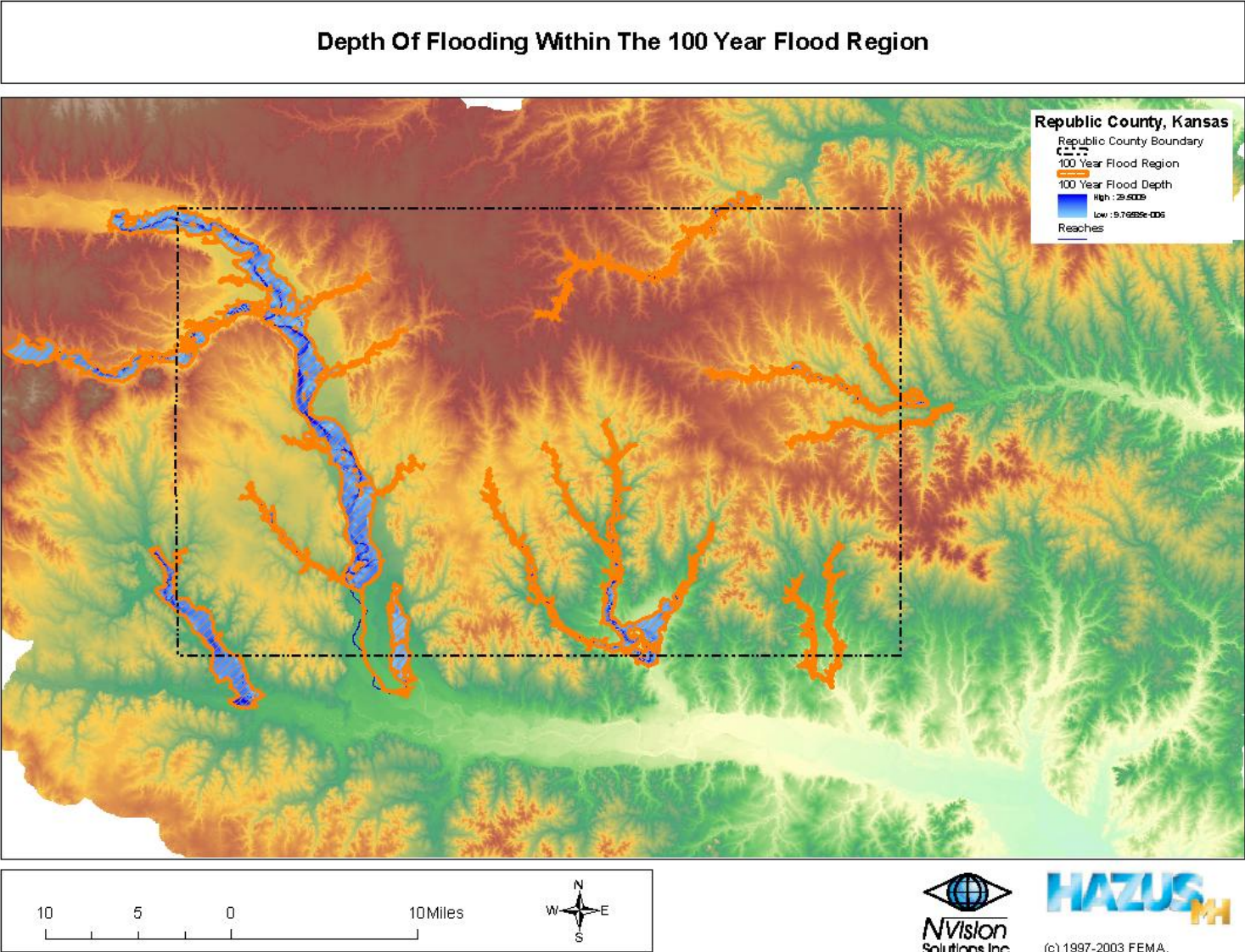
FEMA defines repetitive loss properties as “a residential property that is covered under an NFIP flood insurance policy and has had at least 2 paid losses of more than \$1000 each in any 10-year period since 1978.”

FEMA defines severe repetitive loss properties as “a residential property that is covered under an NFIP flood insurance policy and 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 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. In both cases at least two of the claims must have occurred within any 10-year period and must be greater than 10 days apart. There are not any repetitive loss properties in Republic County.

HAZUS Report

A “flood” HAZUS loss estimation model was completed using FEMA’s software program, HAZUS-MH MR4. The software was used for estimating potential losses from flooding. Figure 3.1.7 is a map that identifies the 100-year floodplain for Republic County. For more information on flood loss estimation, please see Chapter 2: Risk Assessment: Flood.

Figure 3.1. 6 – Republic County 100-year Floodplain

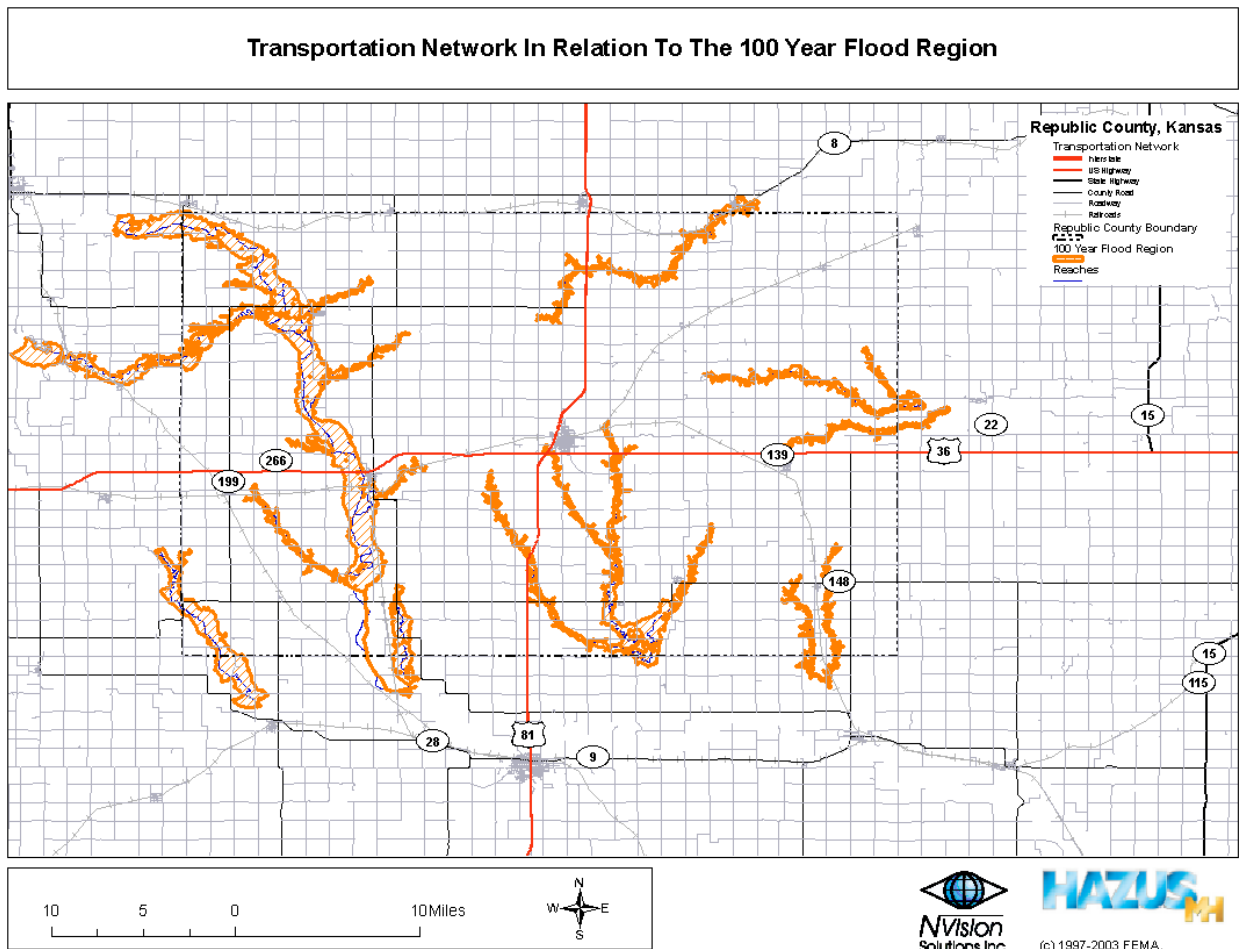


Critical Infrastructure

Highways/Roads

State and national highways cross through Republic County from north to south and from east to west. The highways offer easy access to the area by automobile from all directions. Federal Highway 81, through Concordia and Belleville, is one of the important north-south routes across the country, connecting Winnipeg, Canada, with Laredo, Texas, on the Mexican border. Federal Highway 36 runs through Belleville, Scandia and Courtland, in Republic County. It is paved for a short distance west of Scandia. The remainder of the national highway system in the county is graveled, and by constant maintenance is kept in excellent condition. Figure 3.1.8 is a county road map.

Figure 3.1. 7 – Republic County Transportation Network



Railroads

Republic County has exceptionally good transportation facilities. The towns along the northern edge of Republic County are on the main line of the Chicago, Burlington & Quincy railroad between St. Louis and Denver, while a branch of this road runs southwestward through Cuba to Concordia. The Chicago, Rock Island & Pacific railroad crosses Republic County, running east through Courtland and Scandia to Belleville, where it divides, one branch going northeast, through Munden and Narka and the other southeast through Cuba and Clyde. A branch line of the Atchison, Topeka & Santa Fe cuts across the two counties diagonally from southeast to northwest connecting Miltonvale and Aurora with Concordia and extending on through Courtland to Superior, Neb. The Missouri Pacific

railroad serves all of the towns in the Republican River valley and has a branch west from Concordia through Jamestown. Branches of the Union Pacific connect Belleville and Talmo and Concordia and Clyde with the main line farther east, while another branch extends up the Solomon River through Glasco. Thus the area here described is served by a total of ten branch or mainline railroads belonging to five of the principal systems.

Airport

Belleville Municipal Airport is a city-owned- public use airport located approximately one mile west of Belleville. The airport covers an area of 111 acres and contains two runways: 18/36 with a 3,507 x 60 ft with asphalt pavement and 14/32 with a 1,415 x 100 ft turf surface.

For the 12-month period ending July 24, 2007, the airport had 7,650 aircraft operations, an average of 20 per day: 99% general aviation and 1% military. At that time there were 11 aircraft based at this airport: 82% single-engine and 18% ultra light.

Historic Sites

Historic buildings and structures and documents are often irreplaceable, and may forever be lost in a disaster if not considered in the mitigation planning process. Historic properties and cultural resources are also valuable economic assets that increase property value, while attracting businesses and tourists. Preservation of these assets is often an important method for economic development.

Historic preservation planning protects historic properties and cultural resources before they are threatened with demolition. Hazard mitigation planning protects life and property from damage caused by natural and manmade hazards. Integrating these two planning processes helps ensure the future growth of safe and sustainable historic communities.

Historic preservation is the process of identifying, evaluating, protecting, preserving, and using historic properties. A historic property is any prehistoric or historic district, site, building, structure, or object included in the National Register of Historic Places maintained by the Secretary of the Interior. These properties are legally recognized as historically significant in American history, architecture, archeology, engineering and culture. Typically these properties are at least 50 years old. The National register is a planning tool that highlights the importance of properties worthy of preservation. The National & State Register of Historic Places has two places listed as historical for Republic County.

- County Line Bowstring
 Address: Over West Creek, NW of Hollis, Wayne
 National Register Number: 89002192
 Listed in National Register: 1990
 Owner: Local Government
 Area of Significance: Engineering
 Period of Significance: 1875-1899
 Historic Function: Transportation, Road-Related
 Current Function: Transportation, Road-Related
- Site No. JF00-072
 Address: Jct. of Thayer, Jefferson, Washington and Republic County Lines in Mahaska
 National Register Number: 87001000
 Listed in National Register: 1987
 Owner: Federal, State, Private
 Area of Significance: Exploration/Settlement
 Period of Significance: 1850-1949
 Historic Function: Landscape
 Current Function: Government

Critical Facilities

An essential component of the Republic County Hazard Mitigation Plan is the identification and inventory of the critical facilities located in the County and participating jurisdictions.

The purpose of the critical facilities inventory is to provide information and location data on buildings and infrastructure that are vital to the response and recovery of the community from a natural and/or manmade disaster. While all buildings and structures have value, certain types of structures have a higher priority for protection because damage to them can directly impact the delivery of vital services, thereby delaying response and/or recovery efforts.

For purposes of this Mitigation Plan, Republic County and participating jurisdictions considered critical facilities to be those buildings and structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. These facilities include supporting infrastructure essential to the mission of critical facilities. . The facilities also include education facilities to ensure continuity of education. Table 3.1.12 identifies the critical facilities in Republic County.

Table 3.1. 9 – Republic County Critical Facilities

Name of Asset	Facility Type	Address	Replacement Value
REPUBLIC COUNTY COURTHOUSE	GOVERNMENT	1815 M STREET, BELLEVILLE	2 MILLION
HEALTH DEPARTMENT	HEALTHCARE	1206 18 TH STREET, BELLEVILLE	500,000
COUNTY SHOPS	GOVERNMENT	ADDRESS NOT AVAILABLE	400,000
AMBULANCE BUILDING	EMERGENCY SERVICES	2405 F STREET, BELLEVILLE	500,000
TOWER SITE	GOVERNMENT	ADDRESS NOT AVAILABLE	500,000
REPUBLIC COUNTY HOSPITAL	HEALTHCARE	2420 G STREET, BELLEVILLE	4 MILLION

Local Businesses

Local businesses are vital to the economic growth in the community. During a disaster loss of local businesses can have a detrimental effect on the local economy. The local businesses for Republic County are identified in each municipality profile. The largest employers in the county are:

- Republic County Hospital
- Scott Specialists Inc
- City of Belleville
- Republic County Unified School District 109
- Rolling Hills Electric Co-op
- CA Picard
- Lambert Vet Supply
- Nesika Energy
- Reinke Manufacturing

Community Concerns

Sheltering needs is a very important part of emergency planning. Republic County is concerned for the sheltering needs for the elderly/disabled, school age children, and low income residents.

Republic County was awarded a \$6,000 grant from the Emergency Management Performance Grant (EMPG) FFY Annual Certification. The purpose of the EMPG Program is to make grants to communities to assist state, local, tribal and territorial governments in preparing for all hazards, as authorized by the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.). Title VI of the Stafford Act authorizes FEMA to make grants for the purpose of providing a system of emergency preparedness for the protection of life and property in the United States from hazards and to vest responsibility for emergency preparedness jointly in the federal government and the states and their political subdivisions. The federal government, through the EMPG Program, provides necessary direction, coordination, and guidance, and provides necessary assistance, as authorized in this title so that a comprehensive emergency preparedness system exists for all hazards.

Land Use

Land use can be classified as either primary land use or secondary land use. Direct extraction of a useful product from the physical environment is a primary economic land use. Examples of primary land use include hunting and gathering, caring for grazing livestock, cultivating agriculture, timbering, and extraction of minerals, ore, shale, and clay. Secondary land uses include residential, commercial, and industrial land uses. In some cases primary and secondary land uses are intermingled.

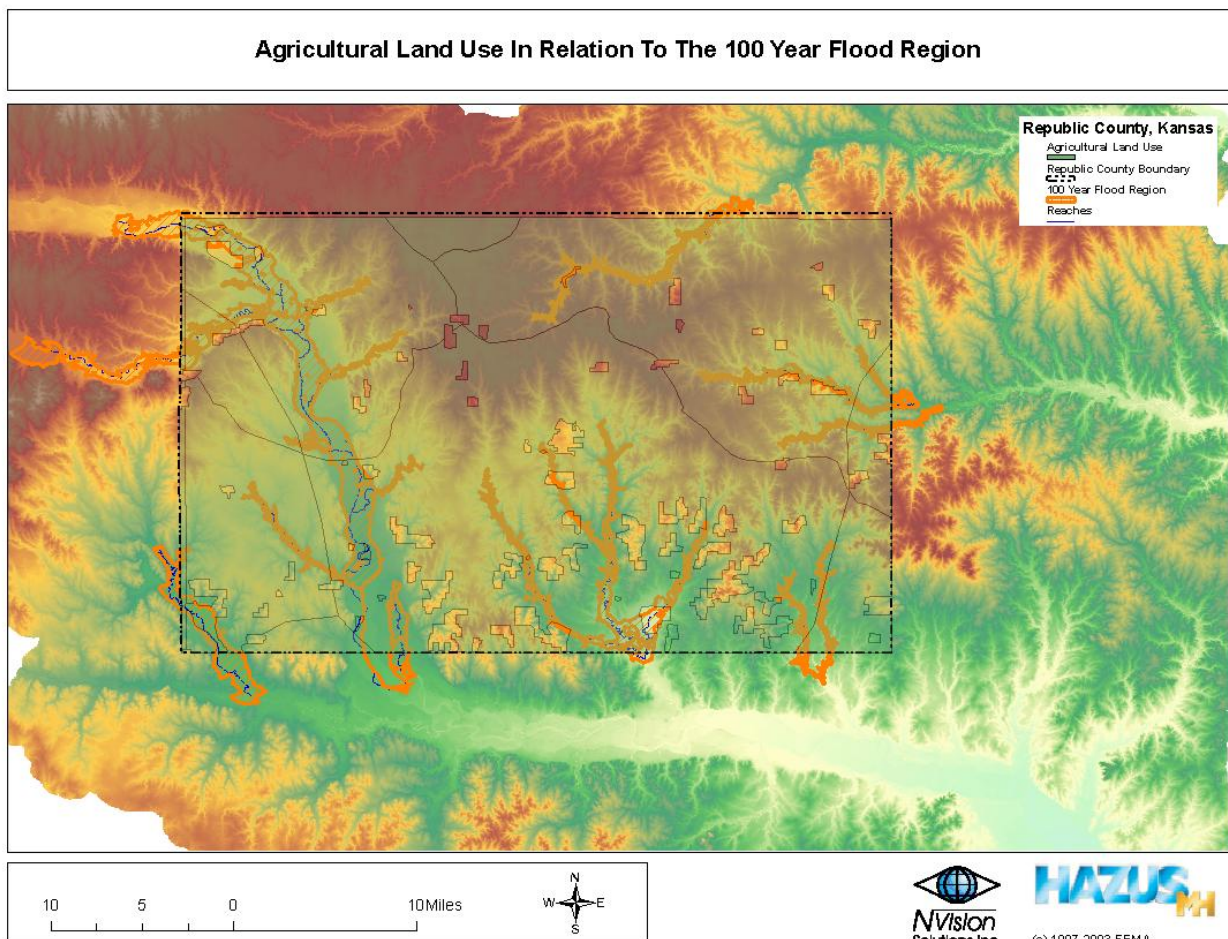
Agricultural uses include the use of land for pasture and grazing, crop land, and forest. The largest percentage of the total county land area is used for agricultural purposes.

Residential home sites, commercial sites, and industrial purposes account for most of the land use in cities in Republic County. Larger density residential, commercial, and industrial land uses are primarily found either within the incorporated communities or close to the city limits.

Farmers either own or rent the majority of private land within Republic County. However they make up the minority population and occupations in the county. Conversion of the land from farming to other land uses can often have an adverse impact on the farming community and economy.

Figure 3.1.8 is an agricultural land use map for Republic County.

Figure 3.1. 8 – Republic County Land Use Map



New Development

Republic County has a Neighborhood Revitalization Plan. It used to encourage growth of the local economy and the county property tax base. The plan awards property tax rebates to Republic County taxpayers who make investments that significantly improve real property. The rebates transfer with the sale of the property. The plan proposes a 5-year rebate schedule. The annual rebates of taxes paid on the new investment are 95%, 90%, 70%, 40% and 20%. Any Republic County taxpayer who is current on all property taxes, penalties, and assessments and whose investments in real property create a \$30,000 increase in its appraised value. The investment can be in any sector of the economy: commercial, residential, industrial, and agricultural.

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are the mitigation actions Republic County plans to adopt.

2011 Mitigation Actions	
Lead Agency: Republic County Highway Department	Project Title: Ditch Cleaning/Deepening
Project Description: Clean and deepen ditches in the county	
Type of Project: Prevention	
Funding Description: LOCAL BUDGET	
Estimated Cost: APPROXIMATELY \$20,000	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	FLOOD, UTILITY/INFRASTRUCTURE FAILURE
Benefits (Losses Avoided): Flood Control	Completion Date: On-going
Plan for Implementation and Administration: Clean and deepen ditches on an as needed basis	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: Republic County Emergency Management	Project Title: Develop Minimum Performance Standards in Flood Prone Areas to Comply with NFIP Guidelines
Project Description: Set forth minimum performance standard for new construction or substantially improved Structures for Republic County Floodplain Management to comply with National Flood Insurance Program (NFIP) guidelines.	
Type of Project: Prevention	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	Flood
Benefits (Losses Avoided): Flood Control	Completion Date: On-going
Plan for Implementation and Administration: Develop minimum performance standard for new construction or substantially improved Structures	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: Republic County Emergency Management	Project Title: Integrate GIS into emergency mitigation
Project Description: Use GIS equipment to map critical infrastructure and hazard prone areas	
Type of Project: Emergency Services	
Funding Description: Local Funds	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	All Hazards
Benefits (Losses Avoided): Improve emergency response time	Completion Date: On-going
Plan for Implementation and Administration: Use GIS equipment to map critical infrastructure and hazard prone areas	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: Republic County Emergency Management/Floodplain Manager	Project Title: Monitor Floodplain Activities
Project Description: Continue to monitor floodplain activities to ensure that structures are reasonably safe from flooding	
Type of Project: Prevention	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	yes
Which hazard will be eliminated, diminished or controlled?	Flood
Benefits (Losses Avoided): Reduce flood insurance premiums for residents and reduce flood damage	Completion Date: On-going
Plan for Implementation and Administration:	
<ol style="list-style-type: none"> 1. Review of all applications for floodplain development permits to assure that sites are reasonably safe from flooding and that the floodplain development permit requirements of this ordinance have been satisfied; 2. Review of all applications for floodplain development permits for proposed development to assure that all necessary permits have been obtained from Federal, State, or local governmental agencies from which prior approval is required by Federal, State, or local law; 3. Review all subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding; 4. Issue floodplain development permits for all approved applications; 5. Notify adjacent communities and the Division of Water Resources, Kansas Department of Agriculture, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA); 6. Assure that the flood-carrying capacity is not diminished and shall be maintained within the altered or relocated portion of any watercourse; and 7. Verify and maintain a record of the actual elevation (in relation to mean sea level) of the lowest floor, including basement, of all new or substantially improved structures; 8. Verify and maintain a record of the actual elevation (in relation to mean sea level) that the new or substantially improved non-residential structures have been floodproofed; 9. When floodproofing techniques are utilized for a particular non-residential structure, the floodplain administrator shall require certification from a registered professional engineer or architect. 	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

Jurisdiction: City of Agenda	
NFIP Participation	No
Date of FEMA Maps	N/A
CRS Participation	N/A
Number of Repetitive Loss Properties	0

The following image is an aerial view of the City of Agenda (City-Data.com).

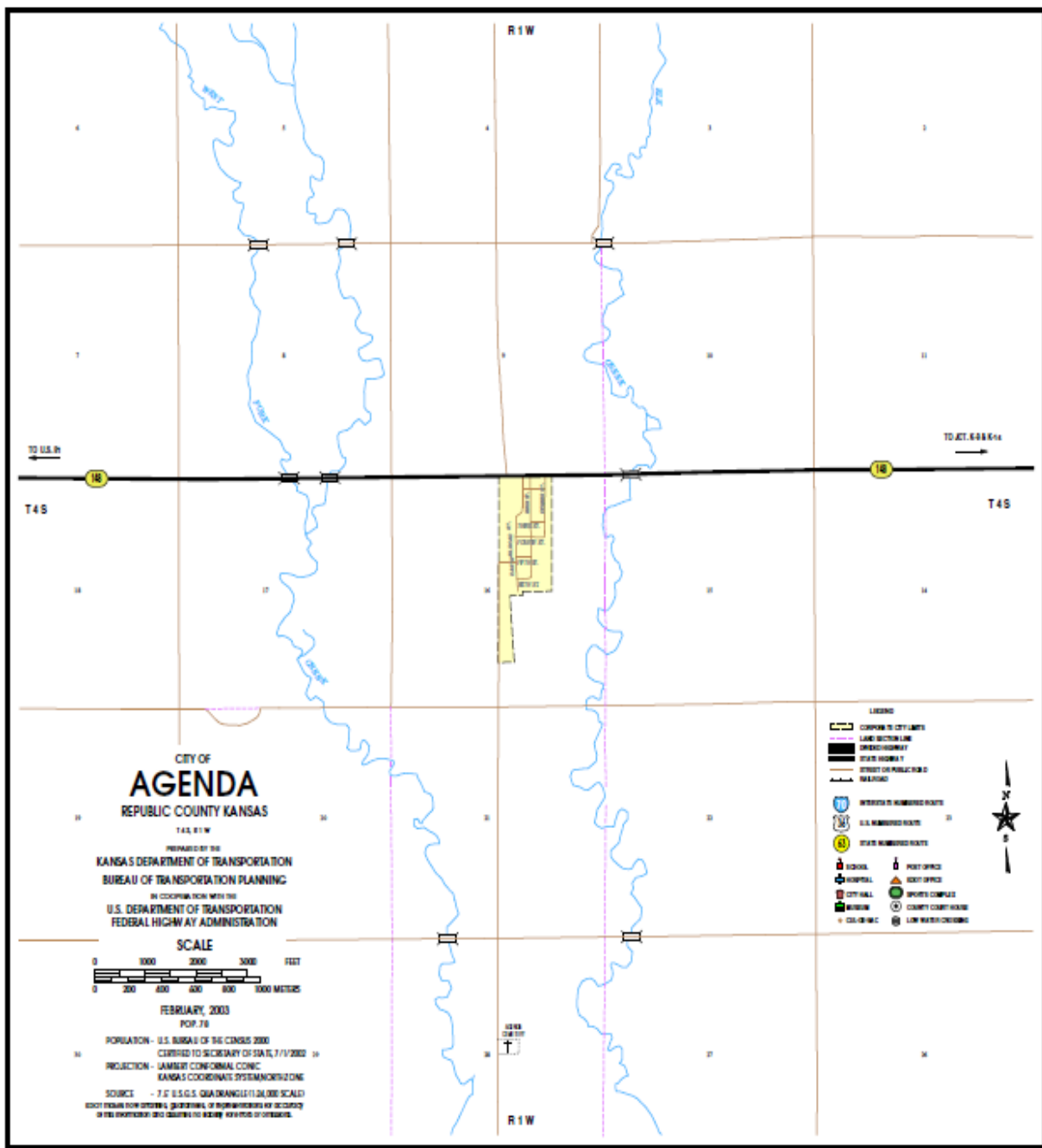
Figure 3.2. 1 – City of Agenda



Location

The City of Agenda is an incorporated city located in Republic County. It is located at 39°42'32"N 97° 25'56"W (39.708897, -97.432156). It has a total land area of 0.2 square miles and has an elevation of 1,414 feet. The following map is the jurisdictional boundaries for the City of Agenda.

Figure 3.2. 2 - City of Agenda Jurisdictional Boundary Map



Governance

The City of Agenda is a city of the third class. In Kansas, any city that has a population of less than 5,000 people is a third class city.

Agenda has the most common form of city government, which is a mayor-council form of government. The council has five council members. The City government also consists of the following departments:

- City Clerk
- City Attorney
- Municipal Judge
- Police Department
- Public Works
- Streets Department
- Treasurer
- Gas
- Sewer
- Water

Population and Demographics

The population and demographics, as well as the economic characteristics are used in the development of the risk assessment. Today, with a population estimated at 67, the City of Agenda is ranked 1,689th among Kansas incorporated cities. Table 3.2.1 identifies the population estimates from last official census conducted in 2000 to 2009 (U.S. Census Bureau). According to the Census Bureau’s population estimates, the population for the City of Agenda has steadily decreased since 2000. There has been about a one percent decrease in the population.

Table 3.2. 1 – Population

Jurisdiction	July 1, 2009	July 1, 2008	July 1, 2007	July 1, 2006	July 1, 2005	July 1, 2004	July 1, 2003	July 1, 2002	July 1, 2001	2000 Census
City of Agenda	67	67	68	69	70	71	72	73	74	76

Table 3.2.2 is the U.S. Census Bureau demographic statistics from the 2000 Census. Over 30 percent of the population in Agenda is over the age of 65, which is almost 17 percent higher than the State of Kansas. A large elderly population puts the city at an increased risk in during hazard events due to transportation, sheltering, and medical needs.

Table 3.2. 2 – Select Demographics

Jurisdiction	Under 5 Years (%)	Over 65 Years (%)	Median Age (Years)	Average Household Size
United States	6.9	12.9	36.4	2.60
Kansas	7.3	13.0	36.4	2.46
Republic County	5.1	27.0	50.6	2.14
City of Agenda	6.2	30.9	44.5	2.13

Economic Characteristics

An important population trend is the number of people employed in different employment sectors. Employment trends can indicate changes in land use or demand for land. The principal employment sector for the City of Agenda is construction. There are six people employed in the manufacturing industry, which is over 21 percent of the population. Table 3.2.3 is the 2000 census statistics for the employed civilian population 16 years and over in Agenda.

Table 3.2. 3 – Economic Industries

Industry	Number of People Employed in Industry	Percent of Population Working in Industry
Construction	6	21.4
Retail Trade	4	14.3
Finance, Insurance, Real Estate, Rental and Leasing	4	14.3
Public Administration	4	14.3
Educational, Health, and Social Services	3	10.7
Professional, Scientific, Management, Administrative, and Waste Management Services	1	3.6
Agriculture, forestry, mining, fishing and hunting	0	0
Manufacturing	0	0
Wholesale Trade	0	0
Transportation and Warehousing, and Utilities	0	0
Information	0	0
Arts, Entertainment, Recreation, Accommodation, and Food Services	0	0

The 2010 cost of living index is 77.9, which is low compared to the Nation’s average of 100 (City-Data.com). Table 3.2.4 is the economic characteristics for Agenda, Kansas from the 2000 census (U.S. Census Bureau). Agenda has a zero unemployment rate, which is significantly less than the State of Kansas average..

Table 3.2. 4 – Select Economic Statistics

Jurisdiction	Individuals Below Poverty Level (%)	Median Home Value (1999\$)	Median Household Income (1999\$)	Per Capita Income (1999\$)	Unemployment Rate (%)	Population in Labor Force (%)
United States	14.3	185,400	50,221	27,041	4.2	64.7
State of Kansas	13.2	114,400	47,709	25,522	3.6	68.6
Republic County	9.6	118,500	36,510	23,494	3.2	63.0
City of Agenda	5.9	10,000	26,500	13,307	0	43.1

Capabilities

Floodplain Management

According to FEMA the definition for floodplain management is “a decision-making process that aims to achieve the wise use of the nation’s floodplains. Wise use means both reduced flood losses and protection of the natural resources and function of floodplains.

Floods are one of the most common hazards in the United States, as well as Kansas, and most homeowners’ insurance policies do not cover flood damage. For that reason, in 1968 Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. In order for a community to offer flood insurance through the NFIP, the community is required to enforce certain minimum regulations on development in the floodplain. This management of the floodplain is done to ensure that flooding problems do not increase and to work towards the reduction in the risk of flooding. This work is performed by the local communities' Floodplain Administrator.

National Flood Insurance Program (NFIP)

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 (Federal Emergency Management Agency).

The City of Agenda is a not participant in the National Flood Insurance Program. There is not any information in the Federal Emergency Management Agency’s Community Status Book Report. Therefore, the residents of Agenda are currently unable to purchase flood insurance through the NFIP because the community is not a participant. The City has currently has decided not to participate in the NFIP. However, they are considering participating in the future.

Existing Planning Ordinances, Codes, and Plans

This section will identify an inventory of existing planning and regulatory tools available to the City of Agenda. It is vital to ensure that proposed mitigation actions are practical considering the jurisdiction’s ability to implement them. It will help build the general foundation for determining the type of mitigation strategy the jurisdiction develops and ultimately adopts. Table 3.2.6 identifies the existing planning ordinances, codes, and plans for Agenda.

Table 3.2. 5 – Existing Plans, Ordinances, and Codes

Planning ordinances, codes, plans
Local emergency operations plan
Economic Development Plan

Administrative/Technical Resources

This section will identify the administrative and technical resources available to the City of Agenda. It is imperative to ensure that adequate staffing and technical resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.2.7 identifies personnel resources and warning capabilities for Agenda.

Table 3.2. 6 – Administrative/Technical Resources

Personnel Resources
Full-time building official
County Emergency Manager

Personnel Resources
Outdoor weather warning signals

Financial Resources

This section will identify the financial resources available to the City of Agenda. It is necessary to ensure that adequate financial resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.2.8 identifies personnel resources and warning capabilities for Agenda.

Table 3.2. 7 – Financial Resources

Financial Resources
Authority to levy taxes for specific purposes
Fees for water, sewer, gas, or electric services
Incur debt through special tax bonds
Incur debt through private activities
Withhold spending in hazard prone areas

Vulnerabilities

Hazards Affecting the City of Agenda

The hazards that are profiled in this section have had direct impact on the City of Agenda. If the hazards are not profiled in this section, there were no reports of impact on the City.

History of Flooding

There was one historic flash flooding event in the National Climatic Data Center database.

July 31, 2007	A round of heavy thunderstorms brought areas of flooding to portions of north central and east central Kansas. There was water over State Highway 148 in Agenda; it was estimated at 1 to 2 feet deep. Property damage was \$70,000.
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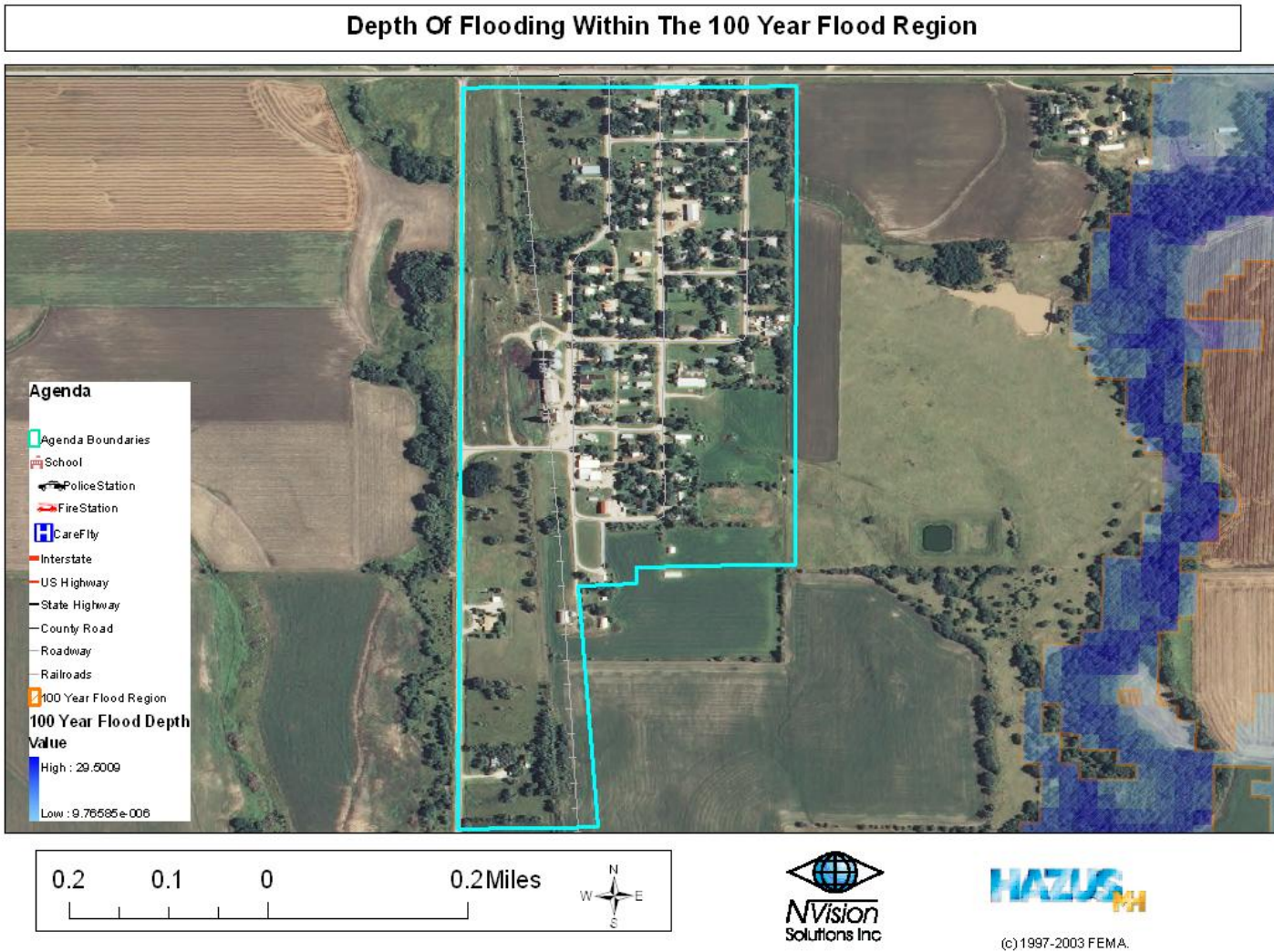
Repetitive Loss Properties

FEMA defines severe repetitive loss properties as “FEMA defines repetitive loss properties as “a residential property that is covered under an NFIP flood insurance policy and has had at least 2 paid losses of more than \$1000 each in any 10-year period since 1978”. There are no repetitive flood loss properties in Agenda, Kansas.

HAZUS Report

A “flood” HAZUS loss estimation model was completed by NVision using FEMA’s software program, HAZUS-MH MR4. The software was used for estimating potential losses from flooding. Figure 3.2.3 is map that identifies the location of the critical facilities in relation to the 100-year floodplain for the City of Agenda. The HAZUS loss estimation model for Agenda did not identify any floodplain areas.

Figure 3.2. 3 - City of Agenda 100-year Flood Plain



History of Hailstorm Events

There were eleven hailstorm events for the City of Agenda in the NCDC database between January 1, 1950 and April 30, 2010. Table 3.2.9 is a summary of each hailstorm event. Although there was only \$5,000 reported in property damage and \$5,000 in crop damage reported, it is likely the amount of damage is much higher as all damage reports are not reported to the NCDC, many damage claims are reported to individual insurance carriers.

Table 3.2. 8 – Hailstorm Events in the City of Agenda

Date	Time	Diameter (Inches)	Property Damage (\$)	Crop Damage (\$)
7/15/1994	1720	1.00	5,000	5,000
6/23/1998	2208	1.00	0	0
9/4/1999	1635	0.88	0	0
4/3/2001	448	0.75	0	0
7/18/2001	1755	0.75	0	0
9/7/2001	1724	0.75	0	0
6/11/2002	2326	0.75	0	0
6/28/2003	2145	0.75	0	0
3/30/2006	1346	0.88	0	0
6/21/2006	1630	3.00	0	0
4/25/2008	2208	1.00	0	0

History of Tornado Events

Historic hazard incidents were obtained from the National Climatic Data Center database.

May 24, 2004 A tornado touched down briefly in open country. There were no reports of damage or injuries.

History of Utility/Infrastructure Failure

Utility/Infrastructure failure includes power and telephone lines, water supply facilities, wastewater facilities and communication towers.

April 11, 2001 Thunderstorm winds blew down power lines causing \$5,000 in property damage.

History of Windstorms

Historic hazard incidents were obtained from the National Climatic Data Center database.

April 6, 2001 A severe thunderstorm was reported two miles east of Agenda.

April 11, 2001 Thunderstorm winds blew down power lines causing \$5,000 in property damage.

August 8, 2004 A severe thunderstorm was reported just outside the City of Agenda. There were no reports of damage.

July 25, 2005 A severe thunderstorm was reported by the City of Agenda. There were no reports of damage.

June 2, 2009 Severe thunderstorms developed and produced hail and damaging winds. Eight inch tree limbs were downed from strong winds. Damage estimates were not available.

May 6, 2010

Severe thunderstorms tracked across Republic County. Numerous power lines were blown down around Agenda. A carport was blown onto the roof of a home. A travel trailer was blown on its side. Property damage was estimated at \$20,000.

City of Agenda Hazard Vulnerability Assessment

The following table is a comparison of the hazards vulnerability ranking for the Republic County HMPC. The first column is the order of priority the HMPC ranked the hazards that threaten the entire planning area. The second column is the hazards that pose a threat to all of Republic County. The third column is the Republic County HMPC planning significance (high, moderate, or low) for the entire planning area, which was determined by the HMPC during the first hazard mitigation planning meeting. The last column is the planning significance for each hazard as determined by the City of Agenda for their specific community.

The City of Agenda determined that winter storms are a moderate risk for the community as there has not been any major damage as a result of winter storms.

Table 3.2. 9 - Hazards Vulnerability Assessment

HMPC Priority	Hazards That Threaten Republic County	HMPC Planning Significance	City of Agenda Planning Significance
1	Winter Storm	High	Moderate
2	Tornado	High	High
3	Windstorm	High	High
4	Flood	High	High
5	Utility/Infrastructure Failure	High	High
6	Hailstorm	High	High
7	Drought	Moderate	Moderate
8	Extreme Temperatures	Moderate	Moderate
9	Major Disease Outbreak	Moderate	Moderate
10	Soil Erosion and Dust	Moderate	Moderate
11	Terrorism/Agro-Terrorism/Civil Disorder	Moderate	Moderate
12	Wildfire	Moderate	Moderate
13	Lightning	Moderate	Moderate
14	Expansive Soils	Moderate	Moderate
15	Agricultural Infestation	Moderate	Moderate
16	Hazardous Materials	Moderate	Moderate
17	Fog	Low	Low
18	Earthquake	Low	Low
19	Dam and Levee Failure	Low	Low
20	Land Subsidence	Low	Low
21	Landslide	Low	Low
22	Radiological	Low	Low

Critical Infrastructure

An essential element of the Republic County Hazard Mitigation Plan is the identification and inventory of the critical infrastructure located in each participating jurisdiction.

The purpose of the critical infrastructure inventory is to provide information and location data on buildings and infrastructure that are vital to the response and recovery of the community from a natural and/or manmade disaster. While all buildings and structures have value, certain types of structures have a higher priority for protection because damage to them can directly impact the delivery of vital services, thereby delaying response and/or recovery efforts.

Highways/Roads

There is only one major highway that runs through Agenda. It is Kansas Highway 148.

Historic Sites

Historic buildings and structures and documents are often irreplaceable, and may forever be lost in a disaster if not considered in the mitigation planning process. Historic properties and cultural resources are also valuable economic assets that increase property value, while attracting businesses and tourists. Preservation of these assets is often an important method for economic development.

Historic preservation planning protects historic properties and cultural resources before they are threatened with demolition. Hazard mitigation planning protects life and property from damage caused by natural and manmade hazards. Integrating these two planning processes helps ensure the future growth of safe and sustainable historic communities.

Historic preservation is the process of identifying, evaluating, protecting, preserving, and using historic properties. A historic property is any prehistoric or historic district, site, building, structure, or object included in the National Register of Historic Places maintained by the Secretary of the Interior. These properties are legally recognized as historically significant in American history, architecture, archeology, engineering and culture. Typically these properties are at least 50 years old. The National register is a planning tool that highlights the importance of properties worthy of preservation. The National & State Register of Historic Places does not have any places listed as historical for the City of Agenda.

Critical Facilities

For purposes of this Mitigation Plan, Republic County and participating jurisdictions considered critical facilities to be those buildings and structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. These facilities include supporting infrastructure essential to the mission of critical facilities. . The facilities also include education facilities to ensure continuity of education. Table 3.2.11 identifies the critical facilities in Agenda.

Table 3.2. 10 – Critical Facilities

Name of Asset	Facility Type	Address	Replacement Value
Fire Station	Emergency Services	Railroad Street & Sixth St	\$585,000
City Offices	Government	300 Main Street	\$250,000

Local Businesses

Local businesses are important to the economic development for Agenda. During a disaster loss of local businesses can have a detrimental effect on the local economy. Table 3.2.12 identifies the local businesses in the area.

Table 3.2. 11 – Local Businesses

Business Name	Type of Business	Address
Connie’s Beauty Salon	Retail	2486 Highway K148

Business Name	Type of Business	Address
Farmers Coop Shipping Association	Agricultural Services	420 Railroad St
Cedar Porch	Retail	411 Railroad St
US Post Office	Government	Main St
Dales Repair Shop	Auto Repair	507 Railroad St
Agenda Oil Co	Gasoline	2759 Highway K148

Community Concerns

There was not any community concerns reported for the City of Agenda.

Land Use

Land use can be classified as either primary land use or secondary land use. Direct extraction of a useful product from the physical environment is a primary economic land use. Examples of primary land use include hunting and gathering, caring for grazing livestock, cultivating agriculture, timbering, and extraction of minerals, ore, shale, and clay. Secondary land uses include residential, commercial, and industrial land uses. In some cases primary and secondary land uses are intermingled.

Residential home sites, commercial sites, and industrial purposes account for most of the land use in cities in Republic County. Larger density residential, commercial, and industrial land uses are primarily found either within the incorporated communities or close to the city limits. Table 3.3.13 identifies the current land usage for the City of Agenda.

Table 3.2. 12 – City of Agenda Current Land Usage

Current Land Use Category	Percent of Jurisdiction
Residential	89.5
Churches	1.5
Government	3.0
Commercial	4.5
Agricultural	1.5

New Development

The City of Agenda did not report any new development plans.

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are the mitigation actions Agenda plans to adopt.

2011 Mitigation Actions	
Lead Agency: City of Agenda and Republic County Emergency Management	Project Title: Improve Public Awareness of Hazard Risks
Project Description: Improve public awareness of hazard risks through educational programs	
Type of Project: Public Education and Awareness	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	Yes
Which hazard will be eliminated, diminished or controlled?	All Hazards
Benefits (Losses Avoided): Reduce the impact of hazards on Residents	Completion Date: On-going
Plan for Implementation and Administration: Incorporate hazard awareness into existing and future public educational programs	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

Jurisdiction: City of Belleville	
NFIP Participation	Yes
Initial Flood Hazard Boundary Map (FHBM) Identified	2/15/1974
CRS Participation	N/A
Number of Repetitive Loss Properties	0

The following image is an aerial view of the City of Belleville (City-Data.com).

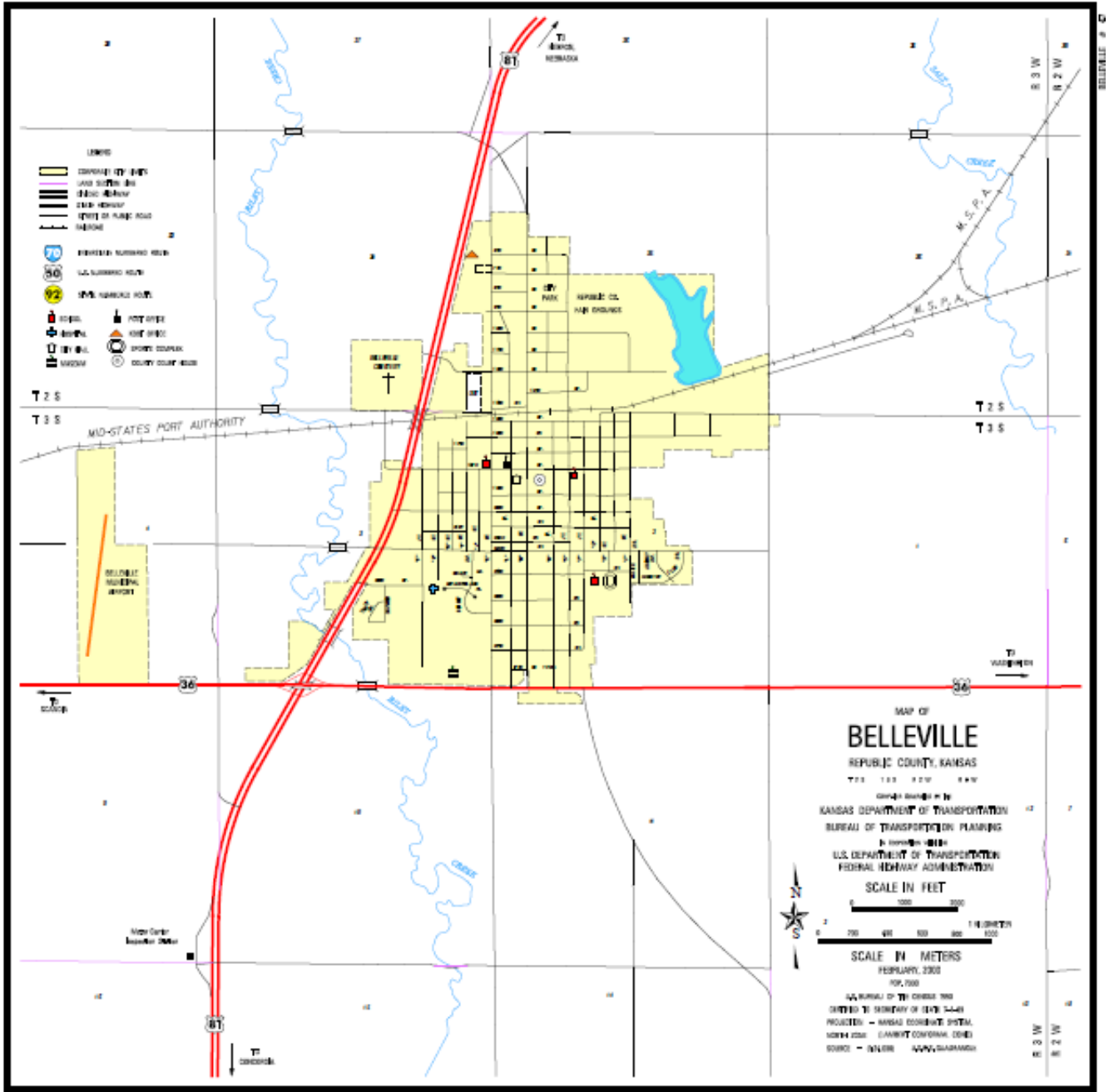
Figure 3.3. 1 – City of Belleville



Location

Belleville is located at the junction of highways 36 and 81, and is the county seat of Republic County. The downtown is built around the courthouse square which is the center attraction for several events during the year. It is located at 39°49'25"N 97° 37'49"W (39.823548, -97.630183). It has a total land area of 1.94 square miles and 0.04 square miles of water, with an elevation of 1,550 feet. The following map is the jurisdictional boundaries for the City of Belleville.

Figure 3.3. 2 - City of Belleville Jurisdictional Boundary Map



History

The City of Belleville has always been known as the Crossroads of America because it is centrally located in the heart of the county. Belleville is home to the architecturally noted Courthouse, which is listed on the National Register of Historical Places.

Belleville has a unique business district- revitalized with its designation of a Kansas Main Street Community, a superior school system and state-of-the-art healthcare facilities.

Amid its many other attractions, Belleville is home to the world’s fastest half-mile dirt track, the Belleville High Banks. Famous names including as Jeff Gordon and Kasey Kahne, have taken home the trophy from the Belleville Midget Nationals race held annually during the North Central Kansas Free Fair

Governance

The City of Belleville is a city of the second class. In Kansas, cities reaching a population of more than 2,000 may be certified as a city of the second class. The second class is limited to cities with a population of less than 25,000, and upon reaching a population of more than 15,000; they may be certified as a city of the first class. First and second class cities are independent of any township and are not included within the township's territory.

The City of Belleville has a City Council, Mayor, and City Manager form of government. The community is divided into three Wards in which two council members are chosen for two year alternating terms. The Mayor is chosen at large from the community for a two-year term and presides at the council meeting. The city manager is hired to oversee the operations of the city and serves the citizens and council members.

The City government also consist s of the following departments:

- City Clerk
- City Manager
- City Attorney
- Fire Department
- Inspections
- Library
- Municipal Judge
- Parks and Recreation
- Police Department
- Streets
- Treasurer
- Gas
- Electric
- Sewer
- Water
- Zoning

Population and Demographics

The population and demographics, as well as the economic characteristics are used in the development of the risk assessment. Today, with a population estimated at 1,828, the City of Belleville is ranked 219th among Kansas incorporated cities. Table 3.3.1 identifies the population estimates from last official census conducted in 2000 to 2009 (U.S. Census Bureau). According to the Census Bureau’s population estimates, the population for the City of Belleville has steadily decreased since 2000. There has been about an eight percent decrease in the population.

Table 3.3. 1 – Population

Jurisdiction	July 1, 2009	July 1, 2008	July 1, 2007	July 1, 2006	July 1, 2005	July 1, 2004	July 1, 2003	July 1, 2002	July 1, 2001	2000 Census
City of Belleville	1,828	1,838	1,868	1,890	1,926	1,960	2,020	2,074	2,161	2,224

Table 3.3.2 is the U.S. Census Bureau demographic statistics from the 2000 Census. Over 30 percent of the population in Belleville is over the age of 65, which is more than 20 percent higher than the State of Kansas. A large elderly population puts the city at an increased risk in during hazard events due to transportation, sheltering, and medical needs.

Table 3.3. 2 – Select Demographics

Jurisdiction	Under 5 Years (%)	Over 65 Years (%)	Median Age (Years)	Average Household Size
United States	6.9	12.9	36.4	2.60
Kansas	7.3	13.0	36.4	2.46
Republic County	5.1	27.0	50.6	2.14
City of Belleville	5.4	35.1	44.5	2.13

Economic Characteristics

An important population trend is the number of people employed in different employment sectors. Employment trends can indicate changes in land use or demand for land. The principal employment sector for the City of Belleville is Educational, Health, and Social Services. There are 198 people employed in this, which is over 19 percent of the population. Table 3.3.3 is the 2000 census statistics for the employed civilian population 16 years and over in Belleville.

Table 3.3. 3 – Economic Industries

Industry	Number of People Employed in Industry	Percent of Population Working in Industry
Educational, Health, and Social Services	198	19.5
Retail Trade	177	17.4
Manufacturing	156	15.4
Transportation and Warehousing, and Utilities	93	9.2
Construction	69	6.8
Professional, Scientific, Management, Administrative, and Waste Management Services	61	6
Arts, Entertainment, Recreation, Accommodation, and Food Services	50	4.9
Other Services	48	4.7
Finance, Insurance, Real Estate, Rental and Leasing	43	4.2
Public Administration	42	4.1

Industry	Number of People Employed in Industry	Percent of Population Working in Industry
Agriculture, forestry, mining, fishing and hunting	36	3.5
Wholesale Trade	28	2.8
Information	15	1.5

The 2010 cost of living index is 79.7, which is low compared to the Nation’s average of 100 (City-Data.com). Table 3.3.4 is the economic characteristics for Belleville, Kansas from the 2000 census (U.S. Census Bureau). Belleville has just below two percent unemployment rate, which is less than the State of Kansas average and has five percent of the families are living below poverty level.

Table 3.3. 4 – Select Economic Statistics

Jurisdiction	Families Below Poverty Level (%)	Individuals Below Poverty Level (%)	Median Home Value (1999\$)	Median Household Income (1999\$)	Per Capita Income (1999\$)	Unemployment Rate (%)	Population in Labor Force (%)
United States	14.3	185,400	50,221	27,041	4.2	64.7	14.3
State of Kansas	13.2	114,400	47,709	25,522	3.6	68.6	13.2
Republic County	9.6	118,500	36,510	23,494	3.2	63.0	9.6
City of Belleville	5.4	8.7	43,800	26,692	18,989	1.9	54.2

Capabilities

Floodplain Management

According to FEMA the definition for floodplain management is “a decision-making process that aims to achieve the wise use of the nation’s floodplains. Wise use means both reduced flood losses and protection of the natural resources and function of floodplains.

Floods are one of the most common hazards in the United States, as well as Kansas, and most homeowners’ insurance policies do not cover flood damage. For that reason, in 1968 Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. In order for a community to offer flood insurance through the NFIP, the community is required to enforce certain minimum regulations on development in the floodplain. This management of the floodplain is done to ensure that flooding problems do not increase and to work towards the reduction in the risk of flooding. This work is performed by the local communities' Floodplain Administrator.

Belleville is in the process working on a draft for a floodplain ordinance.

National Flood Insurance Program (NFIP)

The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the National Flood Insurance Program. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding (Federal Emergency Management Agency). The City of Belleville is a participant in the National Flood Insurance Program. Table 3.3.5 is information is from the Federal Emergency Management Agency’s (FEMA) Community Status Book Report for Belleville.

The table identifies the date the initial Flood Hazard Boundary Map (FHBM) was identified. FHBM is an official map of a community issued by FEMA, where boundaries of the flood, mudflow, and related erosion areas having special hazards have been designated, which is the date the community joins the NFIP Emergency Program. The Emergency Program is defined as “the initial phase of a community’s participation in the NFIP. During this phase, only limited amounts of insurance are available under the Act. It also identifies the date the initial Flood Insurance

Rate Map (FIRM) and the current effective date of the FIRM. A FIRM is an official map of the community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. The final item the table identifies is the date the community went from being in the Emergency Program into the Regular Program. A Regular Program Community is “a community where a FIRM is in effect and full limits of coverage are available under the Act”.

Table 3.3. 5 - NFIP Community Status

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Reg. – Emer. Date
200287	City of Belleville	Republic	02/15/1974	12/17/2010	12/17/2010 (M)	7/6/1984

(M) = No Elevation Determined – All Zone A, C, and X

Existing Planning Ordinances, Codes, and Plans

This section will identify an inventory of existing planning and regulatory tools available to the City of Belleville. It is vital to ensure that proposed mitigation actions are practical considering the jurisdiction’s ability to implement them. It will help build the general foundation for determining the type of mitigation strategy the jurisdiction develops and ultimately adopts. Table 3.3.6 identifies the existing planning ordinances, codes, and plans for Belleville.

Table 3.3. 6 – Existing Plans, Ordinances, and Codes

Planning ordinances, codes, plans
Master Plan
Zoning Ordinance
Subdivision Ordinance
Floodplain Management Regulations
Municipal Code
Building Code
Capital Improvements Plan
Economic Development Plan
Local emergency operations plan
Flood Insurance Study (FIS) or other engineering study for streams
Elevation Certificates

Administrative/Technical Resources

This section will identify the administrative and technical resources available to the City of Belleville. It is imperative to ensure that adequate staffing and technical resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.3.7 identifies personnel resources and warning capabilities for Belleville.

Table 3.3. 7 – Administrative/Technical Resources

Personnel Resources
Personnel skilled in GIS
Full-Time Building Official
Floodplain Manager
Grant Writer
County Emergency Manager
Outdoor weather warning signals

Financial Resources

This section will identify the financial resources available to the City of Belleville. It is necessary to ensure that adequate financial resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.3.8 identifies personnel resources and warning capabilities for Belleville.

Table 3.3. 8 – Financial Resources

Financial Resources
Capital improvement project funding
Impact fees for new development
Authority to levy taxes for specific purposes
Fees for water, sewer, gas, or electric services
Incur debt through special tax bonds
Incur debt through private activities

Vulnerabilities

Hazards Affecting the City of Belleville

The hazards that are profiled in this section have had direct impact on the City of Belleville. If the hazards are not profiled in this section, the city did not report any incidents.

History of Agricultural Infestation

April 22, 2010 Strip Rust was observed in low levels in research plots near Belleville, Kansas. The disease was present in the varieties Jagalene, Jagger, and Santa Fe (K-State Department of Plant Pathology Extension).

History of Flooding

The following historic flood incidents were obtained from the National Climatic Data Center database.

- July 8, 1996 Three to five inches of rain caused flooding of many streets in the town of Belleville and on U.S. Highway 36 four miles east of Belleville. The engines of two farm combines also stalled after water from lowland flooding reached the engines.
- May 26, 2002 Heavy rains produced flash flooding with water reported over the roadway at the junction of highways 81 and 36 near Belleville.
- May 29, 2004 Belleville reported flash flooding. There were heavy rains of 2 to 4 inches produced runoff that flooded many roads for a time in Belleville.
- June 12, 2004 Water was reported over a number of roads throughout Belleville.
- May 23, 2007 Very heavy rain producing thunderstorms rolled over a number of counties during the evening and early morning hours. Dickinson County was hit hard for the second time in the month with significant flooding along the Smoky Hill River. Due to saturated soils, runoff was considerable. Several of the major streams and rivers went above flood stage for several days thereafter. Rainfall totals were mostly in the two to four inch range...however, four to six inches were noted in parts of Marshall, Riley, Clay and Dickinson counties. Clay and Ottawa counties qualified for FEMA funds. Street flooding was reported in Munden, with 18 inches of water running over 220 Road near Munden. There was 8 to 10 inches of water over all of Main Street in south Belleville. Several other streets flooded in Belleville. Some cars stalled in the water. Property damage was estimated at \$20,000.

August 2, 2007

Thunderstorms developed in the area. Perceptible water values above two inches, and slow moving thunderstorms combined to provide an environment conducive to flash flooding. Heavy rainfall in Republic County the morning of the 2nd, resulted in local flash flooding problems. Water one foot deep reported to be flowing over Lincoln Road in Belleville. Property damage estimates were not available.

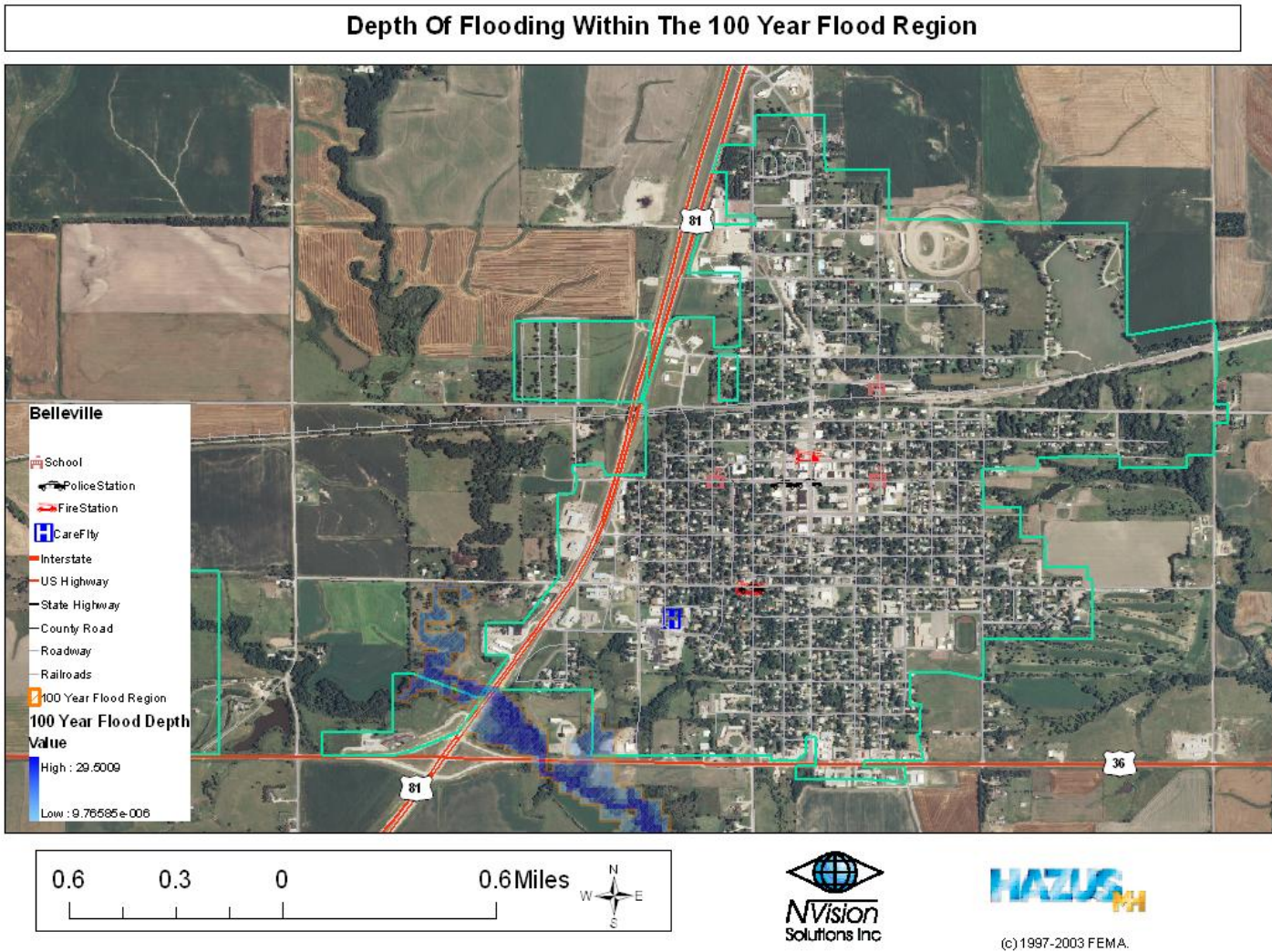
Repetitive Loss Properties

FEMA defines repetitive loss properties as “a residential property that is covered under an NFIP flood insurance policy and has had at least 2 paid losses of more than \$1000 each in any 10-year period since 1978.” There are no repetitive flood loss properties in Belleville, Kansas.

HAZUS Report

A “flood” HAZUS loss estimation model was completed by NVision using FEMA’s software program, HAZUS-MH MR4. The software was used for estimating potential losses from flooding. Figure 3.3.3 is map that identifies the location of the critical facilities in relation to the 100-year floodplain for the City of Belleville. The HAZUS loss estimation model for Belleville identified two residential structures that could experience minor to moderate flood damage. US Highway 81 and US Highway 36 could potentially be inundated with flood waters.

Figure 3.3. 3 - City of Belleville 100-year Flood Plain



History of Fog Events

There was one historic hazard incident in the National Climatic Data Center database for Belleville.

May 27, 2004 Dense fog resulted in two vehicle accidents in the Belleville area. Two vehicles collided at an intersection. The driver of one of the vehicles apparently did not see a stop sign due to the thick fog. Both vehicles suffered damage. The second accident occurred shortly after the first accident and near the same location when one vehicle entered the roadway near the first accident and was struck by another vehicle. In the second accident the vehicles also suffered damage and in addition a passenger in one of the vehicles was injured. The property damage was estimated at \$15,000.

History of Hailstorm Events

There were 26 hailstorm events for the City of Belleville in the NCDC database between January 1, 1950 and April 30, 2010. Table 3.3.9 is a summary of each hailstorm event. Although there was a total of \$90,000 reported in property damage and \$195,000 in crop damage reported, it is expected the amount of damage is much higher as all damage reports are not reported to the NCDC, many damage claims are reported to individual insurance carriers.

Table 3.3. 9 – Hailstorm Events in the City of Belleville

Date	Time	Diameter (Inches)	Property Damage (\$)	Crop Damage (\$)
7/15/1994	1705	0.75	5,000	5,000
7/15/1994	401	1.0	0	0
4/10/1995	401	1.0	0	0
5/9/1996	1834	1.0	0	0
5/9/1996	1846	1.75	0	0
5/22/1996	2200	2.75	10,000	90,000
8/19/1996	1433	1.75	0	0
3/9/1997	135	0.75	0	0
9/8/1997	2040	0.75	0	0
5/30/1999	1907	1.75	0	0
10/13/2000	1753	1.0	0	0
4/3/2001	403	0.75	0	0
4/14/2001	1557	1.0	0	0
5/8/2001	2020	0.75	0	0
7/18/2001	1750	0.88	0	0
7/25/2001	233	1.0	0	0
9/7/2001	1703	1.0	0	0
5/13/2003	1915	1.75	0	0
5/24/2004	1614	1.75	75,000	100,000
5/29/2004	1747	1.0	0	0
4/18/2005	2130	0.88	0	0
5/8/2005	1430	1.0	0	0
6/26/2008	1616	0.75	0	0
4/25/2009	2301	0.88	0	0
6/6/2009	21.40	1.75	0	0

Date	Time	Diameter (Inches)	Property Damage (\$)	Crop Damage (\$)
4/29/2010	1715	1.75	0	0

History of Tornado Events

Historic hazard incidents were obtained from the National Climatic Data Center database.

- June 10, 1998 A funnel cloud was spotted six miles east of Belleville.
- June 13, 1998 A tornado touched down briefly in open country just outside of Belleville. It did not produce any damage.
- April 11, 2001 A tornado touched down south of Belleville and moved northeast doing intermittent damage along a 10 mile path before dissipating. Property damage was estimated at \$20,000.
- May 29, 2004 A tornado touched down near the southwest edge of Belleville and traveled 1/2 mile through parts of town before dissipating. The roof of a Dairy Queen was destroyed in Belleville. Property damage was \$50,000.

History of Utility/Infrastructure Failure

Utility/Infrastructure failure includes power and telephone lines, water supply facilities, wastewater facilities and communication towers.

- June 13, 1998 Strong winds knocked down numerous utility poles and power lines damaged or destroyed a variety of farm structures and equipment and tore the roof off one house. The damage occurred in an area extending from 6 to 10 miles north of Belleville.
- July 18, 2001 Strong winds downed power lines, street signs and trees. Property damage was estimated at \$2,000.

History of Windstorms

Historic hazard incidents were obtained from the National Climatic Data Center database.

- September 8, 1997 Strong winds downed power lines and several large limbs.
- April 25, 1994 Sixty mph winds blew a 40 to 50 foot section of roof off of a livestock sale barn in Belleville. Property damage was \$5,000 and crop damage was \$500.
- June 13, 1998 Strong winds knocked down numerous utility poles and power lines damaged or destroyed a variety of farm structures and equipment and tore the roof off one house. The damage occurred in an area extending from 6 to 10 miles north of Belleville. A survey from the Kansas State Farm Service Agency Office indicated \$125,000 of damage to farm structures and \$650,000 of damage to farm machinery.
- June 13, 2001 Thunderstorms developed over north central Kansas and became severe producing large hail strong winds and 2 tornadoes
- July 18, 2001 Strong winds downed power lines, street signs and trees. Property damage was estimated at \$2,000.

History of Winter Storms

Historic hazard incidents were obtained from the National Climatic Data Center database.

November 10, 1995 A small private plane crashed in a snowstorm due to wind shear. The plane hit in a pasture adjacent to the airport runway just outside Belleville. The pilot and one passenger walked away from the crash to the airport office and called officials. The two received only slight injuries. The plane incurred moderate damage. Property damage estimates were not available.

City of Belleville Hazard Vulnerability Assessment

The following table is a comparison of the hazards vulnerability ranking for the Republic County HMPC. The first column is the order of priority the HMPC ranked the hazards that threaten the entire planning area. The second column is the hazards that pose a threat to all of Republic County. The third column is the Republic County HMPC planning significance (high, moderate, or low) for the entire planning area, which was determined by the HMPC during the first hazard mitigation planning meeting. The last column is the planning significance for each hazard as determined by the City of Belleville for their specific community.

The City determined the vulnerability to agricultural infestation is high because strip rust has been recently discovered in the community. Therefore, they raised this hazard from moderate to high.

They determined the community is moderately vulnerable to fog because they have been directly impacted by this hazard in the past. Therefore, they raised this hazard from low to moderate.

Table 3.3. 10 - Hazards Vulnerability Assessment

HMPC Priority	Hazards That Threaten Republic County	HMPC Planning Significance	City of Belleville Planning Significance
1	Winter Storm	High	High
2	Tornado	High	High
3	Windstorm	High	High
4	Flood	High	High
5	Utility/Infrastructure Failure	High	High
6	Hailstorm	High	High
7	Drought	Moderate	Moderate
8	Extreme Temperatures	Moderate	Moderate
9	Major Disease Outbreak	Moderate	Moderate
10	Soil Erosion and Dust	Moderate	Moderate
11	Terrorism/Agro-Terrorism/Civil Disorder	Moderate	Moderate
12	Wildfire	Moderate	Moderate
13	Lightning	Moderate	Moderate
14	Expansive Soils	Moderate	Moderate
15	Agricultural Infestation	Moderate	High
16	Hazardous Materials	Moderate	Moderate
17	Fog	Low	Moderate
18	Earthquake	Low	Low
19	Dam and Levee Failure	Low	Low
20	Land Subsidence	Low	Low
21	Landslide	Low	Low
22	Radiological	Low	Low

Critical Infrastructure

An essential element of the Republic County Hazard Mitigation Plan is the identification and inventory of the critical infrastructure located in each participating jurisdiction.

The purpose of the critical infrastructure inventory is to provide information and location data on buildings and infrastructure that are vital to the response and recovery of the community from a natural and/or manmade disaster. While all buildings and structures have value, certain types of structures have a higher priority for protection because damage to them can directly impact the delivery of vital services, thereby delaying response and/or recovery efforts.

Highways/Roads

There are two major highways that run through Belleville. They are US Highway 81 and US Highway 36.

Bridges

There is one bridge in Belleville. It is 2 meters long and approximately 6,000 vehicles drive across it per day.

Airports

Belleville Municipal Airport is a city-owned- public use airport located approximately one mile west of Belleville. The airport covers an area of 111 acres and contains two runways: 18/36 with a 3,507 x 60 ft with asphalt pavement and 14/32 with a 1,415 x 100 ft turf surface.

For the 12-month period ending July 24, 2007, the airport had 7,650 aircraft operations, an average of 20 per day: 99% general aviation and 1% military. At that time there were 11 aircraft based at this airport: 82% single-engine and 18% ultra light.

Historic Sites

Historic buildings and structures and documents are often irreplaceable, and may forever be lost in a disaster if not considered in the mitigation planning process. Historic properties and cultural resources are also valuable economic assets that increase property value, while attracting businesses and tourists. Preservation of these assets is often an important method for economic development.

Historic preservation planning protects historic properties and cultural resources before they are threatened with demolition. Hazard mitigation planning protects life and property from damage caused by natural and manmade hazards. Integrating these two planning processes helps ensure the future growth of safe and sustainable historic communities.

Historic preservation is the process of identifying, evaluating, protecting, preserving, and using historic properties. A historic property is any prehistoric or historic district, site, building, structure, or object included in the National Register of Historic Places maintained by the Secretary of the Interior. These properties are legally recognized as historically significant in American history, architecture, archeology, engineering and culture. Typically these properties are at least 50 years old. The National register is a planning tool that highlights the importance of properties worthy of preservation. The National & State Register of Historic Places has several places listed as historical for the City of Belleville. They are:

- East Riley Creek Bridge
Address: Over East Riley Creek, South of Belleville
National Register Number: 89002176
Listed in National Register: 1989
Owner: Local Government
Area of Significance: Engineering,
Period of Significance: 1875-1899
Historic Function: Transportation, Road-Related
Current Function: Transportation, Road-Related

- Republic County Courthouse
 Address: Bounded by “M” Street, Eighteenth Street, and Nineteenth Street
 National Register Number: 02000393
 Listed in National Register: 2002
 Owner: Local Government
 Area of Significance: Architecture, Politics/Government
 Period of Significance: 1925-1974
 Historic Function: Courthouse, Government
 Current Function: Courthouse, Government
- Riley Creek Bridge
 Address: Over Riley Creek, South of Belleville
 National Register Number: 89002175
 Listed in National Register: 1990
 Owner: Local Government
 Area of Significance: Engineering
 Period of Significance: 1875-1899
 Historic Function: Transportation, Road-Related
 Current Function: Transportation, Road-Related
- US Post Office – Belleville
 Also Known As Belleville United States Post Office
 Address: 1119 18th Street, Belleville, Kansas
 National Register Number: 89001633
 Listed in National Register: 1989
 Owner: Federal Government
 Area of Significance: Social History, Art, Politics/Government
 Period of Significance: 1925-1949
 Historic Function: Post Office, Government
 Current Function: Post Office, Government

Critical Facilities

For purposes of this Mitigation Plan, Republic County and participating jurisdictions considered critical facilities to be those buildings and structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. These facilities include supporting infrastructure essential to the mission of critical facilities. . The facilities also include education facilities to ensure continuity of education. Table 3.3.11 identifies the critical facilities in Belleville.

Table 3.3. 11 – Critical Facilities

Name of Asset	Facility Type	Address	Replacement Value
Republic County Hospital	Healthcare	2420 G Street	\$1.5 million
Belleville Police Station	Emergency Services	1819 L Street	\$250,000
Republic County Police Department	Emergency Services	1815 M Street	\$100,000
USD 109 – District Office	Education	1205 19 th Street	\$150,000
Republic county Jr/Sr High School	Education	2504 P Street	
Republic County Middle School	Education	915 18 th Street	
East Elementary School	Education	1811 O Street	
Belleville Fire Department	Emergency Services	1705 Old US Highway 81	\$5000,000
City Hall	Government	1819 L Street	\$250,000

Local Businesses

Local businesses are important to the economic development for Belleville. During a disaster loss of local businesses can have a detrimental effect on the local economy. Table 3.3.12 identifies the local businesses in the area.

Table 3.3. 12 – Local Businesses

Business Name	Type of Business	Address
Spurney Republic County Abstract & Title Co	Real Estate/Financial	1910 M Street
Chapman-Hyland Abstract Co	Real Estate/Financial	1332 19 th Street
Chester Flying Service	Transportation Services	Bellevue Municipal Airport US 36 West
BRB Services	Accounting Services	6006 M Street
RW Business Services	Accounting Services	1329 17 th Street
Crossroads Floral & Antique Villa	Retail	1712 M Street
Steve’s Racing Collectibles	Retail	1155 US Highway 81
The Feathered Nest	Retail	1914 M Street
Leonard’s Appliance Sales & Service	Retail	1814 M Street
Sew Country	Retail	1834 M Street
Roger Novak Real Estate	Real Estate	1325 18 th Street
The Realty Associates	Real Estate	1906 M Street
Mike’s Body Shop	Auto Repair	1313 18 th Street
Stephens Collision and Glass	Auto Repair	1513 15 th Street
Melton Motor Co	Auto Sales	US 81 & 20 th Street
Aero-Auto Mart	Auto Sales	Municipal Airport
Miksell Motors	Auto Sales	1327 28 th Street
Sells Enterprises	Auto Sales	170 N Street
Scofield’s Classics	Auto Sales	1540 US Highway 81
Love’s Auto Supply	Retail	1206 19 th Street
S&P Farm Repair	Retail	Rt 1
Casey’s	Service Station	US 36 & M Street
Farmway Coop	Service Station	1200 180 Rd
Morris Garage	Service Station	1608 N Street
Kravemore 81 Truck Stop	Service Station	US 81 & 20 th Street
Reliable Auto	Service Station	East US 36
Republic Service	Service Station	1109 28 th Street
Scofield’s Classic Mustangs, Inc	Service Station	1540 Hwy 81
Thirty six Conoco Service	Service Station	1421 28 th St
A’s Automatic Auto Wash	Auto Wash	Hwy 36
A’s Car Wash	Auto Wash	North M Street
Treasure Tree	Banquet Hall	1826 M Street
All About You	Retail/Service	202 K Street
The Hair Craft	Retail/Service	1921 S Street
The Hair Company	Retail/Service	1319 18 th Street

Business Name	Type of Business	Address
The Hair House	Retail/Service	Rt. 2 Box 26
Hair Plus	Retail/Service	1305 18 th Street
Bellevue Bowl	Entertainment	1306 19 th Street
Cunningham Communications	Cable TV Service	1809 N Street
Imaginary Colours	Retail	1313 19 th Street
Holiday Cleaners	Cleaning Services	1915 M Street
Gottschalk & Company CPA, LLC	Accounting Services	1903 N Street
Professional Systems	Retail	1329 17 th Street
Concrete	Retail	11 th & M Street
Doodle Bug Academy	Early Education	606 23 rd Street
Head Start of Republic Co	Early Education	1812 L Street
Purple Splash Sportswear	Retail	1825 N Street
Belleville Farm & Home	Ag Retail	1825 N Street
Farmway Co-op Inc	Ag Retail	1200 180 Rd
Hays True Value Hardwar & Lumber	Retail	Hwy 81
Rural Gas	Propane Retail	201 M Street
Polansky Seed	Agricultural	2729 M Street
Town & Country Feed & Seed	Agricultural	US 36
Kee-ell Co	Agricultural	Rt. 2
Bachelor-Faulkner-Dart-Surber, Inc	Retail	1322 19 th Street
Arbuthnot Drug	Retail	1806 M Street
Main Street Gifts	Retail	1828 M Street
Rusty Wheel	Retail	1712 G Street
Hansen Muller	Agricultural	1220 O Street
Food Mart Thriftway	Grocery	2311 M Street
Belleville Public Library	Education	1327 19 th Street
Main Street Liquor	Retail	US 36 & M Street
Belleville 81 Livestock Sales	Agricultural	US Hwy 81 South
Novak Machine Shop	Industrial	Rt 1
Belleville Motorsports, Inc	Manufacturing	2225 Hwy 81
C.A. Picard, Inc	Manufacturing	East Hwy 36
Scott Specialties	Manufacturing	512 M Street
Belleville Telescope	Newspaper	1314 19 th Street
Crossroads Pharmacy	Retail	1103 M Street

Community Concerns

There was not any community concerns reported for the City of Belleville.

Land Use

Land use can be classified as either primary land use or secondary land use. Direct extraction of a useful product from the physical environment is a primary economic land use. Examples of primary land use include hunting and

gathering, caring for grazing livestock, cultivating agriculture, timbering, and extraction of minerals, ore, shale, and clay. Secondary land uses include residential, commercial, and industrial land uses. In some cases primary and secondary land uses are intermingled.

Residential home sites, commercial sites, and industrial purposes account for most of the land use in cities in Republic County. Larger density residential, commercial, and industrial land uses are primarily found either within the incorporated communities or close to the city limits. Table 3.3.13 identifies the current land usage for the City of Belleville.

Table 3.3. 13 – City of Belleville Current Land Usage

Current Land Use Category	Percent of Jurisdiction
Residential	86
Religious	1
Government	2
Commercial	9
Agricultural	2

New Development

For one (1) year a commercial business may receive a one (.01) cent per kilowatt reduction from its current commercial rate. Eligible if reoccupation of existing business building, construction of a new business building, or expansion of existing building occurs. Contact the Republic County Economic Development Office for an application or additional information.

The Belleville Main Street Program was established in 2002 with the purpose of revitalizing the downtown area. Using a four-point approach of Organization, Promotion, Design and Economic Restructuring, the Belleville Main Street Program plans events, promotions and education activities as well as coordinates incentives available to members.

The Belleville Area Chamber of Commerce is organized for the purpose of advancing tourism, commercial, industrial, civic and economic interest of the City of Belleville, Kansas and surrounding areas. Committees including Retail, Agriculture, Education, Fair Amusement, and Bed Tax along with the Board of Directors plan and coordinate activities and events for the community and area businesses

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are the mitigation actions Belleville plans to adopt.

2011 Mitigation Actions	
Lead Agency: City of Belleville and Republic County Emergency Management	Project Title: Improve Public Awareness of Hazard Risks
Project Description: Improve public awareness of hazard risks through educational programs	
Type of Project: Public Education and Awareness	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	Yes
Which hazard will be eliminated, diminished or controlled?	All Hazards
Benefits (Losses Avoided): Reduce the impact of hazards on Residents	Completion Date: On-going
Plan for Implementation and Administration: Incorporate hazard awareness into existing and future public educational programs	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: City of Belleville and Republic County Emergency Management	Project Title: Promote use of NOAA weather radios
Project Description: Promote the use of NOAA weather radios including citizen purchase of receivers	
Type of Project: Public Education and Awareness	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	yes
Which hazard will be eliminated, diminished or controlled?	Tornado, Windstorm, Winter Storms
Benefits (Losses Avoided): Informed public	Completion Date: On-going
Plan for Implementation and Administration: Promote the use of NOAA weather radios including citizen purchase of receivers	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: City of Belleville	Project Title: Monitor Floodplain Activities
Project Description: Continue to monitor floodplain activities to ensure that structures are reasonably safe from flooding	
Type of Project: Prevention	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	yes
Which hazard will be eliminated, diminished or controlled?	Flood
Benefits (Losses Avoided): Reduce flood insurance premiums for residents and reduce flood damage	Completion Date: On-going
<p>Plan for Implementation and Administration:</p> <ol style="list-style-type: none"> Review of all applications for floodplain development permits to assure that sites are reasonably safe from flooding and that the floodplain development permit requirements of this ordinance have been satisfied; Review of all applications for floodplain development permits for proposed development to assure that all necessary permits have been obtained from Federal, State, or local governmental agencies from which prior approval is required by Federal, State, or local law; Review all subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding; Issue floodplain development permits for all approved applications; Notify adjacent communities and the Division of Water Resources, Kansas Department of Agriculture, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA); Assure that the flood-carrying capacity is not diminished and shall be maintained within the altered or relocated portion of any watercourse; and Verify and maintain a record of the actual elevation (in relation to mean sea level) of the lowest floor, including basement, of all new or substantially improved structures; Verify and maintain a record of the actual elevation (in relation to mean sea level) that the new or substantially improved non-residential structures have been floodproofed; When floodproofing techniques are utilized for a particular non-residential structure, the floodplain administrator shall require certification from a registered professional engineer or architect. 	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

Jurisdiction: City of Courtland	
NFIP Participation	Yes
Initial Flood Hazard Boundary Map (FHBM) Identified	5/21/1976
CRS Participation	No
Number of Repetitive Loss Properties	0

The following image is an aerial view of the City of Courtland (City-Data.com).

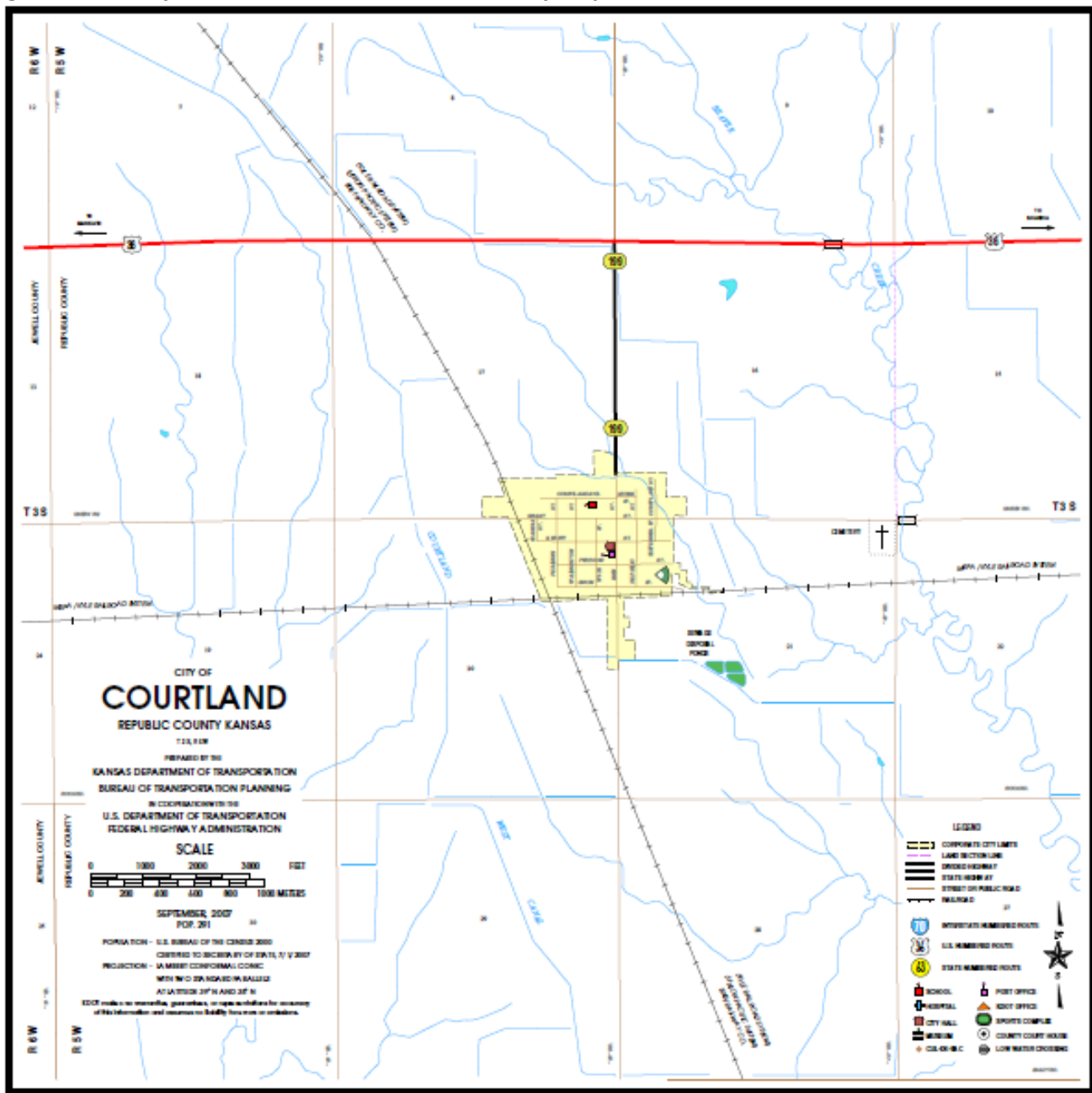
Figure 3.4. 1 – City of Courtland



Location

Courtland is located one mile south of US Highway 36 on Kansas Highway 199 in Republic County. It is located at 39°46'53"N 97° 53'33"W. It has a total land area of 0.27 square miles, with an elevation of 1,499 feet. The following map is the jurisdictional boundaries for the City of Courtland.

Figure 3.4. 2 - City of Courtland Jurisdictional Boundary Map



COURTLAND # 127

History

In 1887, Atchison, Topeka and Santa Fe Railway built a branch line from Neva (3 miles west of Strong City) through Courtland to Superior, Nebraska. In 1996, the Atchison, Topeka and Santa Fe Railway merged with Burlington Northern Railroad and renamed to the current BNSF Railway. Most locals still refer to this railroad as the "Santa Fe" (Wikipedia).

Governance

The City of Courtland is a city of the third class. In Kansas, any city that has a population of less than 5,000 people is a third class city.

Courtland has the most common form of city government, which is a mayor-council form of government. The council has five council members. The City government also consists of the following departments:

The City government also consists of the following departments:

- City Clerk
- City Attorney
- Economic Development
- Fire Department
- Library
- Parks and Recreation
- Public Works Department
- Sanitation Department
- Street Department
- Treasurer
- Sewer
- Water

Population and Demographics

The population and demographics, as well as the economic characteristics are used in the development of the risk assessment. Today, with a population estimated at 297, the City of Courtland is ranked 935th among Kansas incorporated cities. Table 3.4.1 identifies the population estimates from last official census conducted in 2000 to 2009 (U.S. Census Bureau). According to the Census Bureau’s population estimates, the population for the City of Courtland has steadily decreased since 2000. There has been over an eight percent decrease in the population.

Table 3.4. 1 – Population

Jurisdiction	July 1, 2009	July 1, 2008	July 1, 2007	July 1, 2006	July 1, 2005	July 1, 2004	July 1, 2003	July 1, 2002	July 1, 2001	2000 Census
City of Courtland	297	299	305	309	286	292	301	310	322	334

Table 3.4.2 is the U.S. Census Bureau demographic statistics from the 2000 Census. Almost 30 percent of the population in Courtland is over the age of 65, which is more than six percent higher than the State of Kansas. A large elderly population puts the city at an increased risk in during hazard events due to transportation, sheltering, and medical needs.

Table 3.4. 2 – Select Demographics

Jurisdiction	Under 5 Years (%)	Over 65 Years (%)	Median Age (Years)	Average Household Size
United States	6.9	12.9	36.4	2.60
Kansas	7.3	13.0	36.4	2.46
Republic County	5.1	27.0	50.6	2.14
City of Courtland	6.6	29.0	47.1	2.24

Economic Characteristics

An important population trend is the number of people employed in different employment sectors. Employment trends can indicate changes in land use or demand for land. The principal employment sector for the City of Courtland is agriculture, forestry, mining, fishing and hunting. There are 23 people employed in this industry, which is over 16 percent of the population. Table 3.4.3 is the 2000 census statistics for the employed civilian population 16 years and over in Courtland.

Table 3.4. 3 – Economic Industries

Industry	Number of People Employed in Industry	Percent of Population Working in Industry
Agriculture, forestry, mining, fishing and hunting	23	16.8
Transportation and Warehousing, and Utilities	21	15.3
Educational, Health, and Social Services	21	15.3
Construction	18	13.1
Retail Trade	13	9.5
Manufacturing	12	8.8
Arts, Entertainment, Recreation, Accommodation, and Food Services	10	7.3
Other Services	8	5.8
Wholesale Trade	5	3.6
Public Administration	4	2.9
Professional, Scientific, Management, Administrative, and Waste Management Services	2	1.5
Information	0	0
Finance, Insurance, Real Estate, Rental and Leasing	0	0

The 2011 cost of living index is 78.4, which is low compared to the Nation’s average of 100 (City-Data.com). Table 3.4.4 is the economic characteristics for Courtland, Kansas from the 2000 census (U.S. Census Bureau). Courtland has less than one percent unemployment rate and approximately over six percent of the families are living below poverty level.

Table 3.4. 4 – Select Economic Statistics

Jurisdiction	Individuals Below Poverty Level (%)	Median Home Value (1999\$)	Median Household Income (1999\$)	Per Capita Income (1999\$)	Unemployment Rate (%)	Population in Labor Force (%)
United States	14.3	185,400	50,221	27,041	4.2	64.7
State of Kansas	13.2	114,400	47,709	25,522	3.6	68.6
Republic County	9.6	118,500	36,510	23,494	3.2	63.0
City of Courtland	11.3	28,800	27,188	14,543	0.8	53.7

Capabilities

Floodplain Management

According to FEMA the definition for floodplain management is “a decision-making process that aims to achieve the wise use of the nation’s floodplains. Wise use means both reduced flood losses and protection of the natural resources and function of floodplains.

Floods are one of the most common hazards in the United States, as well as Kansas, and most homeowners’ insurance policies do not cover flood damage. For that reason, in 1968 Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. In order for a community to offer flood insurance through the NFIP, the community is required to enforce certain minimum regulations on development in the floodplain. This management of the floodplain is done to ensure that flooding problems do not increase and to work towards the reduction in the risk of flooding. This work is performed by the local communities' Floodplain Administrator.

National Flood Insurance Program (NFIP)

The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the National Flood Insurance Program. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding (Federal Emergency Management Agency). The City of Courtland is a participant in the National Flood Insurance Program. Table 3.4.5 is information is from the Federal Emergency Management Agency’s (FEMA) Community Status Book Report for Courtland.

The table indentifies the date the initial Flood Hazard Boundary Map (FHBM) was identified. FHBM is an official map of a community issued by FEMA, where boundaries of the flood, mudflow, and related erosion areas having special hazards have been designated, which is the date the community joins the NFIP Emergency Program. The Emergency Program is defined as “the initial phase of a community’s participation in the NFIP. During this phase, only limited amounts of insurance are available under the Act. It also identifies the date the initial Flood Insurance Rate Map (FIRM) and the current effective date of the FIRM. A FIRM is an official map of the community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. The final item the table identifies is the date the community went from being in the Emergency Program into the Regular Program. A Regular Program Community is “a community where a FIRM is in effect and full limits of coverage are available under the Act”.

Table 3.4. 5 - NFIP Community Status

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Reg. – Emer. Date
200399A	City of Courtland	Republic	5/21/1976	12/17/2010	12/17/2010 (M)	12/17/2010

(M) = No Elevation Determined – All Zone A, C, and X

Existing Planning Ordinances, Codes, and Plans

This section will identify an inventory of existing planning and regulatory tools available to the City of Courtland. It is vital to ensure that proposed mitigation actions are practical considering the jurisdiction’s ability to implement them. It will help build the general foundation for determining the type of mitigation strategy the jurisdiction develops and ultimately adopts. Table 3.4.6 identifies the existing planning ordinances, codes, and plans for Courtland.

Table 3.4. 6 – Existing Plans, Ordinances, and Codes

Planning ordinances, codes, plans
Fire Prevention code
Zoning Ordinance
Fire Department ISO Rating
Floodplain Management
Water Drought Emergency Ordinance
Economic Development Plan
Local emergency operations plan

Administrative/Technical Resources

This section will identify the administrative and technical resources available to the City of Courtland. It is imperative to ensure that adequate staffing and technical resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.4.7 identifies personnel resources and warning capabilities for Courtland.

Table 3.4. 7 – Administrative/Technical Resources

Personnel Resources
Floodplain Manager
Grant Writer
County Emergency Manager
Outdoor weather warning signals

Financial Resources

This section will identify the financial resources available to the City of Courtland. It is necessary to ensure that adequate financial resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.4.8 identifies personnel resources and warning capabilities for Courtland.

Table 3.4. 8 – Financial Resources

Financial Resources
Capital improvement project funding
Community Development Block Grants
Authority to levy taxes for specific purposes
Fees for water, sewer, gas, or electric services
Incur debt through general obligation bonds

Vulnerabilities

Hazards Affecting the City of Courtland

The hazards that are profiled in this section have had direct impact on the City of Courtland. If the hazards are not profiled in this section, the city did not report any incidents.

History of Flooding

The following historic flood incidents were obtained from the National Climatic Data Center database.

July 10, 2006	A deputy reported fast flowing water up to 6 inches deep over HWY 266 about 2 miles Northeast of Courtland. Also a deputy reported fast flowing water up to 6 inches deep over several county roads 1 to 2 miles northwest of Courtland. The flash flooding occurred with up to 4.75 inches of rain.
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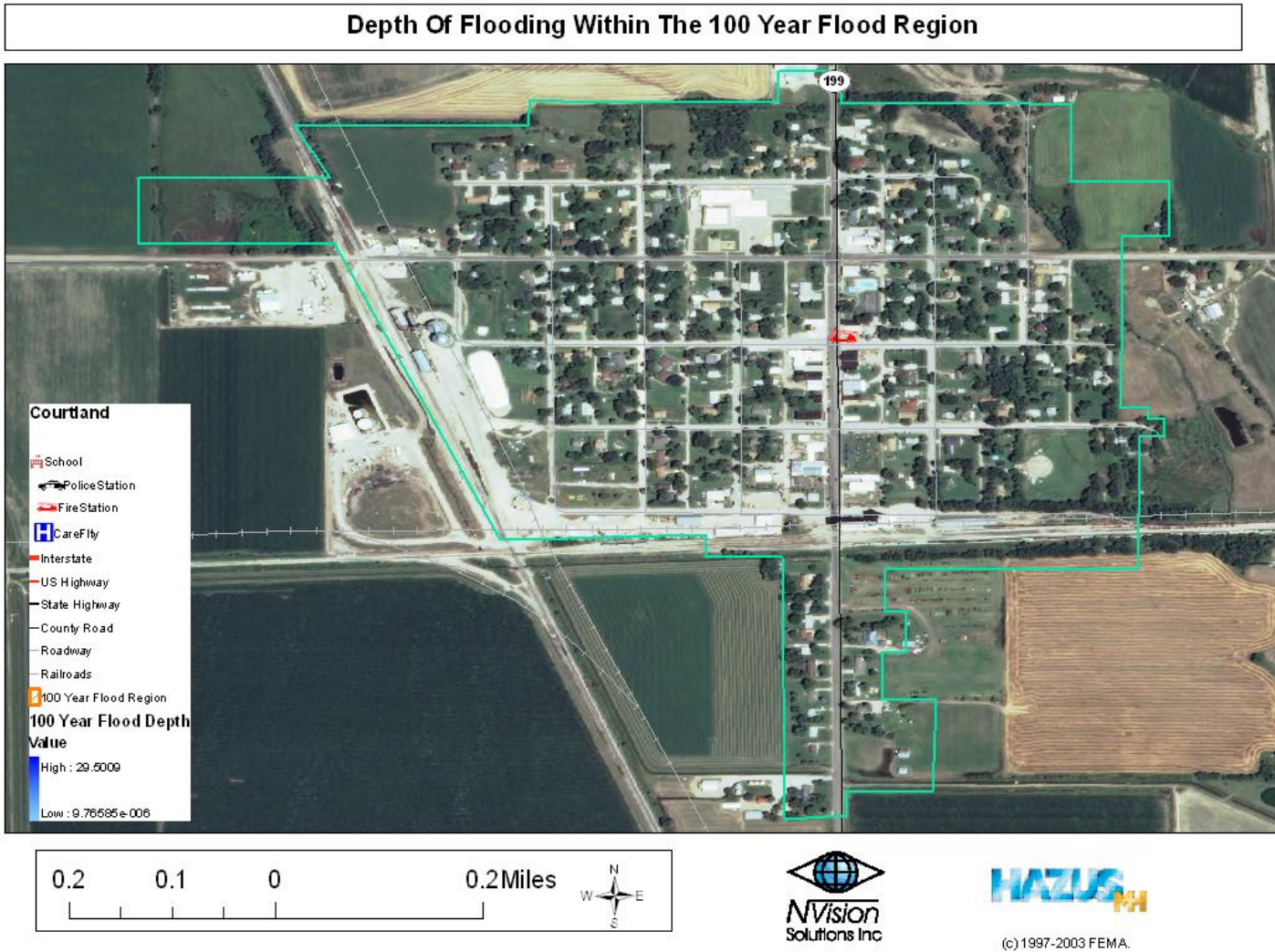
Repetitive Loss Properties

FEMA defines severe repetitive loss properties as “FEMA defines repetitive loss properties as “a residential property that is covered under an NFIP flood insurance policy and has had at least 2 paid losses of more than \$1000 each in any 10-year period since 1978”. There are no repetitive flood loss properties in Courtland, Kansas.

HAZUS Report

A “flood” HAZUS loss estimation model was completed by NVision using FEMA’s software program, HAZUS-MH MR4. The software was used for estimating potential losses from flooding. Figure 3.4.3 is map that identifies the location of the critical facilities in relation to the 100-year floodplain for the City of Courtland. The HAZUS loss estimation model for Courtland did not identify any floodplain areas.

Figure 3.4. 3 - City of Courtland 100-year Flood Plain



History of Hailstorm Events

There were 14 hailstorm events for the City of Courtland in the NCDC database between January 1, 1950 and April 30, 2010. Table 3.4.9 is a summary of each hailstorm event. Although there was not any property or crop damage reported, it is expected the amount of damage is much higher as all damage reports are not reported to the NCDC, many damage claims are reported to individual insurance carriers.

Table 3.4. 9 – Hailstorm Events in the City of Courtland

Date	Time	Diameter (Inches)	Property Damage Reported (\$)	Crop Damage Reported (\$)
5/22/1996	2125	0.59	0	0
5/9/2011	2240	0.88	0	0
9/7/2001	1641	0.75	0	0
9/22/2001	2045	1.75	0	0
8/25/2004	0755	0.88	0	0
6/16/2005	1710	0.75	0	0
8/25/2006	1837	1.00	0	0
4/25/2008	0100	1.00	0	0
6/2/2008	0700	1.75	0	0
9/3/2009	1519	1.75	0	0
4/29/2010	1822	1.25	0	0
5/6/2010	2149	0.88	0	0
6/19/2010	0712	1.00	0	0
6/19/2010	1622	0.75	0	0

History of Lightning Events

Historic hazard incidents were obtained from the National Climatic Data Center database.

August 25, 2000 Lightning struck a house in Courtland and ignited a fire that did minor damage. Property damage was estimated at \$1,000.

History of Tornado Events

Historic hazard incidents were obtained from the National Climatic Data Center database.

April 11, 2001 A tornado moved from east central Jewell County into Republic County and struck the City of Courtland before dissipating near the town of Republic. Considerable damage occurred to power lines and farm outbuildings along the path of the tornado. Considerable damage occurred to several buildings in the town of Courtland as well. Total property damage was estimated at \$60,000.

June 22, 2003 A tornado touched down in rural areas near Courtland and moved northeast about one half mile and struck a farm before dissipating. Several outbuildings at the farm were damaged. A second tornado touched down northeast of Courtland, moved northeast for a mile and damaged some power poles and power lines before dissipating. The third in a series of tornadoes touched down northeast of Courtland and traveled 3 miles and damaged 2 homes before dissipating. Total property damage for this tornado outbreak was estimated at \$195,000.

May 29, 2008 The tornado crossed from Jewell County into Republic County 4 miles South Southwest of Courtland. There, tree damage was noted, and several outbuildings were destroyed

at a residence. An old rock home was also destroyed. Significant tree, power pole, and power line damage was reported along the path. Several of these trees had been uprooted and thrown for several hundred feet. Irrigation units were destroyed. Several homes, a newspaper reported at least six, were damaged along the path. The home that sustained the most significant damage had portions of the roof removed, and its eastern wall blown out. Barns, outbuildings, and grain bins were destroyed at the residence as well. The old Union Valley Schoolhouse was demolished, and several headstones and trees in the Union Valley Cemetery were blown down. The tornado was rated EF-3 when it entered the county. Local Emergency Management reported that several residents had to be rescued after the tornado because of debris and damage to their homes. Highway 36 was closed through Friday morning because of power poles and power lines on the roadway. Between Hwy 81 and a point two miles south of the state line along the path, EF-2 damage was surveyed. Thereafter, EF-1 damage was noted. The tornado exited Republic County and entered Thayer County 5 miles west northwest of Narka. Property damage was estimated at \$1 million.

History of Utility/Infrastructure Failure

Utility/Infrastructure failure includes power and telephone lines, water supply facilities, wastewater facilities and communication towers.

- June 13, 1998 Strong winds knocked down numerous utility poles and power lines damaged or destroyed a variety of farm structures and equipment and tore the roof off one house. The damage occurred in an area extending from 6 to 10 miles north of Courtland.
- July 18, 2001 Strong winds downed power lines, street signs and trees. Property damage was estimated at \$2,000.

History of Windstorms

Historic hazard incidents were obtained from the National Climatic Data Center database.

- June 12, 1994 High winds snapped power pole in half in the Courtland area. Property damage was estimated at \$10,000, crop damage was also estimated at \$5,000.
- July 1, 1994 A severe thunderstorm caused \$5,000 in property damage and \$500 in crop damage in Courtland.
- June 22, 2003 Thunderstorms developed over Republic County the evening of the 22nd and persisted into the early morning hours of the 23rd. There were numerous reports of large hail and damaging winds along with several tornadoes were the result. The persistence of the thunderstorms in the same location led to flash flooding in Republic County as well as the Republican River to flood and do considerable crop damage.

History of Winter Storms

Historic hazard incidents were obtained from the National Climatic Data Center database.

- November 10, 1995 A small private plane crashed in a snowstorm due to wind shear. The plane hit in a pasture adjacent to the airport runway just outside Courtland. The pilot and one passenger walked away from the crash to the airport office and called officials. The two received only slight injuries. The plane incurred moderate damage. Property damage estimates were not available.

City of Courtland Hazard Vulnerability Assessment

The following table is a comparison of the hazards vulnerability ranking for the Republic County HMPC. The first column is the order of priority the HMPC ranked the hazards that threaten the entire planning area. The second

column is the hazards that pose a threat to all of Republic County. The third column is the Republic County HMPC planning significance (high, moderate, or low) for the entire planning area, which was determined by the HMPC during the first hazard mitigation planning meeting. The last column is the planning significance for each hazard as determined by the City of Courtland for their specific community.

The City raised the vulnerability to lightning to high because the community has been directly impacted by lightning events in the past.

They determined the vulnerability to soil erosion and terrorism for Courtland is low.

Table 3.4. 10 - Hazards Vulnerability Assessment

HMPC Priority	Hazards That Threaten Republic County	HMPC Planning Significance	City of Courtland Planning Significance
1	Winter Storm	High	High
2	Tornado	High	High
3	Windstorm	High	High
4	Flood	High	High
5	Utility/Infrastructure Failure	High	High
6	Hailstorm	High	High
7	Drought	Moderate	Moderate
8	Extreme Temperatures	Moderate	Moderate
9	Major Disease Outbreak	Moderate	Moderate
10	Soil Erosion and Dust	Moderate	Low
11	Terrorism/Agro-Terrorism/Civil Disorder	Moderate	Low
12	Wildfire	Moderate	Moderate
13	Lightning	Moderate	High
14	Expansive Soils	Moderate	Moderate
15	Agricultural Infestation	Moderate	Moderate
16	Hazardous Materials	Moderate	Moderate
17	Fog	Low	Low
18	Earthquake	Low	Low
19	Dam and Levee Failure	Low	Low
20	Land Subsidence	Low	Low
21	Landslide	Low	Low
22	Radiological	Low	Low

Critical Infrastructure

An essential element of the Republic County Hazard Mitigation Plan is the identification and inventory of the critical infrastructure located in each participating jurisdiction.

The purpose of the critical infrastructure inventory is to provide information and location data on buildings and infrastructure that are vital to the response and recovery of the community from a natural and/or manmade disaster. While all buildings and structures have value, certain types of structures have a higher priority for protection because damage to them can directly impact the delivery of vital services, thereby delaying response and/or recovery efforts.

Highways/Roads

There are two major highways that are in the Courtland area. Kansas Highway 199 runs directly through the City, while US 36 is a little north of town.

Railroads

There is one railroad line that Kyle Railroad, Union Pacific System and Burlington Northern Santa Fe Railway Company all use the rail line.

There is one other rail line that runs through town and it is only used by MSPA and Kyle Railroad System.

Historic Sites

Historic buildings and structures and documents are often irreplaceable, and may forever be lost in a disaster if not considered in the mitigation planning process. Historic properties and cultural resources are also valuable economic assets that increase property value, while attracting businesses and tourists. Preservation of these assets is often an important method for economic development.

Historic preservation planning protects historic properties and cultural resources before they are threatened with demolition. Hazard mitigation planning protects life and property from damage caused by natural and manmade hazards. Integrating these two planning processes helps ensure the future growth of safe and sustainable historic communities.

Historic preservation is the process of identifying, evaluating, protecting, preserving, and using historic properties. A historic property is any prehistoric or historic district, site, building, structure, or object included in the National Register of Historic Places maintained by the Secretary of the Interior. These properties are legally recognized as historically significant in American history, architecture, archeology, engineering and culture. Typically these properties are at least 50 years old. The National register is a planning tool that highlights the importance of properties worthy of preservation. The National & State Register of Historic Places does not have any places listed as historical for the City of Courtland.

Critical Facilities

For purposes of this Mitigation Plan, Republic County and participating jurisdictions considered critical facilities to be those buildings and structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. These facilities include supporting infrastructure essential to the mission of critical facilities. The facilities also include education facilities to ensure continuity of education. Table 3.4.11 identifies the critical facilities in Courtland.

Table 3.4. 11 – Critical Facilities

Name of Asset	Facility Type	Address	Replacement Value
City Hall	Government	403 Main Street	\$200,000
Pike Valley Elementary/Junior High	Education	502 Grant	\$5,062,000
Courtland Fire Department	Emergency Service	405 Main Street	\$800,000

Local Businesses

Local businesses are important to the economic development for Courtland. During a disaster loss of local businesses can have a detrimental effect on the local economy. Table 3.4.12 identifies the local businesses in the area.

Table 3.4. 12 – Local Businesses

Business Name	Type of Business	Address
Garman & Sons, Inc	Service/Retail	301 Main Street
Tebow Plumbing Company	Service/Retail	410 Main Street

Business Name	Type of Business	Address
Bec's Barber Shop	Service/Retail	Highway 36
Main Street Cuts	Service/Retail	422 Main Street
The Curl Next Door	Service/Retail	417 Main Street
Jensen Tire & Service	Service/Retail	225 Main Street
Hard Oil	Retail/Convenience Store	810 Main Street
The Country Store	Retail/Grocery	415 Main Street
Country Cabinets	Retail	324 Main Street
Nutri-Shield, Inc	Retail	511 Main Street
Guds Atelje	Retail	420 Main Street
The Depot Market	Retail	Highway 36
Swedish American State Bank	Financial	324 Liberty Street
Pinky's Bar & Grill	Restaurant	428 Main Street
The Coffee Shop	Community Building	414 Main Street
C& W Farm Supply, Inc	Agricultural	508 Main Street
United Grain	Agricultural	526 Pershing
Anderson Fertilizer Service, LLC	Agricultural	811 Grant Street
Farmway Coop	Agricultural	317 Scandia Street
Municipal Swimming Pool	Entertainment	307 Main Street
Kansas Bostwick Irrigation District #2	Government	528 Main Street
United States Postal Service	Government	416 Main Street
Clark Insurance	Insurance Service	412 Republic Street
Johnson Insurance Agency	Insurance Service	324 Liberty Street
Medico Associates	Healthcare	411 Main Street
Courtland Senior Center	Healthcare	401 Main Street
Courtland Veterinary Clinic	Animal Health	404 Main Street
Hanel Veterinary Clinic & Trailer Sales	Animal Health/Retail	Highway 36
Courtland Journal	Communication/Newspaper	420 Main Street
Ada Lutheran Church	Religious	RR 1 Box 241
Covenant Church	Religious	505 Republic
United Methodist Church	Religious	308 Main

Community Concerns

The City of Courtland has a high elderly population and is concerned for their safety in a crisis event. The community is concerned about sheltering and fulfilling the healthcare needs in a disastrous event. Loss of power for extended amount of time is a major concern for elderly and disabled people dependant on life saving machines, such as oxygen tanks.

Land Use

Land use can be classified as either primary land use or secondary land use. Direct extraction of a useful product from the physical environment is a primary economic land use. Examples of primary land use include hunting and gathering, caring for grazing livestock, cultivating agriculture, timbering, and extraction of minerals, ore, shale, and

clay. Secondary land uses include residential, commercial, and industrial land uses. In some cases primary and secondary land uses are intermingled.

Residential home sites, commercial sites, and industrial purposes account for most of the land use in cities in Republic County. Larger density residential, commercial, and industrial land uses are primarily found either within the incorporated communities or close to the city limits. Table 3.4.13 identifies the current land usage for the City of Courtland.

Table 3.4. 13 – City of Courtland Current Land Usage

Current Land Use Category	Percent of Jurisdiction
Residential	93.25
Religious	0.9
Government	2.2
Commercial	1.05
Agricultural	2.6

New Development

There were not any reports of new development in Courtland, KS.

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are the mitigation actions Courtland plans to adopt.

2011 Mitigation Actions	
Lead Agency: City of Courtland	Project Title: Monitor Floodplain Activities
Project Description: Continue to monitor floodplain activities to ensure that structures are reasonably safe from flooding	
Type of Project: Prevention	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	yes
Which hazard will be eliminated, diminished or controlled?	Flood
Benefits (Losses Avoided): Reduce flood insurance premiums for residents and reduce flood damage	Completion Date: On-going
Plan for Implementation and Administration:	
<ol style="list-style-type: none"> 1. Review of all applications for floodplain development permits to assure that sites are reasonably safe from flooding and that the floodplain development permit requirements of this ordinance have been satisfied; 2. Review of all applications for floodplain development permits for proposed development to assure that all necessary permits have been obtained from Federal, State, or local governmental agencies from which prior approval is required by Federal, State, or local law; 3. Review all subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding; 4. Issue floodplain development permits for all approved applications; 5. Notify adjacent communities and the Division of Water Resources, Kansas Department of Agriculture, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA); 6. Assure that the flood-carrying capacity is not diminished and shall be maintained within the altered or relocated portion of any watercourse; and 7. Verify and maintain a record of the actual elevation (in relation to mean sea level) of the lowest floor, including basement, of all new or substantially improved structures; 8. Verify and maintain a record of the actual elevation (in relation to mean sea level) that the new or substantially improved non-residential structures have been floodproofed; 9. When floodproofing techniques are utilized for a particular non-residential structure, the floodplain administrator shall require certification from a registered professional engineer or architect. 	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: City of Courtland	Project Title: Appoint Floodplain Manager
Project Description: Appoint Local Flood Plan Manager	
Type of Project: Prevention	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	yes
Which hazard will be eliminated, diminished or controlled?	Flood
Benefits (Losses Avoided): Ensure compliance with NFIP regulations	Completion Date: June 2011
Plan for Implementation and Administration: Interview potential applicants Appoint Floodplain Manager	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: City of Courtland	Project Title: Water Drought Emergency Ordinance
Project Description: Update water drought emergency ordinances	
Type of Project: Prevention	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	yes
Which hazard will be eliminated, diminished or controlled?	Drought
Benefits (Losses Avoided): Ensure water conservation	Completion Date: On-going
Plan for Implementation and Administration: Update water drought emergency ordinances	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

Jurisdiction: City of Cuba	
NFIP Participation	No
Initial Flood Hazard Boundary Map (FHBM) Identified	7/25/1975
CRS Participation	No
Number of Repetitive Loss Properties	0

The following image is an aerial view of the City of Cuba (City-Data.com).

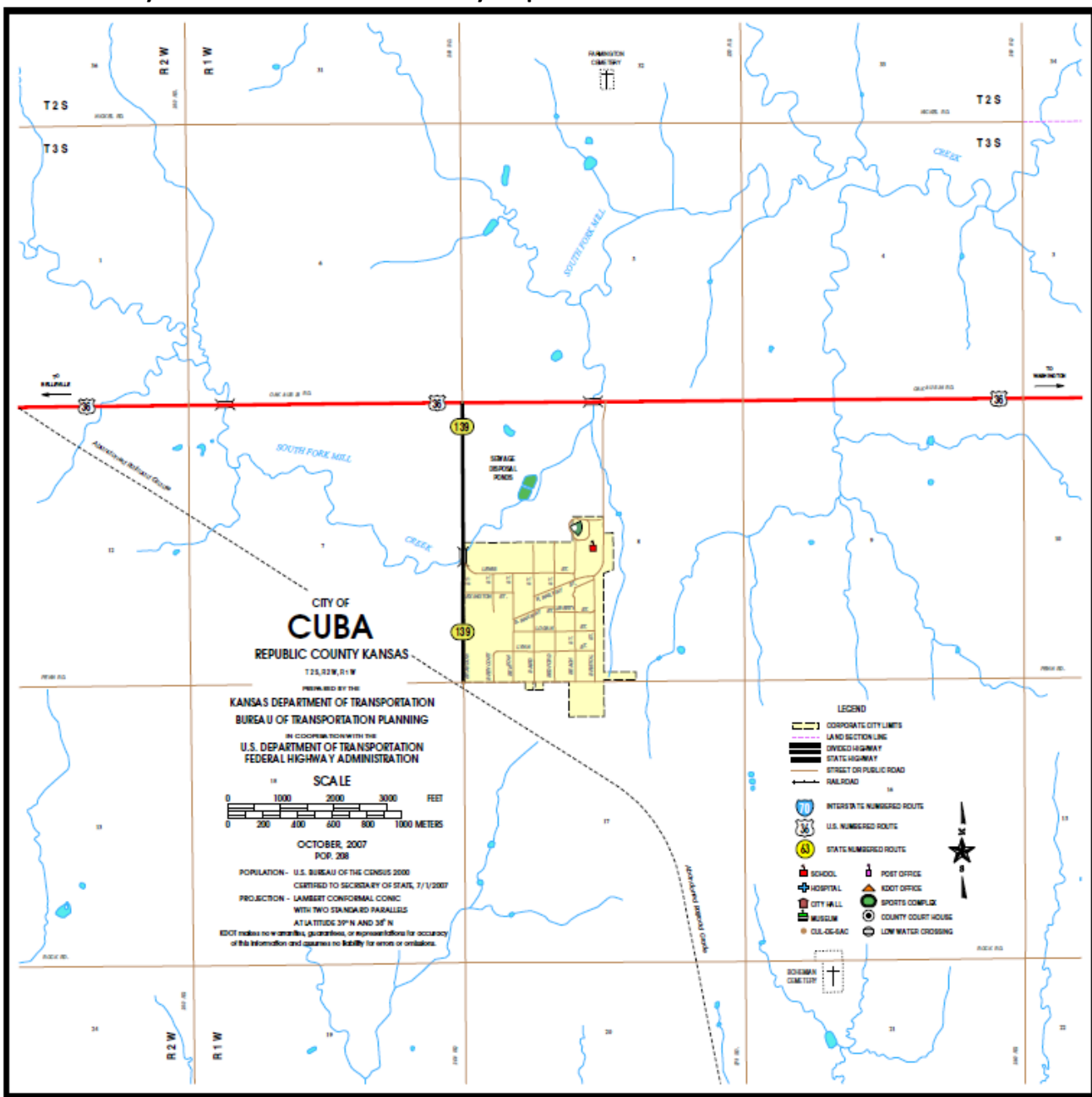
Figure 3.5. 1 – City of Cuba



Location

Cuba is located south of US Highway 36 on Kansas Highway 139 in Republic County. It is located at 39°48'8"N 97°27'26"W. It has a total land area of 0.30 square miles, with an elevation of 1,581 feet. The following map is the jurisdictional boundaries for the City of Cuba.

Figure 3.5. 2 - City of Cuba Jurisdictional Boundary Map



CUBA # 129

History

The city of Cuba, Kansas was founded in 1868 by American southerners traveling westward after the American Civil War. The city received its name from one settler who had once lived on the island of Cuba. Cuba’s residents are predominantly Czech as it grew with a wave of immigrants from Bohemia, some settling by the early 1870s. Originally the majority of the population of Cuba was of Czech and Austrian descent.

Cuba, Kansas has moved twice before settling into its present location. They built a school, a log cabin with a dirt floor and sod roof, and picked the name Cuba, after a visitor who had traveled to the Caribbean shared stories of the islanders' fight for freedom from Spain. In the early 1870s town leaders decided that Cuba needed a new school and a better location. They built the second school and moved the town two miles (three kilometers) west. In 1884 the Burlington and Missouri Railroad ran a line a few miles south of Cuba. So the town moved again. Today the trains are gone, but the town remains.

Cuba was first made famous after it was documented by National Geographic photographer, Jim Richardson. Since that time it has been featured twice on the "CBS News Sunday Morning."

The town has become a representation of community involvement, known for its annual week-long Rock-A-Thon where residents typically raise more than \$25,000 by simply rocking in rocking chairs. They host a harvest festival in July, a community Thanksgiving feed and a Christmas open house.

Residents have restored the old blacksmith's shop, which first opened in 1884. It listed on the National Register of Historic Places. They have also restored the office of Doc McClaskey, who died in 1981 but was the town doctor for more than half a century; and brought in an old country schoolhouse where they display school pictures through the decades.

Governance

The City of Cuba is a city of the third class. In Kansas, any city that has a population of less than 5,000 people is a third class city.

Cuba has the most common form of city government, which is a mayor-council form of government. The council has five council members. The City government also consist s of the following departments:

The City government also consist s of the following departments:

- City Clerk
- City Attorney
- Fire Department
- Library
- Street Department
- Treasurer
- Sewer
- Water

Population and Demographics

The population and demographics, as well as the economic characteristics are used in the development of the risk assessment. Today, with a population estimated at 191, the City of Cuba is ranked 1182nd among Kansas incorporated cities. Table 3.5.1 identifies the population estimates from last official census conducted in 2000 to 2009 (U.S. Census Bureau). According to the Census Bureau’s population estimates, the population for the City of Cuba has steadily decreased since 2000. There has been over an eight percent decrease in the population.

Table 3.5. 1 – Population

Jurisdiction	July 1, 2009	July 1, 2008	July 1, 2007	July 1, 2006	July 1, 2005	July 1, 2004	July 1, 2003	July 1, 2002	July 1, 2001	2000 Census
City of Cuba	191	192	195	198	205	207	212	216	225	231

Table 3.5.2 is the U.S. Census Bureau demographic statistics from the 2000 Census. Almost 30 percent of the population in Cuba is over the age of 65, which is more than six percent higher than the State of Kansas. A large

elderly population puts the city at an increased risk in during hazard events due to transportation, sheltering, and medical needs.

Table 3.5. 2 – Select Demographics

Jurisdiction	Under 5 Years (%)	Over 65 Years (%)	Median Age (Years)	Average Household Size
United States	6.9	12.9	36.4	2.60
Kansas	7.3	13.0	36.4	2.46
Republic County	5.1	27.0	50.6	2.14
City of Cuba	4.3	29.4	46.6	2.10

Economic Characteristics

An important population trend is the number of people employed in different employment sectors. Employment trends can indicate changes in land use or demand for land. The principal employment sector for the City of Cuba is Educational, Health, and Social Services. There are 26 people employed in this industry, which is over 26 percent of the population. Table 3.5.3 is the 2000 census statistics for the employed civilian population 16 years and over in Cuba.

Table 3.5. 3 – Economic Industries

Industry	Number of People Employed in Industry	Percent of Population Working in Industry
Educational, Health, and Social Services	26	26.5
Manufacturing	12	12.2
Arts, Entertainment, Recreation, Accommodation, and Food Services	10	10.2
Other Services	9	9.2
Public Administration	8	8.2
Agriculture, forestry, mining, fishing and hunting	6	6.1
Construction	6	6.1
Wholesale Trade	5	5.1
Retail Trade	5	5.1
Transportation and Warehousing, and Utilities	5	5.1
Finance, Insurance, Real Estate, Rental and Leasing	3	3.1
Professional, Scientific, Management, Administrative, and Waste Management Services	3	3.1
Information	0	0

The 2011 cost of living index is 77.9, which is low compared to the Nation’s average of 100 (City-Data.com). Table 3.5.4 is the economic characteristics for Cuba, Kansas from the 2000 census (U.S. Census Bureau). Cuba has a little over one percent unemployment rate and approximately three percent of the families are living below poverty level.

Table 3.5. 4 – Select Economic Statistics

Jurisdiction	Individuals Below Poverty Level (%)	Median Home Value (1999\$)	Median Household Income (1999\$)	Per Capita Income (1999\$)	Unemployment Rate (%)	Population in Labor Force (%)
United States	14.3	185,400	50,221	27,041	4.2	64.7
State of Kansas	13.2	114,400	47,709	25,522	3.6	68.6
Republic County	9.6	118,500	36,510	23,494	3.2	63.0
City of Cuba	6.8	19,000	28,333	17,103	1.1	55.9

Capabilities

Floodplain Management

According to FEMA the definition for floodplain management is “a decision-making process that aims to achieve the wise use of the nation’s floodplains. Wise use means both reduced flood losses and protection of the natural resources and function of floodplains.

Floods are one of the most common hazards in the United States, as well as Kansas, and most homeowners’ insurance policies do not cover flood damage. For that reason, in 1968 Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. In order for a community to offer flood insurance through the NFIP, the community is required to enforce certain minimum regulations on development in the floodplain. This management of the floodplain is done to ensure that flooding problems do not increase and to work towards the reduction in the risk of flooding. This work is performed by the local communities' Floodplain Administrator.

National Flood Insurance Program (NFIP)

The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the National Flood Insurance Program. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding (Federal Emergency Management Agency). The City of Cuba is not currently a participant in the National Flood Insurance Program. Table 3.5.5 is information is from the Federal Emergency Management Agency’s (FEMA) Community Status Book Report for Cuba.

The table identifies the date the initial Flood Hazard Boundary Map (FHBM) was identified. FHBM is an official map of a community issued by FEMA, where boundaries of the flood, mudflow, and related erosion areas having special hazards have been designated, which is the date the community joins the NFIP Emergency Program. The Emergency Program is defined as “the initial phase of a community’s participation in the NFIP. During this phase, only limited amounts of insurance are available under the Act. It also identifies the date the initial Flood Insurance Rate Map (FIRM) and the current effective date of the FIRM. A FIRM is an official map of the community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. The final item the table identifies is the date the community went from being in the Emergency Program into the Regular Program. A Regular Program Community is “a community where a FIRM is in effect and full limits of coverage are available under the Act”.

Communities that participate in the NFIP but do not enforce the floodplain management regulations are placed on probation. Probation means the policyholders in the community are charged an additional \$50 premium on policies sold or renewed during the probation period. The community has 90 days to avoid this sanction by correcting deficiencies. The City of Cuba is a non-participating community as the community was sanctioned in 1976. The community has recently been speaking with Kansas Department of Agriculture: Division of Water Resources regarding what is needed for the community to rejoin the NFIP.

Table 3.5. 5 - NFIP Community Status

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Sanction Date	Tribal
200400#	City of Cuba	Republic	7/25/1975	12/17/2010	12/17/2010	7/25/1976	NO

Existing Planning Ordinances, Codes, and Plans

This section will identify an inventory of existing planning and regulatory tools available to the City of Cuba. It is vital to ensure that proposed mitigation actions are practical considering the jurisdiction’s ability to implement them. It will help build the general foundation for determining the type of mitigation strategy the jurisdiction develops and ultimately adopts. Table 3.5.6 identifies the existing planning ordinances, codes, and plans for Cuba.

Table 3.5. 6 – Existing Plans, Ordinances, and Codes

Planning ordinances, codes, plans
Fire Prevention code
Fire Department ISO Rating
Economic Development Plan
Local emergency operations plan

Administrative/Technical Resources

This section will identify the administrative and technical resources available to the City of Cuba. It is imperative to ensure that adequate staffing and technical resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.5.7 identifies personnel resources and warning capabilities for the community.

Table 3.5. 7 – Administrative/Technical Resources

Personnel Resources
Grant Writer
County Emergency Manager
Outdoor weather warning signals

Financial Resources

This section will identify the financial resources available to the City of Cuba. It is necessary to ensure that adequate financial resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.5.8 identifies personnel resources and warning capabilities for the community.

Table 3.5. 8 – Financial Resources

Financial Resources
Capital improvement project funding
Community Development Block Grants
Authority to levy taxes for specific purposes
Fees for water, sewer, gas, or electric services
Incur debt through general obligation bonds

Vulnerabilities

Hazards Affecting the City of Cuba

The hazards that are profiled in this section have had direct impact on the City of Cuba. If the hazards are not profiled in this section, the city did not report any incidents.

History of Flooding

There were not any reports of flooding in the National Climatic Data Center (NCDC) for the City of Cuba.

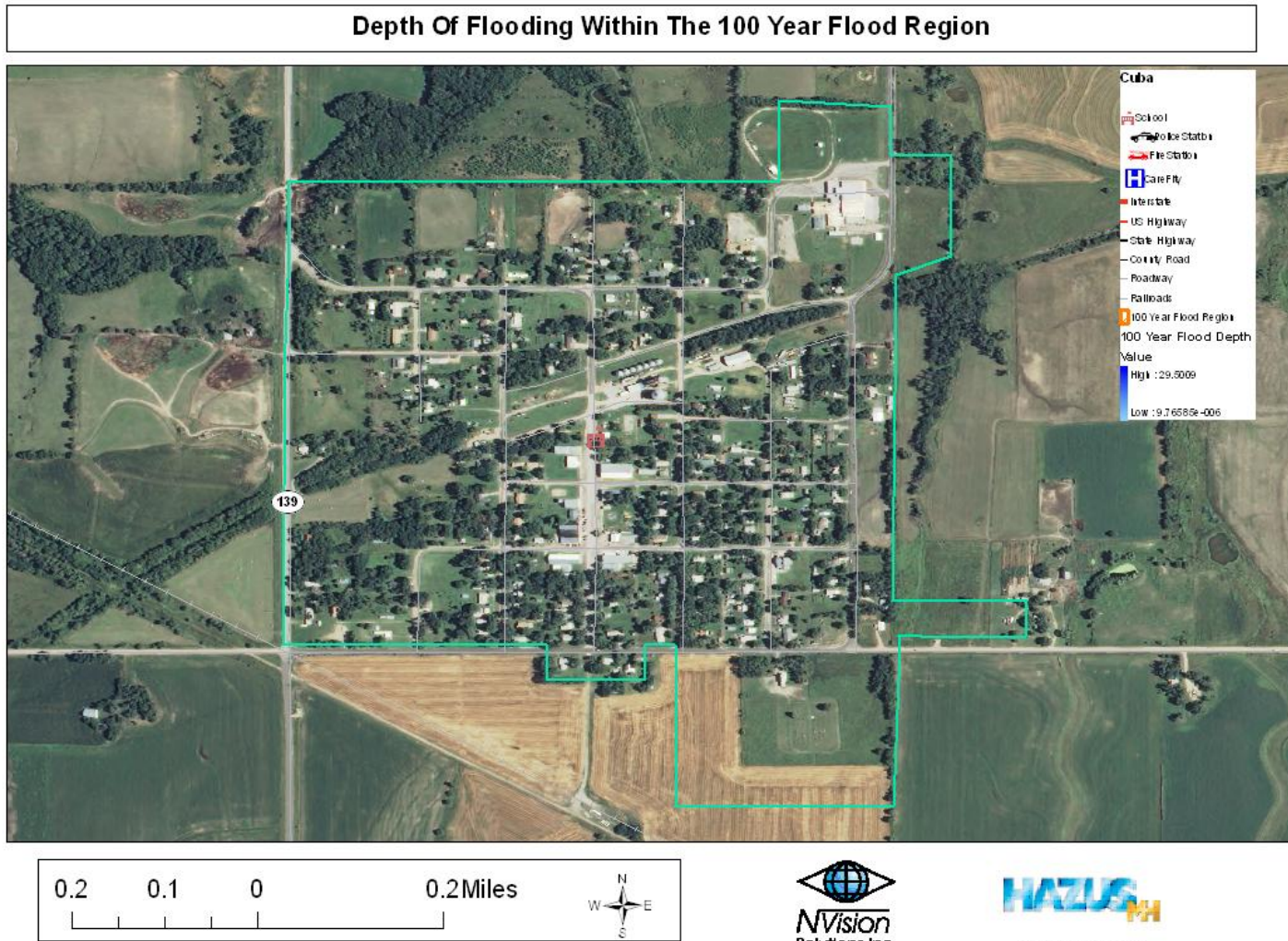
Repetitive Loss Properties

FEMA defines repetitive loss properties as “a residential property that is covered under an NFIP flood insurance policy and has had at least 2 paid losses of more than \$1000 each in any 10-year period since 1978. There are no repetitive flood loss properties in Cuba, Kansas.

HAZUS Report

A “flood” HAZUS loss estimation model was completed by NVision using FEMA’s software program, HAZUS-MH MR4. The software was used for estimating potential losses from flooding. Figure 3.5.3 is map that identifies the location of the critical facilities in relation to the 100-year floodplain for the City of Cuba. The HAZUS loss estimation model for Cuba did not identify any floodplain areas.

Figure 3.5. 3 - City of Cuba 100-year Flood Plain



History of Hailstorm Events

There were seven hailstorm events for the City of Cuba in the NCDC database between January 1, 1950 and April 30, 2010. Table 3.5.9 is a summary of each hailstorm event. Although there was only \$5,000 in property and \$5,000 in crop damage reported, it is expected the amount of damage is much higher as all damage reports are not reported to the NCDC, many damage claims are reported to individual insurance carriers.

Table 3.5. 9 – Hailstorm Events in the City of Cuba

Date	Time	Diameter (Inches)	Property Damage Reported (\$)	Crop Damage Reported (\$)
8/12/1993	1930	1.75	5,000	5,000
5/22/1996	2200	2.00	0	0
5/29/2004	1837	1.00	0	0
6/29/2006	1600	1.00	0	0
4/26/2009	1209	1.25	0	0
6/1/2009	1543	1.75	0	0
4/29/2010	1739	1.00	0	0

History of Tornado Events

Historic hazard incidents were obtained from the National Climatic Data Center database.

May 24, 2004 A tornado touched down briefly in the open country just west of Cuba. There were not any reports of property damage or injuries.

History of Utility/Infrastructure Failure

Utility/Infrastructure failure includes power and telephone lines, water supply facilities, wastewater facilities and communication towers.

June 14, 2001 Strong winds downed power lines near Cuba. Damage was estimated at \$2,000.

History of Windstorms

Historic hazard incidents were obtained from the National Climatic Data Center database.

June 14, 2001 Strong winds downed power lines near Cuba. Thunderstorms developed over north central Kansas and became severe producing large hail strong winds and 2 tornadoes. Damage was estimated at \$2,000.

July 18, 2001 Strong winds destroyed a garage. Property damage was estimated at \$5,000.

March 27, 2004 Strong winds blew a 300 gallon fuel tank on top of a car. A barn was moved 12 feet off its foundation, and several feed bins were blown on top of the barn. Property damage was estimated at \$30,000.

City of Cuba Hazard Vulnerability Assessment

The following table is a comparison of the hazards vulnerability ranking for the Republic County HMPC. The first column is the order of priority the HMPC ranked the hazards that threaten the entire planning area. The second column is the hazards that pose a threat to all of Republic County. The third column is the Republic County HMPC planning significance (high, moderate, or low) for the entire planning area, which was determined by the HMPC during the first hazard mitigation planning meeting. The last column is the planning significance for each hazard as determined by the City of Cuba for their specific community.

The City of Cuba they were not any more or less vulnerable to any particular hazard than the rest of the planning area. Therefore, they determined the planning significance for each hazard was the same as the HMPC planning significance.

Table 3.5. 10 - Hazards Vulnerability Assessment

HMPC Priority	Hazards That Threaten Republic County	HMPC Planning Significance	City of Cuba Planning Significance
1	Winter Storm	High	High
2	Tornado	High	High
3	Windstorm	High	High
4	Flood	High	High
5	Utility/Infrastructure Failure	High	High
6	Hailstorm	High	High
7	Drought	Moderate	Moderate
8	Extreme Temperatures	Moderate	Moderate
9	Major Disease Outbreak	Moderate	Moderate
10	Soil Erosion and Dust	Moderate	Moderate
11	Terrorism/Agro-Terrorism/Civil Disorder	Moderate	Moderate
12	Wildfire	Moderate	Moderate
13	Lightning	Moderate	Moderate
14	Expansive Soils	Moderate	Moderate
15	Agricultural Infestation	Moderate	Moderate
16	Hazardous Materials	Moderate	Moderate
17	Fog	Low	Low
18	Earthquake	Low	Low
19	Dam and Levee Failure	Low	Low
20	Land Subsidence	Low	Low
21	Landslide	Low	Low
22	Radiological	Low	Low

Critical Infrastructure

An essential element of the Republic County Hazard Mitigation Plan is the identification and inventory of the critical infrastructure located in each participating jurisdiction.

The purpose of the critical infrastructure inventory is to provide information and location data on buildings and infrastructure that are vital to the response and recovery of the community from a natural and/or manmade disaster. While all buildings and structures have value, certain types of structures have a higher priority for protection because damage to them can directly impact the delivery of vital services, thereby delaying response and/or recovery efforts.

Highways/Roads

There are two major highways that are in the Cuba area. Kansas Highway 139 runs directly through the City, while US 36 is a little north of town.

Historic Sites

Historic buildings and structures and documents are often irreplaceable, and may forever be lost in a disaster if not considered in the mitigation planning process. Historic properties and cultural resources are also valuable economic assets that increase property value, while attracting businesses and tourists. Preservation of these assets is often an important method for economic development.

Historic preservation planning protects historic properties and cultural resources before they are threatened with demolition. Hazard mitigation planning protects life and property from damage caused by natural and manmade hazards. Integrating these two planning processes helps ensure the future growth of safe and sustainable historic communities.

Historic preservation is the process of identifying, evaluating, protecting, preserving, and using historic properties. A historic property is any prehistoric or historic district, site, building, structure, or object included in the National Register of Historic Places maintained by the Secretary of the Interior. These properties are legally recognized as historically significant in American history, architecture, archeology, engineering and culture. Typically these properties are at least 50 years old. The National register is a planning tool that highlights the importance of properties worthy of preservation. The National & State Register of Historic Places does not have any places listed as historical for the City of Cuba.

- Cuba Blacksmith Shop
 Also Known As 157-1210-0002
 Address: ½ block West of Baird Street on the Lyon Street
 National Register Number: 09000810
 Listed in National Register: 2009
 Owner: Local Government
 Area of Significance: Industry, Agriculture, commerce
 Period of Significance: 1875-1974
 Historic Function: Commerce/Trade
 Current Function: Work In Progress

Critical Facilities

For purposes of this Mitigation Plan, Republic County and participating jurisdictions considered critical facilities to be those buildings and structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. These facilities include supporting infrastructure essential to the mission of critical facilities. The facilities also include education facilities to ensure continuity of education. Table 3.5.11 identifies the critical facilities in Cuba.

Table 3.5. 11 – Critical Facilities

Name of Asset	Facility Type	Address	Replacement Value
City Office	Government	313 Baird Street	\$200,000
Cuba Fire Department	Emergency Service	402 Lynn Street	\$600,000
Cuba Cash Store	Critical Supplier	301 Baird Street	\$350,000

Local Businesses

Local businesses are important to the economic development for Cuba. During a disaster loss of local businesses can have a detrimental effect on the local economy. Table 3.5.12 identifies the local businesses in the area.

Table 3.5. 12 – Local Businesses

Business Name	Type of Business	Address
Hillcrest Public Library	Education	804 Bristol Street
Cuba Post Office	Government	309 Baird Street
Two Doors Down Cafe	Restaurant	307 Baird Street
Town & Country Services	Automotive Repair	300 Baird Street
Cuba Saint Isidore Catholic Church	Religious	603 Linden Street
Cuba Presbyterian Church	Religious	218 Beach Street
Cuba Cash Store	Retail	301 Baird Street
New Century Bank	Financial	311 Baird Street
Twin County Pets	Animal Health	706 Linden Street

Business Name	Type of Business	Address
Weathers Oil Company	Service Station	2599 US Hwy 36
Little Steps Daycare	Education	405 Bristol Street
Livestock Nutrition Services	Agricultural	205 Beach Street
United Farmers Coop	Agricultural	402 Baird Street
Harvels Gardens	Retail	401 Bedford Street
Hair Gallery	Service/Retail	306 Benton Street
Avon	Retail	303 Bristol Street
JBN Telephone	Utility Service	418 West 5 th

Community Concerns

The City of Cuba is concerned about the declining population. It is difficult for small, out-of-the-way towns like Cuba to keep up with modern times. Many years ago farmers had money in their pockets and spent it in the town's stores. Two railroads brought trains to town, and on Saturday night the place was hopping. Even Lawrence Welk and his band came here. Today hardly anybody finds his way to Cuba. The trains are gone, many of the old houses are vacant, and farmers are sparse. After the community lost their school, they feared the city would disappear. However, the residents are fighting to keep the community alive by sticking together and supporting the local businesses.

Land Use

Land use can be classified as either primary land use or secondary land use. Direct extraction of a useful product from the physical environment is a primary economic land use. Examples of primary land use include hunting and gathering, caring for grazing livestock, cultivating agriculture, timbering, and extraction of minerals, ore, shale, and clay. Secondary land uses include residential, commercial, and industrial land uses. In some cases primary and secondary land uses are intermingled.

Residential home sites, commercial sites, and industrial purposes account for most of the land use in cities in Republic County. Larger density residential, commercial, and industrial land uses are primarily found either within the incorporated communities or close to the city limits. Table 3.5.13 identifies the current land usage for the City of Cuba.

Table 3.5. 13 – City of Cuba Current Land Usage

Current Land Use Category	Percent of Jurisdiction
Residential	87.9
Religious	1.2
Government	2.4
Commercial	6.1
Agricultural	2.4

New Development

The City of Cuba did not report any new development plans.

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are the mitigation actions Cuba plans to adopt.

2011 Mitigation Actions	
Lead Agency: City of Courtland	Project Title: Promote water conservation and education
Project Description: Promote water conservation and education through educational programs	
Type of Project: Prevention	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	yes
Which hazard will be eliminated, diminished or controlled?	Drought
Benefits (Losses Avoided): Ensure water conservation	Completion Date: On-going
Plan for Implementation and Administration: Promote water conservation and education through educational programs	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

Jurisdiction: City of Munden	
NFIP Participation	No
Initial Flood Hazard Boundary Map (FHBM) Identified	N/A
CRS Participation	No
Number of Repetitive Loss Properties	0

The following image is an aerial view of the City of Munden (City-Data.com).

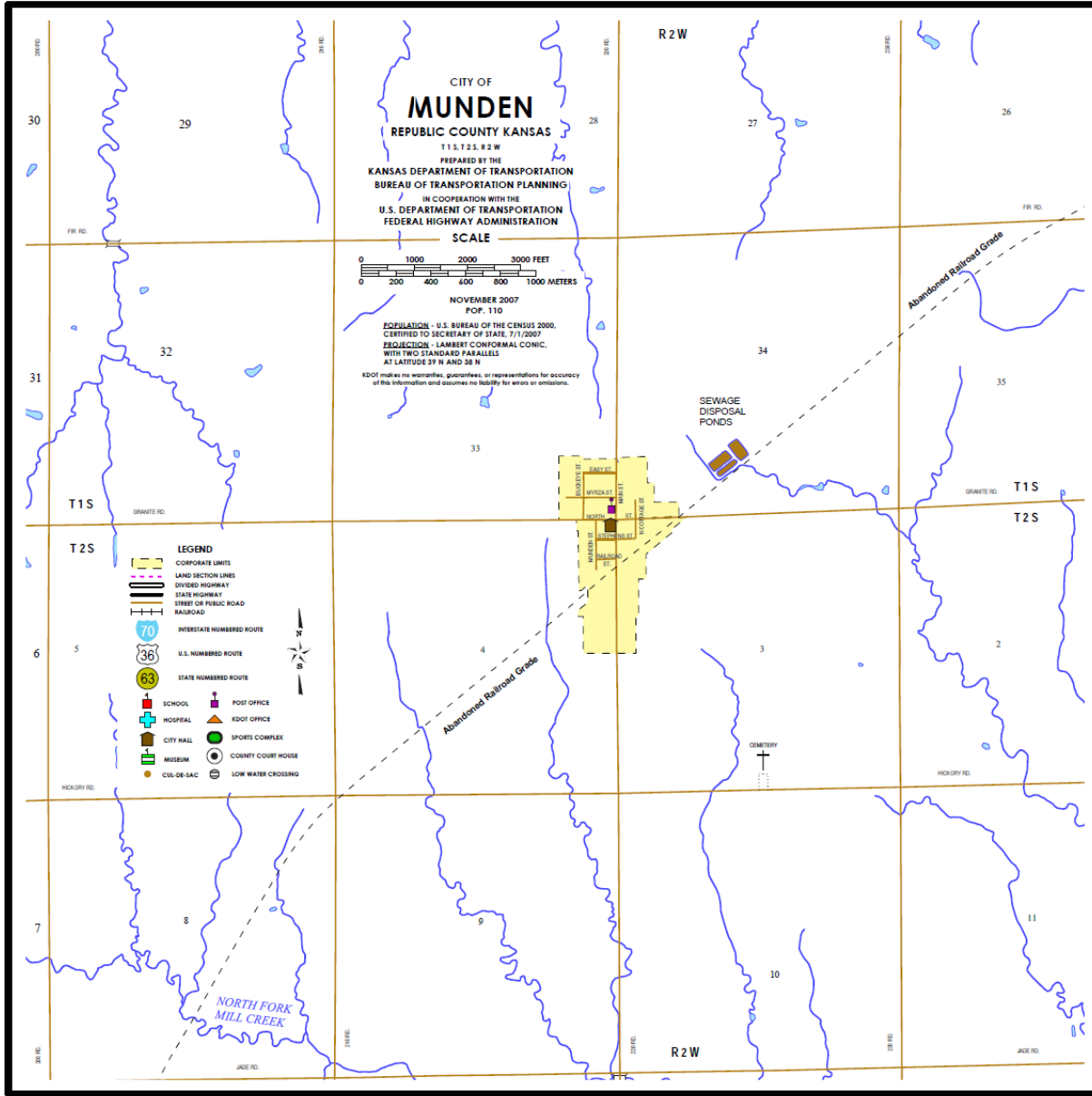
Figure 3.6. 1 – City of Munden



Location

Munden is located north east of Belleville in Republic County. The latitude is 39.913N and the longitude is -97.537. It has a total land area of 0.30 square miles, with an elevation of 1,634 feet. The following map is the jurisdictional boundaries for the City of Munden.

Figure 3.6. 2 - City of Munden Jurisdictional Boundary Map



MUNDEN # 493

MUNDEN # 493

Governance

The City of Munden is a city of the third class. In Kansas, any city that has a population of less than 5,000 people is a third class city.

Munden has the most common form of city government, which is a mayor-council form of government. The council has five council members. The City government also consists of the following departments:

- City Clerk
- City Attorney
- Fire Department
- Street Department
- Treasurer
- Sewer
- Water

Population and Demographics

The population and demographics, as well as the economic characteristics are used in the development of the risk assessment. Today, with a population estimated at 101, the City of Munden is ranked 1505th among Kansas incorporated cities. Table 3.6.1 identifies the population estimates from last official census conducted in 2000 to 2009 (U.S. Census Bureau). According to the Census Bureau’s population estimates, the population for the City of Munden has steadily decreased since 2000. There has been over a 17 percent decrease in the population.

Table 3.6. 1 – Population

Jurisdiction	July 1, 2009	July 1, 2008	July 1, 2007	July 1, 2006	July 1, 2005	July 1, 2004	July 1, 2003	July 1, 2002	July 1, 2001	2000 Census
City of Munden	101	102	103	105	108	109	112	114	119	122

Table 3.6.2 is the U.S. Census Bureau demographic statistics from the 2000 Census. Nearly 20 percent of the population in Munden is over the age of 65, which is more than five percent higher than the State of Kansas. A large elderly population puts the city at an increased risk in during hazard events due to transportation, sheltering, and medical needs.

Table 3.6. 2 – Select Demographics

Jurisdiction	Under 5 Years (%)	Over 65 Years (%)	Median Age (Years)	Average Household Size
United States	6.9	12.9	36.4	2.60
Kansas	7.3	13.0	36.4	2.46
Republic County	5.1	27.0	50.6	2.14
City of Munden	7.4	18.9	39.0	2.26

Economic Characteristics

An important population trend is the number of people employed in different employment sectors. Employment trends can indicate changes in land use or demand for land. The principal employment sector for the City of Munden is Educational, Health, and Social Services. There are 18 people employed in this industry, which is 30 percent of the population. Table 3.6.3 is the 2000 census statistics for the employed civilian population 16 years and over in Munden.

Table 3.6. 3 – Economic Industries

Industry	Number of People Employed in Industry	Percent of Population Working in Industry
Educational, Health, and Social Services	18	30
Manufacturing	12	20
Arts, Entertainment, Recreation, Accommodation, and Food Services	7	11.7
Other Services	6	10
Public Administration	4	6.7
Agriculture, forestry, mining, fishing and hunting	4	6.7
Construction	4	6.7
Wholesale Trade	3	5
Retail Trade	2	3.3
Transportation and Warehousing, and Utilities	0	0
Finance, Insurance, Real Estate, Rental and Leasing	0	0
Professional, Scientific, Management, Administrative, and Waste Management Services	0	0
Information	0	0

The 2011 cost of living index is 77.7, which is low compared to the Nation’s average of 100 (City-Data.com). Table 3.6.4 is the economic characteristics for Munden, Kansas from the 2000 census (U.S. Census Bureau). Munden has no unemployment rate.

Table 3.6. 4 – Select Economic Statistics

Jurisdiction	Individuals Below Poverty Level (%)	Median Home Value (1999\$)	Median Household Income (1999\$)	Per Capita Income (1999\$)	Unemployment Rate (%)	Population in Labor Force (%)
United States	14.3	185,400	50,221	27,041	4.2	64.7
State of Kansas	13.2	114,400	47,709	25,522	3.6	68.6
Republic County	9.6	118,500	36,510	23,494	3.2	63.0
City of Munden	16.2	9,999	25,000	12,649	0	61.9

Capabilities

Floodplain Management

According to FEMA the definition for floodplain management is “a decision-making process that aims to achieve the wise use of the nation’s floodplains. Wise use means both reduced flood losses and protection of the natural resources and function of floodplains.

Floods are one of the most common hazards in the United States, as well as Kansas, and most homeowners’ insurance policies do not cover flood damage. For that reason, in 1968 Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. In order for a community to offer flood insurance through the NFIP, the community is required to enforce certain minimum regulations on development in the floodplain. This management of the floodplain is done to ensure that flooding problems do not increase and to work towards the reduction in the risk of flooding. This work is performed by the local communities' Floodplain Administrator.

National Flood Insurance Program (NFIP)

The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the National Flood Insurance Program. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding (Federal Emergency Management Agency). The City of Munden is not currently a participant in the National Flood Insurance Program.

Existing Planning Ordinances, Codes, and Plans

This section will identify an inventory of existing planning and regulatory tools available to the City of Munden. It is vital to ensure that proposed mitigation actions are practical considering the jurisdiction’s ability to implement them. It will help build the general foundation for determining the type of mitigation strategy the jurisdiction develops and ultimately adopts. Table 3.6.5 identifies the existing planning ordinances, codes, and plans for Munden.

Table 3.6. 5 – Existing Plans, Ordinances, and Codes

Planning ordinances, codes, plans
Fire Prevention code
Fire Department ISO Rating 7
Economic Development Plan
Local emergency operations plan

Administrative/Technical Resources

This section will identify the administrative and technical resources available to the City of Munden. It is imperative to ensure that adequate staffing and technical resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.6.6 identifies personnel resources and warning capabilities for the community.

Table 3.6. 6 – Administrative/Technical Resources

Personnel Resources
Engineer/Professional trained in construction practices related to buildings and/or infrastructure – Campbell & Johnson
County Emergency Manager
Outdoor weather warning signals

Financial Resources

This section will identify the financial resources available to the City of Munden. It is necessary to ensure that adequate financial resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.6.7 identifies personnel resources and warning capabilities for the community.

Table 3.6. 7 – Financial Resources

Financial Resources
Fees for water, sewer, gas, or electric services
Incur debt through general obligation bonds

Vulnerabilities

Hazards Affecting the City of Munden

The hazards that are profiled in this section have had direct impact on the City of Munden. If the hazards are not profiled in this section, the city did not report any incidents.

History of Flooding

Historic hazard incidents were obtained from the National Climatic Data Center database.

July 31, 2007

A round of heavy thunderstorms brought areas of flooding to portions of north central and east central Kansas. Water was reported flowing over a roadway in Munden. It was estimated to be up to 6 inches deep. Two inches of rain fell in about an hour. Property damage was estimated at \$30,000.

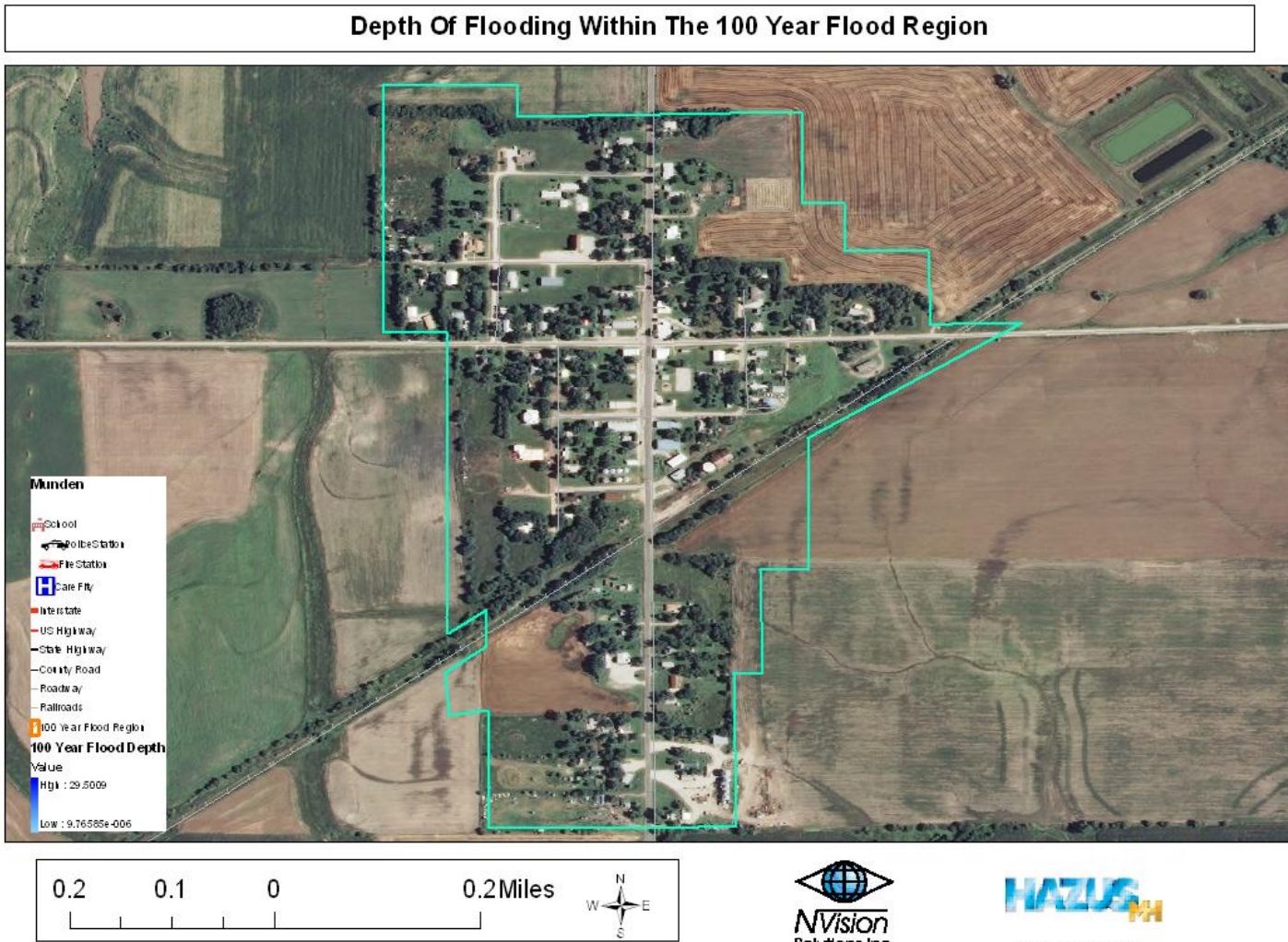
Repetitive Loss Properties

FEMA defines repetitive loss properties as “a residential property that is covered under an NFIP flood insurance policy and has had at least 2 paid losses of more than \$1000 each in any 10-year period since 1978. There are no repetitive flood loss properties in Munden, Kansas.

HAZUS Report

A “flood” HAZUS loss estimation model was completed by NVision using FEMA’s software program, HAZUS-MH MR4. The software was used for estimating potential losses from flooding. Figure 3.6.3 is map that identifies the location of the critical facilities in relation to the 100-year floodplain for the City of Munden. The HAZUS loss estimation model for Munden did not identify any floodplain areas.

Figure 3.6. 3 - City of Munden 100-year Flood Plain



History of Hailstorm Events

There were 15 hailstorm events reported for the City of Munden in the NCDC database between January 1, 1950 and February, 28, 2011. Table 3.6.8 is a summary of each hailstorm event. Although there was only \$10,000 in crop damage reported, it is expected the amount of damage is much higher as all damage reports are not reported to the NCDC, many damage claims are reported to individual insurance carriers.

Table 3.6. 8 – Hailstorm Events in the City of Munden

Date	Time	Diameter (Inches)	Property Damage Reported (\$)	Crop Damage Reported (\$)
5/22/1996	2250	1.75	0	0
6/13/2001	1905	0.88	0	0
6/22/2003	2122	1.25	0	0
5/22/2004	1558	0.88	0	10,000
5/24/2004	1545	1.00	0	0
5/29/2004	1545	0.75	0	0
4/18/2005	2110	1.75	0	0
8/17/2005	1200	0.88	0	0
7/13/2006	1730	1.75	0	0
4/24/2008	2155	1.50	0	0
6/23/2008	0106	1.25	0	0
8/22/2008	2337	0.75	0	0
6/17/2009	1137	2.75	0	0
4/29/2010	1715	1.50	0	0
6/2/2010	0150	1.00	0	0

History of Lightning

Historic hazard incidents were obtained from the National Climatic Data Center database.

June 22, 1998 Lightning struck a house causing damage of a few burned or partially melted ceiling tiles. Damage estimates were not available.

History of Tornado Events

Historic hazard incidents were obtained from the National Climatic Data Center database.

June 13, 2001 A tornado formed just north of Munden and moved northeast doing considerable damage to several farmsteads before moving into Nebraska. Thunderstorms developed over north central Kansas and became severe producing large hail strong winds and 2 tornadoes. Property damage was estimated at \$120,000.

June 22, 2003 A tornado touched down 4 miles west of Munden and blew a sheriffs car into the ditch before dissipating. Thunderstorms developed over Republic County the evening of the 22nd and persisted into the early morning hours of the 23rd. There were numerous reports of large hail and damaging winds along with several tornadoes. Property damage was estimated at \$5,000.

May 29, 2004 A tornado touched down briefly in Munden and damaged a few homes. There was \$5,000 in property damage reported.

History of Windstorms

Historic hazard incidents were obtained from the National Climatic Data Center database.

- May 22, 1996 A severe thunderstorm was reported in the City of Munden. There were no reports of property damage or injuries.

- August 7, 2000 Strong winds knocked down power lines and took the roof off of a shed five miles east of Munden. Property damage was estimated at \$4,000.

- June 13, 2001 Thunderstorms were reported by the City of Munden. The storms became severe producing large hail strong winds and 2 tornadoes.

City of Munden Hazard Vulnerability Assessment

The following table is a comparison of the hazards vulnerability ranking for the Republic County HMPC. The first column is the order of priority the HMPC ranked the hazards that threaten the entire planning area. The second column is the hazards that pose a threat to all of Republic County. The third column is the Republic County HMPC planning significance (high, moderate, or low) for the entire planning area, which was determined by the HMPC during the first hazard mitigation planning meeting. The last column is the planning significance for each hazard as determined by the City of Munden for their specific community.

The City of Munden concluded they were not any more or less vulnerable to any particular hazard than the rest of the planning area. Therefore, they determined the planning significance for each hazard was the same as the HMPC planning significance.

Table 3.6. 9 - Hazards Vulnerability Assessment

HMPC Priority	Hazards That Threaten Republic County	HMPC Planning Significance	City of Munden Planning Significance
1	Winter Storm	High	High
2	Tornado	High	High
3	Windstorm	High	High
4	Flood	High	High
5	Utility/Infrastructure Failure	High	High
6	Hailstorm	High	High
7	Drought	Moderate	Moderate
8	Extreme Temperatures	Moderate	Moderate
9	Major Disease Outbreak	Moderate	Moderate
10	Soil Erosion and Dust	Moderate	Moderate
11	Terrorism/Agro-Terrorism/Civil Disorder	Moderate	Moderate
12	Wildfire	Moderate	Moderate
13	Lightning	Moderate	Moderate
14	Expansive Soils	Moderate	Moderate
15	Agricultural Infestation	Moderate	Moderate
16	Hazardous Materials	Moderate	Moderate
17	Fog	Low	Low
18	Earthquake	Low	Low
19	Dam and Levee Failure	Low	Low
20	Land Subsidence	Low	Low

HMPC Priority	Hazards That Threaten Republic County	HMPC Planning Significance	City of Munden Planning Significance
21	Landslide	Low	Low
22	Radiological	Low	Low

Critical Infrastructure

An essential element of the Republic County Hazard Mitigation Plan is the identification and inventory of the critical infrastructure located in each participating jurisdiction.

The purpose of the critical infrastructure inventory is to provide information and location data on buildings and infrastructure that are vital to the response and recovery of the community from a natural and/or manmade disaster. While all buildings and structures have value, certain types of structures have a higher priority for protection because damage to them can directly impact the delivery of vital services, thereby delaying response and/or recovery efforts.

Highways/Roads

There are not any major highways or roads in Munden, Kansas.

Historic Sites

Historic buildings and structures and documents are often irreplaceable, and may forever be lost in a disaster if not considered in the mitigation planning process. Historic properties and cultural resources are also valuable economic assets that increase property value, while attracting businesses and tourists. Preservation of these assets is often an important method for economic development.

Historic preservation planning protects historic properties and cultural resources before they are threatened with demolition. Hazard mitigation planning protects life and property from damage caused by natural and manmade hazards. Integrating these two planning processes helps ensure the future growth of safe and sustainable historic communities.

Historic preservation is the process of identifying, evaluating, protecting, preserving, and using historic properties. A historic property is any prehistoric or historic district, site, building, structure, or object included in the National Register of Historic Places maintained by the Secretary of the Interior. These properties are legally recognized as historically significant in American history, architecture, archeology, engineering and culture. Typically these properties are at least 50 years old. The National register is a planning tool that highlights the importance of properties worthy of preservation. The National & State Register of Historic Places does not have any places listed as historical for the City of Munden.

- Shimanek Barn
 Address: Unavailable
 National Register Number: 09000194
 Listed in National Register: 2009
 Owner: Private
 Area of Significance: Architecture, Agriculture
 Period of Significance: 1900-1974
 Historic Function: Agriculture/Subsistence
 Current Function: Agriculture/Subsistence

Critical Facilities

For purposes of this Mitigation Plan, Republic County and participating jurisdictions considered critical facilities to be those buildings and structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. These facilities include supporting infrastructure

essential to the mission of critical facilities. The facilities also include education facilities to ensure continuity of education. There were not any critical facilities identified in Munden.

Local Businesses

Local businesses are important to the economic development for Munden. During a disaster loss of local businesses can have a detrimental effect on the local economy. There were not any local businesses identified in Munden.

Community Concerns

There was no community concerns reported.

Land Use

Land use can be classified as either primary land use or secondary land use. Direct extraction of a useful product from the physical environment is a primary economic land use. Examples of primary land use include hunting and gathering, caring for grazing livestock, cultivating agriculture, timbering, and extraction of minerals, ore, shale, and clay. Secondary land uses include residential, commercial, and industrial land uses. In some cases primary and secondary land uses are intermingled.

Residential home sites, commercial sites, and industrial purposes account for most of the land use in cities in Republic County. Larger density residential, commercial, and industrial land uses are primarily found either within the incorporated communities or close to the city limits. Table 3.6.13 identifies the current land usage for the City of Munden.

Table 3.6. 10 – City of Munden Current Land Usage

Current Land Use Category	Percent of Jurisdiction
Residential	87.9
Religious	1.2
Government	2.4
Commercial	6.1
Agricultural	2.4

New Development

The City of Munden did not report any new development plans.

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are the mitigation actions Munden plans to adopt.

2011 Mitigation Actions	
Lead Agency: City of Munden and Republic County Emergency Management	Project Title: Install outdoor storm sirens
Project Description: Purchase and install additional emergency alert siren to be located in the northwest	
Type of Project: Emergency Services	
Funding Description: LOCAL BUDGET/GRANT	
Estimated Cost: Approximately \$13,000	
Does the jurisdiction have the authority required to implement the proposed project?	Yes
Which hazard will be eliminated, diminished or controlled?	Tornado
Benefits (Losses Avoided): Life Safety	Completion Date: Within 5 years
Plan for Implementation and Administration: Once grant has been obtained, purchase and install new outdoor storm siren	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: City of Munden and Republic County Emergency Management	Project Title: Improve Public Awareness of Hazard Risks
Project Description: Improve public awareness of hazard risks through educational programs	
Type of Project: Public Education and Awareness	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	Yes
Which hazard will be eliminated, diminished or controlled?	All Hazards
Benefits (Losses Avoided): Reduce the impact of hazards on Residents	Completion Date: On-going
Plan for Implementation and Administration: Incorporate hazard awareness into existing and future public educational programs	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

Jurisdiction: City of Narka	
NFIP Participation	No
Initial Flood Hazard Boundary Map (FHBM) Identified	N/A
CRS Participation	No
Number of Repetitive Loss Properties	0

The following image is an aerial view of the City of Narka (City-Data.com).

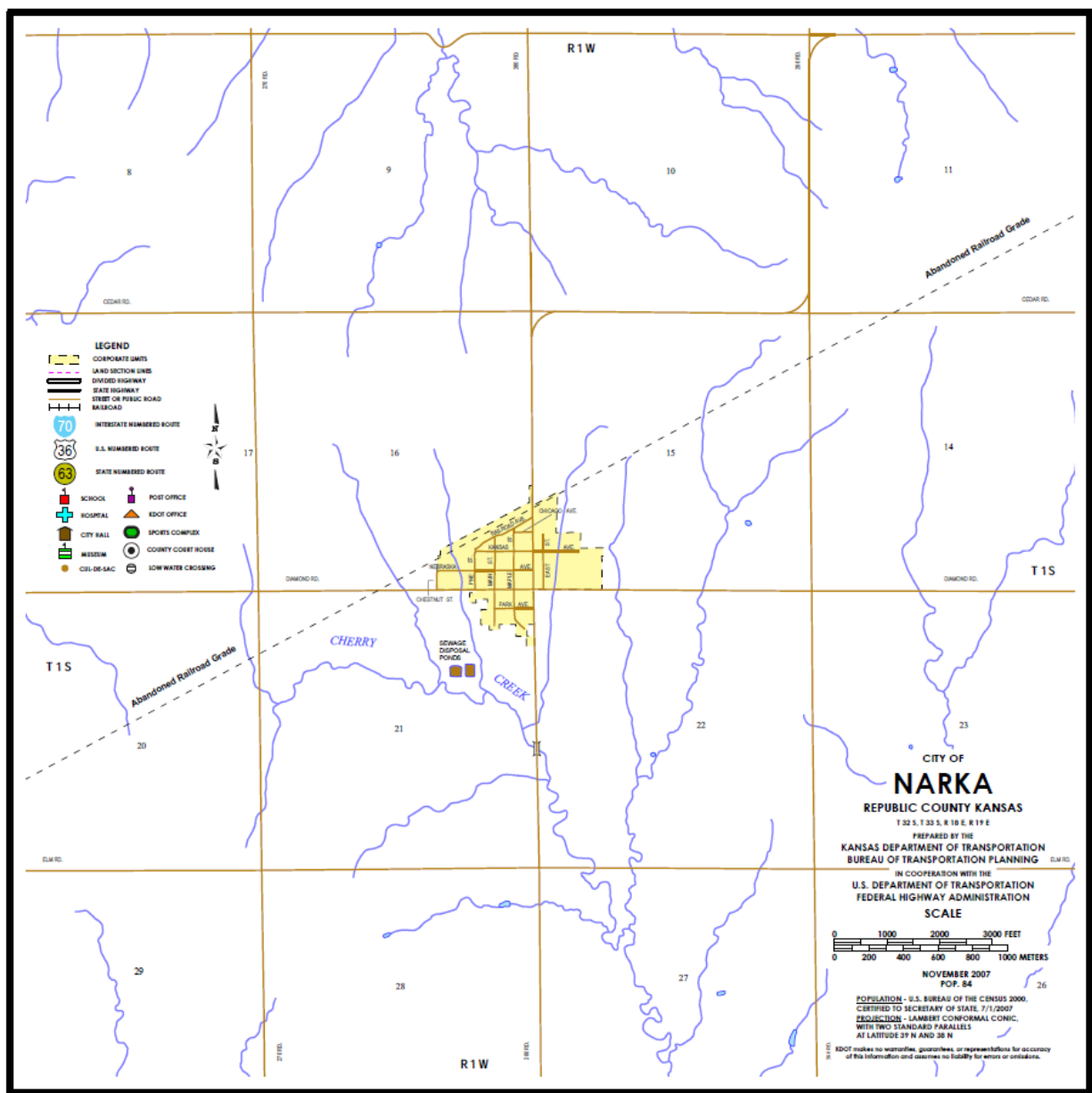
Figure 3.7. 1 – City of Narka



Location

Narka is located north east of Belleville in Republic County. It is located at 39°57'37"N 97°25'38"W / 39.960229°N 97.427351°W (39.960229; -97.427351). It has a total land area of 0.2 square miles, with an elevation of 1,585 feet. The following map is the jurisdictional boundaries for the City of Narka.

Figure 3.7. 2 - City of Narka Jurisdictional Boundary Map



MADK & # 4174

Governance

The City of Narka is a city of the third class. In Kansas, any city that has a population of less than 5,000 people is a third class city.

Narka has the most common form of city government, which is a mayor-council form of government. The council has five council members. The City government also consists of the following departments:

- City Clerk
- City Attorney
- Fire Department
- Parks & Recreation Department
- Sanitation Department
- Streets Department
- Treasurer
- Sewer
- Water

Population and Demographics

The population and demographics, as well as the economic characteristics are used in the development of the risk assessment. Today, with a population estimated at 77, the City of Narka is ranked 1643rd among Kansas incorporated cities. Table 3.7.1 identifies the population estimates from last official census conducted in 2000 to 2009 (U.S. Census Bureau). According to the Census Bureau’s population estimates, the population for the City of Narka has steadily decreased since 2000. There has been over a 17 percent decrease in the population.

Table 3.7. 1 – Population

Jurisdiction	July 1, 2009	July 1, 2008	July 1, 2007	July 1, 2006	July 1, 2005	July 1, 2004	July 1, 2003	July 1, 2002	July 1, 2001	2000 Census
City of Narka	77	77	79	80	82	83	85	87	90	93

Table 3.7.2 is the U.S. Census Bureau demographic statistics from the 2000 Census. Over 22 percent of the population in Narka is over the age of 65, which is almost ten percent higher than the State of Kansas. A large elderly population puts the city at an increased risk in during hazard events due to transportation, sheltering, and medical needs.

Table 3.7. 2 – Select Demographics

Jurisdiction	Under 5 Years (%)	Over 65 Years (%)	Median Age (Years)	Average Household Size
United States	6.9	12.9	36.4	2.60
Kansas	7.3	13.0	36.4	2.46
Republic County	5.1	27.0	50.6	2.14
City of Narka	4.3	22.6	41.5	1.98

Economic Characteristics

An important population trend is the number of people employed in different employment sectors. Employment trends can indicate changes in land use or demand for land. The principal employment sector for the City of Narka is Retail Trade. There are 12 people employed in this industry, which is over 37 percent of the population. Table 3.7.3 is the 2000 census statistics for the employed civilian population 16 years and over in Narka.

Table 3.7. 3 – Economic Industries

Industry	Number of People Employed in Industry	Percent of Population Working in Industry
Retail Trade	12	37.5
Agriculture, forestry, mining, fishing and hunting	6	18.8
Construction	4	15.6
Other Services	5	15.6
Educational, Health, and Social Services	2	6.3
Transportation and Warehousing, and Utilities	1	3.1
Arts, Entertainment, Recreation, Accommodation, and Food Services	1	3.1
Manufacturing	0	0
Wholesale Trade	0	0
Information	0	0
Finance, Insurance, Real Estate, Rental and Leasing	0	0
Professional, Scientific, Management, Administrative, and Waste Management Services	0	0
Public Administration	0	0

The 2011 cost of living index is 77.0, which is low compared to the Nation’s average of 100 (City-Data.com). Table 3.7.4 is the economic characteristics for Narka, Kansas from the 2000 census (U.S. Census Bureau). Narka has over six percent unemployment rate and over 22 percent of the families are living below poverty level.

Table 3.7. 4 – Select Economic Statistics

Jurisdiction	Individuals Below Poverty Level (%)	Median Home Value (1999\$)	Median Household Income (1999\$)	Per Capita Income (1999\$)	Unemployment Rate (%)	Population in Labor Force (%)
United States	14.3	185,400	50,221	27,041	4.2	64.7
State of Kansas	13.2	114,400	47,709	25,522	3.6	68.6
Republic County	9.6	118,500	36,510	23,494	3.2	63.0
City of Narka	23.8	9,999	16,250	11,693	6.6	59.0

Capabilities

Floodplain Management

According to FEMA the definition for floodplain management is “a decision-making process that aims to achieve the wise use of the nation’s floodplains. Wise use means both reduced flood losses and protection of the natural resources and function of floodplains.

Floods are one of the most common hazards in the United States, as well as Kansas, and most homeowners’ insurance policies do not cover flood damage. For that reason, in 1968 Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. In order for a community to offer flood insurance through the NFIP, the community is required to enforce certain minimum regulations on development in the floodplain. This management of the floodplain is done to ensure that flooding problems do not increase and to work towards the reduction in the risk of flooding. This work is performed by the local communities' Floodplain Administrator.

National Flood Insurance Program (NFIP)

The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the National Flood Insurance Program. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding (Federal Emergency Management Agency). The City of Narka is not currently a participant in the National Flood Insurance Program. The community has been identified as being in a non-Special Flood Hazard Area (NSFHA) by FEMA.

Existing Planning Ordinances, Codes, and Plans

This section will identify an inventory of existing planning and regulatory tools available to the City of Narka. It is vital to ensure that proposed mitigation actions are practical considering the jurisdiction’s ability to implement them. It will help build the general foundation for determining the type of mitigation strategy the jurisdiction develops and ultimately adopts. Table 3.7.5 identifies the existing planning ordinances, codes, and plans for Narka.

Table 3.7. 5– Existing Plans, Ordinances, and Codes

Planning ordinances, codes, plans
Zoning Ordinance
Economic Development Plan
Local emergency operations plan

Administrative/Technical Resources

This section will identify the administrative and technical resources available to the City of Narka. It is imperative to ensure that adequate staffing and technical resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.7.6 identifies personnel resources and warning capabilities for the community.

Table 3.7. 6 – Administrative/Technical Resources

Personnel Resources
County Emergency Manager
Outdoor weather warning signals

Financial Resources

This section will identify the financial resources available to the City of Narka. It is necessary to ensure that adequate financial resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.7.7 identifies personnel resources and warning capabilities for the community.

Table 3.7. 7 – Financial Resources

Financial Resources
Capital improvement project funding
Community Development Block Grants
Authority to levy taxes for specific purposes
Fees for water, sewer, gas, or electric services
Incur debt through general obligation bonds

Vulnerabilities

Hazards Affecting the City of Narka

The hazards that are profiled in this section have had direct impact on the City of Narka. If the hazards are not profiled in this section, the city did not report any incidents.

History of Flooding

There were not any historic floods reported for the City of Narka.

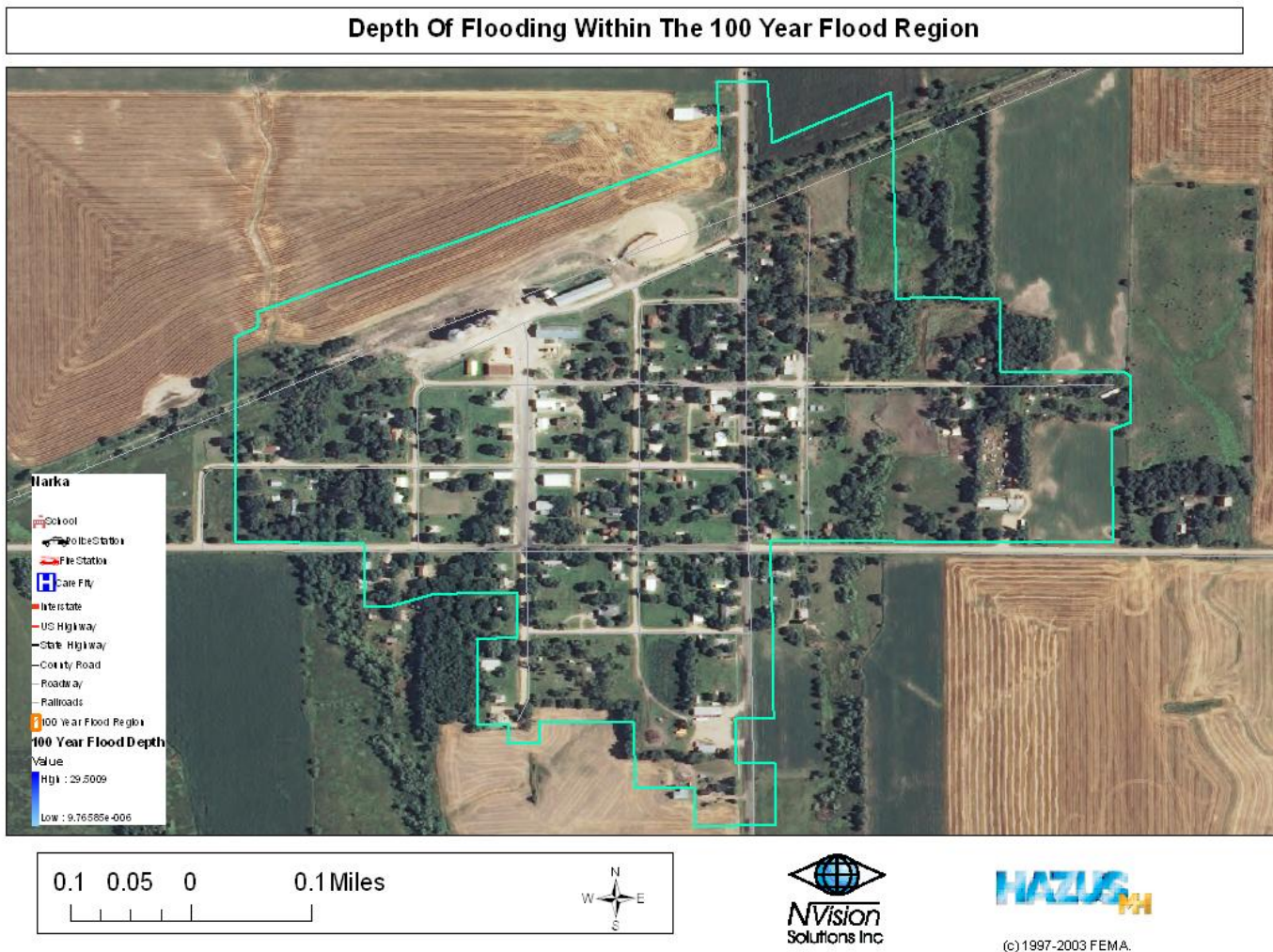
Repetitive Loss Properties

FEMA defines repetitive loss properties as “a residential property that is covered under an NFIP flood insurance policy and has had at least 2 paid losses of more than \$1000 each in any 10-year period since 1978. There are no repetitive flood loss properties in Narka, Kansas.

HAZUS Report

A “flood” HAZUS loss estimation model was completed by NVision using FEMA’s software program, HAZUS-MH MR4. The software was used for estimating potential losses from flooding. Figure 3.7.3 is map that identifies the location of the critical facilities in relation to the 100-year floodplain for the City of Narka. The HAZUS loss estimation model for Narka did not identify any floodplain areas.

Figure 3.7. 3 - City of Narka 100-year Flood Plain



History of Hailstorm Events

There were 7 hailstorm events reported for the City of Narka in the NCDC database between January 1, 1950 and February, 28, 2011. Table 3.7.8 is a summary of each hailstorm event. Although there was not any property damage reported, it is expected the amount of damage is much higher as all damage reports are not reported to the NCDC. Many damage claims are reported to individual insurance carriers.

Table 3.7. 8 – Hailstorm Events in the City of Narka

Date	Time	Diameter (Inches)	Property Damage Reported (\$)	Crop Damage Reported (\$)
9/8/1997	1640	0.75	0	0
8/7/2000	1558	1.00	0	0
10/13/2000	1814	0.75	0	0
4/14/2001	1555	1.75	0	0
5/5/2002	2154	0.88	0	0
5/29/2004	1930	1.25	0	0
4/24/2009	1837	0.88	0	0

History of Tornado Events

Historic hazard incidents were obtained from the National Climatic Data Center database.

June 13, 2001 A F0 tornado formed just southwest of Narka and moved doing some damage to the community of Narka before crossing into Nebraska. Thunderstorms developed over north central Kansas and became severe producing large hail strong winds and 2 tornadoes. Property damage was estimated at \$45,000.

May 29, 2004 A F0 tornado touched down near Narka and traveled 1 mile before dissipating.

History of Utility/Infrastructure Failure

There was one historic event reported for Narka, Kansas.

June 14, 2001 Strong winds downed power lines near Narka. Damage was estimated at \$2,000.

History of Windstorms

Historic hazard incidents were obtained from the National Climatic Data Center database.

July 1, 1994 Large tree limbs were blown in this area by strong thunderstorm winds estimated at 70 knots. Property and crop damage were estimated at \$5,000 for each.

August 7, 2000 Strong winds knocked down power lines and took the roof off of a shed five miles east of Narka. Property damage was estimated at \$4,000.

June 13, 2001 Thunderstorms were reported by the City of Narka. The storms became severe producing large hail strong winds and 2 tornadoes.

City of Narka Hazard Vulnerability Assessment

The following table is a comparison of the hazards vulnerability ranking for the Republic County HMPC. The first column is the order of priority the HMPC ranked the hazards that threaten the entire planning area. The second column is the hazards that pose a threat to all of Republic County. The third column is the Republic County HMPC planning significance (high, moderate, or low) for the entire planning area, which was determined by the HMPC during the first hazard mitigation planning meeting. The last column is the planning significance for each hazard as determined by the City of Narka for their specific community.

FEMA concluded the City of Narka does not have any Special Flood Hazard Areas (SFHA). As a result, Narka determined the community’s vulnerability to flood is low.

Table 3.7. 9 - Hazards Vulnerability Assessment

HMPC Priority	Hazards That Threaten Republic County	HMPC Planning Significance	City of Narka Planning Significance
1	Winter Storm	High	High
2	Tornado	High	High
3	Windstorm	High	High
4	Flood	High	Low
5	Utility/Infrastructure Failure	High	High
6	Hailstorm	High	High
7	Drought	Moderate	Moderate
8	Extreme Temperatures	Moderate	Moderate
9	Major Disease Outbreak	Moderate	Moderate
10	Soil Erosion and Dust	Moderate	Moderate
11	Terrorism/Agro-Terrorism/Civil Disorder	Moderate	Moderate
12	Wildfire	Moderate	Moderate
13	Lightning	Moderate	Moderate
14	Expansive Soils	Moderate	Moderate
15	Agricultural Infestation	Moderate	Moderate
16	Hazardous Materials	Moderate	Moderate
17	Fog	Low	Low
18	Earthquake	Low	Low
19	Dam and Levee Failure	Low	Low
20	Land Subsidence	Low	Low
21	Landslide	Low	Low
22	Radiological	Low	Low

Critical Infrastructure

An essential element of the Republic County Hazard Mitigation Plan is the identification and inventory of the critical infrastructure located in each participating jurisdiction.

The purpose of the critical infrastructure inventory is to provide information and location data on buildings and infrastructure that are vital to the response and recovery of the community from a natural and/or manmade disaster. While all buildings and structures have value, certain types of structures have a higher priority for protection because damage to them can directly impact the delivery of vital services, thereby delaying response and/or recovery efforts.

Highways/Roads

There are not any major highways or roads in Narka, Kansas.

Historic Sites

Historic buildings and structures and documents are often irreplaceable, and may forever be lost in a disaster if not considered in the mitigation planning process. Historic properties and cultural resources are also valuable

economic assets that increase property value, while attracting businesses and tourists. Preservation of these assets is often an important method for economic development.

Historic preservation planning protects historic properties and cultural resources before they are threatened with demolition. Hazard mitigation planning protects life and property from damage caused by natural and manmade hazards. Integrating these two planning processes helps ensure the future growth of safe and sustainable historic communities.

Historic preservation is the process of identifying, evaluating, protecting, preserving, and using historic properties. A historic property is any prehistoric or historic district, site, building, structure, or object included in the National Register of Historic Places maintained by the Secretary of the Interior. These properties are legally recognized as historically significant in American history, architecture, archeology, engineering and culture. Typically these properties are at least 50 years old. The National register is a planning tool that highlights the importance of properties worthy of preservation. The National & State Register of Historic Places has one place listed as historical for the City of Narka.

- Cossaart Barn
 Also Known As 157-177
 Address: 3040 Birch Rd, Narka, KS
 National Register Number: 09001166
 Listed in National Register: 2009
 Owner: Private
 Area of Significance: Architecture
 Period of Significance: 1900-1974
 Historic Function: Agriculture/Subsistence
 Current Function: Agriculture/Subsistence

Critical Facilities

For purposes of this Mitigation Plan, Republic County and participating jurisdictions considered critical facilities to be those buildings and structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. These facilities include supporting infrastructure essential to the mission of critical facilities. The facilities also include education facilities to ensure continuity of education. Table 3.7.11 identifies the critical facilities in Narka.

Table 3.7. 10 – Critical Facilities

Name of Asset	Facility Type	Address	Replacement Value
City Office	Government	502 Main Street	

Local Businesses

Local businesses are important to the economic development for Narka. During a disaster loss of local businesses can have a detrimental effect on the local economy. Table 3.7.12 identifies the local businesses in the area.

Table 3.7. 11 – Local Businesses

Business Name	Type of Business	Address
Don't Matter	Restaurant/Bar	420 Main Street

Community Concerns

There was no community concerns reported.

New Development

The City of Narka did not report any new development plans.

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are the mitigation actions Narka plans to adopt.

2011 Mitigation Actions	
Lead Agency: City of Narka and Republic County Emergency Management	Project Title: Improve Public Awareness of Hazard Risks
Project Description: Improve public awareness of hazard risks through educational programs	
Type of Project: Public Education and Awareness	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	Yes
Which hazard will be eliminated, diminished or controlled?	All Hazards
Benefits (Losses Avoided): Reduce the impact of hazards on Residents	Completion Date: On-going
Plan for Implementation and Administration: Incorporate hazard awareness into existing and future public educational programs	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

Jurisdiction: City of Republic	
NFIP Participation	No
Initial Flood Hazard Boundary Map (FHBM) Identified	N/A
CRS Participation	No
Number of Repetitive Loss Properties	0

The following image is an aerial view of the City of Republic (City-Data.com).

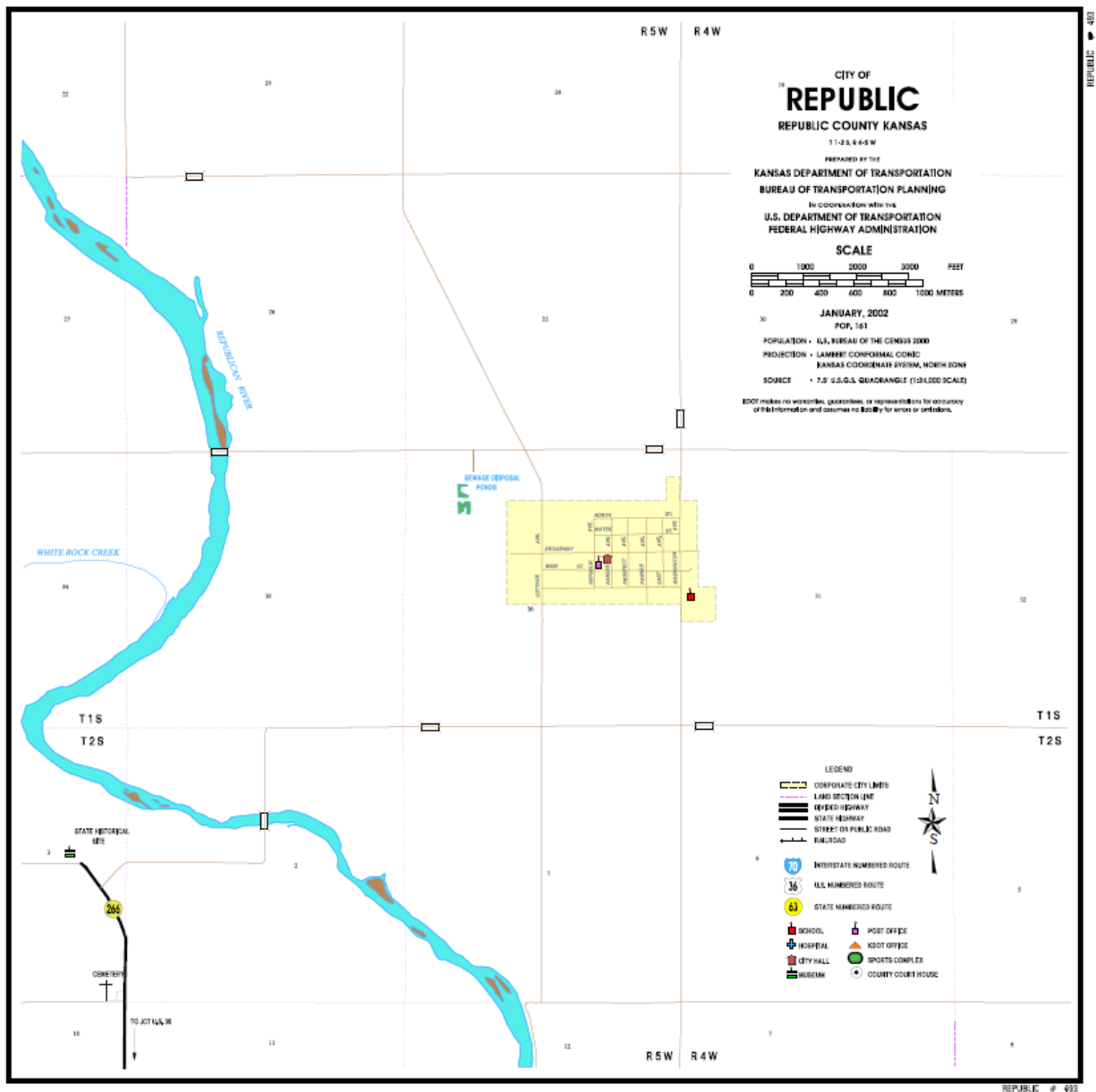
Figure 3.8. 1 – City of Republic



Location

Republic is located north west of Belleville in Republic County. It is located at 39°55'25"N 97°49'21"W (39.923636, -97.822412). It has a total land area of 0.3 square miles, with an elevation of 1,499 feet. The following map is the jurisdictional boundaries for the City of Republic.

Figure 3.8. 2 - City of Republic Jurisdictional Boundary Map



Governance

The City of Republic is a city of the third class. In Kansas, any city that has a population of less than 5,000 people is a third class city.

Republic has the most common form of city government, which is a mayor-council form of government. The council has five council members. The City government also consists of the following departments:

- City Clerk
- City Attorney
- Streets Department
- Treasurer
- Sewer
- Water

Population and Demographics

The population and demographics, as well as the economic characteristics are used in the development of the risk assessment. Today, with a population estimated at 133, the City of Republic is ranked 1371st among Kansas incorporated cities. Table 3.8.1 identifies the population estimates from last official census conducted in 2000 to 2009 (U.S. Census Bureau). According to the Census Bureau’s population estimates, the population for the City of Republic has steadily decreased since 2000. There has been almost a 17 percent decrease in the population.

Table 3.8. 1 – Population

Jurisdiction	July 1, 2009	July 1, 2008	July 1, 2007	July 1, 2006	July 1, 2005	July 1, 2004	July 1, 2003	July 1, 2002	July 1, 2001	2000 Census
City of Republic	133	134	136	137	142	144	147	150	156	160

Table 3.8.2 is the U.S. Census Bureau demographic statistics from the 2000 Census. Over 27percent of the population in Republic is over the age of 65, which is 14 percent higher than the State of Kansas. A large elderly population puts the city at an increased risk in during hazard events due to transportation, sheltering, and medical needs.

Table 3.8. 2 – Select Demographics

Jurisdiction	Under 5 Years (%)	Over 65 Years (%)	Median Age (Years)	Average Household Size
United States	6.8	12.4	36.4	2.59
Kansas	7	13.3	35.2	2.51
Republic County	4.5	26.1	45.7	2.23
City of Republic	3.1	27.3	49.8	1.92

Economic Characteristics

An important population trend is the number of people employed in different employment sectors. Employment trends can indicate changes in land use or demand for land. The principal employment sector for the City of Republic is Transportation and Warehousing, and Utilities. There are 16 people employed in this industry, which is over 21 percent of the population. Table 3.8.3 is the 2000 census statistics for the employed civilian population 16 years and over in Republic.

Table 3.8. 3 – Economic Industries

Industry	Number of People Employed in Industry	Percent of Population Working in Industry
Transportation and Warehousing, and Utilities	16	21.1
Manufacturing	10	13.2
Educational, Health, and Social Services	10	13.2
Retail Trade	9	11.8
Agriculture, forestry, mining, fishing and hunting	8	10.5
Other Services	6	7.9
Public Administration	6	7.9
Wholesale Trade	5	6.6
Construction	2	2.6
Information	2	2.6
Finance, Insurance, Real Estate, Rental and Leasing	2	2.6
Professional, Scientific, Management, Administrative, and Waste Management Services	0	0
Arts, Entertainment, Recreation, Accommodation, and Food Services	0	0

The 2011 cost of living index is 77.5, which is low compared to the Nation’s average of 100 (City-Data.com). Table 3.8.4 is the economic characteristics for Republic, Kansas from the 2000 census (U.S. Census Bureau). Republic has less unemployment than the State of Kansas over two percent unemployment rate and over nine percent of the families are living below poverty level.

Table 3.8. 4 – Select Economic Statistics

Jurisdiction	Individuals Below Poverty Level (%)	Median Home Value (1999\$)	Median Household Income (1999\$)	Per Capita Income (1999\$)	Unemployment Rate (%)	Population in Labor Force (%)
United States	14.3	185,400	50,221	27,041	4.2	64.7
State of Kansas	13.2	114,400	47,709	25,522	3.6	68.6
Republic County	9.6	118,500	36,510	23,494	3.2	63.0
City of Republic	9.7	25,500	27,679	18,399	2.5	66.9

Capabilities

Floodplain Management

According to FEMA the definition for floodplain management is “a decision-making process that aims to achieve the wise use of the nation’s floodplains. Wise use means both reduced flood losses and protection of the natural resources and function of floodplains.

Floods are one of the most common hazards in the United States, as well as Kansas, and most homeowners’ insurance policies do not cover flood damage. For that reason, in 1968 Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. In order for a community to offer flood insurance through the NFIP, the community is required to enforce certain minimum regulations on development in the floodplain. This management of the floodplain is done to ensure that flooding

problems do not increase and to work towards the reduction in the risk of flooding. This work is performed by the local communities' Floodplain Administrator.

National Flood Insurance Program (NFIP)

The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the National Flood Insurance Program. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding (Federal Emergency Management Agency). The City of Munden is not currently a participant in the National Flood Insurance Program.

Existing Planning Ordinances, Codes, and Plans

This section will identify an inventory of existing planning and regulatory tools available to the City of Republic. It is vital to ensure that proposed mitigation actions are practical considering the jurisdiction’s ability to implement them. It will help build the general foundation for determining the type of mitigation strategy the jurisdiction develops and ultimately adopts. Table 3.8.6 identifies the existing planning ordinances, codes, and plans for Republic.

Table 3.8. 5 – Existing Plans, Ordinances, and Codes

Planning ordinances, codes, plans
Fire Prevention code
Capital Improvements Plan
Mutual Aid Agreements

Administrative/Technical Resources

This section will identify the administrative and technical resources available to the City of Republic. It is imperative to ensure that adequate staffing and technical resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.8.7 identifies personnel resources and warning capabilities for the community.

Table 3.8. 6 – Administrative/Technical Resources

Personnel Resources
County Emergency Manager
Outdoor weather warning signals

Financial Resources

This section will identify the financial resources available to the City of Republic. It is necessary to ensure that adequate financial resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.8.8 identifies personnel resources and warning capabilities for the community.

Table 3.8. 7 – Financial Resources

Financial Resources
Capital improvement project funding
Community Development Block Grants
Authority to levy taxes for specific purposes
Fees for water, sewer, gas, or electric services
Incur debt through general obligation bonds

Vulnerabilities

Hazards Affecting the City of Republic

The hazards that are profiled in this section have had direct impact on the City of Republic. If the hazards are not profiled in this section, the city did not report any incidents.

History of Flooding

Historic hazard incidents were obtained from the National Climatic Data Center database.

August 17, 2005	Fast flowing water was over secondary roads five miles east of the City of Republic. Property damage was estimated at \$50,000.
May 31, 2006	Up to 4.5 inches of rain produced fast flowing water over a road on the west side of the City of Republic, and the highway department was barricading the road. There was \$5,000 in property damage.
May 31, 2007	Water was reported flowing over Fir road one-half mile east of the City of Republic, as well as 2 miles west of highway 81 on Fir road. There was \$50,000 in property damage.

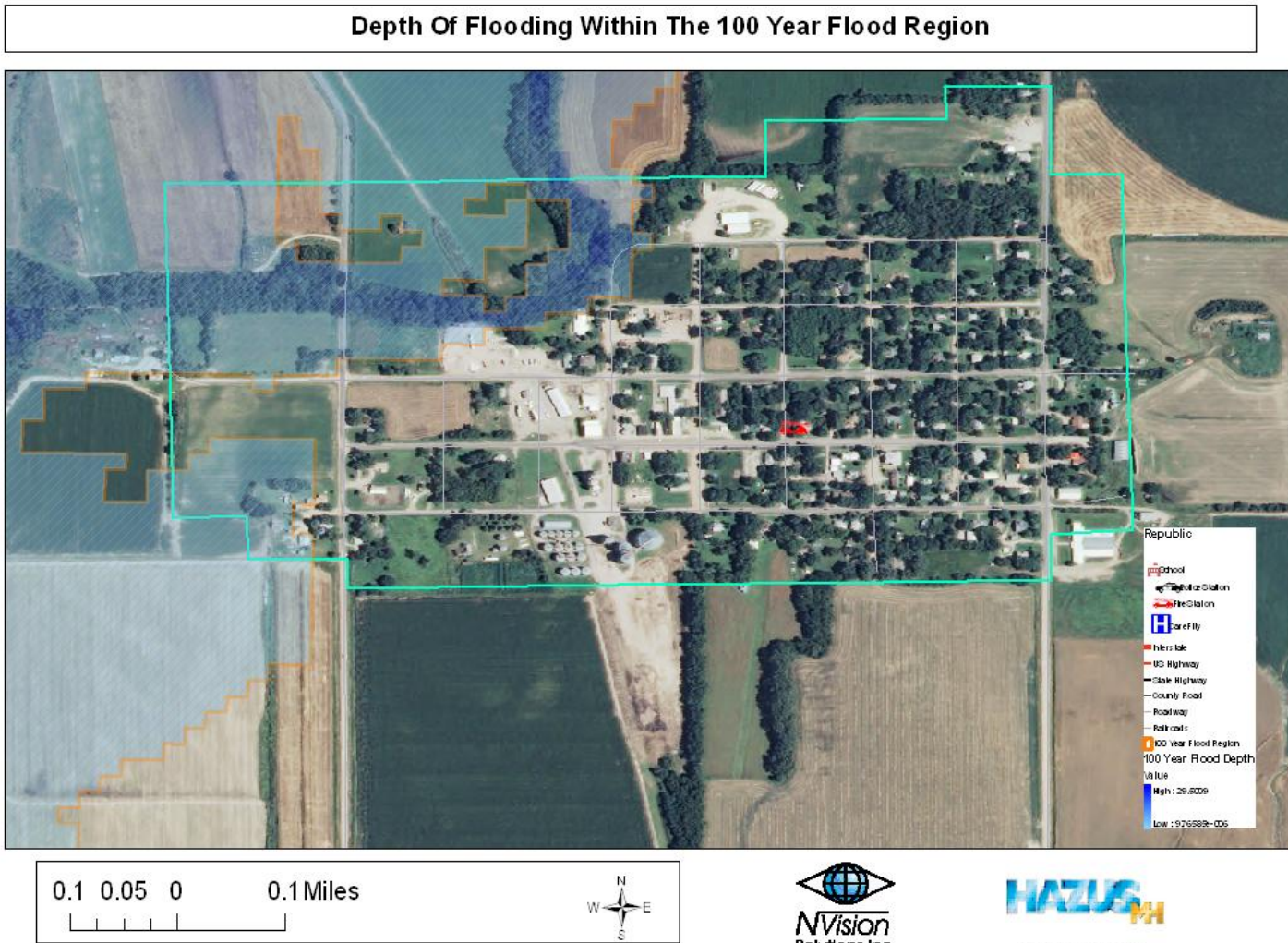
Repetitive Loss Properties

FEMA defines repetitive loss properties as “a residential property that is covered under an NFIP flood insurance policy and has had at least 2 paid losses of more than \$1000 each in any 10-year period since 1978. There are no repetitive flood loss properties in Republic, Kansas.

HAZUS Report

A “flood” HAZUS loss estimation model was completed by NVision using FEMA’s software program, HAZUS-MH MR4. The software was used for estimating potential losses from flooding. Figure 3.8.3 is map that identifies the location of the critical facilities in relation to the 100-year floodplain for the City of Republic. The HAZUS loss estimation model for Republic did not identify any floodplain areas.

Figure 3.8. 3 - City of Republic 100-year Flood Plain



History of Hailstorm Events

There were 13 hailstorm events reported for the City of Republic in the NCDC database between January 1, 1950 and February, 28, 2011. Table 3.8.9 is a summary of each hailstorm event. Although there was not any property damage reported, it is expected the amount of damage is much higher as all damage reports are not reported to the NCDC. Many damage claims are reported to individual insurance carriers.

Table 3.8. 8 – Hailstorm Events in the City of Republic

Date	Time	Diameter (Inches)	Property Damage Reported (\$)	Crop Damage Reported (\$)
5/22/1996	2110	1.75	0	0
6/4/2000	0650	1.00	0	0
4/20/2001	1935	0.75	0	0
5/9/2001	2210	0.88	0	0
9/22/2001	2020	0.75	0	0
5/13/2003	1915	1.25	0	0
5/22/2004	2115	0.75	0	0
6/12/2004	1824	1.00	0	0
4/18/2005	2059	1.75	0	0
5/5/2007	2155	1.50	0	0
6/2/2008	0645	1.75	0	0
8/4/2009	0315	1.00	0	0
4/29/2010	1957	1.00	0	0

History of Tornado Events

Historic hazard incidents were obtained from the National Climatic Data Center database.

June 22, 2003 A fourth tornado touched down near Republic and moved northeast for 2 miles and damaged a home before dissipating. Property damage was estimated at \$60,000. A tornado struck 3 miles northeast of Republic and moved northeast 4 miles and destroyed a house in its path before it dissipated near the Nebraska border. Thunderstorms developed over Republic County the evening of the 22nd and persisted into the early morning hours of the 23rd. numerous reports of large hail and damaging winds along with several tornadoes were the result. The persistence of the thunderstorms in the same location led to flash flooding in Republic County as well as the Republican River to flood and do considerable crop damage. Property damage was estimated at \$80,000.

May 22, 2004 A tornado touched down briefly at a farm and damaged a barn. Property damage was estimated at \$9,000. A tornado touched down at the Pawnee Indian Museum and damaged a roof to the museum building before moving 2 miles and lifting at the edge of Republic. Along the tornado's path a windmill was destroyed, power lines were downed, and 3 center pivoting irrigation systems were damaged. A one ton granite memorial at the Pawnee Indian Museum was moved 8 feet off the foundation. Property damage was estimated at \$90,000.

History of Windstorms

Historic hazard incidents were obtained from the National Climatic Data Center database.

June 24, 1994 High winds caused significant tree damage in the City of Republic. Property damage was estimated at \$5,000, crop damage was estimated at \$500.

May 23, 2006	Spotter reports gusts up to 60 mph. There were no reports of property damage.
May 31, 2007	Wind gust of at least 60mph reported by Law Enforcement one mile north of Republic. There were tree limbs broken off. Very heavy rain and small hail also reported. Property damage estimates were not available.
August 20, 2007	The top of a 4 inch diameter tree was blown off seven miles north west of the City of Republic. Property damage estimates were not available.
April 24, 2008	Measured 60 mph gust on home weather station four miles north of the City of Republic. Property damage estimates were not available.

City of Republic Hazard Vulnerability Assessment

The following table is a comparison of the hazards vulnerability ranking for the Republic County HMPC. The first column is the order of priority the HMPC ranked the hazards that threaten the entire planning area. The second column is the hazards that pose a threat to all of Republic County. The third column is the Republic County HMPC planning significance (high, moderate, or low) for the entire planning area, which was determined by the HMPC during the first hazard mitigation planning meeting. The last column is the planning significance for each hazard as determined by the City of Republic for their specific community.

The City of Republic determined they were not any more or less vulnerable to any particular hazard than the rest of the planning area. Therefore, they determined the planning significance for each hazard was the same as the HMPC planning significance.

Table 3.8. 9 - Hazards Vulnerability Assessment

HMPC Priority	Hazards That Threaten Republic County	HMPC Planning Significance	City of Republic Planning Significance
1	Winter Storm	High	High
2	Tornado	High	High
3	Windstorm	High	High
4	Flood	High	High
5	Utility/Infrastructure Failure	High	High
6	Hailstorm	High	High
7	Drought	Moderate	Moderate
8	Extreme Temperatures	Moderate	Moderate
9	Major Disease Outbreak	Moderate	Moderate
10	Soil Erosion and Dust	Moderate	Moderate
11	Terrorism/Agro-Terrorism/Civil Disorder	Moderate	Moderate
12	Wildfire	Moderate	Moderate
13	Lightning	Moderate	Moderate
14	Expansive Soils	Moderate	Moderate
15	Agricultural Infestation	Moderate	Moderate
16	Hazardous Materials	Moderate	Moderate
17	Fog	Low	Low
18	Earthquake	Low	Low
19	Dam and Levee Failure	Low	Low
20	Land Subsidence	Low	Low
21	Landslide	Low	Low
22	Radiological	Low	Low

Critical Infrastructure

An essential element of the Republic County Hazard Mitigation Plan is the identification and inventory of the critical infrastructure located in each participating jurisdiction.

The purpose of the critical infrastructure inventory is to provide information and location data on buildings and infrastructure that are vital to the response and recovery of the community from a natural and/or manmade disaster. While all buildings and structures have value, certain types of structures have a higher priority for protection because damage to them can directly impact the delivery of vital services, thereby delaying response and/or recovery efforts.

Highways/Roads

There are not any major highways or roads in Republic, Kansas.

Historic Sites

Historic buildings and structures and documents are often irreplaceable, and may forever be lost in a disaster if not considered in the mitigation planning process. Historic properties and cultural resources are also valuable economic assets that increase property value, while attracting businesses and tourists. Preservation of these assets is often an important method for economic development.

Historic preservation planning protects historic properties and cultural resources before they are threatened with demolition. Hazard mitigation planning protects life and property from damage caused by natural and manmade hazards. Integrating these two planning processes helps ensure the future growth of safe and sustainable historic communities.

Historic preservation is the process of identifying, evaluating, protecting, preserving, and using historic properties. A historic property is any prehistoric or historic district, site, building, structure, or object included in the National Register of Historic Places maintained by the Secretary of the Interior. These properties are legally recognized as historically significant in American history, architecture, archeology, engineering and culture. Typically these properties are at least 50 years old. The National register is a planning tool that highlights the importance of properties worthy of preservation. The National & State Register of Historic Places has one place listed as historical for the City of Republic.

- Pawnee Indian Village Site
 Also Known As 14RP1
 Address: On KS 266 and the Republican River
 National Register Number: 02000393
 Listed in National Register: 1971
 Owner: State
 Area of Significance: Historic - Aboriginal
 Period of Significance: 1825-1849
 Historic Function: Domestic/Village Site
 Current Function: Recreation and Culture/Museum and Park

Critical Facilities

For purposes of this Mitigation Plan, Republic County and participating jurisdictions considered critical facilities to be those buildings and structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. These facilities include supporting infrastructure essential to the mission of critical facilities. The facilities also include education facilities to ensure continuity of education. Table 3.8.11 identifies the critical facilities in Republic.

Table 3.8. 10 – Critical Facilities

Name of Asset	Facility Type	Address	Replacement Value
City Office	Government	502 Main Street	\$150,000

Local Businesses

Local businesses are important to the economic development for Republic. During a disaster loss of local businesses can have a detrimental effect on the local economy. Table 3.8.12 identifies the local businesses in the area.

Table 3.8. 11 – Local Businesses

Business Name	Type of Business	Address
Latham & Sons Trucking	Services	417 Main Street

Community Concerns

There was no community concerns reported.

New Development

The City of Republic did not report any new development plans.

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are the mitigation actions Republic plans to adopt.

2011 Mitigation Actions	
Lead Agency: City of Republic and Republic County Emergency Management	Project Title: Improve Public Awareness of Hazard Risks
Project Description: Improve public awareness of hazard risks through educational programs	
Type of Project: Public Education and Awareness	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	Yes
Which hazard will be eliminated, diminished or controlled?	All Hazards
Benefits (Losses Avoided): Reduce the impact of hazards on Residents	Completion Date: On-going
Plan for Implementation and Administration: Incorporate hazard awareness into existing and future public educational programs	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: City of Republic	Project Title: Promote NOAA weather Radios including citizen purchase of receivers
Project Description: Encourage the citizens of the City of Republic	
Type of Project: Public Education and Awareness	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	Yes
Which hazard will be eliminated, diminished or controlled?	Thunderstorms, Tornados, and Winter storms
Benefits (Losses Avoided): Reduce the impact of hazards on Residents	Completion Date: On-going
Plan for Implementation and Administration: Encourage the citizens of the City of Republic	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

Jurisdiction: City of Scandia	
NFIP Participation	Yes
Current FIRM Effective Date	12/17/2010
CRS Participation	No
Number of Repetitive Loss Properties	0

The following image is an aerial view of the City of Scandia (City-Data.com).

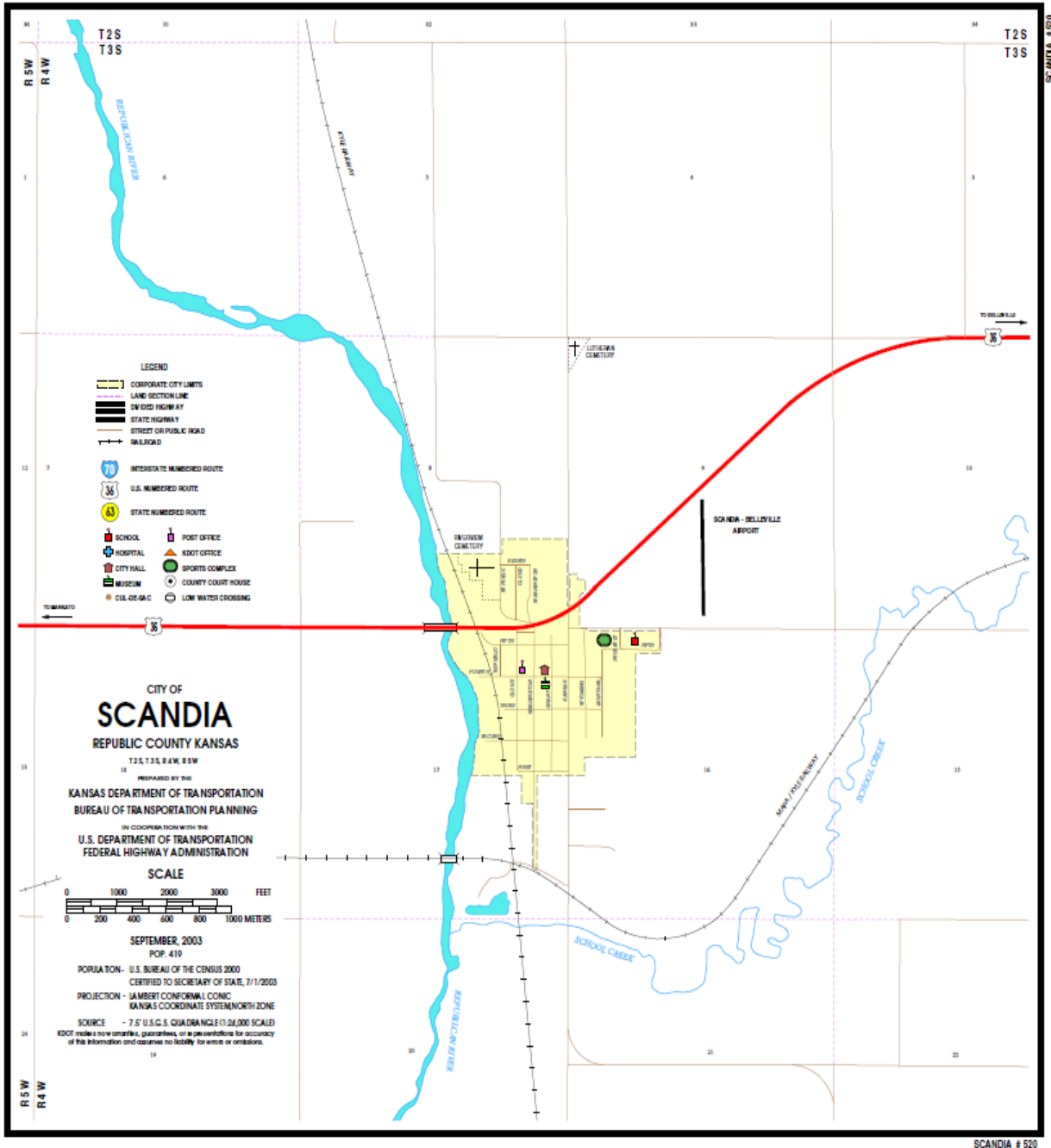
Figure 3.9. 1 – City of Scandia



Location

Scandia is located south west of Belleville in Republic County. It is located at 39°47'44"N 97°47'2"W (39.795609, -97.783757). It has a total land area of 0.47 square miles, with an elevation of 1,450 feet. The following map is the jurisdictional boundaries for the City of Scandia.

Figure 3.9. 2 - City of Scandia Jurisdictional Boundary Map



History

In 1806 the first American flag was flown in what is present day Scandia. However, it wasn't settled until 1868 by Swedes fleeing a famine in their native country, and was called New Scandinavia. The primary colony from Sweden was at Lindsborg in McPherson County. The settlement at New Scandia in Republic County was promoted by the Scandinavian Agricultural Society of Chicago. Swedish influence was also in Osage County and the Blue River parts of Riley and Pottawatomie counties.

Long before white men settled Kansas, this region was the home of Pawnee Indians. French traders in the late 1700's named those along this river, the Republican Pawnee, in the mistaken belief that their form of government was a republic. The Republican River, Republic County and the City of Republic took their names from them.

Along the east side of the river passed the military road, which was opened in 1857 to connect Fort Riley and Fort Kearny, Nebraska. White settlements began in this area in the early 1860's. In 1868 the Scandinavian Agricultural Society of Chicago started a colony, which became Scandia. The name was changed to Scandia in 1876, according to post office records.

Fearful of Indian attacks, the settlers constructed a stronghold near the river named Colony House. Jedediah Smith, explorer and mapper of the American West, led 60 men up the Republican Valley in January 1826. He stayed several weeks at a Republican Pawnee Village. The site of this village has been preserved by the state, and a modern archeological museum was opened there in 1967 (Scandia, Kansas).

Scandia is now a small rural community, occasionally notorious for its Neo-Nazi political chapter, the National Socialist Movement.

Governance

The City of Scandia is a city of the third class. In Kansas, any city that has a population of less than 5,000 people is a third class city.

Scandia has the most common form of city government, which is a mayor-council form of government. The council has five council members. The City government also consist s of the following departments:

- City Clerk
- City Attorney
- Fire Department
- Library
- Streets Department
- Sewer
- Treasurer

Population and Demographics

The population and demographics, as well as the economic characteristics are used in the development of the risk assessment. Today, with a population estimated at 343, the City of Scandia is ranked 864th among Kansas incorporated cities. Table 3.9.1 identifies the population estimates from last official census conducted in 2000 to 2009 (U.S. Census Bureau). According to the Census Bureau’s population estimates, the population for the City of Scandia has steadily decreased since 2000. There has been over a 21 percent decrease in the population.

Table 3.9. 1 – Population

Jurisdiction	July 1, 2009	July 1, 2008	July 1, 2007	July 1, 2006	July 1, 2005	July 1, 2004	July 1, 2003	July 1, 2002	July 1, 2001	2000 Census
City of Scandia	343	345	351	356	368	375	387	399	419	436

Table 3.9.2 is the U.S. Census Bureau demographic statistics from the 2000 Census. Twenty percent of the population in Scandia is over the age of 65, which is about seven percent higher than the State of Kansas. A large

elderly population puts the city at an increased risk in during hazard events due to transportation, sheltering, and medical needs.

Table 3.9. 2 – Select Demographics

Jurisdiction	Under 5 Years (%)	Over 65 Years (%)	Median Age (Years)	Average Household Size
United States	6.9	12.9	36.4	2.60
Kansas	7.3	13.0	36.4	2.46
Republic County	5.1	27.0	50.6	2.14
City of Scandia	4.8	20.0	42.0	2.27

Economic Characteristics

An important population trend is the number of people employed in different employment sectors. Employment trends can indicate changes in land use or demand for land. The principal employment sector for the City of Scandia is Educational, Health, and Social Services. There are 45 people employed in this industry, which is over 20 percent of the population. Table 3.9.3 is the 2000 census statistics for the employed civilian population 16 years and over in Scandia.

Table 3.9. 3 – Economic Industries

Industry	Number of People Employed in Industry	Percent of Population Working in Industry
Educational, Health, and Social Services	45	20.5
Agriculture, forestry, mining, fishing and hunting	43	19.6
Construction	25	11.4
Retail Trade	23	10.5
Arts, Entertainment, Recreation, Accommodation, and Food Services	17	7.8
Manufacturing	14	6.4
Transportation and Warehousing, and Utilities	11	5
Other Services	10	4.6
Information	8	3.7
Finance, Insurance, Real Estate, Rental and Leasing	8	3.7
Wholesale Trade	7	3.2
Public Administration	5	2.3
Professional, Scientific, Management, Administrative, and Waste Management Services	3	1.4

The 2011 cost of living index is 79.0, which is low compared to the Nation’s average of 100 (City-Data.com). Table 3.9.4 is the economic characteristics for Scandia, Kansas from the 2000 census (U.S. Census Bureau). Scandia has nearly a zero unemployment rate and over 12 percent of the families are living below poverty level.

Table 3.9. 4 – Select Economic Statistics

Jurisdiction	Individuals Below Poverty Level (%)	Median Home Value (1999\$)	Median Household Income (1999\$)	Per Capita Income (1999\$)	Unemployment Rate (%)	Population in Labor Force (%)
United States	14.3	185,400	50,221	27,041	4.2	64.7
State of Kansas	13.2	114,400	47,709	25,522	3.6	68.6

Jurisdiction	Individuals Below Poverty Level (%)	Median Home Value (1999\$)	Median Household Income (1999\$)	Per Capita Income (1999\$)	Unemployment Rate (%)	Population in Labor Force (%)
Republic County	9.6	118,500	36,510	23,494	3.2	63.0
City of Scandia	12.8	31,600	29,896	15,619	0.3	64.7

Capabilities

Floodplain Management

According to FEMA the definition for floodplain management is “a decision-making process that aims to achieve the wise use of the nation’s floodplains. Wise use means both reduced flood losses and protection of the natural resources and function of floodplains.

Floods are one of the most common hazards in the United States, as well as Kansas, and most homeowners’ insurance policies do not cover flood damage. For that reason, in 1968 Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. In order for a community to offer flood insurance through the NFIP, the community is required to enforce certain minimum regulations on development in the floodplain. This management of the floodplain is done to ensure that flooding problems do not increase and to work towards the reduction in the risk of flooding. This work is performed by the local communities' Floodplain Administrator.

National Flood Insurance Program (NFIP)

The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the National Flood Insurance Program. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding (Federal Emergency Management Agency). Republic County is a participant in the National Flood Insurance Program.

Table 3.9.5 is information is from the Federal Emergency Management Agency’s (FEMA) Community Status Book Report for Republic County. The table identifies the date the initial Flood Hazard Boundary Map (FHBM) was identified. FHBM is an official map of a community issued by FEMA, where boundaries of the flood, mudflow, and related erosion areas having special hazards have been designated, which is the date the community joins the NFIP Emergency Program. The Emergency Program is defined as “the initial phase of a community’s participation in the NFIP. During this phase, only limited amounts of insurance are available under the Act. It also identifies the date the initial Flood Insurance Rate Map (FIRM) and the current effective date of the FIRM. A FIRM is an official map of the community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. The final item the table identifies is the date the community went from being in the Emergency Program into the Regular Program. A Regular Program Community is “a community where a FIRM is in effect and full limits of coverage are available under the Act”.

Table 3.9. 5 - NFIP Community Status

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Reg. – Emer. Date
200289#	City of Scandia	Republic	5/10/1974	7/16/1979	12/17/2010	7/16/1979

Existing Planning Ordinances, Codes, and Plans

This section will identify an inventory of existing planning and regulatory tools available to the City of Scandia. It is vital to ensure that proposed mitigation actions are practical considering the jurisdiction’s ability to implement them. It will help build the general foundation for determining the type of mitigation strategy the jurisdiction

develops and ultimately adopts. Table 3.9.6 identifies the existing planning ordinances, codes, and plans for Scandia.

Table 3.9. 6 – Existing Plans, Ordinances, and Codes

Planning ordinances, codes, plans
Neighborhood Revitalization Plan
Floodplain Management Regulations
Fire Prevention Code
Fire Department ISO Rating: 8
Building Code
Stormwater Management Program
Site Plan Review Requirements
Capital Improvements Plan
Economic Development Plan
Local emergency operations plan
Flood Insurance Study (FIS) or other engineering study for streams
Elevation Certificates

Administrative/Technical Resources

This section will identify the administrative and technical resources available to the City of Scandia. It is imperative to ensure that adequate staffing and technical resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.9.7 identifies personnel resources and warning capabilities for the community.

Table 3.9. 7 – Administrative/Technical Resources

Personnel Resources
County Emergency Manager
Floodplain Manager
Grant Writer
GIS Data – Hazard Areas
GIS Data – Critical Facilities
GIS Data – Building Footprints
GIS Data – Land Use
GIS Data – Links to Assessor’s Data
Outdoor weather warning signals

Financial Resources

This section will identify the financial resources available to the City of Scandia. It is necessary to ensure that adequate financial resources are available to the jurisdiction for implementing proposed mitigation actions. Table 3.9.8 identifies personnel resources and warning capabilities for the community.

Table 3.9. 8 – Financial Resources

Financial Resources
Capital improvement project 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

Financial Resources
Incur debt through special tax bonds
Incur debt through private activities

Vulnerabilities

Hazards Affecting the City of Scandia

The hazards that are profiled in this section have had direct impact on the City of Scandia. If the hazards are not profiled in this section, the city did not report any incidents.

History of Dam Failure

There have not been any reports of dam failure in the City of Scandia. However, it is concern for the community because they are located 25 miles downstream from the Lovewell Dam in Jewell County. A breach of this dam would cause damage to properties in Scandia. The dam does have an Emergency Action Plan on file. Damage estimates were not available.

History of Extreme Temperatures

The community has experienced bouts with extreme temperatures in the past.

History of Flooding

The City of Scandia reported severe flooding June 23-27, 2003. The feed store lost all of the feed. Approximately 15 homes were damaged and several businesses were flooded when the Republican River topped the river banks. Several residential structures were moved as result of the flooding. Approximately six homes were mitigated through the revitalization program.

Scandia experienced severe flooding again May 7, 2010. The community had to sandbag approximately ¾ of a mile to contain the floodwaters. The mayor of the community reported crops and farmland south of the Republican River were reported a total loss. Many houses had to be evacuated.

Repetitive Loss Properties

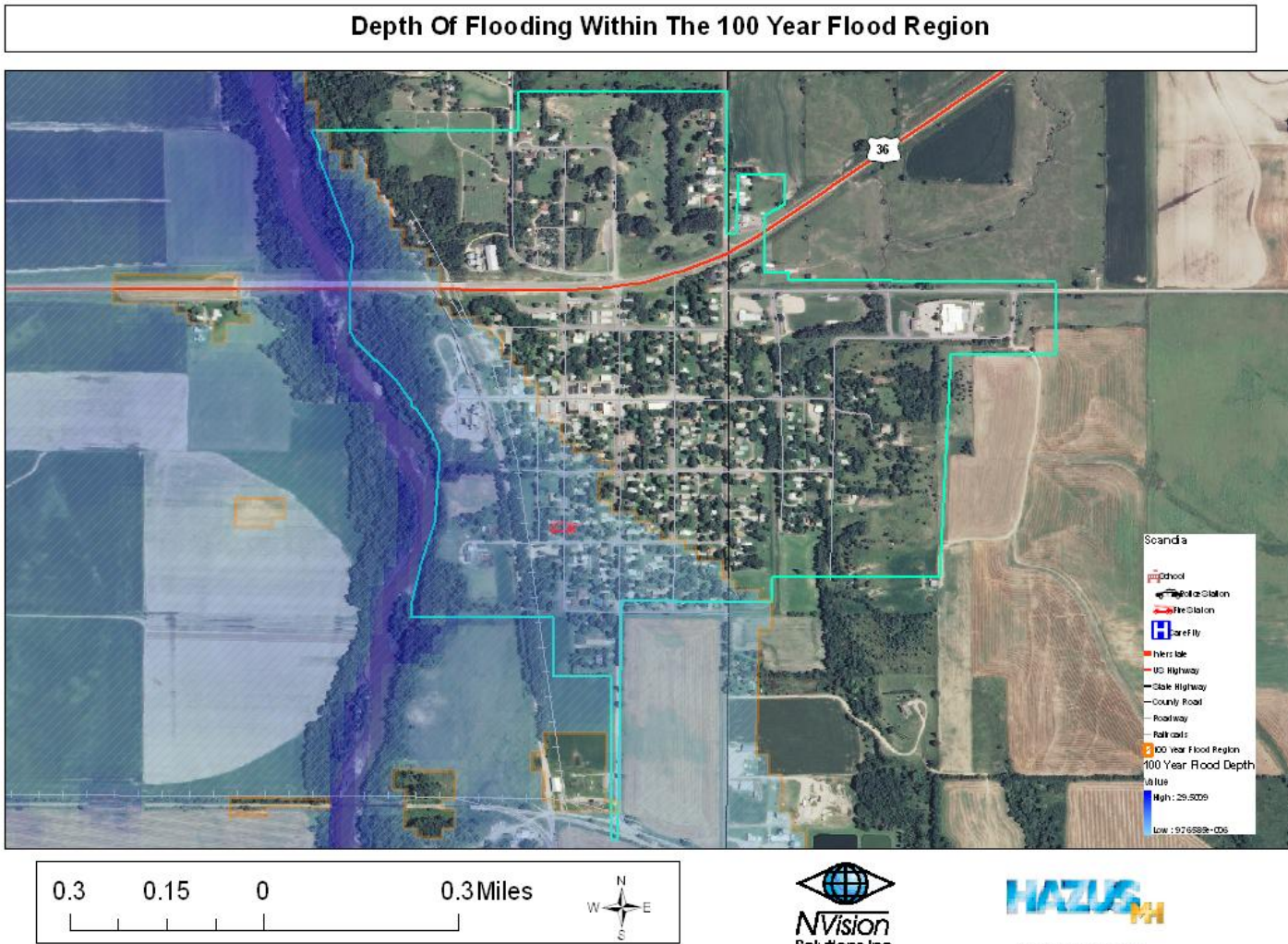
FEMA defines repetitive loss properties as “a residential property that is covered under an NFIP flood insurance policy and has had at least 2 paid losses of more than \$1000 each in any 10-year period since 1978. There are no repetitive flood loss properties in Scandia, Kansas.

HAZUS Report

A “flood” HAZUS loss estimation model was completed by NVision using FEMA’s software program, HAZUS-MH MR4. The software was used for estimating potential losses from flooding. Figure 3.9.3 is map that identifies the location of the critical facilities in relation to the 100-year floodplain for the City of Scandia.

The HAZUS loss estimation model for Scandia identified approximately 79 residential houses, the fire station, and grain elevator could experience minor to moderate flooding. There are also two local businesses that could potentially experience moderate flooding, Scandia Auto Parts and Raney’s Home Center & Sports Shop. The HAZUS model also as showed the Short Line Railroad tracks, a portion of US 36 and the Rodeo Grounds would be inundated with flood waters.

Figure 3.9. 3 - City of Scandia 100-year Flood Plain



History of Hailstorm Events

There were 7 hailstorm events reported for the City of Scandia in the NCDL database between January 1, 1950 and February, 28, 2011. Table 3.7.9 is a summary of each hailstorm event. Although there was not any property damage reported, it is expected the amount of damage is much higher as all damage reports are not reported to the NCDL. Many damage claims are reported to individual insurance carriers.

Table 3.9. 9 – Hailstorm Events in the City of Scandia

Date	Time	Diameter (Inches)	Property Damage Reported (\$)	Crop Damage Reported (\$)
5/9/1996	1802	0.88	0	0
6/13/2001	1828	1.00	0	0
7/18/2001	1705	1.00	0	0
9/22/2001	2036	0.88	0	0
6/28/2003	2138	0.88	0	0
4/7/2004	1536	0.88	0	0
5/21/2004	2050	0.88	0	0
8/8/2004	1645	0.75	0	0
6/26/2008	1615	1.00	0	0

History of Lightning

Historic hazard incidents were obtained from the National Climatic Data Center database.

- October 4, 1998 According to the Scandia Journal a farmhouse was severely burned when lightning struck a nearby fence charger igniting a fire that burned the house. Property damage was estimated at \$25,000.
- June 2009 Lightning took out the communication system in the city and a home was struck by lightning and burned down.

History of Utility/Infrastructure Failure

There was one historic event reported for Scandia, Kansas.

- May 8, 2001 Strong winds downed power lines near Scandia. Damage was estimated at \$2,000.

History of Windstorms

Historic hazard incidents were obtained from the National Climatic Data Center database.

- July 22, 1996 A severe thunderstorm was reported two miles south east of Scandia. There were not any reports of damage.
- August 25, 2000 Strong winds knocked down power lines and did damage of a minor nature to several buildings two miles northwest of Scandia. Property damage was estimated at \$2,000.
- April 11, 2001 Thunderstorms were reported by the City of Scandia. There were not any reports of damage.
- May 8, 2001 Strong thunderstorm winds damaged power lines near Scandia causing approximately \$2,000 in property damage.

History of Tornado Events

Historic hazard incidents were obtained from the National Climatic Data Center database.

May 29, 2004 A tornado touched down over open country near Scandia and traveled 1 mile before dissipating. There was a lot of tree damage but damage estimates were not available.

History of Utility/Infrastructure Failure

The City of Scandia reported in 2010 the power was out in the city for an entire day.

History of Wildfire

Scandia reported every year the surrounding area experiences wildfires.

History of Windstorms

Historic hazard incidents were obtained from the National Climatic Data Center database.

August 25, 2000 Winds knocked down power lines and did damage of a minor nature to several buildings two miles northwest of Scandia. Property damage was estimated at \$2,000.

May 8, 2001 Strong thunderstorm winds damaged power lines near Scandia. Property damage was estimated at \$2,000.

City of Scandia Hazard Vulnerability Assessment

The following table is a comparison of the hazards vulnerability ranking for the Republic County HMPC. The first column is the order of priority the HMPC ranked the hazards that threaten the entire planning area. The second column is the hazards that pose a threat to all of Republic County. The third column is the Republic County HMPC planning significance (high, moderate, or low) for the entire planning area, which was determined by the HMPC during the first hazard mitigation planning meeting. The last column is the planning significance for each hazard as determined by the City of Scandia for their specific community.

Scandia raised lightning to high vulnerability based on past incidents. They also determined they are moderately vulnerable to dam failure because of their location downstream from the Lovewell Dam.

Table 3.9. 10 - Hazards Vulnerability Assessment

HMPC Priority	Hazards That Threaten Republic County	HMPC Planning Significance	City of Scandia Planning Significance
1	Winter Storm	High	High
2	Tornado	High	High
3	Windstorm	High	High
4	Flood	High	Low
5	Utility/Infrastructure Failure	High	High
6	Hailstorm	High	High
7	Drought	Moderate	Moderate
8	Extreme Temperatures	Moderate	Moderate
9	Major Disease Outbreak	Moderate	Moderate
10	Soil Erosion and Dust	Moderate	Moderate
11	Terrorism/Agro-Terrorism/Civil Disorder	Moderate	Moderate
12	Wildfire	Moderate	Moderate
13	Lightning	Moderate	High
14	Expansive Soils	Moderate	Moderate
15	Agricultural Infestation	Moderate	Moderate
16	Hazardous Materials	Moderate	Moderate

HMPC Priority	Hazards That Threaten Republic County	HMPC Planning Significance	City of Scandia Planning Significance
17	Fog	Low	Low
18	Earthquake	Low	Low
19	Dam Failure	Low	Moderate
20	Land Subsidence	Low	Low
21	Landslide	Low	Low
22	Radiological	Low	Low

Critical Infrastructure

An essential element of the Republic County Hazard Mitigation Plan is the identification and inventory of the critical infrastructure located in each participating jurisdiction.

The purpose of the critical infrastructure inventory is to provide information and location data on buildings and infrastructure that are vital to the response and recovery of the community from a natural and/or manmade disaster. While all buildings and structures have value, certain types of structures have a higher priority for protection because damage to them can directly impact the delivery of vital services, thereby delaying response and/or recovery efforts.

Highways/Roads

There is one major highway in the City of Scandia, which is US Highway 36.

Bridges

There are three wooden bridges and four cement bridges in town. The water backs up and has caused damage to the bridges.

Railroads

Kyle Railroad has rail lines that run through Scandia. It is a short line railroad. The railroad services the grain elevator and manufacturing plant in town.

Airports

There is a grass runway a half mile outside of town. Airplanes that spray the crops in the area refuel at the airport.

Historic Sites

Historic buildings and structures and documents are often irreplaceable, and may forever be lost in a disaster if not considered in the mitigation planning process. Historic properties and cultural resources are also valuable economic assets that increase property value, while attracting businesses and tourists. Preservation of these assets is often an important method for economic development.

Historic preservation planning protects historic properties and cultural resources before they are threatened with demolition. Hazard mitigation planning protects life and property from damage caused by natural and manmade hazards. Integrating these two planning processes helps ensure the future growth of safe and sustainable historic communities.

Historic preservation is the process of identifying, evaluating, protecting, preserving, and using historic properties. A historic property is any prehistoric or historic district, site, building, structure, or object included in the National Register of Historic Places maintained by the Secretary of the Interior. These properties are legally recognized as historically significant in American history, architecture, archeology, engineering and culture. Typically these properties are at least 50 years old. The National register is a planning tool that highlights the importance of properties worthy of preservation. The National & State Register of Historic Places does not have any places listed as historical for the City of Scandia.

Critical Facilities

For purposes of this Mitigation Plan, Republic County and participating jurisdictions considered critical facilities to be those buildings and structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. These facilities include supporting infrastructure essential to the mission of critical facilities. The facilities also include education facilities to ensure continuity of education. Table 3.9.11 identifies the critical facilities in Scandia.

Table 3.9. 11 – Critical Facilities

Name of Asset	Facility Type	Address	Replacement Value
Country Place Home Plus of Scandia	Healthcare	308 Washington Street	\$1 million
Pike Valley Elementary/Junior High School	Education	502 Grant Street	\$843,000
Pike Valley High School	Education	100 School Street	\$754,400
City Hall	Government	406 4 th Street	\$700,000
Scandia Fire Department	Emergency Services	200 North Cloud Street	\$400,000

Local Businesses

Local businesses are important to the economic development for Scandia. During a disaster loss of local businesses can have a detrimental effect on the local economy. Table 3.9.12 identifies the local businesses in the area.

Table 3.9. 12 – Local Businesses

Business Name	Type of Business	Address
Scandia Public Library	Education	409 4 th Street
Home Oil Services Co.	Retail	405 Washington Street
Scandia Repair & Auto Parts	Retail/Auto Services	200 4 th Street
Raney’s Home Center & Sports Shop	Retail	205 4 th Street
United Grain Inc	Agricultural Services	191 4 th Street
Thompson & Thompson Law Offices	Service	310 4 th Street
Antique Mall	Retail	309 4 th Street
Styleaire Beauty Salon	Retail/Service	Main Street
NCK Feed & Ag Services	Agricultural Services	1015 90 Rd
Tags Grill & Bar	Restaurant	319 North Cloud Street
Victorian Rose	Retail	311 North Cloud
Gile Alignment Services	Retail/Services	506 Washington Street
United Methodist Church	Religion	418 Cloud Street
United Methodist Church	Religion	209 Grant Street
Ammana Lutheran Church	Religion	418 Grant Street
Our Saviors Lutheran Church	Religion	945 Highway K148

Community Concerns

The community reported they are concerned about the number of bridges that are in need of repair in the community. Approximately six bridges need to be repaired. The bridges have been damaged by floodwaters. The city also reported there is one mile of drainage ditches and sewer lines that also need repair.

A saferoom is needed in the community because of the large elderly population. The saferoom would be used as a shelter in times when evacuations are necessary and also as a cooling shelter in times of extreme heat.

Land Use

Land use can be classified as either primary land use or secondary land use. Direct extraction of a useful product from the physical environment is a primary economic land use. Examples of primary land use include hunting and gathering, caring for grazing livestock, cultivating agriculture, timbering, and extraction of minerals, ore, shale, and clay. Secondary land uses include residential, commercial, and industrial land uses. In some cases primary and secondary land uses are intermingled.

Agricultural uses include the use of land for pasture and grazing, crop land, and forest. The largest percentage of the total county land area is used for agricultural purposes.

Residential home sites, commercial sites, and industrial purposes account for most of the land use in cities in Republic County. Larger density residential, commercial, and industrial land uses are primarily found either within the incorporated communities or close to the city limits.

Farmers either own or rent the majority of private land within Republic County. However they make up the minority population and occupations in the county. Conversion of the land from farming to other land uses can often have an adverse impact on the farming community and economy.

Table 3.9. 13 – City of Scandia Land Use

Current Land Use Category	Percent of Jurisdiction
Residential	75
Commercial	25

New Development

The City of Scandia reported there have been some discussions about expanding US Highway 36 to four lanes in the future, building a new fire station, sewer system upgrade, and lift station pumps are 40 years old and need to be replaced.

The city has revitalization fund that they are planning to use to reshape the drainage system, replace bridges, and remove trees creating hazardous conditions. The city also plans to acquire a new well site.

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are the mitigation actions Scandia plans to adopt.

2011 Mitigation Actions	
Lead Agency: City of Scandia	Project Title: Ditch Cleaning/Deepening
Project Description: Clean and deepen ditches in the county	
Type of Project: Prevention	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/a	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	UTILITY/INFRASTRUCTURE FAILURE
Benefits (Losses Avoided): Flood Control	Completion Date: On-going
Plan for Implementation and Administration: Clean and deepen ditches on an as needed basis	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: City of Scandia	Project Title: Sewer Line Replacement
Project Description: Replace approximately 1 mile of sewer line	
Type of Project: Structural Project	
Funding Description: Local Funds	
Estimated Cost: N/a	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	UTILITY/INFRASTRUCTURE FAILURE
Benefits (Losses Avoided): Reduce sewage backup/Flood Control	Completion Date: Within 5 years
Plan for Implementation and Administration: Replace approximately 1 mile of sewer line	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: City of Scandia	Project Title: Bridge Replacement
Project Description: There are 4 cement bridges in the community that cause water to backup and need to be replaced	
Type of Project: Structural Project	
Funding Description: Local Funds/Grant	
Estimated Cost: N/a	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	UTILITY/INFRASTRUCTURE FAILURE
Benefits (Losses Avoided): Reduce water backup/Flood Control	Completion Date: Within 5 years
Plan for Implementation and Administration: After funding is secured replace the 4 cement bridges that are causing water to backup	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: City of Scandia	Project Title: Monitor Floodplain Activities
Project Description: Continue to monitor floodplain activities to ensure that structures are reasonably safe from flooding	
Type of Project: Prevention	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	yes
Which hazard will be eliminated, diminished or controlled?	Flood
Benefits (Losses Avoided): Reduce flood insurance premiums for residents and reduce flood damage	Completion Date: On-going
<p>Plan for Implementation and Administration:</p> <ol style="list-style-type: none"> Review of all applications for floodplain development permits to assure that sites are reasonably safe from flooding and that the floodplain development permit requirements of this ordinance have been satisfied; Review of all applications for floodplain development permits for proposed development to assure that all necessary permits have been obtained from Federal, State, or local governmental agencies from which prior approval is required by Federal, State, or local law; Review all subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding; Issue floodplain development permits for all approved applications; Notify adjacent communities and the Division of Water Resources, Kansas Department of Agriculture, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA); Assure that the flood-carrying capacity is not diminished and shall be maintained within the altered or relocated portion of any watercourse; and Verify and maintain a record of the actual elevation (in relation to mean sea level) of the lowest floor, including basement, of all new or substantially improved structures; Verify and maintain a record of the actual elevation (in relation to mean sea level) that the new or substantially improved non-residential structures have been floodproofed; When floodproofing techniques are utilized for a particular non-residential structure, the floodplain administrator shall require certification from a registered professional engineer or architect. 	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

Jurisdiction: Republic County Unified School District 109

Counties In Service Area Republic County **Website Address:** <http://www.usd109.org/>



Republic County USD 109

1205 19th Street
 Belleville, KS 66935

Administrators:

Superintendent	Brian Harris	email: bharris@usd109.org
Clerk of the Board	Linda Gieber	email: lgieber@usd109.org
Business Office Manager	Darice Wilkinson	email: dwilkinson@usd109.org
Technology Coordinator	Troy Johnson	email: tjohnson@usd109.org
Director of Transportation	Mark VanNortwick	email: mvannortwick@usd109.org

USD-109 Adopts New Mission Statement

As part of the school improvement process, USD-109 has adopted a new Mission & Vision Statement.

MISSION STATEMENT

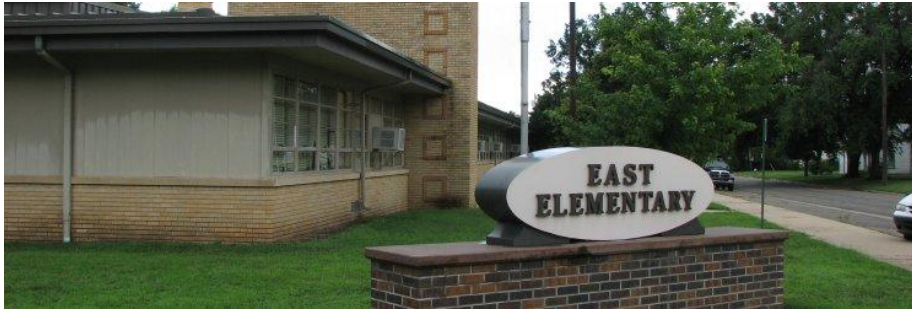
USD 109 shall provide a safe environment for all students in which they have the opportunity to develop and maximize their individual abilities so that upon graduation they are adequately prepared to live as responsible citizens whether they go on to college, vocational training, enter the work force, or take other paths in local and global communities.

VISION STATEMENT

USD 109 believes that the vision of the school district is to provide a learning environment that encourages all students to achieve to their maximum potential; to provide staff a productive and rewarding school system in which to work; and, to encourage the active involvement of parents and the community in the education of our students. This vision for USD 109 is a school district where:

- Parents, community members, staff, and students are full partners in the education of all students.
- Students and staff are physically and emotionally safe.
- Students and staff take pride in their school district.
- The challenges of the future are continually met through curriculum, instructional strategies and meaningful assessments.
- A nurturing environment is provided that is responsive to each student's needs, intelligences, and interests.
- Students, school personnel, and parents show respect toward themselves and others.
- Students learn to become life-long learners and productive citizens.
- Adequate resources are available to provide students with a quality educational experience.

Republic County USD 109



East Elementary School

1811 O Street
 Belleville, KS 66935
 Total Enrollment 2010-2011: 213
 Year Built: 2006
 Date Opened: 7/1/2006



Republic County Middle School

915 18th Street
 Belleville, KS 66935
 Total Enrollment 2010-2011: 69
 Building Type: Middle School
 Year Built: 2009
 Date Opened: 8/1/2009



Republic County Jr/Sr High School

2405 P Street
 Belleville, KS 66935-0469
 Total Enrollment 2010-2011: 229
 Building Type: Middle School
 Year Built: 2009
 Date Opened: 7/1/2009

Hazards That May Impact the Institution

Each school district identified the threat level for each hazard that may affect the district. The table below is the hazards that Smoky Valley USD 400 identified that may affect their institutions.

Table 3.10. 1 – USD 400 Hazard Threat Rating

McPherson County Identified Hazards	Threat Rating 1= Significant 2= Moderate 3= Negligible	Past Hazard Affects
Agricultural Infestation	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Dam and Levee Failure	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Drought	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Earthquake	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Expansive Soils	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Extreme Temperatures	1	SCHOOL BUILDINGS HAVE HAD TO BE CLOSED DUE TO EXTREME COLD TEMPERATURES. WITH THE COMBINATION OF HIGH WINDS AND LOW WIND CHILLS, THE DISTRICT HAS HAD TO KEEP CHILDREN AT HOME. THERE WAS A CONCERN OF FREEZING WATER PIPES AND BITTER COLD EXPOSURE OF THE KIDS.
Flood	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Fog	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Hailstorm	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Hazardous Materials	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Land Subsidence	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Landslide	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Lightning	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Major Disease Outbreak	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Radiological	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Soil Erosion and Dust	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Terrorism/Agro - Terrorism/Civil Disorder	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Tornado	2	THERE HAVE BEEN TORNADOES IN THE AREA BUT THERE WERE NO REPORTS OF DAMAGE TO USD 109 AS A RESULT
Utility/Infrastructure Failure	2	USD 109 HAS EXPERIENCED POWER OUTAGES IN THE PAST
Wildfire/Urban Fire	3	USD 109 has not been affected by hazard
Windstorm	3	USD 109 HAS NOT BEEN AFFECTED BY HAZARD
Winter Storm	2	WINTER STORMS ARE A CONCERN EVERY SCHOOL YEAR

Vulnerable Sites

An essential component of the Republic County Hazard Mitigation Plan is the identification and inventory of the vulnerable facilities located within the school district.

The purpose of the vulnerable sites inventory is to provide information and location data on buildings and infrastructure in the school district. Table 3.10.2 identifies the vulnerable sites in the Republic County USD 109 school district.

Table 3.10. 2 – Vulnerable Sites

Name of Building	Address	Estimated Replacement Cost
DISTRICT OFFICE BUILDING	1205 19TH STREET BELLEVILLE, KS 66935	\$200,000
EAST ELEMENTARY SCHOOL	1811 O STREET BELLEVILLE, KS 66935	\$2,740,000
REPUBLIC COUNTY MIDDLE SCHOOL	915 18TH STREET BELLEVILLE, KS 66935	\$3,500,000
REPUBLIC COUNTY JR/SR HIGH SCHOOL	2405 P STREET BELLEVILLE, KS 66935-0469	\$4,225,000

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are the mitigation actions Smoky Valley USD 400 plans to adopt.

2011 Mitigation Actions	
Lead Agency: REPUBLIC COUNTY USD 109	Project Title: FEMA APPROVED SAFE ROOM
Project Description: LOOK INTO FUNDING FOR FEMA APPROVED SAFEROOMS FOR SCHOOL BUILDINGS IN THE DISTRICT THAT CURRENTLY DO NOT HAVE SAFEROOMS OR BASEMENTS	
Type of Project: STRUCTURAL PROJECT	
Funding Description: LOCAL/HMGP FUNDS	
Estimated Cost: \$150,000 - \$350,000	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	TORNADOES
Benefits (Losses Avoided): LOSS OF HUMAN LIFE OR PERSONAL INJURY	Completion Date: WITHIN 5 YEARS
Plan for Implementation and Administration: SECURE FUNDING SECURED THROUGH FEMA HMGP GRANT PROGRAM AND LOCAL FUNDS. CONSTRUCT	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: REPUBLIC COUNTY USD 109	Project Title: PUBLIC AWARENESS PROJECT
Project Description: CONTINUE PUBLIC AWARENESS AND EDUCATIONAL PROGRAMS ON HAZARDS	
Type of Project: PUBLIC EDUCATION AND AWARENESS	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	ALL HAZARDS
Benefits (Losses Avoided): INFORMED PUBLIC/LIFE SAFETY	Completion Date: ON-GOING
Plan for Implementation and Administration: CONTINUE TO PROMOTE PUBLIC AWARENESS CAMPAIGNS AND EDUCATIONAL PROGRAMS ON ALL HAZARDS	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: REPUBLIC COUNTY USD 109	Project Title: EMS Training
Project Description: Key personnel in the school district will attend EMS training	
Type of Project: PUBLIC EDUCATION AND AWARENESS	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	ALL HAZARDS
Benefits (Losses Avoided): Emergency preparedness	Completion Date: ON-GOING
Plan for Implementation and Administration: Key personnel will attend EMS training annually	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

Jurisdiction: Pike Valley Unified School District 426

Counties In Service Area Republic County Website Address: <http://www.pikevalley.com/>



Pike Valley USD 426

100 School Street
Scandia, KS 66966

Administrators:

Superintendent
Board Clerk

Chris Vignery
Vickie Nylund

email: cvignery@pikevalley.com
email: vnylund@pikevalley.com

USD 426 Mission Statement

Pike Valley USD 426, with community support, will provide students and patrons opportunities to be functioning citizens, in an ever changing and richly diverse society, to achieve at their next level of endeavor, and to believe in the worth and dignity of themselves and others. A highly qualified staff, committed to excellence, will offer an appropriate, balanced curriculum in an environment conducive to learning.

Pike Valley USD 426

Pike Valley Elementary

502 Grant
 Courtland, KS 66939
 Total Enrollment 2010-2011: 85
 Year Built: 1966
 Date Opened: 8/1/1966

Pike Valley Jr High

502 Grant
 Courtland, KS 66939
 Total Enrollment 2010-2011: 55
 Year Built: 1939
 Date Opened: 8/1/1939

Pike Valley High School

100 School Street
 Scandia, KS
 Total Enrollment 2010-2011:
 259
 Year Built: 1963

Regulatory Tools

This section will identify an inventory of regulatory tools available to Republic County USD 426. It is essential to ensure that proposed mitigation actions are deemed practical considering the jurisdiction’s ability to implement them. It will help build the general foundation for determining the type of mitigation strategy the jurisdiction develops and ultimately adopts. Table 3.11.1 identifies the regulatory tools for the school district.

Table 3.11. 1– USD 418 Regulatory Tools

Regulatory Tools	Year Adopted	Comments
Master Plan	2005	This information is in our Crisis Plan
Capital Improvement Plan	Annually	This plan is done annually at our board meetings
Weapons Policy	N/A	This is in our Board Policy

Hazards That May Impact the Institution

Each school district indentified the threat level for each hazard that may affect the district. The school district assessed their vulnerability to each hazard and the threat rating is identified in Table 3.11.2.

Table 3.11. 2 – USD 418 Hazard Threat Rating

McPherson County Identified Hazards	Threat Rating 1= Significant 2= Moderate 3= Negligible	Past Hazard Affects
Agricultural Infestation	3	USD426 has not been affected by hazard
Dam and Levee Failure	3	USD426 has not been affected by hazard
Drought	3	USD426 has not been affected by hazard
Earthquake	3	USD426 has not been affected by hazard
Expansive Soils	3	USD426 has not been affected by hazard
Extreme Temperatures	3	USD426 has not been affected by hazard
Flood	3	USD426 has not been affected by hazard
Fog	3	USD426 has not been affected by hazard
Hailstorm	3	USD426 has not been affected by hazard
Hazardous Materials	3	USD426 has not been affected by hazard
Land Subsidence	3	USD426 has not been affected by hazard
Landslide	3	USD426 has not been affected by hazard
Lightning	3	USD426 has not been affected by hazard
Major Disease Outbreak	3	USD426 has not been affected by hazard

McPherson County Identified Hazards	Threat Rating 1= Significant 2= Moderate 3= Negligible	Past Hazard Affects
Radiological	3	USD426 has not been affected by hazard
Soil Erosion and Dust	3	USD426 has not been affected by hazard
Terrorism/Agro - Terrorism/Civil Disorder	3	USD426 has not been affected by hazard
Tornado	2	Although none of the buildings in USD 109 district have suffered damage from a tornado event, they are concerned for the safety of the children and staff.
Utility/Infrastructure Failure	3	USD426 has not been affected by hazard
Wildfire/Urban Fire	3	USD426 has not been affected by hazard
Windstorm	2	May 2010 a severe windstorm caused damage to buildings in the school district
Winter Storm	1	January 2010 an intense winter storm caused damage to buildings in the school district

Vulnerable Sites

An essential component of the Republic County Hazard Mitigation Plan is the identification and inventory of the vulnerable facilities located within the school district.

The purpose of the vulnerable sites inventory is to provide information and location data on buildings and infrastructure in the school district. Table 3.11.3 identifies the vulnerable sites in the Republic County USD 426 district.

Table 3.11. 3 – Vulnerable Sites

Name of Building	Address	Estimated Replacement Cost for Building (\$)	Estimated Replacement Cost for Contents (\$)	Occupancy	Size of Building (Sq. Footage)
Pike Valley Elementary/Junior High	502 Grant Street, Courtland, KS	4,219,000	843,000	1000	43,388
Pike Valley High School	100 School Street, Scandia, Ks	3,851,500	754,400	1000	31,368
Pike Valley Board Office	100 School Street, Scandia, Ks	361,700	102,000	100	2,100

Personnel Information

This section will identify the personnel resources available to Republic County USD 426. It is vital to ensure that adequate staffing is available to a jurisdiction for implementing proposed mitigation actions. Table 3.11.5 identifies the personnel resources for the district.

Table 3.11. 4 – Personnel Information

Personnel Resources	Department/Position
Full-Time Building Official	Superintendent
Public Information Officer	Superintendent

Financial Resources

This section will identify the financial resources available to the school district. It is fundamental to ensure that adequate financial resources are available to a jurisdiction for implementing proposed mitigation actions. Table 3.11.6 identifies the financial resources.

Table 3.11. 5 – Financial Resources

Financial Resources	Year/Amount	Comments
Is Institution Self Insured? NO	2010/\$10,000,000	EMC Insurance Companies
Capital Improvements Project Funding	2010/\$500,000	Capital Outlay Fund

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are the mitigation actions McPherson USD 418 plans to adopt.

2010 Mitigation Actions	
Lead Agency: Pike Valley USD 426	Project Title: FEMA Approved Safe Room
Project description: Look into funding for FEMA approved saferooms for school buildings in the district	
Type of Project: STRUCTURAL PROJECT	
Funding Description: LOCAL/HMGP FUNDS	
Estimated Cost: \$150,000 - \$350,000	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	TORNADOES
Benefits (Losses Avoided): LOSS OF HUMAN LIFE OR PERSONAL INJURY	Completion Date: WITHIN 5 YEARS
Plan for Implementation and Administration: SECURE FUNDING SECURED THROUGH FEMA HMGP GRANT PROGRAM AND LOCAL FUNDS. CONSTRUCT	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

2011 Mitigation Actions	
Lead Agency: REPUBLIC COUNTY USD 426	Project Title: EMS Training
Project Description: Key personnel in the district will attend EMS training	
Type of Project: PUBLIC EDUCATION AND AWARENESS	
Funding Description: LOCAL BUDGET	
Estimated Cost: N/A	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	ALL HAZARDS
Benefits (Losses Avoided): Emergency preparedness	Completion Date: ON-GOING
Plan for Implementation and Administration: Key personnel will attend EMS training annually	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

Jurisdiction: Rolling Hills Electric Cooperative, Inc***History***

Rolling Hills Electric was formed January 1, 2002 through the consolidation of Jewell-Mitchell Cooperative Electric Company, Inc in Mankato, Kansas; NCK Electric Cooperative, Inc in Belleville, Kansas; and Smoky Hill Electric Cooperative Association, Inc. in Ellsworth, Kansas. Jewell-Mitchell Cooperative has been in business since April 1937; NCK Electric has been in business since April 1939; and Smoky Hill Electric has been in business since April 1945.

Rolling Hills Electric has three offices. The headquarters of the consolidated cooperative is located at 122 West Main Street in Mankato, Kansas. District offices are located and maintained at 2305 U.S. Highway 81, Belleville, Kansas and 208 West First Street, Ellsworth, Kansas. Warehouses are also maintained at all three locations and a RadioShack retail office at Ellsworth location.

Rolling Hills Electric serves rural consumers in the following counties of Kansas: Barton, Clay, Cloud, Ellsworth, Jewell, Lincoln, Mitchell, Osborne, Ottawa, Phillips, Rooks, Republic, Russell, Saline, Smith and Washington. Rolling Hills Electric serves 6,800 consumers with a total of 10,940 meters, over 6,190 miles of distribution line, and 153 miles of transmission line. Besides serving the rural residential consumer, included in the 10,940 meters are services to the entire cities of Alton, Kanopolis, and Wilson along with commercial, agricultural and wholesale customers. Among these are irrigation services, oil wells, Bureau of Reclamation, Nesika Ethanol, North Central Kansas Vocational/Technical College, and several government entities.

Other service providers in the area:

Rolling Hills Electric Cooperated is the only rural electric cooperative in Republic County

Capabilities

Rolling Hills Electric currently employs a total of 40 fulltime line crew, General Manager and 13 office staff to serve the clients' needs throughout the service territory. Rolling Hills Electric has a 24-hour answering service and employees are on-call after hours, each day of the year. Rolling Hills Electric holds monthly safety meetings and is evaluated annually by Kansas Electric Cooperatives, Inc. (state wide organization) and Federated Rural Electric Insurance.

Rolling Hills Electric has 33 distribution substations: Bunker Hill, Ellsworth, Fredrick, Glendale, Holyrood, Kanopolis, Lucas, Vespar, Wilson, and Wilson City located in the Ellsworth District service area; Alton, Bellaire, Cedar, Covert, Esbon, Gilbert, Hunter, Ionia, Jayhawk, Jewell, Lovewell, Mankato, Osborne and Solomon Rapids in the Mankato District service area; Ames, Aurora, Clifton, Cuba, Jamestown, Kaneb, Republic, Rice and Scandia in the Belleville District service area.

Rolling Hills Electric is operating with the emergency plan developed in December 2005 and revised December 2006. This plan is in place because Rolling Hills Electric recognizes that even in the safest of environments, emergency situations arise. Rolling Hills Electric is concerned with the safety of its employees, visitors and the community, and therefore desires to minimize the effects of any emergency situation. The plan addresses what to do in an emergency due to fire, inclement weather, bomb threat, terroristic threat, disgruntled employee, robbery, chemical spill, oil spill, and information technology problems. Rolling Hills Electric is prepared to provide safety and reduce the time and effort required to restore normal business functions following an emergency.

Of the four disasters where Rolling Hills Electric qualified for FEMA funds to restore lines, Rolling Hills Electric has proposed mitigation measures in two FEMA declared disasters: DR 1675-KS and DR-1741-KS. Neither one has been implemented.

Vulnerabilities

Areas of concern in the Rolling Hills Electric service territory is loss of power to several key consumers. These consist of radio stations, Rural Water District wells and pump houses, Rural Fire Districts, oil and gas pumping stations, water control at area lakes, railroad crossings on major highways, cell towers and phone service providers, and FAA tower.

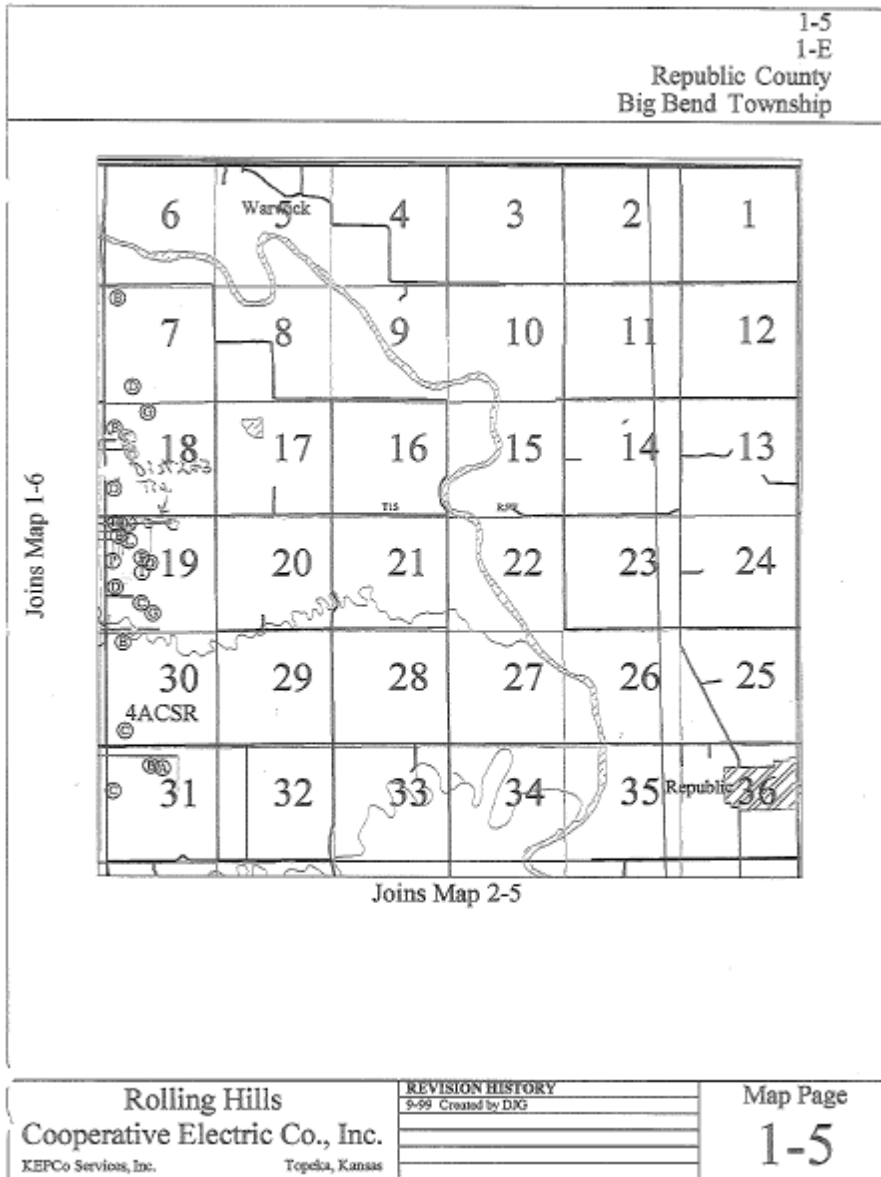
Like the rest of the planning area, Rolling Hills Electric's infrastructure is vulnerable to natural and manmade hazards. High winds, ice and storms are among the top threats to Rolling Hills Electric's 153 miles of transmission lines at 115kV, 69kV, and 34.5kV. Its distribution system of 6,190 miles of line (38 of which are underground and therefore protected against inclement weather) is operated at 12.47kV, 4,160V and 2,400V. Because the area has a relatively low population density (approximately 1.5 customers per mile) it can be argued that the area represents a lower overall risk for the state. However, these consumers are least likely to have the resources needed to respond to a long-lasting power outage, and both commercially available resources and state owned resources are seldom found in nearby locations. When these factors are taken into account, the likelihood of the planning area to experience longer periods without adequate utility coverage is greater than more densely populated areas of Kansas.

2011 Mitigation Actions

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one mitigation action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing, as well as future buildings and infrastructure. The following tables are information on the mitigation actions Rolling Hills Electric Cooperative plans to adopt.

2011 Mitigation Actions	
Lead Agency: ROLLING HILLS ELECTRIC COOP. LINE DEPARTMENT	Project Title: DISTRIBUTION LINE UPGRADE
Issue/Background: PROBLEMS: (1) AGE OF LINE (2) STORMS THE LINES HAVE ENDURED (3) REMOTE AREAS THEY TRANSVERSE (4) NEED FOR RELIABLE ELECTRICITY. COLLECTIVELY THESE ISSUES WILL NOT ALLOW ROLLING HILLS ELECTRIC COOP. TO SUPPLY ELECTRICITY TO THE PEOPLE OF SALINE COUNTY TO MEET TODAY'S NEEDS	
Type of Project: PROPERTY PROTECTION	
Funding Description: LOCAL/GRANT	
Estimated Cost: \$180,000	
Does the jurisdiction have the authority required to implement the proposed project?	YES
Which hazard will be eliminated, diminished or controlled?	UTILITY/INFRASTRUCTURE FAILURE
Benefits (Losses Avoided): PREVENT BLACK-OUT FAILURE	Completion Date: 4 MONTHS
Plan for Implementation and Administration: REPLACEMENT OF 4 MILES OF 8A CWC SINGLE PHASE LINE WITH 4 MILES OF #2 ACSR SINGLE PHASE LINE	
STAPLEE Criteria	Yes/No
Social: Is the proposed strategy socially acceptable to the community?	YES
Technical: Will the proposed strategy work?	YES
Administrative: Is there someone to coordinate and lead the effort?	YES
Political: Is there public support both to implement and to maintain the project?	YES
Legal: Is there a clear legal basis or precedent for this activity?	YES
Economic: Does the cost seem reasonable for the size of the problem and the likely benefits?	YES
Environmental: Will the strategy need environmental regulatory approvals?	NO

The following map identifies the area in need of line replacement.



CHAPTER 4 – MITIGATION STRATEGY AND PLAN MAINTENANCE

The mitigation strategy is an ongoing plan for reducing losses identified in the risk assessment portion of this plan. This strategy includes the development of goals, objectives, and mitigation actions that have been identified, analyzed and prioritized by the Republic County HMPC. This Chapter is divided into 5 subsections:

- Implementation of National Flood Insurance Program
- Local Hazard Mitigation Goals and Objectives
- Identification and Analysis of Mitigation Actions
- Implementation of Mitigation Actions
 - Multi-Jurisdictional Mitigation Actions
 - Republic County Mitigation Actions
- Plan Maintenance Process
 - Method and schedule for monitoring, evaluating, and updating the plan
 - Maintenance Schedule
 - Incorporation into Existing Planning Mechanisms, and
 - Continued Public Involvement

Implementation of National Flood Insurance Program

Federal requirement €201.6(c) (3) (ii) states: “the mitigation strategy must also address the jurisdiction’s participation in the NFIP, and continued compliance with the NFIP requirement, as appropriate.”

The NFIP provides the maps and regulatory basis for local floodplain management. It is also the primary source of insurance protection for flood prone properties. Involvement in the National Flood Insurance Program (NFIP) is based on an agreement between local jurisdictions and FEMA. The NFIP has 3 basic areas of focus:

- Floodplain identification and mapping – Participation in the NFIP requires communities to adopt the flood maps. By mapping the flood hazards, a broad-based awareness of the flood hazards is provided. It also provides the statistics needed to administer floodplain management programs and to actuarially rate new construction for flood insurance.
- Floodplain management – The NFIP requires communities to adopt and enforce minimum floodplain management regulations that help mitigate the effects of flooding on new and improved structures.
- Flood insurance – The NFIP enables property owners to purchase insurance as a protection measure against flood losses in exchange for State and community floodplain management regulations.

The NFIP is based on a mutual agreement between the Federal Government and the community. Standard homeowners insurance does not cover flooding. Therefore, congress created the NFIP to help provide a way for property owners to protect themselves from flood damage. Federally guaranteed flood insurance is made available to communities that agree to regulate development in their mapped floodplain to reduce the risk of flooding. For more information please refer to Chapter 2 – Risk Assessment: Flood.

The *Local Multi-Hazard Mitigation Planning Guidance (2008)* stipulates that all local mitigation plans approved by FEMA after October 1, 2008, must describe each jurisdiction’s participation in the NFIP and must identify, analyze, and prioritize actions related to continued compliance with the NFIP. Please refer to **Table 4. 2 – Republic County 2011 Mitigation Actions** for the actions related to NFIP compliance. The action items relating to NFIP compliance are also provided in each participating jurisdiction’s profile in Chapter 3: Jurisdiction Profiles.

The following table includes a list of NFIP participants, the date of the initial Flood Hazard Boundary Map (FHBM), the initial Flood Insurance Rate Map (FIRM) and the current effective map date for the planning area.

Table 4. 1 – Community NFIP Participation

Communities Participating in the NFIP					
Community Identification #	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Reg. - Emergency Date
200287#	CITY OF BELLEVILLE	2/15/1974	12/17/2010	12/17/2010 (M)	7/6/1984
200399A	CITY OF COURTLAND	5/21/1976	12/17/2010	12/17/2010 (M)	12/17/2010
200286#	REPUBLIC COUNTY	N/A	12/27/2010	12/27/2010	12/27/2010
200289#	CITY OF SCANDIA	5/10/1974	7/16/1979	12/17/2010	7/16/1979
Communities Not Participating in the NFIP					
Community Identification #	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Sanction Date
200400#	CITY OF CUBA	7/25/1975	12/17/2010	12/17/2010	7/25/1976
200288#	CITY OF REPUBLIC	12/6/1974	12/17/2010	12/17/2010	12/6/1975
N/A	CITY OF AGENDA	N/A	N/A	N/A	N/A
N/A	CITY OF MUNDEN	N/A	N/A	N/A	N/A
N/A	CITY OF NARKA	N/A	N/A	N/A	N/A

(M) = No Elevation Determined – All Zone A, C, and X

Republic County Hazard Mitigation Goals and Objectives

The *Local Multi-Hazard Mitigation Planning Guidance (2008)* defines goals as broad policy statements that explain what is to be achieved. Communities are encouraged by FEMA to include objectives developed to achieve goals. This helps the plan reviewer to understand the connection between goals, objectives, and actions. According to the *Planning Guidance*, objectives should be based on findings of the local and state risk assessments and represent long-term ideas for hazard reduction or improvement of mitigation capabilities.

Mitigation goals should express the community’s need to protect people and structures, reduce costs associated with disaster response and recovery, and minimize the disruption to the community following a disaster. Goals should not identify specific mitigation actions, but identify the overall improvement the community wants to achieve. Goals are broad, forward-looking statements that sufficiently describe the community’s intentions.

In order to ensure the goals and objectives are consistent with those set forth by the State of Kansas, there was a review of the 2007 Kansas Hazard Mitigation Plan goals and objectives. The local hazard mitigation goals and objectives in this plan also need to be in alignment with those presented in other local plans. Therefore a review of existing local plans was conducted as well.

2011 Republic County Hazard Mitigation Goals and Objectives:

Goal 1: Decrease the planning area’s vulnerability to the impacts of natural and manmade hazards.

Objective 1.1 – Encourage jurisdictions to implement mitigation actions for structures currently located in hazard areas.

Objective 1.2 – Maintain current building code standards in order to decrease possible damage to building and infrastructure.

Objective 1.3 – Promote jurisdictions to incorporate mitigation actions into existing and future planning efforts.

Objective 1.4 – Increase community participation in the National Flood Insurance Program (NFIP).

Goal 2: Improve public preparedness, understanding, and support for hazard mitigation.

Objective 2.1 – Increase public understanding of hazards and risks by providing awareness, preparedness, and mitigation information through numerous sources.

Goal 3: Make sure that public funds are used in the most efficient manner for mitigation projects.

Objective 3.1 – Maximize the use of outside funding sources for mitigation projects.

Objective 3.2 – Encourage property-owner’s to implement mitigation measures for self-protection.

Objective 3.3 – Identify financial incentives and funding opportunities.

Objective 3.4 – Prioritize mitigation projects with high priority given to those sites with the greatest vulnerability to hazards.

In order to assist the HMPC with the development of a comprehensive list of potential mitigation actions, State and Local Emergency Management Consultants presented a mitigation action worksheet during the second planning meeting. The worksheet had sample mitigation actions to be considered for implementation.

The HMPC was asked to determine the relevance of each action item by completing the worksheet during the meeting. They rated the sample mitigation actions by order of importance, with 1 being least important, 2 somewhat important and 3 most important. The handouts were collected and analyzed. The table below is the results of mitigation actions worksheet. Please refer to Appendix 11 to view the worksheet and results.

After the HMPC had determined which mitigation measures were relevant to the planning area, each action was prioritized in the fourth planning meeting using the STAPLEE method. Some of the mitigation actions initially identified were in the end eliminated.

Identification and Analysis of Mitigation Actions

Federal Requirement 201.6(c)(3)(ii) states: The mitigation strategy shall include 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. The actions adopted by each jurisdiction represent actions that can be executed by using local resources, like capital improvements budgets and special district funds. These actions can also be accomplished by making changes to ordinances, policies, or procedures.

In multi-jurisdictional plans, it is necessary for each participating jurisdiction to adopt and implement at least one action item. During the development of action items, the jurisdiction must look at how the actions can reduce the effects of hazards on existing and new buildings and infrastructure.

In the fourth meeting, the HMPC had the task of prioritizing the action items to determine the feasibility of implementation. Some of the actions proposed were determined not to be feasible at this time; therefore, some of the actions were not adopted by the jurisdictions. The technique used for prioritizing the mitigation actions was the STAPLEE method. To review the results of the prioritization of the action items please refer to Appendix 13.

The STAPLEE was used in analyzing and ranking the mitigation actions, with an emphasis on cost effectiveness and the protection of human lives and property. The STAPLEE method is as follows:

- S – Social** The public must support the overall implementation strategy and specific mitigation actions. The projects were evaluated in terms of community acceptance.

- T – Technical** It is important to determine if the proposed action is technically feasible, will help reduce losses in the long-term, and has minimal secondary impacts. The HMPC determined whether the alternative action was the whole or part of the solution, or not a solution at all.

- A – Administrative** Under this part of the evaluation criteria, examine the anticipated staffing, funding, and maintenance requirements for the mitigation action to determine if the jurisdiction has the personnel and administrative capabilities necessary to implement the action or whether outside help will be needed.

- P – Political** Understanding how the community and State political leadership feels about issues related to the environment, economic development, safety, and emergency management. This will provide valuable insight into the level of political support for mitigation activities and programs. Proposed mitigation objectives sometimes fail because of a lack of political acceptability.

- L – Legal** Without the appropriate legal authority, the action cannot lawfully be undertaken. When considering this criterion, determine whether the jurisdiction must pass new laws or regulations. Each level of government operates under a specific source of delegated authority. As a general rule, most local governments operate under enabling legislation that gives them the power to engage in different activities. The unit of government is identified for undertaking the mitigation action, and include an analysis of interrelationships between local, regional, State, and Federal governments. Legal authority is likely to have a significant role later in the process when the State or community will have to determine how mitigation activities can best be carried out, and to what extent mitigation policies and programs can be enforced.

- E – Economic** Every local and State government experiences budget constraints. Cost-effective mitigation actions that can be funded in current or upcoming budget cycles are much more likely to be implemented than mitigation actions requiring general obligation bonds or other instruments that would incur long-term debt to a community. States and local communities with tight budgets or budget shortfalls may be more willing to, at least in part, be outside sources. “Big-ticket” mitigation actions, such as large-scale acquisitions and relocations are often considered for implementation in a post-disaster scenario when additional Federal and State funding for mitigation is available.

E – Environmental

Impact on the environment is an important consideration because of public desire for sustainable and environmentally healthy communities and the many statutory considerations, such as NEPA, to keep in mind when using Federal funds. There is a need to evaluate whether implementation of mitigation actions would cause negative consequences to environmental assets such as threatened and endangered species, wetlands, and other protected natural resources.

The following considerations were also made during the evaluation process:

- Compatibility with the goals and objectives identified in the Kansas Hazard Mitigation Plan
- Compatibility with the goals and objectives identified in the local mitigation strategy
- Affects of mitigation actions on other jurisdictions in the surrounding area
- Cost effectiveness of proposed actions
- Funding priorities identified in the Kansas Hazard Mitigation Plan

Implementation of Mitigation Actions

The manner in which the STAPLEE was used to prioritize the actions will be discussed in this section. While prioritizing the actions the HMPC considered the benefits that would result from mitigation actions versus the cost of those actions.

The STAPLEE score for each action item was totaled. The STAPLEE was divided into eight different criteria considerations, which were then added together to get a total for each action item. Please refer to Appendix 13 for the actual STAPLEE that was completed during the meeting. The totals were then evaluated and divided into three priority levels: High, Moderate, and Low. The actions with a total of 20 to 24 were rated as “High”, the actions totaling 19 to 15 were considered to be “Moderate”, and the actions totaling less than 15 had a “Low” priority level. The actions that were rated as “High” are the actions that the participating jurisdictions intend to adopt and implement. The actions rated “Moderate” or “Low” are considered to be important, but are not feasible to implement at this time. The modified STAPLEE criteria considerations are as follows:

MODIFIED STAPLEE EVALUATION						
Modified STAPLEE Criteria Considerations						
Certain = 3		Highly Likely = 2		Possible = 1		Not Likely = 0
S (Social)	T (Technical)	A (Administrative)	P (Political)	L (Legal)	E (Economic)	E (Environmental)
Socially Acceptable	Technically Feasible	Adequate Staffing	Political Support	Legal Authority to Implement Action Item	Clear benefit of Action Outside Funding possible	Consists with community environmental goals

The action items contained in this chapter are the actions adopted by the participating jurisdictions. The actions that the HMPC determined were not feasible at this time are not included in this list. Also, some of the action

items were determined to be redundant and therefore combined to make a single action item. For a complete list of all actions considered please refer to Appendix 13.

Multi-Jurisdictional Mitigation Actions

According to the *Local Multi-Hazard Mitigation Planning Guidance*, each participating jurisdiction must identify the specific actions they will agree to implement for each hazard profiled. Some actions may apply to more than one jurisdiction. As previously stated, a wide realm of mitigation actions was considered, however only the actions listed in this chapter are considered to be feasible at this time.

The following table is the mitigation actions for all jurisdictions, the STAPLEE priority level, the entities that adopted each action item, the goals the action item supports, and the hazards the actions mitigate. For details on the individual jurisdiction actions (plan for implementation, the lead agency, potential funding sources, cost for implementation, and timeline) please refer to Chapter 3 – Jurisdiction Profiles.

Table 4. 2 – Republic County 2011 Mitigation Actions

Mitigation Actions for All Jurisdictions	STAPLEE Priority Level	Goals Supported	Jurisdictions Adopted	Hazards Mitigated Against
Ditch Cleaning/Deepening	21	1, 3	Republic County, City of Scandia	Flood, Utility/Infrastructure Failure
Develop Minimum Performance Standards in Flood Prone Areas to Comply with NFIP Guidelines	23	1, 3	Republic County	Flood
Integrate GIS into emergency mitigation	23	1, 3	Republic County	All Hazards
Improve Public Awareness of Hazard Risks	23	1,2	City of Agenda, City of Belleville, City of Munden, City of Narka, City of Republic, USD 109	All Hazards
Promote use of NOAA weather radios	21	1, 2, 3	City of Belleville, City of Republic	Tornado, Windstorm, Winter Storms
Monitor Floodplain Activities	23	1, 3	Republic County, City of Belleville, City of Courtland, City of Scandia	Flood
Appoint Floodplain Manager	23	1, 3	City of Courtland	Flood
Water Drought Emergency Ordinance	21	1, 3	City of Courtland	Drought
Promote Water Conservation and Education	21	1, 2,3	City of Courtland	Drought
Install Outdoor Storm Sirens	20	1,3	City of Munden	Tornado
Sewer Line Replacement	20	1,3	City of Scandia	Utility/Infrastructure Failure
Bridge Replacement	21	1,3	City of Scandia	Utility/Infrastructure Failure
Look into funding for FEMA approved safe room in each school building	24	1,3	USD 109, USD 426	Tornado
EMS Training	20	1,3	USD 109, USD 426	All Hazards
Distribution Line Upgrade	20	1, 3	Rolling Hills Electric Cooperative	Utility/Infrastructure Failure

Plan Maintenance Process

Local hazard mitigation plans are approved by the Federal Emergency Management Agency for a period of five years. During the five years between required updates, municipalities are encouraged to review and validate the plan as needed. The adoption of a formal plan maintenance process ensures that the mitigation plan will remain an active and relevant document. This section includes:

- Method and schedule for monitoring, evaluating, and updating the plan
- Maintenance Schedule
- Incorporation into Existing Planning Mechanisms, and
- Continued Public Involvement

The Republic County Hazard Mitigation Planning Committee developed specific objectives and tasks in the third planning meeting to ensure that appropriate monitoring protocols are in place to facilitate future plan review and updates.

The development of this multi-jurisdictional hazard mitigation plan was the first step in implementing a comprehensive mitigation process in Republic County. The second step will be to engage in a plan maintenance process to ensure the ease of future plan updates.

Monitoring, Evaluating, and Updating the Plan

In accordance with hazard mitigation assistance program regulations and guidance, local governments, acting as subgrantees, must have a FEMA approved local hazard mitigation plan in order to apply for and/or receive project grants under the following hazard mitigation assistance programs:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Severe Repetitive Loss (SRL)

FEMA will not disperse funds for the previously mentioned program grants for projects to jurisdictions with a lapsed local mitigation plan. The lapsed period for local mitigation plans is defined as beginning on the first day after the mitigation plan expires and ending on the last date before the updated plan is approved.

The Republic County Emergency Management will remain the lead agency in ensuring the compliance of the maintenance process. The principal task of the Republic County Emergency Management Agency in relation to this plan is to ensure it is successfully carried out, as well as report to community governing boards and public on the status of plan implementation and mitigation opportunities. Other tasks include reviewing and promoting mitigation proposals, listening to concerns about hazard mitigation, forwarding concerns to appropriate entities, and publishing relevant information on the County website.

The HMPC will identify and assess changes in policy, participation and new opportunities for mitigation activities. This requires a continued awareness of the triggers that may require changes in the mitigation plan. The triggers may include, but are not limited to, the following:

- The need to include a non-participating jurisdiction in the already approved plan
- Changes to the mitigation actions adopted or the gathering of additional information based on changes to the federal programs
- Changes in jurisdictional boundaries for participating municipalities

During the annual review process the following specific areas of emphasis need to be addressed:

- Status of mitigation actions
- Applicability of mitigation goals and objectives

- Additions to the list of disaster events in the planning area
- Changes to the municipal profiles, including boundary changes, capability enhancements and newly identified vulnerabilities

In order to remain committed to improving the update process, the HMPC developed the following schedule for implementation of the review process.

Table 4. 3 – Republic County Hazard Mitigation Maintenance Schedule

Year	Required Step	Plan of Action	Result
2009	<p>Begin development of 2011-2016 Hazard Mitigation Plan</p> <p>Submit to FEMA for approval</p>	<p>Plan development process began in November 2009 and will be completed in September 2011.</p>	<p>Development of the mitigation plan in progress</p> <p>Federal approval received on _____</p>
2012	<p>Annual review of the 2011-2016 Hazard Mitigation Plan</p> <p>Date of Annual Review _____</p>	<ul style="list-style-type: none"> • Report all significant hazard incidents within the planning area. • Perform an annual review of the mitigation goals and objectives included in the mitigation plan. • Coordinate the annual meeting with the HMPC members. • Report status of the mitigation projects adopted by each participating jurisdiction. 	<p>Add the information reported at the annual review to the hazard mitigation plan. Make necessary changes to the mitigation goals and objectives based on the achievements of the participating jurisdictions.</p>
2013	<p>Annual review of the 2011-2016 Hazard Mitigation Plan</p> <p>Date of Annual Review _____</p>	<ul style="list-style-type: none"> • Report all significant hazard incidents within the planning area. • Perform an annual review of the mitigation goals and objectives included in the mitigation plan. • Coordinate the annual meeting with the HMPC members. • Report status of the mitigation projects adopted by each participating jurisdiction. 	<p>Add the information reported at the annual review to the hazard mitigation plan. Make necessary changes to the mitigation goals and objectives based on the achievements of the participating jurisdictions.</p>

Year	Required Step	Plan of Action	Result
2014	Annual review of the 2011-2016 Hazard Mitigation Plan Date of Annual Review _____	<ul style="list-style-type: none"> • Report all significant hazard incidents within the planning area. • Perform an annual review of the mitigation goals and objectives included in the mitigation plan. • Coordinate the annual meeting with the HMPC members. • Report status of the mitigation projects adopted by each participating jurisdiction. 	Add the information reported at the annual review to the hazard mitigation plan. Make necessary changes to the mitigation goals and objectives based on the achievements of the participating jurisdictions.
2015	Begin the 5-year update of the 2011-2016 Hazard Mitigation Plan Update began on _____	<ul style="list-style-type: none"> • Conduct an annual review Report all significant hazard incidents within the planning area. • Perform an annual review of the mitigation goals and objectives included in the mitigation plan. • Coordinate the annual meeting with the HMPC members. • Report status of the mitigation projects adopted by each participating jurisdiction. • Apply for planning grant funds, if appropriate • Evaluate new mitigation planning requirements issued by the Federal government and the State of Kansas • Hold a HMPC planning meeting and establish a project timeline • Identify and notify potential eligible applicants and stakeholders • Develop a schedule to host a series of planning and stakeholder meetings 	<ul style="list-style-type: none"> • HMPC members reconvene and encourage additional organizations to participate in the process to update the plan • Submit notice to all potential eligible applicants • Ensure a minimum of two public input opportunities • Document direct or indirect participation
2016	Submit the updated multi-jurisdictional hazard mitigation plan for approval	Complete a draft update of the plan and submit it to FEMA, no later than October 1, 2015	Adopt the FEMA approved plan before expiration of the 2011-2016 Republic County Multi-Hazard Mitigation plan

Year	Required Step	Plan of Action	Result
	Date updated plan was submitted to FEMA for approval _____		

By adopting this plan the HMPC and the Republic County Emergency Management Agency agree to:

- Meet annually to monitor and evaluate the accomplishments of the plan;
- Meet after a disaster event to update the information in the plan;
- Act as a place for discussion about hazard mitigation issues;
- Circulate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high priority, low- or no-cost recommended actions;
- Monitor opportunities to help the community implement the plan’s recommended actions for which no current funding exists;
- Incorporate the hazard mitigation plan into community goals, plans, and activities that coincide, effect, or directly have an impact on community vulnerability to disasters;
- Report on plan progress and recommended changes to the LEPC; and
- Inform and request input from the public.

Incorporation into Existing Planning Mechanisms

According to Federal Requirement €201.6(c)(4)(ii): *the plan shall include a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvements when appropriate.*

The Republic County HMPC reviewed and assessed existing plans, data reports, and studies. Some of the plans utilized in the development of this plan include:

- *Local Multi-Hazard Mitigation Planning Guidance (2008)*
- 2007 Kansas Hazard Mitigation Plan
- Kansas Water Plan – Cimarron Basin Section
- Emergency Preparedness Guidebook
- Kansas Association of Conservation Districts Five Year Strategic Plan 2010-2013

Various reports were also used. They include:

- 2009 Managing the Risk Report by the Kansas Commission on Emergency Planning and Response
- National Flood Insurance Program’s Community Information System reports
- National Flood Insurance Program Insurance Reports
- Commission on Emergency Planning and Response Reports
- 2010 Kansas Severe Weather Awareness Week Information Packet by the National Weather Service, Kansas Emergency Management Association (KEMA), and Kansas Division of Emergency Management
- 2009 Kansas Department of Transportation Quick Facts Report

The policies, goals, objectives and actions adopted as part of this plan are intended to be integrated into the development and future updates of various plans, codes. Such integration will facilitate risk prevention practices, and support the achievement of the goals, objectives and actions outlined in this plan. Some of the

existing and future plans, codes, and regulations that this 2011 Hazard Mitigation Plan shall be integrated into include but certainly not limited to the following:

- Local Emergency Operations Plan
- General Land Use Plan
- Capital Improvements Plan
- Post-Disaster Redevelopment/Recovery Plan
- Regional Development Plans
- Comprehensive Emergency Management Plan
- Evacuation Plan
- Zoning Ordinances
- Subdivision Regulations
- Solid Waste & Hazardous Materials Waste Regulations
- Property Deed Restrictions
- Site Plan Review
- Storm Water Management
- Soil Erosion Ordinance
- Historic Preservation Programs
- Construction/Retrofit Program
- Transportation Improvement/Retrofit Program
- School District Facilities Plan
- Economic Development Authority
- Land Buyout Program
- Local and/or Regional Evacuation Programs
- Fire Rescue Long-Range Programs
- Mutual Aid Agreement
- Temporary Animal Relocation Program

Continued Public Involvement

Republic County Emergency Management will distribute the annual plan review to the HMPC members, and will also make the information available to the public by inviting the public to the annual meetings.

APPENDICES



Republic County Emergency Management

1815 M Street – Ste 8
Belleville, Ks 66935-2242

Raymond Raney, Emergency Manager – 785-527-7237

City Mayors, City Managers, Public Works Departments
Fire Departments
Emergency Managers from surrounding counties
Farm Services Agency
Kansas Dept. of Transportation (Local)
Kansas Wildlife and Parks (Local)
Hospital
Nursing Home
Area Industry
Highway Department
County Health
County Sheriff
City Police Chief
County Clerk
County Commissioners
County Appraiser & Mapper
Extension Agent
Superintendents of the two County Schools
Railroads
Rolling Hills Electric Company
Rep. Raney

Contact List

Agenda	Vicki Kopsa – Mayor	785-243-8176
Belleville	Bob Knudson – City Manager	785-527-2288
Courtland	Tim Garman – Mayor	785-374-4260
Cuba	Pam Reynolds – City Clerk	785-729-3861
Munden	Leroy Splichal – City Council	785-987-5564
Narka	Steve Kirk – Mayor	785-358-2503
	Estelle Edwards – City Clerk	785-358-2510
Republic	Shirley Grenn – City Clerk	785-361-4431
Scandia	Gary Cline – Mayor	785-335-2229
Pike Valley USD 426	Chris Vignery	785-335-2206
Republic County	Raymond Raney	785-527-723



Republic County Emergency Management

1815 M Street – Ste 8
Bellville, Ks 66935-2242

Raymond Raney, Emergency Manager – 785-527-7237

Republic County Invites You to the Hazard Mitigation Planning Meeting

Planning Meeting Scheduled

Republic County is beginning the process of developing the Republic County Hazard Mitigation Plan and invites you to attend the initial Hazard Mitigation Planning Meeting. Hazard mitigation plans identify reasonable strategies to reduce the potential loss of life, human suffering, and loss of property from manmade or natural disasters, such as floods, fires, snow and ice storms, tornados, power outages, and public health emergencies.

The Federal Emergency Management Agency (FEMA) requires states and local governments to have approved hazard mitigation plans in order to maintain eligibility for certain types of community disaster assistance. These plans must comply with the requirements established by the federal Disaster Mitigation Act of 2000 (DMA 2000).

Mitigation is defined by FEMA as "Acting before a disaster strikes to prevent permanently the occurrence of the disaster or to reduce the effects of the disaster when it occurs. It is also used effectively after a disaster to reduce the risk of a repeat disaster."

Meeting Information

Date: November 19, 2009

Time: 6:30 p.m.

Location: Republic County Hospital

Address: 2420 G Street (West Door)



Republic County Emergency Management

1815 M Street – Ste 8
Belleville, Ks 66935-2242

Raymond Raney, Emergency Manager – 785-527-7237

February 8th, 2010

RE: Invitation to Hazard Mitigation Planning Meeting

Republic County is in the process of developing the Republic County Hazard Mitigation Plan and invites you to attend the second Planning Meeting. At the first meeting, we established the known hazards, as well as the potential hazards that could affect Republic County. At this second meeting, we will set goals and objectives to continue through this planning process.

The Federal Emergency Management Agency (FEMA) requires states and local governments to have approved hazard mitigation plans in order to maintain eligibility for certain types of community disaster assistance. These plans must comply with the requirements established by the federal Disaster Mitigation Act of 2000 (DMA 2000).

Mitigation is defined by FEMA as "Acting before a disaster strikes to prevent permanently the occurrence of the disaster or to reduce the effects of the disaster when it occurs. It is also used effectively after a disaster to reduce the risk of a repeat disaster."

This meeting is scheduled for **Monday, February 22nd, 2010, at 6:30 pm** at the 4-H building in Belleville.

WHAT WILL BE ASKED OF YOU?

- 1) **Attend the planning meetings.** You don't have to have the same person participate at each meeting, but it is best if you can. During these meetings, you will have an opportunity to help develop the Hazard Mitigation Plan by offering your input.
- 2) **Share Information.** If you are a potential subgrantee, you will need to help develop a profile for your jurisdiction, district or company. If you are a stakeholder, information on how natural hazards present a risk to you would be important.
- 3) **Adopt a mitigation action or initiative.** We will discuss this at the planning meetings. It may be something you are already doing, or it can be something new – like raising awareness of risks within your community/organization.
- 4) **Help us get public input on the plan.** The plan must be available for public input at least twice during this process, and we must provide documentation on how that was done.
- 5) **Adopt the plan.** Subgrantees are required to do so in writing. A copy of the adoption statement – a promulgation signed by the leadership of your organization – needs to be included in the plan prior to publishing.

This is a great opportunity for each of us. If you participate in the process, you gain funding eligibility. If you do not, you must develop your own plan and go through the entire process on your own, at your own cost. Besides this benefit, your participation will help us develop a better, more comprehensive plan – and more importantly, a plan that meets federal funding requirements.

We look forward to seeing you on February 22nd. If you have any questions, please feel free to contact me at (785) 527-7237 or Beth at (785) 527-5692.

Sincerely,



Raymond L. Raney
Republic County Emergency Manager



Republic County Emergency Management

1918 N St
Belleville, Mo 65933

Director, Raymond Raney – 785-527-7237

Republic County Storm Spotter Training and Hazard Mitigation Planning Meeting

The Republic County Emergency Management would like to invite you the Hazard Mitigation Planning Meeting held in conjunction with the National Weather Service Storm Spotter Training.

Every year, the National Weather Service gives basic storm spotter training courses, which are available to the general public. Our spotters are our 'eyes and ears' in the field, and are invaluable to accomplishing the mission of protecting life and property. Training presentations are typically about an hour long, and are given by a meteorologist

State and Local Hazard Mitigation Consultants will provide a brief overview of hazard mitigation. Hazard Mitigation is defined by FEMA as "Acting before a disaster strikes to prevent permanently the occurrence of a disaster or reducing the effects of the disaster when it occurs. It is also used effectively after a disaster to reduce the risk of a repeat disaster."

Meeting Information

Date: March 18, 2010

Time: 7:00 p.m.

Location: 4-H Building in Belleville



Republic County Emergency Management
1815 M St
Belleville, Mo 63835

Director, Raymond Raney – 785-527-7237

May 14, 2010

RE: 2011-2016 Hazard Mitigation Plan

Dear Hazard Mitigation Planning Committee:

Republic County Emergency Management Director, Raymond Raney, along with State and Local Emergency Management Consultants will be conducting individual meetings with jurisdictions needing assistance with the development of mitigation actions. The meetings will be conducted on Tuesday, June 15th, 2010. Please contact the Republic County Emergency Management at the number at the top of this letter in order to schedule a time for your jurisdictions.

Sincerely,

A handwritten signature in black ink that reads "Raymond L. Raney". The signature is written in a cursive, flowing style.

Raymond L. Raney
Republic County Emergency Manager

Sign-In Sheet (Page 1 of 3 Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Thursday, November 19, 2009 @ 6:30p.m.
Event: Hazard Mitigation Plan Kick-off Meeting	Place/Room: Hospital Basement Meeting Room 2420 G Street, Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Raymond Raney	Republic Co. E.M.	rcyender.com		Raymond Raney
Beth Reed	Republic Co. E.M.	rc26@rcrcn.com	785-527-5692	Beth A. Reed
Mike Stant	K.R.O.T.		785-527-2507	Mike Stant
Lewis Novak	Republic Co Rural Fire		785-243-7340	Lewis Novak
Troy Damman	USD 109	tdamman@usd109	785-527-5621	Troy Damman
Stephanie Swiercinsky	Rep Co Hospital	sswiercinsky@rphospital.org	785-527-2254	Stephanie Swiercinsky
Gary Friat	Belleville P.D.	bfriat@bellevillemo.com	785-527-5655	Gary Friat
LEROY SPICHLER	MUNDEN		785-527-5564	LeRoy Spicler
STEVEN T. ZUKOWSKI	Belleville Police Dept		785-527-2288	Steven T. Zukowski
Marcia Hansen	RPCO Health Dept	rchthh@rcokencn.com	785-527-5671	Marcia Hansen
Randy Hansen	Belleville City Council		785-527-3496	Randy Hansen
Tom Skewies	Cuba Fire		724-3806	Tom Skewies
Roger Stephens	Naska Fire		358-2389	Roger Stephens
Nathan Surber	Naska BFD #3		358-2312	Nathan Surber
Mason Edwards	Naska BFD #3		358-2307	Mason Edwards

Sign-In Sheet (Page <u>2</u> of <u>3</u> Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Thursday, November 19, 2009 @ 6:30p.m.
Event: Hazard Mitigation Plan Kick-off Meeting	Place/Room: Hospital Basement Meeting Room 2420 G Street, Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Robert Stephens	City of Narka (Council)		358-2189	<i>Robert Stephens</i>
Nathan Svoboda	City of Narka		3582312	<i>Nathan Svoboda</i>
Lewis Narek	RP Co LEPC		785 243-7346	<i>Lewis Narek</i>
STEVEN T. ZULCOWSKI	RP Co LEPC		785-527-2288	<i>Steven T. Zulcowski</i>

Sign-In Sheet (Page <u>3</u> of <u>3</u> Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Thursday, November 19, 2009 @ 6:30p.m.
Event: Hazard Mitigation Plan Kick-off Meeting	Place/Room: Hospital Basement Meeting Room 2420 G Street, Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Scotty Chris	city of Scandia		385-2229	<i>Scotty Chris</i>
Chris Vignery	USD 426	cvignery@ksc.edu	385-2206	<i>Chris Vignery</i>
Janet Lukas	City of Covertland		785-374-4260	<i>Janet Lukas</i>
Dennis Wilkins	City of Republic		785-361-2830	<i>Dennis Wilkins</i>
Ken Baxs				<i>Ken Baxs</i>

Sign-In Sheet (Page ___ of ___ Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Monday, February 22, 2010 @ 6:30p.m.
Event: Hazard Mitigation Plan Kick-off Meeting	Place/Room: County 4-H Building Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
LEROY SALICHAL	MUDDEN - CITY	LSALICHAL@JUNTELCO.COM	785 987-5564	<i>[Signature]</i>
Lewis Nowak	RPC Rural Fire		785 243-7340	<i>[Signature]</i>
Duffy Stroud	BFD		785 527-0104	<i>[Signature]</i>
Jay Beum	City of Cuba		729 3665	<i>[Signature]</i>
TIM ROYER	BFD		617-7156	<i>[Signature]</i>
Jay Carlgen	RPC County Rural Fire #11		335-2614	<i>[Signature]</i>
James A. Ballyn	Rep Co Rural Fire #11		243-2544	<i>[Signature]</i>
Beth A. Reed	Rep Co EM		527-5692	<i>[Signature]</i>
Raymond Rung	Rep Co EM		527 2237	<i>[Signature]</i>
Jay Beum	Cuba Fire		729 3665	<i>[Signature]</i>
Mike Liggett	Rolling Hills Elect Coop	mliggett@rollinghills.coop	785 - 378-3151	<i>[Signature]</i>

Sign-In Sheet (Page 1 of 2 Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Thursday, March 18, 2010
Event: Hazard Mitigation Plan Meeting /Storm Spotter Training	Place/Room: 4-H Building Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Tom Hiatt	#207 Rep. Co Hospital	NONE	527-2391	Tom Hiatt
Frank Rytz	Bocc		987-5404	Frank Rytz
Jeffrey W. Smith	Belleville P.D.	JeffBpd46@HazardMitig.com	955-0522	Jeffrey W. Smith
Martin Shumaker	Nacka, RP203	mdshor@BNT.com	358-2599	Martin Shumaker
Peggy Zukowski	Belleville, Ks.		527-589	Peggy Zukowski
Steven Zukowski	Belleville U			
Dennis Wilkins	City of Republic	NONE	361-2131	Dennis Wilkins
Gary Fint	Belleville P.D	bcop@nacka.com	527-5812	Gary Fint
David Cox	Republic Co. S.O.	dcox358@yhc.com	527-5658	David Cox
Melvin Kelens	Belleville #7		527 5110	Melvin Kelens
Bonald Allen	Courtland RFD		374-4562	Bonald Allen
Michael W. Allen	RFD #12		785-243-5980	Michael W. Allen
Gary Thomas	RPSO		785-955-0624	Gary Thomas
Trevor Lieb	RCEMS, Courtland ^{City} Fire	tlieb@courtland. ^{net}	785-374-9218	Trevor Lieb
Jim Jansky	Belleville Ks storm spotter		527-2348	Jim Jansky

Sign-In Sheet (Page 2 of 2 Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Thursday, March 18, 2010
Event: Hazard Mitigation Plan Meeting / Storm Spotter Training	Place/Room: 4-H Building Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Chad Oritt	NWS	Chad.Oritt@noaa.gov		
Jared Leighton	NWS	Jared.Leighton@noaa.gov		
Howard Killingbeck	Rep. Co.	Howkill@GMAIL.COM		
KATHLEEN KILLINGBECK		KKILLINGBECK63@GMAIL.COM		
^{Denna J. Shoemaker} Denna J. Shoemaker	Rep Co.	mdshoe@jnteleo	358-2597	
Lannie D. Craig	Rep Co (Munden F.D)		527-1118	
Roberta Craig			527-1117	
Peggy Frint			527-5812	
Randy Ainsworth	Dispatch/EMS	^{normail.com} Ainsworth221@	335-2888	
Mitch W. Crowl	Countyland/Fire		955-0396	
John B. G...	County Highway Dept		527-0604	
Clay Wallin	RFD # 12	clay@polanskyseed.com	527-0209	
Kevin GARST	BFD	PePA Kew2003 Yahoo	527-3223	
Shawnee Garst			527-3867	
Ken Rabe	SPOTTER	@BUMP 6 A1 KCKRM.com	527-2876	

Sign-In Sheet (Page 3 of 8 Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Thursday, March 18, 2010
Event: Hazard Mitigation Plan Meeting /Storm Spotter Training	Place/Room: 4-H Building Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Andrew Bates	Republic County Sheriff	abates35@repco.net	785-455-0116	<i>Andrew Bates</i>
BENTLEY PARKER	FIRE CHIEF REPOBLIC	Po Box 93 Belleville	785-361-2874	<i>Bentley Parker</i>
DON SLAUGHTER	Bell Fire Dept PD Courtland Fire Belleville	2508 W 091	785-527-2627	<i>Don Slaughter</i>
Wes Clark	Courtland Fire	wclark25@wind.net	(785) 213-0161	<i>Wes Clark</i>
JILL GATES	KHP	jgates@khp.org	785-213-6649	<i>Jill Gates</i>
Karol McChesney		donm.c@chelectric.net	785-987-5388	<i>Karol McChesney</i>
Don Lieb	EMS	klieb@courtland.net	785-374-4514	<i>Don Lieb</i>
BRIAN SCHWARTZ	ORCHARD P.D.		785-527-2627	<i>Brian Schwartz</i>
LINDA SCHWARTZ	SPOTTER		785-527-2627	<i>Linda Schwartz</i>
David M. Miller	HEC-D	dj.mcb9@live.com	785-374-4784	<i>David Miller</i>
Lewis Novak	Telmo-Wayne Fire		243-7340	<i>Lewis Novak</i>
Curt Crawford	Storm Spotter	CCRAWFORD50@att.net	524-5670	<i>Curt Crawford</i>
Gwan Swanson	Sardin Fire		527-3061	<i>Gwan Swanson</i>
Jerry Swanson	" "		335-2881	<i>Jerry Swanson</i>

Sign-In Sheet (Page 4 of 5 Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Thursday, March 18, 2010
Event: Hazard Mitigation Plan Meeting /Storm Spotter Training	Place/Room: 4-H Building Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Jean Jevsky	Storm Spotter	jjensby@netks.net	785-527-2348	Jean Jevsky
Randy Alkire	Storm Spotter		785-527-3558	Randy Alkire
Charles Dieselmeyer	Chester Fire/Rescue		785-326-5326	Charles Dieselmeyer
Gary D. Chino	Scandia Fire		325-2229	Gary D. Chino
Aaron Klags	Storm spotter	aaronkags@yahoo.com	243-0112	Aaron Klags
Ronny Keno	KHP		785-331-8087	Ronny Keno
Jeff Nouak	Rep Co EMS	JEN911@yahoo.com	785-568-2759	Jeff Nouak
David Strand	Rep Co EMS		785-987-5344	David Strand
Vicky Thomas	public	vickylarson@yahoo.com	785-335-2851	Vicky Thomas
Ron Aspegren	Rural Fire #12		785-527-3208	Ron Aspegren
Tom Skulies	Cube Fire		777-3906	Tom Skulies
Raymond Roney	Republic Co. Eng.	rcy@ncken.com	785-527-2337	Raymond Roney
Jane Roney	Storm Spotter	janceroney@hotmail.com	785-955-0175	Jane Roney
Tim Hiatt	" "		785-527-7117	Timothy Hiatt
Jimmy Shepek	Sheriff's Dept		785-527-5658	Jimmy Shepek

Sign-In Sheet (Page 5 of 8 Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Thursday, March 18, 2010
Event: Hazard Mitigation Plan Meeting /Storm Spotter Training	Place/Room: 4-H Building Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Dawn Novak	Rep Co. EMS	mict554@yahoo.com	785-568-2758	Dawn M Novak
JOSHUA FLOWERS	REP. CO. SHERIFF	BRODER@repco.kansas.gov	785-527-1100	J. Flowers
Ulasc Daniels	Mahaska Fire	mid-1997@yahoo.com	785-245-3219	Ulasc Daniels
Fred Inert	Mahaska Fire	mid-1997	785-245-3385	Fred Inert

Sign-In Sheet (Page <u>6</u> of <u>8</u> Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Thursday, March 18, 2010
Event: Hazard Mitigation Plan Meeting / Storm Spotter Training	Place/Room: 4-H Building Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Ron Blew	RP50	rcj@ndks.org	785-527-5658	<i>Ron Blew</i>
Dana Larson	scandia fire		785-747-7435	<i>Dana Larson</i>
David Kadavy	RCEMS	kadavyd@yahoo.com	785-987-5508	<i>David Kadavy</i>
Troy Newman	Public	tnewman@yahoo.com	785-561-2136	<i>Troy Newman</i>
Christy Newman	Public	newman@macykay.com		<i>Christy Newman</i>
Brandi Larson	Sheriff		335 2570	<i>Brandi Larson</i>
Keith Larson	Public		" "	<i>Keith Larson</i>
Deb Klucinski			785-729-3806	<i>Deb Klucinski</i>
Tech Shivers	Cuba Fire		47957 729-3806	<i>Tech Shivers</i>
Beth A. Reed	Emergency Mgmt	rc26@ndks.org	785-527-5692	<i>Beth A. Reed</i>
Tim Royen	BFD			<i>Tim Royen</i>
Eric Nondat	BPD			<i>Eric Nondat</i>
Jesse Daniels	Public	ShadowWolf1994@yahoo.com		<i>Jesse Daniels</i>

Sign-In Sheet (Page 1 of 2 Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Thursday, March 18, 2010
Event: Hazard Mitigation Plan Meeting /Storm Spotter Training	Place/Room: 4-H Building Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Don Wilber	Retired		527 4039	<i>Don Wilber</i>
Brian Freeman	1358 council city fire	btfreeman@rcmi174.net	374-4466	<i>Brian Freeman</i>
Amelia	ems		955 0523	<i>Pam Smith</i>

Sign-In Sheet (Page 2 of 2 Pages)	
Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan	Meeting Date: Thursday, March 18, 2010
Event: Hazard Mitigation Plan Meeting /Storm Spotter Training	Place/Room: 4-H Building Belleville, KS

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Everett Roop	Chester SMS	er1000@hotmail.com	324-8825 ⁴⁰²	Everett Roop
JAMES NORRIS	NORRIS FIRE		335-2521	James Norris
Marvin Punn			527-2010	Marvin Punn
Kent Kalivoda	City of Agenda		732-6469	Kent Kalivoda
Arman Taskesen	Reinke Mfg.		955-0385	A Taskesen
Alwe Lubodny			527-5214	Alwe Lubodny
Dan Baloun		danbaloun@yahoo.com	577-6471	Dan Baloun
Amy Baloun		abaloun@qan.com	227-510	Amy Baloun
Katherine A. Wilker			527-5039	Katherine A. Wilker

Sign-in Sheet (Page ___ of ___ Pages)
 Meeting Date: Tuesday, June 15th, 2010

Project: Republic County Multi-Jurisdictional Hazard Mitigation Plan

Name (Please Print)	Agency/Organization	E-Mail Address	Phone #	Signature
Kerby SPLICHA	CITY OF MANDAN		785-987-5564	<i>[Signature]</i>
Chris Uignery	USD 426	cuignery@p.kevillkg.com	785-335-2206	<i>[Signature]</i>
Mary & Chris	City of Scandia	gary@ckrae@yahoo.com	335-2229	<i>[Signature]</i>
Raymond Roney	Rep Co. Emerg. Mgt	rcy@rock.com	785 527-7237	<i>[Signature]</i>
Vicki Kopsa	Agenda City	vjones@cloudcountyks.org	785-243-8176	<i>[Signature]</i>

Republic County
1st Hazard Mitigation Planning Meeting
Meeting Date: November 19, 2009 at 6:30p.m.
Next Meeting: February 22, 2010 at 6:30p.m.

1st Hazard Mitigation Meeting Attendees

ORGANIZATIONS	MEETING 1
Republic County (unincorporated areas & townships)	X
Cities	
City of Agenda	
City of Belleville	X
Belleville Police Department	X
City of Courtland	X
City of Cuba	
City of Republic	X
City of Munden	X
City of Narka	X
City of Scandia	X
Unified School Districts	
Republic County – USD #109	X
Pike Valley – USD 426	X
Rural Electric Cooperatives	
Prairie Land Electric Cooperative	
Rolling Hills Electric Cooperative	
Fire Districts	
Belleville Fire Department	
Agenda Fire Department	
Munden Fire Department	
Republic County Fire Department	X
Scandia Fire Department	
Narka Rural Fire District #3	X
Cuba Fire Station	X
County Departments	
County Clerk	
Emergency Management	X
Extension Office	
Appraiser	
County Commissioners	
Road and Bridge	
LEPC	X
Sherriff	
Health Care	
Republic County Hospital	X
Republic County Health Department	X
Bellevue Health Care Center	
Special Districts	
Farm Service Agency	
BNSF Railroad	
Kyle Railroad	

Neighboring Counties	
Cloud County, Kansas	
Jewell County, Kansas	
Jefferson County, Nebraska	
Washington County, Kansas	
Nuckolls County, Nebraska	
Thayer County, Nebraska	
Other	
Kansas Department of Transportation – Local Office	X
Kansas Water Office - Local	
Kansas Division of Emergency Management	
Kansas Forestry Service	
Kansas Department of Agriculture - DWR	
State & Local Emergency Management Consultants	X

Meeting Minutes

Republic County Emergency Manager, Raymond Raney, welcomed the group of participants to the first hazard mitigation planning meeting.

The first action on the agenda was to establish the role of the Republic County Hazard Mitigation Planning Committee (HMPC). The HMPC's responsibility is to provide the leadership during the planning process. It was agreed the Republic County Emergency Management would serve as the lead role for coordinating meeting times and locations.

Meeting Objectives

- Review Disaster Mitigation Act of 2000, and related planning requirements
- Discuss grant programs and funds availability (after plan approval)
- Multi-jurisdictional planning and the role of the Republic County Hazard Mitigation Planning Committee
- Public participation strategy
- Hazard identification and profiling – What this means for participating entities. How the planning process developed and the opportunities to enhance the process
- Participating jurisdictions must share key data and validate the plan

The HMPC discussed the concept of hazard mitigation, specifically FEMA's definition:

"Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects."

PRE-disaster mitigation connects emergency management, economic development, planning and code enforcement functions with critical infrastructure owners (80-90% in private sector), stakeholders and elected officials.

The group discussed the importance of mitigating hazards, and the findings of a national study which reveal the potential to save \$4 for every \$1 spent on preventing and diminishing recurring hazards.

Additional topics of discussion included:

- The federal authority to require mitigation plans, specifically the authority under the Federal Disaster Mitigation Act of 2000, or The Disaster Mitigation Act of 2000 (DMA 2K), which requires local governments to have a hazard mitigation plan approved by the Federal Emergency Management Agency (FEMA) before jurisdictions can be considered eligible for certain federal disaster assistance and hazard mitigation funding programs;

- The Hazard Mitigation Grant Programs – Administered by FEMA, also 404 mitigation, its purpose, authority and planning requirements;
- Mitigation planning and the definition of “jurisdiction” FEMA’s definition of “local government”, and Kansas’ definition of municipality being those entities with the authority to tax;
- Special districts designated under Republic County and how these may be potential applicants;
- The benefits of developing a hazard mitigation plan and how these relate to the opportunity to obtain support for local school districts; and
- The active participation requirements for developing a hazard mitigation plan, as defined by FEMA

Jurisdiction participation in the planning process

To participate in the multi-jurisdictional plan, jurisdictions must complete the following steps:

- MUST designate a representative to serve on the Republic County Hazard Mitigation Planning Committee,
- Assist in the risk assessment process
- Develop and/or adopt at least one mitigation action
- Provide decision-making data,
- Assist in informing the public, local officials, and other interested parties about the planning process and provide opportunity for them to comment on the plan, and
- MUST formally adopt the mitigation plan.

Jurisdictions that opt not to participate

Counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations that do not participate in the planning process as well as publicly funded colleges and universities will not be eligible applicants for certain FEMA mitigation funding programs. Cities and school districts deciding not to participate must provide a written statement explaining decision.

Mitigation plan review and update process

- Approved mitigation plans are good for 5 years
- Can be updated to add jurisdictions
- Must document that review process
- Should conduct an annual meeting to review plan and update status of mitigation actions

General plan requirements

- Documented planning process
- Public involvement
 - Must provide public comment period during drafting stage & prior to approval
- Opportunity for all stakeholders to be involved
- Risk assessment
- Hazard identification and profile
- Vulnerability analysis
- Capability analysis
- Mitigation strategy
- Goals and objectives
- Mitigation actions—a range of specific projects to reduce the effects of each hazard (each participating jurisdiction must have one action in the plan)
- Plan maintenance process
- Documentation of plan adoption

The HMPC members discussed ways to promote participation and the PROXY process. In the event a jurisdiction cannot participate in the meetings, they have the option to allow Republic County Emergency Management act as their proxy. It is necessary to attach a written proxy statement to the plan.

Republic County – Eligible Applicants

- Republic County – unincorporated areas and townships
- Cities
- Special Districts
 - School Districts
 - Rural Water districts
 - Rural Electric Cooperatives
 - Fire Districts
 - Hospital Districts
 - Library Districts
 - Levee Districts
 - Watershed Districts

Public participation is required by FEMA:

- During the draft stage
- Prior to final approval

Participants discussed the possible mechanisms to promote public participation

- Websites
- Town meetings
- Public Surveys
- Newspaper advertisements
- Presentations to civic groups
- Stakeholder meetings
- Public libraries

The HMPC decided to publish a notice in the local newspaper informing residents of upcoming meetings and how to get in touch with emergency management to provide their input on the hazard mitigation plan. The location, date and time of the meeting will be included in the public notice, which will be submitted to the local news paper.

The HMPC discussed the need to invite all entities that may be eligible as potential applicants for FEMA’s HMGP funds and others that are stakeholders of this process. The type of entities considered as “stakeholders” of mitigation plans include:

- critical infrastructure owners,
- critical service providers,
- organizations that serve special need populations,
- key employers (large numbers of staff),
- cultural/historic assets, and
- facilities that may be particularly vulnerable to a potential hazard

Stakeholders do not have authority to levy taxes, therefore are not considered eligible applicants¹. Stakeholders must rely on participating municipalities to submit mitigation projects on their behalf, and are not required to adopt the plan, but are encouraged to be part of the planning process. This ensures their needs and priorities are considered when the HMPC defines mitigation strategies, goals, objectives and activities. Stakeholders can assist in collecting and sharing information, coordinating public feedback, etc.

Republic County Hazard Identification Discussion

The HMPC discussed the requirements for conducting an analysis of the risk to the planning area, including the use of MitigationPlan.com factors in ranking the identified or potential hazards. HMPC members agreed that hazards will be assigned a Calculated Priority Risk Index. This Hazard Ranking method uses a formula based on numeric assignments 1-4 for the following hazard elements:

- Probability
- Magnitude
- Warning Time
- Duration

$$(\text{Probability} \times .45) + (\text{Magnitude/Severity} \times .30) + (\text{Warning Time} \times .15) + (\text{Duration} \times .10) = \text{CPRI}$$

Potential Hazards Identified by the State of Kansas – in Alphabetical Order

1. Agricultural Infestation
2. Dam and Levee Failure
3. Drought
4. Earthquake
5. Expansive Soils
6. Extreme Temperatures
7. Flood
8. Fog
9. Hailstorm
10. Hazardous Material (Manmade Hazard)
11. Land Subsidence
12. Landslide
13. Lightning
14. Major Disease Outbreak (Manmade Hazard)
15. Radiological (Manmade Hazard)
16. Soil Erosion and Dust
17. Terrorism/Agro-Terrorism/Civil Disorder (Manmade Hazard)
18. Tornado
19. Utility/Infrastructure Failure
20. Wildfire
21. Windstorm
22. Winter Storm

The Republic County HMPC agreed that all hazards identified in the State of Kansas Hazard Mitigation Plan of 20 have the potential to impact the Republic planning area; with the exception of Landslides. The HMPC determined the planning area does not currently have any areas that are prone to Landslides, but agreed that in the event of future problems with this hazard it may necessitate an annex to be added to the plan.

Method Used to Profile Hazards

The Republic County HMPC agreed to utilize the risk assessment methodology required by the State of Kansas, including evaluating each hazard identified as a potential threat and assign it a weighted factor to determine the probability, magnitude, warning time and duration. The weighted factors are then totaled to create the Calculated Priority Risk Index (CPRI). The following are the weighted factors used to determine the CPRI.

Probability of the Hazard Occurring

- 4 - Highly Likely
 - History of events is greater than 33% likely per year.
 - Event is "Highly Likely" to occur
- 3 – Likely
 - History of events is greater than 20% but less than or equal to 33% likely per year.
 - Event is "Likely" to occur
- 2 – Occasional
 - History of events is greater than 10% but less than or equal to 20% likely per year.
 - Event could "Possibly" occur
- 1 – Unlikely
 - History of events is less than or equal to 10% likely per year.
 - Event is "Unlikely" but is possible of occurring

Magnitude of the Hazard

- 4 – Catastrophic
 - Multiple deaths
 - Complete shutdown of facilities for 30 or more days
 - Over 50% of property is severely damaged
- 3 – Critical
 - Injuries and/or illnesses result in permanent disability
 - Complete shutdown of critical facilities for at least 2 weeks
 - 25-50% 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% 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 100% of property is severely damaged

Hazard Warning Time

- 4 – Less than 6 hours
- 3 – 6-12 hours
- 2 – 12-24 hours
- 1 – 24+ hours

Duration of the Hazard

- 4 – More than 1 week
- 3 – Less than 1 week
- 2 – Less than 1 day
- 1 – Less than 6 hours

Planning Significance

Based on the total CPRI, the hazards will be separated into three categories of planning significance:

- High (3.0-4.0),
- Moderate (2.0-2.9)
- Low (1.1-1.9)

Republic County

The following table is the outcome of applying the methodology used to determine the planning area's vulnerability and planning significance for each hazard.

Hazard Priority	Hazard	Probability	CPRI Weighted factor	Magnitude	CPRI Weighted factor	Warning Time	CPRI Weighted factor	Duration	CPRI Weighted factor	CPRI Total Weighted factor	Planning Significance
1	Winter Storm	4	1.80	4	1.20	4	0.60	4	0.40	4.00	High
2	Tornado	4	1.80	4	1.20	4	0.60	2	0.20	3.80	High
3	Windstorm	4	1.80	3	0.90	4	0.60	3	0.30	3.60	High
4	Flood	4	1.80	3	0.90	3	0.45	3	0.30	3.45	High
5	Utility/Infrastructure Failure	4	1.80	2	0.60	4	0.60	3	0.30	3.30	High
6	Hailstorm	4	1.80	2	0.60	4	0.60	1	0.10	3.10	High
7	Drought	4	1.80	2	0.60	1	0.15	4	0.40	2.95	Moderate
8	Extreme Temperatures	4	1.80	2	0.60	1	0.15	4	0.40	2.95	Moderate
9	Major Disease Outbreak	4	1.80	2	0.60	1	0.15	4	0.40	2.95	Moderate
10	Soil Erosion and Dust	4	1.80	2	0.60	1	0.15	4	0.40	2.95	Moderate
11	Terrorism/Agro-Terrorism/Civil Disorder	4	1.80	2	0.60	1	0.15	4	0.40	2.95	Moderate
12	Wildfire	4	1.80	1	0.30	4	0.60	2	0.20	2.90	Moderate
13	Lightning	4	1.80	1	0.30	4	0.60	1	0.10	2.80	Moderate
14	Expansive Soils	3	1.35	1	0.30	4	0.60	4	0.40	2.65	Moderate
15	Agricultural Infestation	3	1.35	2	0.60	1	0.15	4	0.40	2.50	Moderate
16	Hazardous Materials	2	0.90	1	0.30	4	0.60	2	0.20	2.00	Moderate
17	Fog	3	1.35	1	0.30	1	0.15	1	0.10	1.90	Low
18	Earthquake	1	0.45	1	0.30	4	0.60	1	0.10	1.45	Low
19	Dam and Levee Failure	1	0.45	2	0.60	1	0.15	1	0.10	1.30	Low
20	Land Subsidence	1	0.45	1	0.30	1	0.15	4	0.40	1.30	Low
21	Landslide	1	0.45	1	0.30	1	0.15	4	0.40	1.30	Low
22	Radiological	1	0.45	1	0.30	1	0.15	4	0.40	1.30	Low

Hazard Ranking Session

During the ranking of the hazards, each hazard was discussed in detail. The discussion revealed several of the hazards have negatively impacted the Republic County planning area. The following is the outcome of the discussion:

1. **Agriculture Infestation** – Chinch bugs have recently been a problem for Republic County.
2. **Dam and Levee Failure** – The HMPC expressed concern about the Lovewell Dam in Jewell County. If this dam should experience dam failure, it would have an impact on Republic County residents.
3. **Drought** – The County has not recently experienced any problems with drought. In fact, they have received record precipitation this year.
4. **Earthquake** – The HMPC determined this is a low hazard because they are situated too close to any fault lines.
5. **Expansive Soils** – There is a road in Republic that has had to be resurfaced for the past 10-15 years because of expansive soils and the road keeps cracking.
6. **Extreme Temperatures** – The Scandia feedlot lost 500 head of cattle this year due to extreme heat conditions. In 1999, the Local Resource Council and the Salvation Army began donating air conditioning units to elderly residents. Republic County has a large elderly population, therefore extreme heat and cold can be difficult for them to handle. Emergency Management has utility assistance funds set aside to assist residents that cannot afford to pay their utility bills in the winter.
7. **Flood** – Republic has recently been mapped by FEMA. Scandia experiences flooding on a regular basis. Raymond Raney will develop map of hazardous materials facilities located in the flood plain.
8. **Fog** – Nothing added
9. **Hail** – Nothing added
10. **Hazardous Materials** – This hazard is a concern for the County because of the Highways. The highways are used to transport hazardous material regularly. Nesika Energy is an ethanol producing plant and is located west of Scandia. Nutri Shield is a food preservative plant located north of Courtland
11. **Land Subsidence** – Potential for sink holes just south of Belleville where there used to be an old coal mine. It is at the Republic/Cloud county line.
12. **Landslides** – No areas for landslides
13. **Lightning** - Nothing added
14. **Major Disease Outbreak** – In the past there has been 1 death associated with Norovirus in Republic County. During the summer this year is when the H1N1 affected Republic County. There is a shortage of the vaccine in the county. Currently less than 10% of the population has been vaccinated against H1N1. According to the Republic County Hospital, with the current statistics, the County can expect to see 3 deaths as a result of H1N1.
15. **Radiological** – Nothing added
16. **Soil Erosion and Dust** – Nothing added
17. **Terrorism/Agro-Terrorism/Civil Disorder (Manmade Hazards)** – This is a hazard that is of concern, because there is a White Supremacist group in the area. It is also a concern because of Agro-Terrorism; there are 2 feedlots and 1 sale barn in the County. Another concern is if the water supply were to become contaminated. Water is supplied by the Ogallala Aquifer from Nebraska and Canada.
18. **Tornado** – The City of Belleville is in need of a battery back-up for the siren. Raymond Raney will supply a map with siren locations and coverage area.
19. **Utility/Infrastructure Failure** – Currently the County is experiencing power outage problems because of a winter storm that moved through the area November 16, 2009. Power outages are usually less than one week. Contact Prairie Land and Rolling Hills Electric Cooperatives for more statistics on utility failure. Republic County Emergency Management will supply a map of oil and gas field locations.
20. **Wildfire** – Republic County Rural Fire Department agreed to supply statistics for wildfires in Republic County.

21. **Windstorm** – Power poles have been broken due to windstorms. The eastern half of the county was without power due to windstorm. Republic County Emergency Management was going to get more information on this storm.
- **Winter storm** – The HMPC determined the planning area is well equipped to handle winter storms, with the exception of utility lines. The utility lines are in need of an upgrade.

Next meeting

The next meeting will be held on Monday, February 22, 2010 at the 4-H Building in Belleville, Kansas at 6:30p.m.

The agenda for the next meeting will include:

- Identification of Goals & Objectives
- Suggested goals & objectives presented
- Project discussion
- Develop action items for each hazard

Republic County 2nd Hazard Mitigation Planning Meeting

Meeting Date: February 22, 2010 at 6:30p.m.

Next Meeting: March 18, 2010 at 6:30p.m.

2nd Hazard Mitigation Meeting Attendees

MEETING INVITEES	MEETING 1	MEETING 2	DATA RECEIVED
Republic County (unincorporated areas & townships)	X	X	X
Cities			
City of Agenda			
City of Belleville	X		X
Belleville Police Department	X		
City of Courtland	X		
City of Cuba		X	
City of Republic	X		
City of Munden	X	X	
City of Narka	X		X
City of Scandia	X		
Unified School Districts			
Republic County – USD #109	X		X
Pike Valley – USD 426			
Rural Electric Cooperatives			
Prairie Land Electric Cooperative			
Rolling Hills Electric Cooperative		X	
Fire Districts			
Belleville Fire Department		X	
Agenda Fire Department			
Munden Fire Department			
Republic County Fire Department #11	X	X	X
Scandia Fire Department			
Narka Rural Fire District #3	X		
Cuba Fire Station	X		
County Departments			
County Clerk			
Emergency Management	X	X	
Extension Office			
Appraiser			
County Commissioners			
Road and Bridge			
LEPC	X		
Sherriff			
Health Care			
Republic County Hospital	X		
Republic County Health Department	X		
Bellevue Health Care Center			
Special Districts			
Farm Service Agency			
BNSF Railroad			

Kyle Railroad			
Neighboring Counties			
Cloud County, Kansas			
Jewell County, Kansas			
Jefferson County, Nebraska			
Washington County, Kansas			
Nuckolls County, Nebraska			
Thayer County, Nebraska			
Other			
Kansas Department of Transportation – Local Office	X		
Kansas Water Office - Local			
Kansas Division of Emergency Management			
Kansas Forestry Service			
Kansas Department of Agriculture - DWR			
State & Local Emergency Management Consultants	X	X	

Meeting Minutes

Republic County Emergency Manager, Raymond Raney, welcomed the group to the planning meeting for the Republic County Hazard Mitigation Planning Committee (HMPC).

Meeting Objectives

- Review the State of Kansas mitigation goals and objectives
- Identify goals and objectives
- Discussion of mitigation actions (projects)
- Develop mitigation strategy and maintenance schedule

Goals and Objectives

A vital stage in the mitigation planning process is to develop goals and objectives. It is imperative that mitigation goals convey the community's need to protect people and structures, reduce costs associated with disaster response and recovery, and minimize the disruption to the community following a disaster. Goals should not identify specific mitigation actions but identify the overall improvements the community wants to accomplish. Goals are broad statements that describe the community's intentions.

In order to ensure the goals and objectives are consistent with the ones of the State of Kansas, the HMPC reviewed the 2007 Kansas Hazard Mitigation Plan goals and objectives. The State of Kansas goals and objectives are as follows (Kansas Hazard Mitigation Team):

Goal 1: Minimize the vulnerability of the people, property, environment, and economy of Kansas and its communities to the impacts of natural and manmade hazards.

Objective 1.1 – Encourage life and property protection measures for all communities and structures located in hazard areas.

Objective 1.2 – Protect critical facilities, infrastructure, and utility systems

Objective 1.3 – Reduce repetitive property losses due to flood, wildfire, and other hazards

Objective 1.4 – Reduce potential damage to future buildings and infrastructure

Objective 1.5 – Encourage the incorporation of mitigation measures into repairs, redevelopment, and capital improvement projects

Objective 1.6 – Preserve and restore natural systems to serve natural mitigation functions

Goal 2: Build the mitigation capabilities of local governments throughout Kansas in establishing and implementing effective mitigation plans, policies, and programs.

- Objective 2.1 – Encourage all Kansas communities to develop, implement, and adopt a local hazard mitigation plan
- Objective 2.2 – Increase community participation in the National Flood Insurance Program (NFIP)
- Objective 2.3 – Encourage local governments to adopt and enforce building codes, mitigation-related ordinances, and land use planning
- Objective 2.4 – Develop technical support programs and guidance materials to facilitate local planning projects
- Objective 2.5 – Identify and provide financial incentives and funding opportunities

Goal 3: Promote a state policy framework for effective hazard mitigation programming in the state.

- Objective 3.1 – Promote coordination between federal, state, and local organizations, plans, and programs related to hazard mitigation
- Objective 3.2 – Institutionalize the Kansas Hazard Mitigation Team as the entity responsible for monitoring, reviewing, and updating of the Kansas Hazard Mitigation Plan
- Objective 3.3 – Incorporate mitigation concepts into existing and future policies and regulations of the State
- Objective 3.4 – Implement, monitor, and assess the effectiveness of the mitigation plan and promote success
- Objective 3.5 – Enhance capabilities to collect analyze, update, and exchange data and information to support risk assessment and mitigation needs.

Goal 4: Improve education and training in hazard mitigation and related programs for government officials, business, and the public.

- Objective 4.1 – Identify and develop needed training and education to targeted audiences
- Objective 4.2 – Strengthen outreach and partnerships with the private sector, nonprofit organizations, and the public
- Objective 4.3 – Improve public understanding of hazards and risk by providing awareness, preparedness, and mitigation information through various channels of communications

After careful review of the State's goals and objectives, the 2010 Republic County Goals and Objectives were developed. Republic County determined several of the State of Kansas mitigation goals and objectives were consistent with the County's goals. As a result, they were used as a basis for the goals developed here, with some modification. The Republic County goals and objectives are as follows:

Goal 1: Decrease the planning area's vulnerability to the impacts of natural and manmade hazards.

- Objective 1.1 – Encourage jurisdictions to implement mitigation actions for structures currently located in hazard areas.
- Objective 1.2 – Maintain current building code standards in order to decrease possible damage to building and infrastructure.
- Objective 1.3 – Promote jurisdictions to incorporate mitigation actions into existing and future planning efforts.
- Objective 1.4 – Increase community participation in the National Flood Insurance Program (NFIP).

Goal 2: Improve public preparedness, understanding, and support for hazard mitigation.

Objective 2.1 – Increase public understanding of hazards and risks by providing awareness, preparedness, and mitigation information through numerous sources.

Goal 3: Make sure that public funds are used in the most efficient manner for mitigation projects.

Objective 3.1 – Maximize the use of outside funding sources for mitigation projects.

Objective 3.2 – Encourage property-owner’s to implement mitigation measures for self-protection.

Objective 3.3 – Identify financial incentives and funding opportunities.

Objective 3.4 – Prioritize mitigation projects with high priority given to those sites with the greatest vulnerability to hazards.

Mitigation Actions

The next thing on the agenda was to develop a comprehensive list of possible mitigation actions. Mitigation actions should address existing and new buildings and infrastructure. The comprehensive list included various mitigation actions/projects for each hazard posing a threat to the planning area.

In order to assist the HMPC with the development of a comprehensive list of potential mitigation actions, State and Local Emergency Management Consultants presented the following worksheet with sample mitigation actions to be considered for implementation.

The HMPC was asked to determine the relevance of each action item by completing the worksheet during the meeting. The handouts were collected and analyzed. The table below is the results of mitigation actions worksheet.

The participating jurisdictions were asked to take the mitigation worksheets back to their respective communities to assist in the development of community mitigation actions.

Action Should Be Implemented	Action Already Implemented	Mitigation Actions
		Agricultural Infestation
	57%	Promote use of disease resistant crops through incentives and/or rebate programs
	43%	Ensure that existing monitoring capabilities at the State and County level are integrated to provide an early warning of an outbreak, blight, or infestation in the County’s animal or plant populations
	14%	Begin an animal disease, blight, or infestation public awareness and educational campaign under the County education and outreach program
		Dam and Levee Failure
		Adopt/enforce water conservation ordinances
		Elevate Levees
14%		Develop emergency action plan for dams for high and significant hazard dams
		Enforcement of Zoning and Building Code Ordinances through current site plan, subdivision, and building permit review processes to reduce the effects of drought
		Create cooperative Federal/non-Federal drought contingency plans for rapid implementation during water shortages
		Drought
57%		Adopt/enforce water conservation ordinances
57%		Promote water conservation and education
14%		Create cooperative Federal/non-Federal drought contingency plans for rapid implementation during water shortages
	29%	Encourage watershed programs to develop/implement watershed plans

		Create cooperative Federal/non-Federal drought contingency plans for rapid implementation during water shortages
14%		Support eradication of drought promoting (invasive) plant species
14%		Promote use of native, drought tolerant plants
		Earthquake
		Develop earthquake evacuation plans
		Identify areas at risk for earthquakes
		Extreme Temperatures
		Create and implement a plan for providing cooling stations during extreme heat conditions
29%		Identify and implement cooling stations for those in need during extreme temperatures
14%		Identify and implement shelter for those in need during extreme cold
		Create and implement a plan for providing shelters during extreme cold temperatures
14%		Educate public on extreme temperature hazards and precautions
		Expansive Soils
14%		Identify areas of expansive soils
		Encourage communities to adopt building codes regarding expansive soils
		Flood
29%		Enhance/Build drainage culverts
14%		Build earth floodwalls
29%		Clean sewage lagoons and install rock
29%		Clear and deepen ditches
14%		Update flood maps
14%		Construct and improve berms
14%		Construct storm sewer drainage
	14%	Elevate or relocate structures in flood vulnerable areas
57%		Encourage communities to participate in the National Flood Insurance Program (NFIP)
57%		Maintain compliance with the National Flood Insurance Program (NFIP) requirements
		Consider participation in the Community Rating System (CRS)
14%		Replace bridges and culverts
		Purchase portable pumps
		Fog
29%		Install strobe light on all buses
14%		Apply reflective tape to buses
		Hailstorm
43%		Promote NOAA weather radios, including citizen purchase of receivers and rebate programs
		Provide covered shelter for critical government vehicles and equipment
		Install Class 4 hail-resistant roofing on planned public infrastructure projects
		Implement warning systems that monitor hail storms for use by local emergency managers and citizens, such as NOAA Weather Radios
		Hazardous Materials
71%		Conduct training seminars on HAZMAT

		Designate HAZMAT transportation routes in highly populated areas
57%		Map all hazardous materials facilities
		Establish HAZMAT decontamination sites
		Identify critical facilities that contain hazardous materials
		Land Subsidence (sinkholes)
		Continue to identify areas prone to land subsidence
		Landslide
		Conduct analysis of landslide prone areas
		Lightning
		Provide “whole building” surge protection in critical facilities
		Identify ways to protect structures, infrastructure, and critical facilities and their occupants from damage caused by lightning strikes.
	43%	Ensure proper grounding of facilities
43%		Educate public on lightning dangers
		Major Disease Outbreak
		Update Bioterrorism Plan
		Educate public on prevention of spreading disease
	71%	Continue vaccination programs at County Health Department
71%		Control mosquito infestation
		Radiological
		Prepare/Update community accident response plan
		Install community warning system
		Soil and Dust Erosion
14%		Develop soil erosion stabilization projects
	14%	Tree planting
		Terrorism/Agroterrorism/Civil Disorder
29%		Identify vulnerable facilities and develop mitigation strategies to reduce the vulnerability
		Develop/Update terrorism response/recovery plan
14%		Increase security at high-profile target areas
		Tornado
71%		Construct FEMA approved saferooms in schools
71%		Construct FEMA approved Community Shelters
43%		Purchase/Install backup generator for saferooms/shelter
43%		Install/Upgrade siren warning systems
86%		Promote NOAA weather radio, including citizen purchase of receivers and rebate programs
		Utility/Infrastructure Failure
57%		Purchase/Install backup generators in critical facilities
		Construct/elevate wastewater lift station
		Wildfire
	14%	Conduct a wildland fire study for entire county using GIS to map responses
86%		Purchase new fire fighting suits
86%		Purchase air packs (SCBA)

	43%	Enforce burning restrictions
	57%	Inspect/purchase fire trucks
		Windstorm
71%		Enforcement of Zoning and Building Code Ordinances through current site plan, subdivision, and building permit review processes to reduce the effects of windstorm/high winds
86%		Promote NOAA weather radio, including citizen purchase of receivers and rebate programs
		Clear dead or rotting trees and branches
		Winter Storm
14%		Enforce snow removal policies
86%		Promote NOAA weather radio, including citizen purchase of receivers and rebate programs
14%		Purchase snow trucks, plows, and/or sanders
		Miscellaneous Actions
	100%	Develop local mitigation plan
14%		Develop incentives to encourage mitigation activities
43%		Create cable television weather advisories
		Adopt and support codes that protect assets and new development in hazard areas
		Develop programs to enhance the safety of the residents of each community during an emergency.
		Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties
		Establish alert systems for vulnerable populations
		Establish backup Emergency Operations Center (EOC)
		Install/upgrade computer system
		Develop debris disposal sites
		Equip ambulance with State Radio System
		Purchase new ambulance
		Equip EMS for communication with HAZ-MAT squad
		Install security system in EMS facilities

Development of Mitigation Strategy and Maintenance Schedule

According to Federal guidelines local governments must have a FEMA approved local mitigation plan in order to apply for and/or receive project grants under the following hazard mitigation assistance programs:

- Hazard Mitigation Grant Program (HMGP) - provides grants to States and Local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.
 - States with an approved Standard State Mitigation Plan will qualify for HMGP funding based on 15 percent for amounts not more than \$2,000,000,000; 10 percent for amounts of more than \$2,000,000,000; and 7.5 percent on amounts of more than \$10,000,000,000; and not more than \$35,333,000,000 of the total estimated eligible Stafford Act disaster assistance.
- Pre-Disaster Mitigation (PDM) Grant Program – provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.

PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds

- Flood Mitigation Assistance (FMA) Program – The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).
- Severe Repetitive Loss (SRL) Program – The SRL was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to Severe Repetitive Loss (SRL) structures insured under the NFIP. The definition of SRL is:
 - a property 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;
 - a property 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
- Repetitive Flood Claims (RFC) Program - The RFC grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004. Up to \$10 million is available annually for FEMA to provide RFC funds to assist States and communities reduce flood damages to insured properties that have had one or more claims to the NFIP. FEMA may contribute up to 100 percent of the total amount approved under the RFC grant award to implement approved activities, if the Applicant has demonstrated that the proposed activities cannot be funded under the Flood Mitigation Assistance (FMA) program.

Federal regulations state the local hazard mitigation plan must be updated and resubmitted to FEMA for approval every five (5) years. FEMA will not disperse funds from program grants for projects located in jurisdictions with a lapsed local mitigation plan. The lapsed period for local mitigation plans is defined as beginning on the first day after the mitigation plan expires and ending on the last date before the updated plan is approved.

The HMPC agreed the lead agency for updating this hazard mitigation plan should remain the Republic County Emergency Management. The principal duty is to report to the community governing boards and the public the status of plan implementation and mitigation opportunities. Other tasks include reviewing and promoting mitigation proposals, listening to concerns about hazard mitigation, forwarding concerns on to appropriate entities, and publishing relevant information.

The HMPC will be responsible for identifying and developing the tools for assessing changes in policy, participation and new opportunities for mitigation activities. This requires a continued awareness of the triggers that may require changes in the mitigation plan. Those may include, but are not limited to, the following:

- The need to include a non-participating jurisdiction in the already approved plan
- Changes to the mitigation actions adopted or the gathering of additional information based on changes to the federal programs
- Changes in jurisdictional boundaries for participating municipalities

During the annual review process the following specific areas of emphasis need to be addressed:

- Status of mitigation actions
- Applicability of mitigation goals and objectives
- Additions to the list of disaster events in the planning area
- Changes to the municipal profiles, including boundary changes, capability enhancements and newly identified vulnerabilities

State and Local Emergency Management proposed a maintenance schedule for the hazard mitigation plan. The HMPC accepted the proposed maintenance schedule. The following table is the maintenance schedule for the 2011-2016 Republic County Hazard Mitigation Plan.

Republic County Hazard Mitigation Plan Update and Maintenance Schedule

Year	Required Step	Plan of Action	Result
2009	Begin development of 2011-2016 Hazard Mitigation Plan Submit to FEMA for approval	Plan development process began in November 2009 and will be completed in September 2011.	Development of the mitigation plan in progress Federal approval received on _____
2012	Annual review of the 2011-2016 Hazard Mitigation Plan Date of Annual Review _____	<ul style="list-style-type: none"> • Report all significant hazard incidents within the planning area. • Perform an annual review of the mitigation goals and objectives included in the mitigation plan. • Coordinate the annual meeting with the HMPC members. • Report status of the mitigation projects adopted by each participating jurisdiction. 	Add the information reported at the annual review to the hazard mitigation plan. Make necessary changes to the mitigation goals and objectives based on the achievements of the participating jurisdictions.
2013	Annual review of the 2011-2016 Hazard Mitigation Plan Date of Annual Review _____	<ul style="list-style-type: none"> • Report all significant hazard incidents within the planning area. • Perform an annual review of the mitigation goals and objectives included in the mitigation plan. • Coordinate the annual meeting with the HMPC members. • Report status of the mitigation projects adopted by each participating jurisdiction. 	Add the information reported at the annual review to the hazard mitigation plan. Make necessary changes to the mitigation goals and objectives based on the achievements of the participating jurisdictions.
2014	Annual review of the 2011-2016 Hazard Mitigation Plan Date of Annual Review _____	<ul style="list-style-type: none"> • Report all significant hazard incidents within the planning area. • Perform an annual review of the mitigation goals and objectives included in the mitigation plan. • Coordinate the annual meeting with the HMPC members. • Report status of the 	Add the information reported at the annual review to the hazard mitigation plan. Make necessary changes to the mitigation goals and objectives based on the achievements of the participating jurisdictions.

Year	Required Step	Plan of Action	Result
		mitigation projects adopted by each participating jurisdiction.	
2015	Begin the 5-year update of the 2011-2016 Hazard Mitigation Plan Update began on _____	<ul style="list-style-type: none"> • Conduct an annual review Report all significant hazard incidents within the planning area. • Perform an annual review of the mitigation goals and objectives included in the mitigation plan. • Coordinate the annual meeting with the HMPC members. • Report status of the mitigation projects adopted by each participating jurisdiction. • Apply for planning grant funds, if appropriate • Evaluate new mitigation planning requirements issued by the Federal government and the State of Kansas • Hold a HMPC planning meeting and establish a project timeline • Identify and notify potential eligible applicants and stakeholders • Develop a schedule to host a series of planning and stakeholder meetings 	<ul style="list-style-type: none"> • HMPC members reconvene and encourage additional organizations to participate in the process to update the plan • Submit notice to all potential eligible applicants • Ensure a minimum of two public input opportunities • Document direct or indirect participation
2016	Submit the updated multi-jurisdictional hazard mitigation plan for approval Date updated plan was submitted to FEMA for approval _____	Complete a draft update of the plan and submit it to FEMA, no later than October 1, 2015	Adopt the FEMA approved plan before expiration of the 2011-2016 Republic County Multi-Hazard Mitigation plan

Next Meeting

In order to promote public awareness of the hazard mitigation planning process, the HMPC decided a small presentation should be given at the storm spotter training meeting.

The next meeting will be held on March 18, 2010 at the 4-H Building in Belleville, Kansas at 7p.m in conjunction with the Storm Spotter Training meeting.

Republic County**3rd Hazard Mitigation Planning Meeting**

Meeting Date: March 18, 2010 at 7:00.m.

Next Meeting: June 15, 2010. Times to be set up on an individual basis

3rd Hazard Mitigation Meeting Attendees

MEETING INVITEES	MEETING 1	MEETING 2	MEETING 3	DATA RECEIVED
Republic County (unincorporated areas & townships)	X	X	X	X
Cities				
City of Agenda			X	
City of Belleville	X			X
Belleville Police Department	X			
City of Courtland	X		X	X
City of Cuba		X		
City of Republic	X		X	X
City of Munden	X	X		
City of Narka	X			X
City of Scandia	X		X	
Unified School Districts				
Republic County – USD #109	X			X
Pike Valley – USD 426				
Rural Electric Cooperatives				
Prairie Land Electric Cooperative				
Rolling Hills Electric Cooperative		X		X
Fire Districts				
Belleville Fire Department		X	X	
Munden-Narka Fire Department	X		X	
Republic County Fire Department #11	X	X		X
Courtland Fire Department			X	
Scandia Fire Department			X	
Cuba Fire Station	X		X	
County Departments				
County Clerk				
Emergency Management	X	X	X	X
Extension Office				
Appraiser				
Board of County Commissioners			X	
County Highway Department			X	
LEPC	X		X	
Sherriff				
Health Care				
Republic County Hospital	X		X	
Republic County Health Department	X			
Bellevue Health Care Center				
Special Districts				
Farm Service Agency				
BNSF Railroad				
Kyle Railroad				

Neighboring Counties				
Cloud County, Kansas				
Jewell County, Kansas				
Jefferson County, Nebraska				
Washington County, Kansas				
Nuckolls County, Nebraska				
Thayer County, Nebraska				
Other				
Kansas Department of Transportation – Local Office	X			
Kansas Highway Patrol			X	
Kansas Water Office - Local				
Kansas Division of Emergency Management				
Kansas Forestry Service				
Kansas Department of Agriculture - DWR				
National Weather Service			x	
Reinke Manufacturing			X	
State & Local Emergency Management Consultants	X	X		

Meeting Minutes

In order to promote public awareness of the hazard mitigation planning process, the HMPC decided a small presentation should be given at the storm spotter training meeting. An explanation of hazard mitigation and the planning process was provided along with a drawing for a NOAA Weather Radio. The drawing for the weather radio was for the individuals willing to complete a survey. The survey was used to determine the level of understanding of hazards that pose a threat to the community.

Hazard Mitigation Overview

Definition of hazard mitigation: *“Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects.”*

PRE-disaster mitigation connects emergency management, economic development, planning and code enforcement functions with critical infrastructure owners (80-90% in private sector), stakeholders and elected officials. National studies have shown hazard mitigation has the potential to save \$4 for every \$1 spent on preventing and diminishing recurring hazards.

Hazard Mitigation Grant Programs

According to Federal guidelines local governments must have a FEMA approved local mitigation plan in order to apply for and/or receive project grants under the following hazard mitigation assistance programs:

- Hazard Mitigation Grant Program (HMGP) - provides grants to States and Local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.
 - States with an approved Standard State Mitigation Plan will qualify for HMGP funding based on 15 percent for amounts not more than \$2,000,000,000; 10 percent for amounts of more than \$2,000,000,000; and 7.5 percent on amounts of more than \$10,000,000,000; and not more than \$35,333,000,000 of the total estimated eligible Stafford Act disaster assistance.
- Pre-Disaster Mitigation (PDM) Grant Program – provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds

- Flood Mitigation Assistance (FMA) Program – The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).
- Severe Repetitive Loss (SRL) Program – The SRL was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to Severe Repetitive Loss (SRL) structures insured under the NFIP. The definition of SRL is:
 - a property 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;
 - a property 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
- Repetitive Flood Claims (RFC) Program - The RFC grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004. Up to \$10 million is available annually for FEMA to provide RFC funds to assist States and communities reduce flood damages to insured properties that have had one or more claims to the NFIP. FEMA may contribute up to 100 percent of the total amount approved under the RFC grant award to implement approved activities, if the Applicant has demonstrated that the proposed activities cannot be funded under the Flood Mitigation Assistance (FMA) program.

After the overview of hazard mitigation and the drawing for the NOAA weather radio, the storm spotter training was conducted.

Next Meeting

The HMPC requested State and Local Emergency Management meet on an individual basis with the participating jurisdictions in the planning area to go discuss their mitigation actions. The individual meetings we be conducted June 15, 2010. Times will be set up on an individual basis.

Republic County
4th Hazard Mitigation Planning Meeting
 Final Meeting Date: March 18, 2010 at 7:00.m.

4th Hazard Mitigation Meeting Attendees

ORGANIZATIONS	MEETING 1	MEETING 2	MEETING 3	MEETING 4	DATA RECEIVED
Republic County (unincorporated areas & townships)	X	X	X		X
Cities					
City of Agenda				X	X
City of Belleville	X				X
Belleville Police Department	X				
City of Courtland	X				X
City of Cuba		X			X
City of Republic	X				X
City of Munden	X	X		X	X
City of Narka	X				X
City of Scandia	X			X	X
Unified School Districts					
Republic County – USD #109	X				X
Pike Valley – USD 426				X	X
Rural Electric Cooperatives					
Prairie Land Electric Cooperative					
Rolling Hills Electric Cooperative		X			X
Fire Districts					
Belleville Fire Department		X			
Agenda Fire Department					
Munden Fire Department					
Republic County Fire Department #11	X	X			X
Scandia Fire Department					
Narka Rural Fire District #3	X				
Cuba Fire Station	X				
County Departments					
County Clerk					
Emergency Management	X	X			
Extension Office					
Appraiser					
County Commissioners					
Road and Bridge					
LEPC	X				
Sherriff					
Health Care					
Republic County Hospital	X				
Republic County Health Department	X				
Bellevue Health Care Center					
Special Districts					
Farm Service Agency					
BNSF Railroad					
Kyle Railroad					

Neighboring Counties					
Cloud County, Kansas					
Jewell County, Kansas					
Jefferson County, Nebraska					
Washington County, Kansas					
Nuckolls County, Nebraska					
Thayer County, Nebraska					
Other					
Kansas Department of Transportation – Local Office	X				
Kansas Water Office - Local					
Kansas Division of Emergency Management					
Kansas Forestry Service					
Kansas Department of Agriculture - DWR					
State & Local Emergency Management Consultants	X	X			

Meeting Minutes

Republic County Emergency Manager, Raymond and State and Local Emergency Management met with the participating jurisdictions on an individual basis to go discuss their mitigation actions.

The individual meetings consisted of evaluating and prioritizing mitigation actions. The technique used to evaluate and prioritize the mitigation actions was the STAPLEE method. An emphasis was put on cost effectiveness and the protection of human lives while analyzing and ranking the mitigation actions.

STAPLEE Technique

Federal Requirement 201.6(c)(3)(ii) states: The mitigation strategy shall include 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.

The STAPLEE method was used to analyze and prioritize the mitigation actions. While analyzing and prioritizing the mitigation actions cost effectiveness and the protection of human lives and property was taken into consideration. The STAPLEE is a form created by FEMA to evaluate and prioritize mitigation initiatives. The STAPLEE method is as follows:

- S – Social** The public must support the overall implementation strategy and specific mitigation actions. The projects were evaluated in terms of community acceptance.

- T – Technical** It is important to determine if the proposed action is technically feasible, will help reduce losses in the long-term, and has minimal secondary impacts. The HMPC determined whether the alternative action was the whole or part of the solution, or not a solution at all.

- A – Administrative** Under this part of the evaluation criteria, examine the anticipated staffing, funding, and maintenance requirements for the mitigation action to determine if the jurisdiction has the personnel and administrative capabilities necessary to implement the action or whether outside help will be needed.

- P – Political** Understanding how the community and State political leadership feels about issues related to the environment, economic development, safety, and emergency management. This will provide valuable insight into the level of political support for mitigation activities and programs. Proposed mitigation objectives sometimes fail because of a lack of political acceptability.

L – Legal

Without the appropriate legal authority, the action cannot lawfully be undertaken. When considering this criterion, determine whether the jurisdiction must pass new laws or regulations. Each level of government operates under a specific source of delegated authority. As a general rule, most local governments operate under enabling legislation that gives them the power to engage in different activities. The unit of government is identified for undertaking the mitigation action, and include an analysis of interrelationships between local, regional, State, and Federal governments. Legal authority is likely to have a significant role later in the process when the State or community will have to determine how mitigation activities can best be carried out, and to what extent mitigation policies and programs can be enforced.

E – Economic

Every local and State government experiences budget constraints. Cost-effective mitigation actions that can be funded in current or upcoming budget cycles are much more likely to be implemented than mitigation actions requiring general obligation bonds or other instruments that would incur long-term debt to a community. States and local communities with tight budgets or budget shortfalls may be more willing to, at least in part, be outside sources. “Big-ticket” mitigation actions, such as large-scale acquisitions and relocations are often considered for implementation in a post-disaster scenario when additional Federal and State funding for mitigation is available.

E – Environmental

Impact on the environment is an important consideration because of public desire for sustainable and environmentally healthy communities and the many statutory considerations, such as NEPA, to keep in mind when using Federal funds. There is a need to evaluate whether implementation of mitigation actions would cause negative consequences to environmental assets such as threatened and endangered species, wetlands, and other protected natural resources.

Mitigation actions were evaluated one at a time and prioritized. The mitigation actions were divided into three prioritization categories: High, Moderate, and Low. The actions with a total of 20 to 24 were determined to have a “High” planning priority (actions to be implemented in this plan), the actions totaling from 15 to 19 were determined to be of a “Moderate” planning significance, and the actions totaling less than 15 were rated as “Low.” The actions with a planning significance of “Moderate” or “Low” are still considered to be important. However, it was determined they could not be implemented at this time. Below is a combined list of action items and their priority ranking.

Republic County Multi-Jurisdictional Hazard Mitigation Plan															
Proposed Actions	Modified STAPLEE Criteria Considerations														
	Certain = 3		Highly Likely = 2		Possible = 1		Not Likely = 0					Total STAPLEE Score	Priority Level	Hazard Mitigated	Goal Addressed
	S	T	A	P	L	E		E							
	Social	Technical	Administrative	Political	Legal	Economic		Environmental							
	Socially Acceptable	Technically feasible	Adequate staffing	Political support	Legal Authority to Implement Action Item	Clear benefit of action	Outside funding possible	Consistent with community environmental goals							
Look into funding for FEMA approved safe room in each school building	3	3	3	3	3	3	3	3	3	24	High				
Look into funding for the purchase/installation of backup generator for FEMA approved safe rooms	3	3	3	3	3	3	3	3	3	24	High	Tornado, Windstorm	1,3		
Develop Minimum Performance Standards in Flood Prone Areas to Comply with NFIP Guidelines	3	3	3	3	3	3	2	3	3	23	High	Flood	1, 3		
Monitor Floodplain Activities	3	3	3	3	3	3	2	3	3	23	High	Flood	1, 3		
Appointment of Floodplain Manager	3	3	3	3	3	3	2	3	3	23	High	Flood	1, 3		
Integrate GIS into emergency mitigation	3	3	3	2	3	3	3	3	3	23	High	All Hazards	1, 3		
Improve Public Awareness of Hazard Risks	3	3	3	2	3	3	3	3	3	23	High	All Hazards	1,2		
Develop/Update Response Plans	3	3	3	3	3	3	1	3	3	22	High	All Hazards	1, 3		
Ditch Cleaning/Deepening	3	3	2	2	3	3	2	3	3	21	High	Flood, Utility/Infrastructure Failure	1,3		

Proposed Actions	Modified STAPLEE Criteria Considerations											
	Certain = 3		Highly Likely = 2		Possible = 1		Not Likely = 0					
	S	T	A	P	L	E		E	Total STAPLEE Score	Priority Level	Hazard Mitigated	Goal Addressed
	Social	Technical	Administrative	Political	Legal	Economic		Environmental				
	Socially Acceptable	Technically feasible	Adequate staffing	Political support	Legal Authority to Implement Action Item	Clear benefit of action	Outside funding possible	Consistent with community environmental goals				
Promote use of NOAA weather radios	3	3	2	2	3	3	2	3	21	High	Flood, Tornado, Wind Storms, Winter storms	1, 2, 3
Water Drought Emergency Ordinance	3	3	3	3	3	3	0	3	21	High	Drought	1, 3
Promote water conservation and education	3	3	3	3	3	3	0	3	21	High	Drought	1, 2,3
Bridge Replacement	3	3	3	3	3	3	0	3	21	High	Utility/Infrastructure Failure	1,3
Train key leaders in the community	3	3	2	3	3	3	1	3	21	High	All Hazards	1,3
Establish back up communications system	3	3	3	3	3	3	0	3	21	High	All Hazards	1,3
Purchase/Install backup generators for critical facilities	3	3	2	2	3	3	1	3	20	High	Utility/Infrastructure Failure	1,3
Install/Upgrade Communications for Emergency Responders	3	3	2	2	3	3	1	3	20	High	All Hazards	1,3
Install Outdoor Storm Sirens	3	3	2	2	3	3	1	3	20	High	Tornado	1,3
Sewer Line Replacement	3	3	2	3	3	3	0	3	20	High	Utility/Infrastructure Failure	1,3
EMS Training	3	3	2	3	3	3	0	3	20	High	All Hazards	1,3
Distribution Line Upgrade	3	3	2	3	3	3	0	3	20	High	Utility/Infrastructure Failure	1,3

Proposed Actions	Modified STAPLEE Criteria Considerations															
	Certain = 3		Highly Likely = 2		Possible = 1		Not Likely = 0									
	S	T	A	P	L	E		E	Total STAPLEE Score	Priority Level	Hazard Mitigated	Goal Addressed				
	Social		Technical		Administrative		Political						Legal	Economic		Environmental
	Socially Acceptable	Technically feasible	Adequate staffing		Political support		Legal Authority to Implement Action Item	Clear benefit of action					Outside funding possible	Consistent with community environmental goals		
Install new fire hydrants	3	2	0	1	3	3	0	3	15	Moderate	Wildfire	1,3				
Conduct training seminars on HAZMAT spills	3	2	0	1	3	3	0	3	15	Moderate	Hazardous Materials	1,3				
Support/Conduct EMS and first responders training on a monthly basis	3	2	0	1	3	3	0	3	15	Moderate	All Hazards	1,3				
Develop an evacuation plan	3	2	0	1	3	3	0	3	15	Moderate	Flooding, Hazardous Materials, Radiological, Wildfire	1,2,3				
Develop a debris management plan	3	2	0	1	3	3	0	3	15	Moderate	Agriculture Infestation, Flood, Tomado, Windstorm, Winter storm	1,3				
Backup files and store in alternate locations	3	2	1	2	2	2	0	3	15	Moderate	All Hazards	1,3				
Distribute weather radios to vulnerable populations	3	3	1	1	2	1	0	1	12	Moderate	Tomado, Hailstorms, Lightning, Windstorm	1,2,3				
Continue tree trimming ordinances	1	1	0	1	1	1	0	2	7	Low	Utility/Infrastructure failure	1,3				
Encourage businesses and citizens to use smoke detectors	2	1	0	1	1	1	0	1	7	Low	Fire	1,2,3				

Proposed Actions	Modified STAPLEE Criteria Considerations												
	Certain = 3		Highly Likely = 2		Possible = 1			Not Likely = 0					
	S	T	A	P	L	E		E		Total STAPLEE Score	Priority Level	Hazard Mitigated	Goal Addressed
	Social	Technical	Administrative	Political	Legal	Economic		Environmental					
	Socially Acceptable	Technically feasible	Adequate staffing	Political support	Legal Authority to Implement Action Item	Clear benefit of action	Outside funding possible	Consistent with community environmental goals					
Maintain a list of people on oxygen and other special needs	1	1	0	1	1	1	0	2		7	Low	All Hazards	1,2,3

Republic County Adoption Resolution

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City of Agenda Adoption Resolution

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City of Belleville Adoption Resolution

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City of Courtland Adoption Resolution

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City of Cuba Adoption Resolution

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City of Munden Adoption Resolution

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City of Narka Adoption Resolution

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City of Republic Adoption Resolution

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City of Scandia Adoption Resolution

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Republic County USD 109 Adoption Resolution

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Pike Valley USD 426 Adoption Resolution

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Rolling Hills Electric Cooperative Adoption Resolution

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