CONTRIBUTORS

Schuyler County Hazard Mitigation Planning Committee

Jurisdictional Representatives

Name		Title	Department	Jurisdiction/Agency/Organization
Rodney	Cooper	Presiding Commissioner	County	Schuyler County
Jim	Werner	Northern Dist. Commissioner	County	Schuyler County
Jeff	Lindquist	Southern Dist. Commissioner	County	Schuyler County
Bree	Lawson	County Clerk	County	Schuyler County
Margaret	Reynolds	City Clerk	Administration	City of Lancaster
Jim	Foster	Mayor	Administration	City of Lancaster
Carol	Dryden	City Clerk	Administration	City of Downing
Alan	Garrett	Mayor	Administration	City of Downing
Denny	Brummer	Village Clerk	Administration	Village of Glenwood
Charlene	Long	Mayor	Administration	City of Greentop
Martha	Chapman	City Clerk	Administration	City of Greentop
John	March	Mayor	Administration	City of Queen City
Traci	Walker	City Clerk	Administration	City of Queen City
Kyle	Windy	Principal	Administration	Schuyler County R-1
Rick	Roberts	Superintendent	Administration	Schuyler County R-1
Joe	Wuebeker	Sheriff	County	Schuyler County

Stakeholder Representatives

Name	Title	Department	Agency/Organization
Darla Campbell	County Engagement Specialist	Administration	MU Extension
Amy Crawford	Area Engineer	Transportation	Missouri Department of Transportation
Kathryn Magers	Administrator	Health Care	Schuyler County Health Dept.
Cole Tippett	General Manager	Utility	Tri-County Electric Coop.

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EXECUTIVE SUMMARY

The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. Schuyler County and participating jurisdictions and school/special districts developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses from hazard events to the County and its communities and school/special districts. The plan is an update of a plan that was approved in 2014. The plan and the update were prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 to result in eligibility for the Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grant Programs.

The County Multi-Hazard Mitigation Plan is a multi-jurisdictional plan that covers the following jurisdictions that participated in the planning process:

- Unincorporated Schuyler County
- City of Lancaster
- City of Downing
- Village of Glenwood
- City of Greentop
- City of Queen City
- Schuyler County R-I

Schuyler County and the entities listed above developed a Multi-Jurisdictional Hazard Mitigation Plan that was approved by FEMA in 2014 (hereafter referred to as the *2014 Hazard Mitigation Plan*). This current planning effort serves to update that previously approved plan.

The plan update process followed a methodology in accordance with FEMA guidance, which began with the formation of a Mitigation Planning Committee (MPC) comprised of representatives from Schuyler County and participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to Schuyler County and analyzed jurisdictional vulnerability to these hazards. The MPC also examined the capabilities in place to mitigate the hazard damages, with emphasis on changes that have occurred since the previously approved plan was adopted. The MPC determined that the planning area is vulnerable to several hazards that are identified, profiled, and analyzed in this plan. Riverine and flash flooding, winter storms, severe thunderstorms/hail/lightning/high winds, and tornadoes are among the hazards that historically have had a significant impact.

Based upon the risk assessment, the MPC updated goals for reducing risk from hazards. The goals are listed below:

1. Public Awareness- Using a variety of communications avenues to increase the citizens awareness of and promote education about the natural hazards that they may face, vulnerability to these hazards, and how to lessen the effect of natural hazards.
2. Strengthen communication and coordination between local governments, emergency personnel, public agencies, and citizens to mitigate the effect of future natural hazards.
3. Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties; on natural resources; on infrastructure; and on the local economy.

To advance the identified goals, the MPC developed recommended mitigation actions, as summarized in the table on the following pages. The MPC developed an implementation plan for each action, which identifies priority level, background information, ideas for implementation, responsible agency, timeline, cost estimate, potential funding sources, and more. These additional details are provided in Chapter 4.

Table I. Mitigation Action Matrix

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
Schuyler County 2020.1	Participate in the NFIP	Schuyler County	High	3	Flooding			✓
Schuyler County 2020.2	Implement flood mitigation activities to eliminate effects on Schuyler County residents	Schuyler County	High	3	Flooding	✓	✓	
Schuyler County 2020.3	Install/Upgrade Warning Sirens	Schuyler County	Medium	3	All Hazards	✓		
Schuyler County 2020.4	Maintain Transportation Infrastructure	Schuyler County	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
Schuyler County 2020.5	Response to Pandemic	Schuyler County	Medium	2	Pandemic	✓	✓	
Schuyler County 2020.6	Safe Rooms and Storm Shelters	Schuyler County	High	3	Tornado, Severe Thunderstorms	✓		
Schuyler County 2020.7	Generator for Shelter(s)	Schuyler County	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
Schuyler County 2020.8	Emergency Operations Center	Schuyler County	Low	3	All Hazards	✓	✓	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Lancaster 2020.1	Generator for Shelter(s)	City of Lancaster	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Lancaster 2020.2	Maintain Transportation Infrastructure	City of Lancaster	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Lancaster 2020.3	Installation/Upgrade Sirens	City of Lancaster	Medium	3	All Hazards	✓		
City of Lancaster 2020.4	NFIP Participation	City of Lancaster	High	3	Flooding			✓
City of Queen City 2020.1	Generator for Shelter(s)	City of Queen City	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Queen City 2020.2	Maintain Transportation Infrastructure	City of Queen City	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Queen City 2020.3	Installation/Upgrade Sirens	City of Queen City	Medium	3	All Hazards	✓		
City of Queen City 2020.4	NFIP Participation	City of Queen City	High	3	Flooding			✓

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Greentop 2020.1	Generator for Shelter(s)	City of Greentop	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Greentop 2020.2	Maintain Transportation Infrastructure	City of Greentop	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Greentop 2020.3	Installation/Upgrade Sirens	City of Greentop	Medium	3	All Hazards	✓		
City of Greentop 2020.4	NFIP Participation	City of Greentop	High	3	Flooding			✓
Village of Glenwood 2020.1	Installation/Upgrade Sirens	Village of Glenwood	High	3	All Hazards	✓		
Village of Glenwood 2020.2	Maintain Transportation Infrastructure	Village of Glenwood	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
Village of Glenwood 2020.3	NFIP Participation	Village of Glenwood	High	3	Flooding			✓
City of Downing 2020.1	Installation/Upgrade Sirens	City of Downing	High	3	All Hazards	✓		
City of Downing 2020.2	Maintain Transportation Infrastructure	City of Downing	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Downing 2020.3	Safe Rooms and Storm Shelters	City of Downing	High	3	Tornado, Severe Thunderstorms	✓		

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Downing 2020.4	NFIP Participation	City of Downing	High	3	Flooding			✓
Schuyler County R-1 2020.1	Safe Rooms	Schuyler County R-1	High	3	Tornado, Severe Thunderstorms, Earthquake	✓		
Schuyler County R-1 2020.2	Intercom System	Schuyler County R-1	Medium	3	Tornado, Severe Thunderstorms, Earthquake	✓		

PREREQUISITES

44 CFR requirement 201.6(c)(5): The local hazard mitigation plan shall include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan. For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

This plan has been reviewed by and adopted with resolutions or other documentation of adoption by all participating jurisdictions and schools/special districts. The documentation of each adoption is included in Appendix C, and a model resolution is included on the following page.

The jurisdictions listed in the Executive Summary participated in the development of this plan and have adopted the multi-jurisdictional plan.

Model Resolution

(*LOCAL GOVERNING BODY/SCHOOL DISTRICT*), Missouri RESOLUTION NO. _____

A RESOLUTION OF THE (*LOCAL GOVERNING BODY /SCHOOL DISTRICT*) ADOPTING THE (*PLAN NAME*)

WHEREAS the (*local governing body/school district*) recognizes the threat that natural hazards pose to people and property within the (local governing body/school district); and

WHEREAS the (*local governing body/school district*) has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the (*plan name*), hereafter referred to as the *Plan*, in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the *Plan* identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the *(local governing body/school district*) from the impacts of future hazards and disasters; and

WHEREAS the (*local governing body*) recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the (*local governing body/school district*) will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by the (*local governing body/school district*) demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY THE (*LOCAL GOVERNMENT/SCHOOL DISTRICT*), in the State of Missouri, THAT:

In accordance with (*local rule for adopting resolutions*), the (*local governing body/school district*) adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of_____in favor and__against, and__abstaining, this_____day of _____,_____.

By (Sig): _____
Print name: _____

ATTEST:
By (Sig.): _____
Print name: _____

APPROVED AS TO FORM:
By (Sig.): _____
Print name: _____

1 INTRODUCTION AND PLANNING PROCESS

1.1 PURPOSE

Hazard mitigation is "any actions taken to reduce or eliminate the long-term risk to human life and property from natural hazards". We understand that hazard events will continue to occur, and at their worst can result in death and destruction of property and infrastructure. The work done to minimize the impact of hazard events to life and property is called hazard mitigation. Schuyler County and the participating jurisdictions and school districts, developed this multijurisdictional local hazard mitigation plan update to reduce future losses from hazards.

- The County of Schuyler, City of Lancaster, City of Downing, Village of Glenwood, City of Greentop, City of Queen City, and Schuyler County R-I adopted the plan as a Prerequisite for mitigation grant eligibility and cite the current legislation authorizing plan development.

  Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288) as amended by the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the *Federal Register* on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007.

  FEMA's Local Mitigation Planning Handbook, March 2013 and FEMA's Local Mitigation Plan Review Guide, October 1, 2011.

1.2 BACKGROUND AND SCOPE

This plan is a 5-year update of a previous plan approved in 2014. The plan and update were prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 to result in the eligibility for the Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grant programs.

The follow is a list of participants in both the previous plan as well as the current plan: County of Schuyler, City of Lancaster, City of Downing, Village of Glenwood, City of Greentop, City of Queen City.

Information in the plan will be used to help guide and coordinate mitigation activities and decisions for local land use policy in the future.

1.3 PLAN ORGANIZATION

The new format for the plan has 5 Chapters while the previous plan had 6 sections. The previous plan had a section dedicated to local jurisdictional capabilities, but that has been incorporated into the Planning Area Profile and Capabilities (Chapter 2) of this update.

Below is the outline of the plan.

- Chapter 1: Introduction and Planning Process
- Chapter 2: Planning Area Profile and Capabilities
- Chapter 3: Risk Assessment
- Chapter 4: Mitigation Strategy
- Chapter 5: Plan Implementation and Maintenance
- Appendices

Table 1.1 summarizes the changes made in each chapter of the update.

Table 1.1. Changes Made in Plan Update

Plan Section	Summary of Updates
Chapter 1 - Introduction and Planning Process	Updated members of the Mitigation Planning Committee (MPC) and participating jurisdictions formally adopted the MPC.
Chapter 2 - Planning Area Profile and Capabilities	Noted new GIS capabilities for participating jurisdictions.
Chapter 3 - Risk Assessment	Combined extreme heat and extreme cold into one hazard: extreme temperatures.

Chapter 4 - Mitigation Strategy	The mitigation category of each action was added to the action worksheets.
Chapter 5 - Plan Implementation and Maintenance	Updated MPC meetings for evaluating and updating the plan to quarterly.

1.4 PLANNING PROCESS

44 CFR Requirement 201.6(c)(1): [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Schuyler County, Missouri contracted with the Northeast Missouri Regional Planning Commission (NEMO RPC) to facilitate the update of the multi-jurisdictional, local hazard mitigation plan. In fulfillment of this role, the RPC:

- Assisted in establishing a Mitigation Planning Committee (MPC) as defined by the Disaster Mitigation Act (DMA),
- Ensured the updated plan meets the DMA requirements as established by federal regulations and follows the most current planning guidance of the Federal Emergency Management Agency (FEMA),
- Facilitated the entire plan development process,
- Identified the data that MPC participants could provide and conduct the research and documentation necessary to augment that data,
- Assist in soliciting public input,
- Produce the draft and final plan update in a FEMA-approvable document and coordinate the Missouri State Emergency Management Agency (SEMA) and (FEMA) plan reviews.

Table 1.2 shows the MPC members and the entities they represent, along with their titles.

Table 1.2. Jurisdictional Representatives of Schuyler County Mitigation Planning Committee

Name		Title	Department	Jurisdiction/Agency/Organization
Rodney	Cooper	Presiding Commissioner	County	Schuyler County
Jim	Werner	Northern Dist. Commissioner	County	Schuyler County
Jeff	Lindquist	Southern Dist. Commissioner	County	Schuyler County
Bree	Lawson	County Clerk	County	Schuyler County
Margaret	Reynolds	City Clerk	Administration	City of Lancaster
Jim	Foster	Mayor	Administration	City of Lancaster
Carol	Dryden	City Clerk	Administration	City of Downing
Alan	Garrett	Mayor	Administration	City of Downing
Denny	Brummer	Village Clerk	Administration	Village of Glenwood
Charlene	Long	Mayor	Administration	City of Greentop
Martha	Chapman	City Clerk	Administration	City of Greentop
John	March	Mayor	Administration	City of Queen City
Traci	Walker	City Clerk	Administration	City of Queen City

Kyle	Windy	Principal	Administration	Schuyler County R-1
Rick	Roberts	Superintendent	Administration	Schuyler County R-1
Joe	Wuebeker	Sheriff	County	Schuyler County

Table 1.3 demonstrates each member's expertise in the six mitigation categories (Prevention, Property Protection, Natural Resource Protection, Emergency Services, Structural Flood Control Projects and Public Information).

Table 1.3. MPC Capability with Six Mitigation Categories

Community Department/Office	Prevention	Structure and Infrastructure Projects		Natural Systems Protection	Education and Awareness Programs	Emergency Services
		Property Protection	Structural Flood Control Projects			
County Commission	✓	✓	✓	✓	✓	✓
EMD	✓	✓	✓	✓	✓	✓
Administration	✓	✓	✓	✓	✓	✓
Police	✓	✓	✓	✓	✓	✓
Fire	✓	✓	✓	✓	✓	✓
Utilities	✓	✓	✓	✓	✓	✓
School Administration	✓	✓		✓	✓	✓

1.4.1 Multi-Jurisdictional Participation

44 CFR Requirement §201.6(a)(3): Multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

Hazard mitigation is defined as "sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards" and its purpose is to lessen the negative impact of a disaster on community's economic, social and environmental well-being.

Outreach programs that increase the public' awareness of hazard risks, projects to protect critical facilities and the removal of structures from flood hazard areas are all examples of mitigation actions. Local mitigation actions and concepts can also be incorporated into land use plans and building codes.

Local governments have the responsibility to protect the health, safety and welfare of their citizens. Proactive mitigation policies and actions help reduce risk and create safer, more disaster resilient communities. Mitigation is an investment in a community's future safety and sustainability by facilitating:

- The protection of public safety and prevention of loss of life and injury
- The reduction of harm to existing and future development

- The prevention of damage to a community's unique assets

The importance of active public participation in such an endeavor is obvious, but can be difficult to obtain in reality. Nowhere is the difficulty more apparent than in small rural communities like those in Northeast Missouri. The county of Schuyler, City of Lancaster, City of Downing, Village of Glenwood, City of Greentop, Queen City, and Schuyler R-I School City participated in all elements of the planning process.

Local government jurisdictions and the school districts were invited to participate in the planning process via email and in many cases follow up phone calls and personal visits. (Appendix B public documentation). Committee members were placed on a contact list featuring email and contact information. They were also directed to the RPC webpage.

Jurisdictions that were presented with a multi-jurisdictional plan are required to participate in the planning process and formally adopt the plan. The County of Schuyler, City of Lancaster, City of Downing, Village of Glenwood, City of Greentop, Queen City, and Schuyler R-I School participated in the plan update by meeting minimal requirements as described in the next paragraph. Each participating jurisdiction has formally adopted the mitigation plan.

Minimum participation requirements included:

- Designation of a representative to serve on the MPC;
- Provision of sufficient information to support plan development by completion and return of Data Collection Questionnaires and validating/correcting critical facility inventories;
- When applicable provide progress reports on mitigation actions from the previously approved plan and identify additional mitigation actions for the plan;
- Eliminate from further consideration those actions from the previously approved plan that were not implemented because they were impractical, inappropriate, not cost-effective, or were otherwise not feasible;
- Review and comment on plan drafts;
- Provide documentation to show time donated to the planning effort (if a FEMA planning grant was awarded to the County); and
- Formally adopt the mitigation plan prior to submittal to SEMA and FEMA for final approval.

Table 1.4. Jurisdictional Participation in Planning Process

Jurisdiction	Meeting #1	Data Collection Questionnaire Response	Update/Develop Mitigation Actions
Unincorporated Schuyler County	X	✓	X
City of Lancaster	X	✓	X
City of Downing	X	✓	X
Village of Glenwood	X	✓	X
City of Greentop	X	✓	X
Queen City	X	✓	X
Schuyler R-I School	X	✓	X

1.4.2 The Planning Steps

Table 1.5. Schuyler County Mitigation Plan Update Process

Community Rating System (CRS) Planning Steps (Activity 510)	Local Mitigation Planning Handbook Tasks (44 CFR Part 201)
Step 1. Organize	Task 1: Determine the Planning Area and Resources
	Task 2: Build the Planning Team 44 CFR 201.6(c)(1)
Step 2. Involve the public	Task 3: Create an Outreach Strategy 44 CFR 201.6(b)(1)
Step 3. Coordinate	Task 4: Review Community Capabilities 44 CFR 201.6(b)(2) & (3)
Step 4. Assess the hazard	Task 5: Conduct a Risk Assessment 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii)
Step 5. Assess the problem	
Step 6. Set goals	Task 6: Develop a Mitigation Strategy 44 CFR 201.6(c)(3)(i); 44 CFR 201.6(c)(3)(ii); and 44 CFR 201.6(c)(3)(iii)
Step 7. Review possible activities	
Step 8. Draft an action plan	
Step 9. Adopt the plan	Task 8: Review and Adopt the Plan
Step 10. Implement, evaluate, revise	Task 7: Keep the Plan Current
	Task 9: Create a Safe and Resilient Community 44 CFR 201.6(c)(4)

In September 2020, NEMO RPC staff met with Schuyler County Commissioners to begin the planning process. In October 2020, staff from the RPC organized the all-in-one planning meeting that was held on November 16, 2020. Local jurisdictions were notified by email and letter of the meeting and personal phone calls were made to promote attendance. Agenda for the Kickoff meeting is included in Appendix B, as well as the minutes.

Step 1: Organize the Planning Team
(Handbook Tasks 1, 2, and 4)

Table 1.6. Schedule of MPC Meetings

Meeting	Topic	Date
Informational Meeting	Met directly with local jurisdictions and follow up phone calls to discuss the planning process and importance of participation.	September 2020

All-In-One Meeting	Purpose, process, planning area, building the team, participation, requirements, public outreach, data collection questionnaires, discussion of hazards, risks	November 16, 2020
	Purpose, discussion of hazards, risk assessment, determine/update	
	Review of the draft plan, discussion of plan update process, plan maintenance, discussion of adoption resolutions, submission to SEMA/FEMA	

Step 2: Plan for Public Involvement
(Handbook Task 3)

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

The Planning Meeting's agenda is included in Appendix B which includes discussion, minutes, 44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval. As stated in the minutes, the participants felt a survey tool would not be effective and chose to solicit public involvement at the local level as they would be the key contacts for obtaining public comment. Public notice was posted on the NEMO RPC website, a notice was also posted at the County Courthouse.

No public comments were received which is characteristic for the area. The public in Schuyler County typically does not become active in planning activities such as plan development or updates.

Step 3: Coordinate with Other Departments and Agencies and Incorporate Existing Information
(Handbook Task 3)

44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process. (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

The Schuyler County stakeholders were sent an invitation to attend the second planning meeting and a separate email was sent seeking their input. Stakeholders invited to participate include, police departments, nursing homes, economic developer, Missouri Department of Transportation, water districts, and ambulance districts. Neighboring communities were informed of the Schuyler County plan update and were invited to attend or offer input to the plan as well. No comments were received from the stakeholders during the planning process.

Stakeholder Representatives

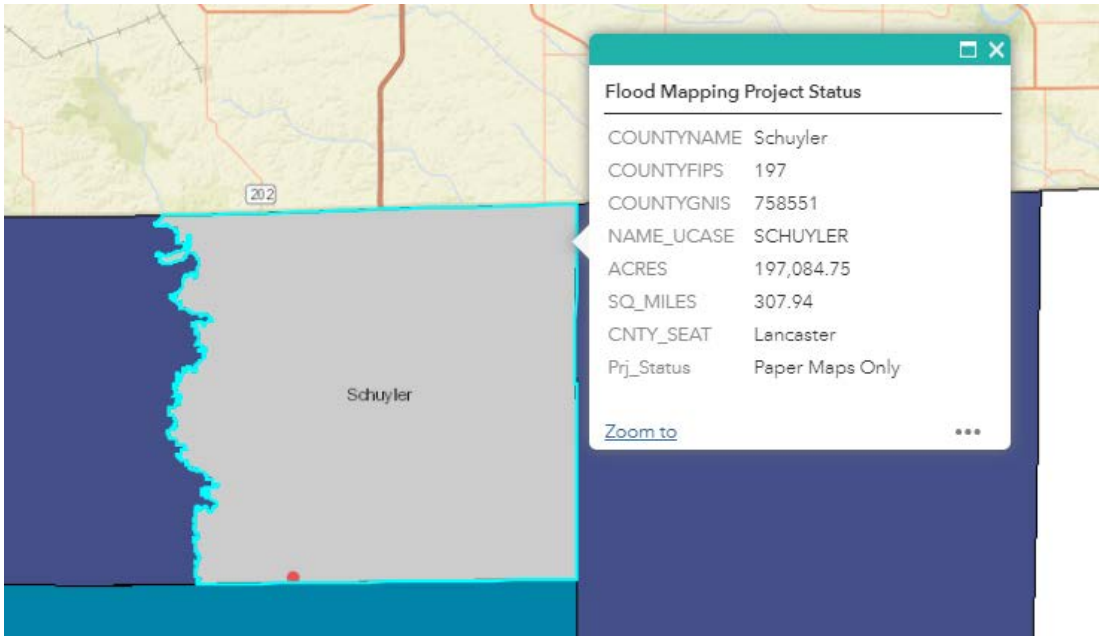
Name	Title	Department	Agency/Organization
Darla Campbell	County Engagement Specialist	Administration	MU Extension
Amy Crawford	Area Engineer	Transportation	Missouri Department of Transportation
Kathryn Magers	Administrator	Health Care	Schuyler County Health Dept.
Cole Tippett	General Manager	Utility	Tri-County Electric Coop.

Coordination with FEMA Risk MAP Project

Schuyler County is currently in the unmapped/paper map only phase for modernized FIRM Status. Risk Map provides mitigation planning support in a variety of ways including helping in the assessment of risks and identifying actions items reduce vulnerability. In addition, this project will provide tools to improve the understanding of risk by local officials and the general public.

Figure 1.1 illustrates the current status of Missouri Counties in regards to Risk Map projects.

Figure 1.1. RiskMAP Study Status Map



Integration of Other Data, Reports, Studies, and Plans

Other documents critical to the information of the plan include, mitigation plans of the state and adjacent counties, reports from university extensions, Flood Insurance Studies (FIS), Flood Insurance Rate Maps (FIRMs), State Department of Natural Resources (DNR) dam information, the National Inventory of Dams (NID), dam inspection reports, state fire reports, Wildland/Urban Interface and Intermix areas from the SILVIS Lab - Department of Forest Ecology and Management - University of Wisconsin, local comprehensive plans, economic development plans, capital improvement plans, US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics, and local budgets.

Examples of information that was incorporated into the plan include:

- FEMA FIRM maps
- DNR dam inspection reports
- County Master Plan
- future growth trends
- SEMA's Arc GIS helped with mapping for hazards
- State Hazard Mitigation Plan
- building counts and content exposure
- American Factfinder
- 2017 American Community Survey
- Demography

Step 4: Assess the Hazard: Identify and Profile Hazards
(Handbook Task 5)

At the November 16, 2020 meeting MPC profiled their hazards which was accomplished by reviewing:

- Previous disaster declarations in the county
- Hazards in the most recent State Hazard Mitigation Plan
- Hazards identified in the previously approved hazard mitigation plan.

The results of this process can be reviewed in Section 4 of this document. Data Collection Questionnaires from the previous plan update were disseminated to jurisdictions in attendance. Participant were requested to review and update the Questionnaires and submit to the RPC no later than December 14, 2020. An email and face to face meeting with those not in attendance but not considered potential planning team members were sent requesting completion of the Data Collection Questionnaire.

Step 5: Assess the Problem: Identify Assets and Estimate Losses
(Handbook Task 5)

Assets were identified with demographic data from the US Census, Census of Agriculture, GIS Structure data, Data Collection Questionnaires and information from the COG.

All loss estimates could not be provided due to lack of information provided by participating Jurisdictions. MPC members could not ascertain the value of buildings in the community, thus the information was not provided.

Step 6: Set Goals
(Handbook Task 6)

The MPC reviewed the goals from the previously approved plan at the November 16, 2020 meeting and accepted the previous goals with no changes.

1. Public Awareness- Using a variety of communications avenues to increase the citizens awareness of and promote education about the natural hazards that they may face, their vulnerability to these hazards, and how to lessen the effect of future natural hazards.
2. Strengthen communication and coordination between local governments, emergency personnel, public agencies, and citizens to mitigate the effect of future natural hazards.
3. Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties; on natural resources; on infrastructure; and on the local economy.

Step 7: Review Possible Mitigation Actions and Activities
(Handbook Task 6)

As part of the Planning Meeting, members were asked to review the mitigation strategy from the previously approved plan and note changes and update as it pertains to their individual jurisdictions. Committee members were requested to address progress (or lack thereof) on previously identified actions in the previously approved plan. MPC members were

encouraged to continue forward only those actions that substantively address long-term mitigation solutions to the risks identified in the risk assessment.

There were virtually no changes to any of the risks assessment in the plan. The MPC used the STAPLEE method to analyze and prioritize proposed actions. Members were provided a copy of the FEMA publication Mitigation Ideas- A Resource for Reducing Risk to Natural Hazards at the Planning Meeting.

Step 8: Draft an Action Plan
(Handbook Task 6)

The action worksheets, including the plan for implementation, submitted by each jurisdiction for the updated Mitigation Strategy are included in Chapter 4.

Step 9: Adopt the Plan
(Handbook Task 8)

After the majority of the draft plan was composed, the adoption resolution examples were given to the jurisdictional representatives and requested for adoption by whatever means their jurisdictions utilize for such activities.

Step 10: Implement, Evaluate, and Revise the Plan
(Handbook Tasks 7 & 9)

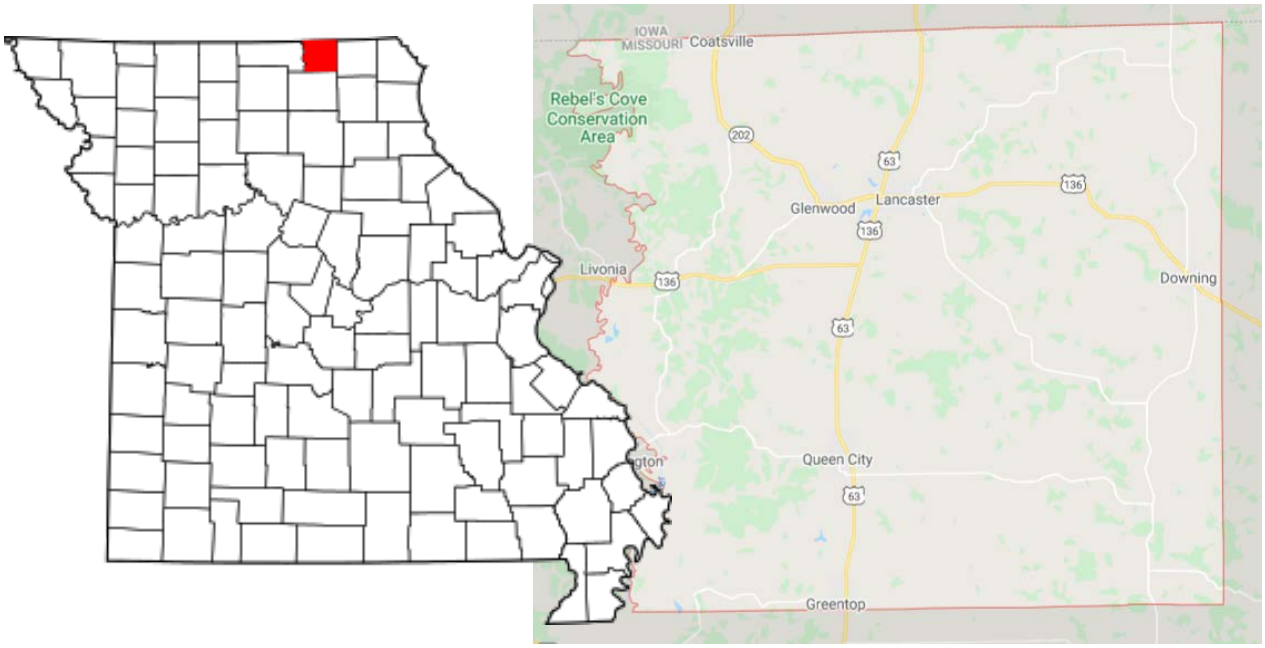
Part of the plan draft development included an outline of plan maintenance (Chapter 5) and was discussed and accepted by the MPC at the Planning Meeting. This process includes reviews annually and in the wake of any significant hazard event, as well as provisions for the five-year update process.

2 PLANNING AREA PROFILE AND CAPABILITIES

2.1 SCHUYLER COUNTY PLANNING AREA PROFILE

The intent of this section is to provide an overview profile of the entire planning area for the multi-jurisdictional plan. **Figure 2.1** shows a map of the County planning area that includes the cities as well as an inset map showing where the county is located in the State.

Figure 2.1. Map of Schuyler County



According to the U.S. Census, the population estimates for Schuyler County as of the 2019 American Community Survey Estimates is 4,660 persons compared to the 2010 Census population of 4,431 persons; a slight 5.2% increase in the nine-year period. This increase in population is well above the State of Missouri population growth estimate of 2.5% and slightly below the National population growth estimate of 6.3% for the same period. According to the 2019 American Community Survey Estimates, Schuyler County has experienced an 11.7% increase in population since the 2000 Census.

The Schuyler County median household income from the 2010 U.S. Census was $27,385 and as of the 2019 U.S. Census estimate it is $39,697 which is an approximate 5% increase. The Median Household Income according to the American Community Survey 5- year estimates (2014-2018) is $53,560 for the State of Missouri and $60,293 for the United States.

2.1.1 Geography, Geology and Topography

Schuyler County covers 307.3 square miles. Topography varies from the river alluvial plains to gently rolling hills and prairies to steep escarpments. Schuyler County is entirely located within the Central Dissected Till Plains Physiographic Region and the Chariton River Hills, Claypan Till Plains and the Wyaconda River Dissected Till Plains Physiographic Subsection. The Quaternary Geology in the County consists mostly of clay loam till throughout most of the County with areas of loamy till located in the extreme Northeastern section with alluvium and sandy clay deposits along the Chariton River basins.

Though, the 2010 Census lists only 63 persons involved in farming, fishing, and forestry Schuyler County has 480 farms, a total of 146,359 acres, 61% in cropland, 30 % in pasture, hay and timber, the balance is incorporated.

2.1.2 Climate

Schuyler County has an annual average precipitation of 40 inches and 20 inches of snow per year. There are an average of 200 sunny days per year in Schuyler County. Temperatures in Schuyler County range from an annual high temperature of 86 degrees and an Annual Low Temperature of 14 degrees.

2.1.3 Population/Demographics

Table 2.1 provides the populations for each city, village, and the unincorporated county for 2000, 2010, and latest 2019 population estimates and percentage.

Table 2.1. Schuyler County Population 2000-2019 by Jurisdiction

Jurisdiction	2000 Population	2010 Population	2019 Annual Population Estimate or ACS Population	# Change (2010-2019)	% Change (2010-2019)
Schuyler County	4170	4361	4555	194	.49%
City of Lancaster	738	881	810	-71	.97%
City of Downing	375	376	413	37	1.09%

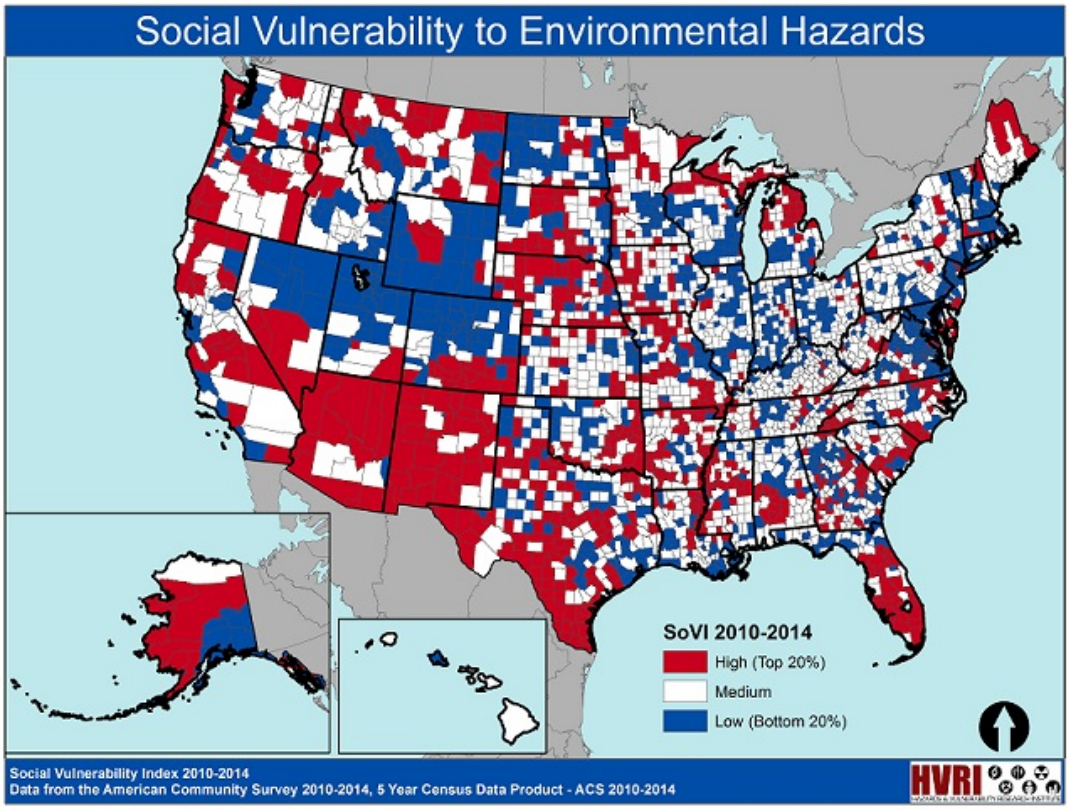
Village of Glenwood	219	260	233	-27	1.29%
City of Greentop	412	386	589	203	5.84%
City of Queen City	647	713	697	-16	.26%

Source: U.S. Bureau of the Census, Decennial Census, annual population estimates/ 5-Year American Community Survey 2019;
*population includes the portions of these cities in adjacent counties

According to the American Community Survey 5-year estimates for 2018, 7.8% of the County's population was under the age of 5 (354). This is in line with the State of Missouri at 6.1% and 6.2% for the Nation. The American Community Survey 5-year estimates for 2018 shows 19.3% of Schuyler County's population was 65 years or older. (877). The National percentage is 35.8%, while the State percentage is 7.4%.

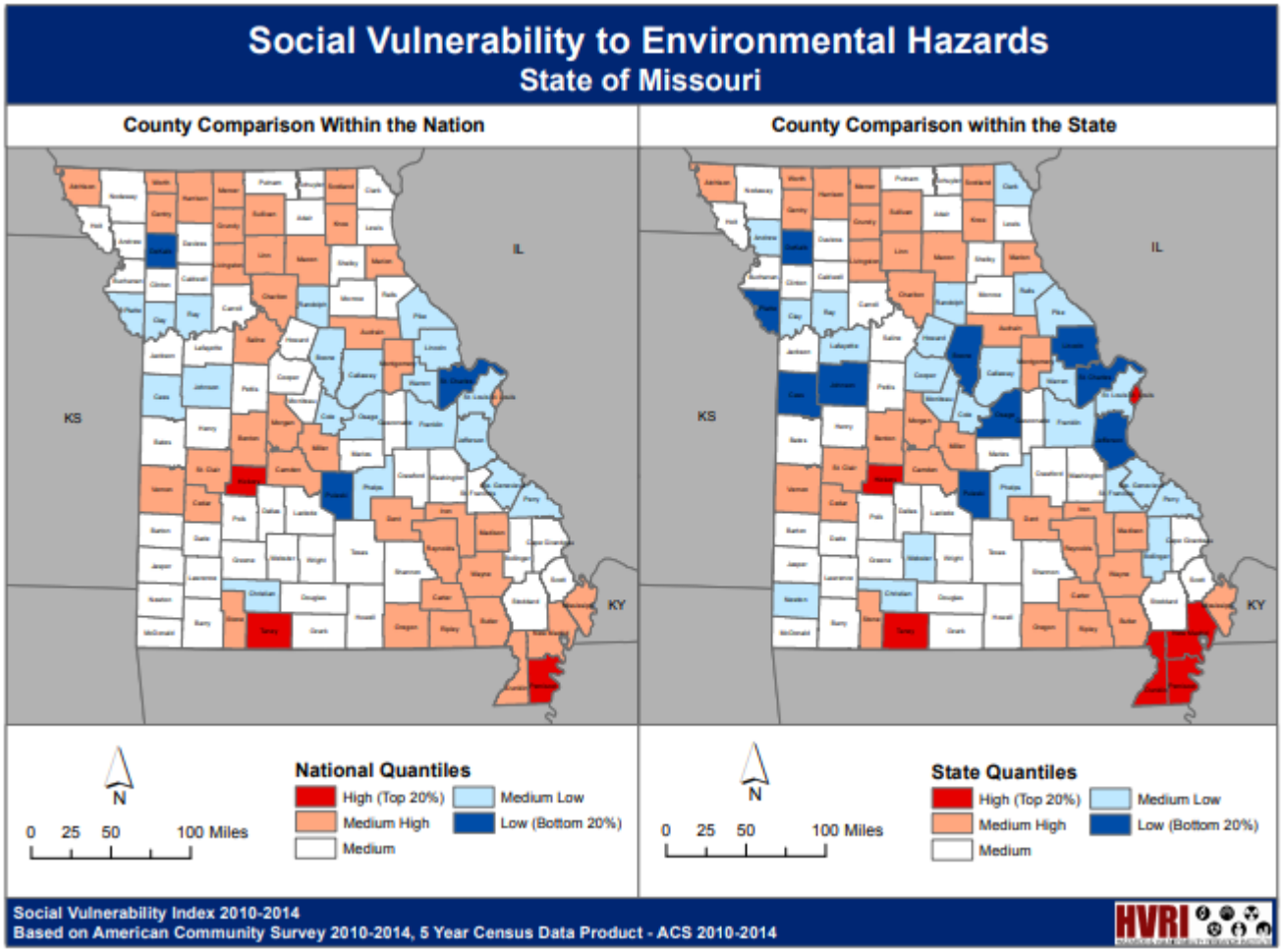
The University of South Carolina developed an index to evaluate and rank the ability to respond to, cope with, recover from, and adapt to disasters. The index synthesizes 29 socioeconomic variables which research literature suggests contribute to reduction in a community's ability to prepare for, respond to, and recover from hazards. SoVI ® data sources include primarily those from the United States Census Bureau.

Figure 2.2. Map Social Vulnerability Index in the United States



Source: http://artsandsciences.sc.edu/geog/hvri/sovi%C2%AE-0

Figure 2.3. Map Social Vulnerability Index in Missouri



Source: http://artsandsciences.sc.edu/geog/hvri/sites/sc.edu.geog.hvri/files/attachments/MO_1014.pdf

A low number means that the county is more resilient to hazard events and a high number means the county is less resilient. Schuyler County has a medium rating.

Table 2.2. Unemployment, Poverty, Education, and Language Percentage Demographics, Schuyler County, Missouri

Jurisdiction	Total in Labor Force	Percent of Population Unemployed	Percent of Families Below the Poverty Level	Percentage of Population (High School graduate)	Percentage of Population (Bachelor's degree or higher)	Percentage of population with spoken language other than English
Schuyler County	1968	2.2%	9.4%	87.6%	12.6%	3.5%
City of Lancaster	345	2.2%	8.3%	86.0%	17.9%	1.6%
City of Downing	190	5.5%	13.3%	84.1%	3.6%	0.3%
Village of	69	0.7%	8.0%	95.9%	4.1%	5.5%

City of Greentop	248	0.6%	6.9%	63.7%	11.9%	1.4%
City of Queen City	238	5.0%	16.1%	92.9%	6.2%	4.6%
State of Missouri	3,074,639	2.9%	9.4%	89.9%	29.2%	6.3%
United States	164,629,492	3.4%	9.5%	88.0%	32.1%	21.6%

Source: U.S. Census, 2019 American Community Survey, 5-year Estimates.

2.1.4 History

Schuyler County was organized February, 14, 1845 and was named for General Philip Schuyler delegate to the Continental Congress and U.S. Senator from New York. Schuyler County is the fourth-least populous county in Missouri.

Long before the first white settlers arrived in the area we now know as Schuyler County, Native American Indians roamed through the territory hunting and fishing. It is not believed that any permanent Native American settlements existed in this region. Even after the arrival of the white men, Native Americans returned to hunt until the fall of 1841, when they left, never to return. According to Richard Caywood, Moses Stice was the first settler, arriving in 1834. This is believed to be a mistake, for in the spring of 1834 there were no less than 30 sets of improvement north and south of Downing and some had as much as 50 to 70 acres of land broke out and there was a horse mill for grinding corn. The first school was established in 1841 south of Downing. The first town in Schuyler County was Tippeconoe, which was established before the county was organized. During these early years the border between Iowa and Missouri was being disputed, with the boundary lying several miles north of the present border. Because Lancaster lay near the geographic center of the county as constituted at the time, judges in the July term of court, 1845, declared: “the Seat of Justice Lancaster”.

2.1.5 Occupations

Table 2.3 provides occupation statistics for the incorporated cities and the county, as a whole.

Table 2.3. Occupation Statistics, Schuyler County, Missouri

Place	Management, Business, Science, and Arts Occupations	Service Occupations	Sales and Office Occupations	Natural Resources, Construction, and Maintenance Occupations	Production, Transportation, and Material Moving Occupations
Schuyler County	24.1%	19.5%	19.6%	13.6%	23.2%
Lancaster	17.6%	13.4%	27.1%	19.0%	22.9%
Downing	10.0%	36.3%	23.7%	10.5%	19.5%
Glenwood	17.6%	23.5%	22.1%	0.0%	36.8%
Greentop	14.5%	31.5%	19.5%	16.6%	17.8%
Queen City	24.3%	21.4%	20.0%	21.0%	13.3%

Source: U.S. Census, 2018 American Community Survey, 5-year Estimates.

2.1.6 Agriculture

Schuyler County has a total of 516 farms with the total acreage of 159,378 acres. The average farm size is 309 acres which is slightly higher than the State average of 285 acres. The top crop for Schuyler County is soybeans with 24,465 acres planted and corn is second with 10,220 acres planted. The average sales per farm was $58,916.

2.1.7 FEMA Hazard Mitigation Assistance (HMA) Grants in Planning Area

Table 2.4. FEMA HMA Grants in County from 1993-2019

Disaster Declaration	Project Type	Sub-Grantee	Date Approved	Project Total
Total	N/A	N/A	N/A	$0.00

Source: Federal Emergency Management Agency7/6/2020; https://www.fema.gov/openfema-dataset-hazard-mitigation-assistance-projects-v2 No HMA grants identified for Schuyler County.

2.1.8 FEMA Public Assistance (PA) Grants in Planning Area

Table 2.5. FEMA PA Grants in County from 1993-2019

Disaster Declaration	Project Type	Applicant	Project Size	Project Total
1412	WASHOUTS ROAD/CULVERTS	197-99197-00	Small	$ 12,654.57
1412	ROAD AND CULVERT REPAIR	197-99197-00	Small	$ 40,301.93
1412	WATER SUPPLY LINE	197-0BF02-00	Small	$ 2,249.99
1736	DEBRIS REMOVAL	197-19990-00	Small	$ 1,964.03
1736	PA PILOT - DEBRIS REMOVAL	197-40610-00	Small	$ 4,991.44
1736	EMERGENCY PROTECTIVE MEASURES	197-40610-00	Small	$ 1,544.91
1736	ROAD WASHOUT DAMAGES	197-40610-00	Small	$ 1,239.15
1736	DONATED RESOURCES	197-60356-00	Small	$
1736	PA PILOT - DEBRIS REMOVAL	197-60356-00	Small	$ 5,202.07
1809	ROAD & CULVERT WASHOUT 197SR02	197-U85M8-00	Small	$ 41,298.38
1809	ROAD & CULVERT WASHOUT 197SR01	197-U85M8-00	Small	$ -
1809	ROAD & CULVERT WASHOUT 197SR03	197-U85M8-00	Small	$ 13,746.37
1809	CITY ROADS QC-C01	197-60356-00	Small	$ 28,325.64
1809	ROAD WASHOUT QC-C02	197-60356-00	Small	$ 19,318.56
1809	WATER SUPPLY LINES-DM008	197-U8C3H-00	Small	$ 3,050.85
1809	197SR01-REPLACES PW #287	197-U85M8-00	Small	$ 13,553.32
1934	1934'SCHUYLER COUNTY ROAD&BRIDGES-DFW-001	197-U85M8-00	Small	$ 5,310.06
1934	DFW-002 - 1934 - CPWS DIST. #1 OF SCHUYLER COUNTY	197-U8C3H-00	Small	$ 20,320.50
1934	DFW-003-1934- CPWS DIST #1 OF SCHUYLER COUNTY	197-U8C3H-00	Small	$ 28,514.68
1934	DC01RR-1934'SHUYLER COUNTY ROAD & BRIDGES	197-U85M8-00	Small	$ 3,225.55
1934	DC02RR-1934'SHUYLER COUNTY ROAD & BRIDGES	197-U85M8-00	Small	$ 15,433.48
1934	DC06RR - RURAL BRIDGES	197-U85M8-00	Small	$ 3,010.57
1934	DAC04RR - GRAVEL & DIRT ROADS	197-U85M8-00	Small	$ 13,903.17
1934	DC05RR - CULVERTS JURISDICTION WIDE	197-U85M8-00	Small	$ 23,644.29
1934	DC08RR - GRAVEL AND DIRT ROADS JURISDICTION WIDE	197-U85M8-00	Small	$ 18,698.19
1934	DC03RR-LIBERTY ROAD & BRIDGE	197-U85M8-00	Small	$ 48,740.16
1934	DC07RR- WATER DISTRIBUTION LINES	197-U8C3H-00	Small	$ 12,172.17
1934	DC09RR- WATER DISTRIBUTION LINES	197-U8C3H-00	Small	$ 12,885.18
1934	DC11RR - 2 INCH RESIDENTIAL WATER MAIN	197-40610-00	Small	$ 5,034.56
1934	DC10RR - ROADS AND CULVERTS	197-40610-00	Small	$ 3,286.88
1934	TEG016 - WATER LINE BACKFILL	197-U8C3H-00	Small	$ 3,842.00

4238	FHW007C SCHUYLER BRIDGE 17200061	197-99197-00	Small	$ 60,927.00
4238	FHW020F - GREENTOP CAT F WATER PURIFICATION	197-29422-00	Small	$ 10,804.41
4238	EM0002G - LAKE SPILLWAY AND PARK	197-40610-00	Small	$ 24,424.09
4238	FHW104F - DAMAGED WATER LINES	197-U8C3H-00	Small	$ 83,391.13
4238	CDS027C - DRAINAGE SYSTEMS & ROADS - SCHUYLER	197-99197-00	Small	$ 30,292.25
4238	CDSO26C - SCHUYLER ROADS	197-99197-00	Small	$ 20,865.13
4238	FHW012C - BRIDGE #15800111	197-99197-00	Large	$ 124,822.57
4238	GAS001C - GRAVEL ROADS	197-99197-00	Small	$ 17,565.89
Total				$ 781,149.42

Source: Federal Emergency Management Agency, 6/24/2020

2.2 JURISDICTIONAL PROFILES AND MITIGATION CAPABILITIES

This section will include individual profiles for each participating jurisdiction. It will also include a discussion of previous mitigation initiatives and ongoing mitigation capabilities in the planning area. There will be a summary table indicating specific capabilities of each jurisdiction that relate to their ability to implement mitigation opportunities. The unincorporated county is profiled first, followed by the incorporated communities and the public school districts.

2.2.1 Unincorporated Schuyler County

By Missouri State Statute (Section 48.020.1) Schuyler County is defined as a 3rd Class County meaning it's assessed valuation is less than six hundred million dollars. The County seat is located in Lancaster.

Schuyler County has five townships (City of Lancaster, City of Downing, Village of Glenwood, City of Greentop, City of Queen City) which serves today primarily as voting districts. The county government provides services such as law enforcement, judicial services, land records, tax collection, property assessment, administration of elections, construction and maintenance of road and bridge and zoning.

The County is governed by an elected board of Commissioners comprised of a Presiding Commissioner and two Associate Commissioners. Other positions within Schuyler County's government include:

- County Assessor
- County Clerk
- Circuit Clerk
- County Collector of Revenue
- County Prosecuting Attorney
- County Coroner
- County Recorder
- County Sheriff
- County Treasurer
- Public Administrator
- County Surveyor
- Emergency Management
- General Services
- Health Department
- Health Services
- Human Resources
- Public Works

Mitigation Initiatives/Capabilities

The County of Schuyler has implemented zoning requirements which govern development within

the County. The County also has an Emergency Management Director (EMD). The EMD plans and directs disaster responses or crisis management activities, provides disaster preparedness training and prepares emergency plans and procedures for natural disasters. The County has a County Emergency Plan and County Hazard Mitigation Plan.

The jurisdictions within Schuyler County are equipped with outdoor warning sirens, however, would benefit from updating.

Table 2.6. Unincorporated Schuyler County Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
City Emergency Operations Plan	No
County Emergency Operations Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	No
County Mitigation Plan	Yes
Debris Management Plan	No
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	Yes
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
Stormwater Ordinance	No
Drainage Ordinance	No
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Seismic Construction Ordinance	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
Hazard Awareness Program	No
National Flood Insurance Program (NFIP)	No
NFIP Community Rating System (CRS) program	No

National Weather Service (NWS) Storm Ready	No
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	6
Capabilities	**Status Including Date of Document or Policy**
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	Yes
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Director	Yes
NFIP Floodplain Administrator	No
Emergency Response Team	Yes
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Veterans Groups	Yes
Local Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.	Yes

Capabilities	Status Including Date of Document or Policy
Local Funding Availability	
Apply for Community Development Block	Yes
Fund projects through Capital	No
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	No
Impact fees for new development	No
Ability to incur debt through general obligation bonds	No
Ability to incur debt through special tax bonds	No
Ability to incur debt through private activities	No
Withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire

2.2.2 City of Lancaster

Lancaster is the county seat for Schuyler County. As of 2010 the city population was 728. A post office called Lancaster has been in operation since 1846. According to one tradition, the community was named after Lancaster, Ohio, the former home of a first settler. Lancaster is located along US Hwy 63.

Lancaster's city government is Mayor and four Councilpersons. The City of Lancaster is divided into two wards with two councilpersons from each ward. Lancaster Public Utilities supplies the City of Lancaster with water, electricity, gas, and water treatment.

The William P. Hall House is on the National Register of Historic Places and was added in 1975.

Table 2.7. City of Lancaster Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	Yes
County Emergency Plan	No
Local Recovery Plan	No
County Recovery Plan	Yes
Local Mitigation Plan	No
County Mitigation Plan	No
Local Mitigation Plan (PDM)	No
County Mitigation Plan (PDM)	Yes
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	No
Drainage Ordinance	No
Seismic Construction Ordinance	No
Capability	
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Iowa Wetlands and Riparian Areas Conservation Plan	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	No

Capability	Status Including Date of Document or Policy
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	6
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	Yes
Emergency Management Coordinator	No
NFIP Floodplain Administrator	No
Emergency Response Team	Yes
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes
County Emergency Management Commission	Yes
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes

Capability	Status Including Date of Document or Policy
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	Yes
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, January 13, 2021

2.2.3 City of Downing

Although not being laid out as a town until 1872, the Downing area was one of the earliest settled areas of Schuyler County, with Henry Downing building a home and claiming land a few miles south of the area circa 1837. It was also near present-day Downing that the first school in the county was established. In the spring of 1841, a crude log cabin was built for use as a school near Henry Downing's home and Miss Esther Hathaway was employed as a teacher. One of the early names for the unincorporated settlement was Cherry Grove.

In September 1872, the Missouri Town Company created the original town plat, naming it for the president of the company, H. H. Downing. Land for the town, the railroad right of way, and depot were donated by James Prime, and the Missouri, Iowa, and Nebraska Railway constructed the depot in April, 1872. By the late 1880s, the Downing business district included four general stores, two drug stores, two grocers, two hardware stores, a restaurant, blacksmith, and two hotels. Manufacturing included two handle factories, a wagon maker, a hoop factory, a harness and saddle maker, and two combination saw/grist mills. Downing had two tobacco-buying warehouses in the late 1800s, with both reporting extensive business. At its peak in 1902, over 155,000 pounds of tobacco were dealt through the Downing warehouses. The town's location on the Keokuk & Western railroad provided opportunity for the convenient shipment of goods, crops, and livestock from the Downing area.

The Downing Railroad Depot was listed on the National Register of Historic Places in 1983 and now serves as a museum. The depot was moved approximately one-quarter mile from its original trackside location and now serves as the centerpiece of a city park with other nearby buildings, including the former Downing jail.

Table 2.8. City of Downing Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	No
County Mitigation Plan	No
Local Mitigation Plan (PDM)	No
County Mitigation Plan (PDM)	Yes
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No

Capability	Status Including Date of Document or Policy
Nuisance Ordinance	No
Storm Water Ordinance	No
Drainage Ordinance	No
Seismic Construction Ordinance	No
Capability	
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Iowa Wetlands and Riparian Areas Conservation Plan	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	No
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	6
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Coordinator	No
NFIP Floodplain Administrator	No
Emergency Response Team	Yes
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	

Capability	Status Including Date of Document or Policy
American Red Cross	No
Salvation Army	No
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.	No
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, December 14, 2020

2.2.4 Village of Glenwood

The town of Glenwood was laid out by Alexander and Stiles Forsha in November, 1868 with the plat consisting of a town square and forty-four other blocks. The first home had been built in the town the previous month by John B. Glaze. By 1869, a schoolhouse had been constructed as well as a two-story block of brick buildings with room for four businesses. Being at the crossing point of two railroads, the St. Louis, Kansas City & Nebraska Railroad and the Keokuk & Western railway, Glenwood saw rapid early growth. By 1873, the town included a large woolen factory, a flour mill, foundry, machine shop, wagon factory and a multitude of other businesses. The Glenwood Criterion newspaper began publication in 1870 and Logan's Bank, the town's first, was established in 1875.

Table 2.9. Village of Glenwood Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	No
County Mitigation Plan	Yes
Local Mitigation Plan (PDM)	No
County Mitigation Plan (PDM)	No
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
Storm Water Ordinance	No
Drainage Ordinance	No
Seismic Construction Ordinance	No
Capability	
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Iowa Wetlands and Riparian Areas Conservation Plan	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	No

Capability	Status Including Date of Document or Policy
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	6
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Coordinator	No
NFIP Floodplain Administrator	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.	No
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No

Capability	Status Including Date of Document or Policy
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, December 17, 2020

2.2.5 City of Greentop

Greentop is considered one of the oldest communities in Schuyler County, with first settlement in the early 1840s. However, the town layout was not documented until 1855. A U.S. Post Office was established in 1857, and the town was finally incorporated in February 1867.

Table 2.10. City of Greentop Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	No
County Mitigation Plan	No
Local Mitigation Plan (PDM)	No
County Mitigation Plan (PDM)	Yes
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	No
Drainage Ordinance	No
Seismic Construction Ordinance	No
Capability	
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Iowa Wetlands and Riparian Areas Conservation Plan	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	No
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	6
Economic Development Program	No

Capability	Status Including Date of Document or Policy
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Coordinator	No
NFIP Floodplain Administrator	No
Emergency Response Team	Yes
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire

2.2.6 City of Queen City

Queen City was laid out in May, 1867 by Doctor George W. Wilson and consisted of a town square surrounded by fifteen other blocks. He chose the name in the hope the town would become "the Queen of the prairies." Dr. Wilson also constructed the first home in the new town, while Henry Bartlett is responsible for building the town's first hotel. By 1888 Queen City offered a considerable business district—five general stores, two grocers, two hardware stores, two hotels, jewelry store, lumber yard, photography gallery, music store, and barber shop were just some of the businesses serving the community and surrounding farms. Being located along the railroad, it provided a fine shipping point for large numbers of railroad ties and other lumber products harvested from heavily wooded areas along the Chariton River several miles to the west. Grain, livestock and some quantities of wool were also shipped by rail from the town. Queen City's first newspaper The Transcript was established in November, 1887 by D.G. Swan.

Table 2.11. City of Queen City Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	No
County Mitigation Plan	Yes
Local Mitigation Plan (PDM)	No
County Mitigation Plan (PDM)	No
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	No
Drainage Ordinance	No
Seismic Construction Ordinance	No
Capability	
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Iowa Wetlands and Riparian Areas Conservation Plan	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No

Capability	Status Including Date of Document or Policy
National Flood Insurance Program (NFIP) Participant	No
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	6
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Coordinator	No
NFIP Floodplain Administrator	No
Emergency Response Team	Yes
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes

Capability	Status Including Date of Document or Policy
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, December 17, 2020

2.2.7 Summary of Jurisdictional Capabilities

Table 2.12. Mitigation Capabilities Summary Table

CAPABILITIES	Uninc. Schuyler County	City of Lancaster	City of Downing	Village of Glenwood	City of Greentop	City of Queen City
Planning Capabilities						
Comprehensive Plan	No	No	No	No	No	No
Builder's Plan	No	No	No	No	No	No
Capital Improvement Plan	No	No	No	No	No	No
Local Emergency Plan	No	Yes	No	No	No	No
County Emergency Plan	Yes	No	Yes	Yes	Yes	Yes
Local Recovery Plan	No	No	No	No	No	No
County Recovery Plan	No	Yes	No	No	No	No
Local Mitigation Plan	No	No	No	No	No	No
County Mitigation Plan	Yes	Yes	Yes	Yes	Yes	Yes
Local Mitigation Plan (PDM)	No	No	No	No	No	No
County Mitigation Plan (PDM)	No	Yes	No	No	No	No
Debris Management Plan	No	No	No	No	No	No
Economic Development Plan	No	No	No	No	No	No
Transportation Plan	No	No	No	No	No	No
Land-use Plan	No	No	No	No	No	No
Flood Mitigation Assistance (FMA) Plan	No	No	No	No	No	No
Watershed Plan	No	No	No	No	No	No
Firewise or other fire mitigation plan	No	No	No	No	No	No
School Mitigation Plan	No	No	No	No	No	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No	No	No	No	No	No
Policies/Ordinance						
Zoning Ordinance	Yes	No	No	No	No	No
Building Code	No	No	No	No	No	No
Floodplain Ordinance	No	No	No	No	No	No
Subdivision Ordinance	No	No	No	No	No	No
Tree Trimming Ordinance	No	No	No	No	No	No
Nuisance Ordinance	No	Yes	No	No	Yes	Yes
Storm Water Ordinance	No	No	No	No	No	No
Drainage Ordinance	No	No	No	No	No	No
Site Plan Review Requirements	No	No	No	No	No	No
Historic Preservation Ordinance	No	No	No	No	No	No
Landscape Ordinance	No	No	No	No	No	No
Seismic Construction Ordinance	No	No	No	No	No	No
Program						
Zoning/Land Use Restrictions	No	No	No	No	No	No
Codes Building Site/Design	No	No	No	No	No	No
National Flood Insurance Program (NFIP) Participant	No	No	No	No	No	No
NFIP Community Rating System (CRS) Participating Community	No	No	No	No	No	No
Hazard Awareness Program	No	No	No	No	No	No
National Weather Service (NWS) Storm Ready	No	No	No	No	No	No
Building Code Effectiveness Grading (BCEGs)	No	No	No	No	No	No

CAPABILITIES	Uninc. Schuyler County	City of Lancaster	City of Downing	Village of Glenwood	City of Greentop	City of Queen City
ISO Fire Rating	Yes	Yes	Yes	Yes	Yes	Yes
Economic Development Program	No	No	No	No	No	No
Land Use Program	No	No	No	No	No	No
Public Education/Awareness	No	No	No	No	No	No
Property Acquisition	No	No	No	No	No	No
Planning/Zoning Boards	Yes	No	No	No	No	No
Stream Maintenance Program	No	No	No	No	No	No
Tree Trimming Program	No	No	No	No	No	No
Engineering Studies for Streams (Local/County/Regional)	No	No	No	No	No	No
Mutual Aid Agreements	Yes	Yes	Yes	Yes	Yes	Yes
Studies/Reports/Maps						
Hazard Analysis/Risk Assessment (Local)	No	No	No	No	No	No
Hazard Analysis/Risk Assessment (County)	No	No	No	No	No	No
Flood Insurance Maps	No	No	No	No	No	No
FEMA Flood Insurance Study (Detailed)	No	No	No	No	No	No
Evacuation Route Map	No	No	No	No	No	No
Critical Facilities Inventory	No	No	No	No	No	No
Vulnerable Population Inventory	No	No	No	No	No	No
Land Use Map	No	No	No	No	No	No
Staff/Department						
Building Code Official	No	No	No	No	No	No
Building Inspector	No	No	No	No	No	No
Mapping Specialist (GIS)	No	No	No	No	No	No
Engineer	No	No	No	No	No	No
Development Planner	No	No	No	No	No	No
Public Works Official	No	Yes	No	No	No	No
Emergency Management Coordinator	Yes	No	No	No	No	No
NFIP Floodplain Administrator	No	No	No	No	No	No
Emergency Response Team	Yes	Yes	Yes	No	Yes	Yes
Hazardous Materials Expert	No	No	No	No	No	No
Local Emergency Planning Committee	Yes	Yes	Yes	Yes	Yes	Yes
County Emergency Management Commission	No	No	Yes	No	No	No
Sanitation Department	No	No	No	No	No	No
Transportation Department	No	No	No	No	No	No
Economic Development Department	No	No	No	No	No	No
Housing Department	No	No	No	No	No	No
Historic Preservation	No	No	No	No	No	No
Non-Governmental Organizations (NGOs)						
American Red Cross	No	No	No	No	No	No
Salvation Army	No	No	No	No	No	No
Veterans Groups	Yes	No	No	No	No	No
Environmental Organization	No	No	No	No	No	No
Homeowner Associations	No	No	No	No	No	No
Neighborhood Associations	No	No	No	No	No	No

CAPABILITIES	Uninc. Schuyler County	City of Lancaster	City of Downing	Village of Glenwood	City of Greentop	City of Queen City
Chamber of Commerce	No	No	No	No	Yes	Yes
Community Organizations (Lions, Kiwanis, etc.	Yes	Yes	No	No	Yes	Yes
Financial Resources						
Apply for Community Development Block Grants	Yes	Yes	Yes	Yes	Yes	Yes
Fund projects through Capital Improvements funding	No	Yes	Yes	Yes	Yes	Yes
Authority to levy taxes for specific purposes	Yes	Yes	Yes	Yes	Yes	Yes
Fees for water, sewer, gas, or electric services	No	Yes	Yes	Yes	Yes	Yes
Impact fees for new development	No	No	No	No	No	No
Incur debt through general obligation bonds	No	Yes	No	No	No	No
Incur debt through special tax bonds	No	Yes	Yes	Yes	Yes	Yes
Incur debt through private activities	No	Yes	Yes	Yes	Yes	Yes
Withhold spending in hazard prone areas	No	No	No	No	No	No

Source: Data Collection Questionnaire, December 14, 2020 – January 13, 2021

2.2.8 Public School District Profiles and Mitigation Capabilities

Schuyler County has one school district : Schuyler County R-1 district. The Schuyler County R-1 District is located on State Highway 63 in the City of Queen City with an elementary, middle, and high School.

Figure 2.4. Schuyler County R-I School District

Schuyler Co. R-I (098-080)

Phone: 660-956-4125
Fax: 660-766-2400
E-mail: scarvajal@schuyler.k12.mo.us

21701 Highway 63
Queen City, MO 63561-2171

County-District Code: 098-080
County: Schuyler

Supervisory Area: I
MSIP: Accredited

Congressional District: 06
House District: 3 , 4
Senate District: 12 , 18

Assessed Valuation: $50,452,708
Tax Levy: $4.2000

			Enrollment (Prior Year)		
	Schools	Cert. Staff	Residents	Non-Res.	Total
Elementary Schools	1	41	337	0	337
Middle Schools	0	0	0	0	0
Jr. High Schools	0	0	0	0	0
High Schools	1	31	248	0	248
Total	2	72	585	0	585

Schuyler Co. Elem. (4020)

21701 Highway 63 Queen City, MO 63561-0248
Phone: 660-956-4125 Fax:660-956-4125

Grade Span: K-06

Principal: Mrs. Katherine Wayman (3 years in district)
E-mail: kwayman@schuyler.k12.mo.us

Schuyler Co. High (1050)

21701 Highway 63 Queen City, MO 63561-0100
Phone: 660-956-4125 Fax:660-766-2646

Grade Span: 07-12

Principal: Mr. Kyle Windy (22 years in district)
E-mail: KWINDY@SCHUYLER.K12.MO.US

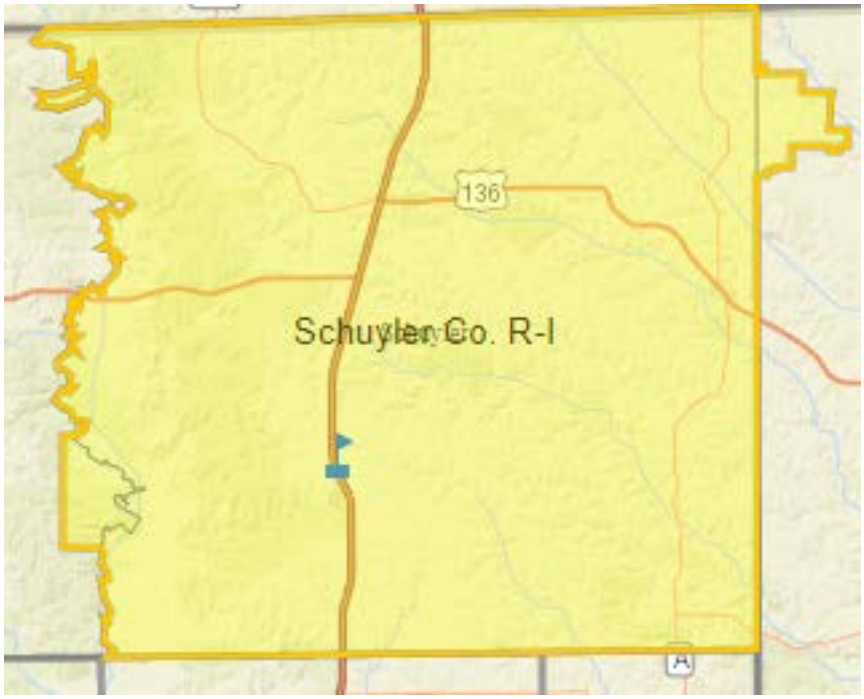


Table 2.13. Schuyler County School Buildings and Enrollment Data

District Name	Building Name	Building Enrolment
Schuyler Co. R-I	Schuyler Co. Elem.	337
Schuyler Co. R-I	Schuyler Co. High	248

Source: http://mcds.dese.mo.gov/quickfacts/Pages/District-and-School-Information.aspx, 6/24/2020

Table 2.14. Summary of Mitigation Capabilities-Schuyler County R-I

Capability	Schuyler County R-I
Planning Elements	
Master Plan/ Date	No
Capital Improvement Plan/Date	No
School Emergency Plan / Date	Yes
Weapons Policy/Date	Yes
Personnel Resources	
Full-Time Building Official (Principal)	Yes
Emergency Manager	No
Grant Writer	No
Public Information Officer	Yes
Financial Resources	
Capital Improvements Project Funding	No
Local Funds	No
General Obligation Bonds	No
Special Tax Bonds	Yes
Private Activities/Donations	Yes
State and Federal Funds/Grants	Yes
Other	

Public Education Programs	No
Privately or Self- Insured?	Privately
Fire Evacuation Training	Yes
Tornado Sheltering Exercises	Yes
Public Address/Emergency Alert System	Yes
NOAA Weather Radios	No
Lock-Down Security Training	Yes
Mitigation Programs	No
Tornado Shelter/Saferoom	Yes
Campus Police	Yes

Source: Data Collection Questionnaire,

3 RISK ASSESSMENT

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

The goal of the risk assessment is to estimate the potential loss in the planning area, including loss of life, personal injury, property damage, and economic loss, from a hazard event. The risk assessment process allows communities and school/special districts in the planning area to better understand their potential risk to the identified hazards. It will provide a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

The risk assessment for Schuyler County and its jurisdictions followed the methodology described in the Local Mitigation Planning Handbook (March 2013).

This chapter is divided into four main parts:

- **Section 3.1 Hazard Identification** identifies the hazards that threaten the planning area and provides a factual basis for elimination of hazards from further consideration;
- **Section 3.2 Assets at Risk** provides the planning area's total exposure to natural hazards, considering critical facilities and other community assets at risk;
- **Section 3.3 Land Use and Development** discusses development that has occurred since the last plan update and any increased or decreased risk that resulted. This section also discusses areas of planned future development and any implications on risk/vulnerability;
- **Section 3.4 Hazard Profiles and Vulnerability Analysis** provides more detailed information about the hazards impacting the planning area. For each hazard, there are three sections: 1) Hazard Profile provides a general description and discusses the threat to the planning area, the geographic location at risk, potential Strength/Magnitude/Extent, previous occurrences of hazard events, probability of future occurrence, risk summary by jurisdiction, impact of future development on the risk; 2) Vulnerability Assessment further defines and quantifies populations, buildings, critical facilities, and other community/school or special district assets at risk to natural hazards; and 3) Problem Statement briefly summarizes the problem and develops possible solutions.

3.1 HAZARD IDENTIFICATION

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type…of all natural hazards that can affect the jurisdiction.

The Schuyler County Emergency Management Director, along with members of the MPC and the Northeast Missouri Regional Planning Commission, reviewed existing mitigation plans, researched historical disaster declaration records, and surveyed various other sources, including anecdotal information, to fairly identify hazards to be included in this plan.

3.1.1 Review of Existing Mitigation Plans

The MPC reviewed the hazards identified in the previously approved plan from 2014, as well as the hazards identified in the most recent State Plan. There were no significant differences between the lists of hazards included in the previously approved plan and this plan update.

3.1.2 Review Disaster Declaration History

Federal and state declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. If the disaster is so severe that both the local and state governments' capacities are exceeded; a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

FEMA also issues emergency declarations, which are more limited in scope and do not include the long-term federal recovery programs of major disaster declarations. Determinations for declaration type are based on scale and type of damages and institutions or industrial sectors affected.

The following table lists FEMA disaster declarations made since 1965 that include Schuyler County.

Table 3.1. FEMA Disaster Declarations that included Schuyler County, Missouri, 1965-Present

Disaster Number	Description	Declaration Date Incident Period
75	TORNADOES & FLOODS	5/22/1957
100	FLOODS	4/20/1960
173	SEVERE STORMS & FLOODING	7/8/1964
114	FLOODS	5/27/1961
372	HEAVY RAINS, TORNADOES & FLOODING	4/19/1973
407	SEVERE STORMS & FLOODING	11/1/1973
995	SEVERE STORMS & FLOODING	7/9/1993

1412	SEVERE STORMS, TORNADOES AND FLOODING	5/6/2002
1934	SEVERE STORMS, FLOODING, AND TORNADOES	8/17/2010
1736	SEVERE WINTER STORMS	12/27/2007
1773	SEVERE STORMS AND FLOODING	6/25/2008
1809	SEVERE STORMS, FLOODING, AND A TORNADO	11/13/2008
3017	DROUGHT	9/24/1976
3232	HURRICANE KATRINA EVACUATION	9/10/2005
3281	SEVERE WINTER STORMS	12/12/2007
3281	SEVERE WINTER STORMS	12/12/2007
3303	SEVERE WINTER STORM	1/30/2009
3317	SEVERE WINTER STORM	2/3/2011
1961	SEVERE WINTER STORM AND SNOWSTORM	3/23/2011
4238	SEVERE STORMS, TORNADOES, STRAIGHT-LINE WINDS, AND FLOODING	8/7/2015

Source: Federal Emergency Management Agency, https://www.fema.gov/data-visualization-summary-disaster-declarations-and-grants

3.1.3 Research Additional Sources

The following additional data sources were also consulted during the completion of this plan:

- Missouri Hazard Mitigation Plans (2010, 2013, and 2018)
- Previously approved planning area Hazard Mitigation Plan (2014)
- Federal Emergency Management Agency (FEMA)
- Missouri Department of Natural Resources
- National Drought Mitigation Center Drought Reporter
- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics
- National Agricultural Statistics Service (Agriculture production/losses)
- Data Collection Questionnaires completed by each jurisdiction
- State of Missouri GIS data
- Environmental Protection Agency
- Flood Insurance Administration
- Hazards US (Hazus)
- Missouri Department of Transportation
- Missouri Division of Fire Marshal Safety
- Missouri Public Service Commission
- National Fire Incident Reporting System (NFIRS)
- National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI);

- County and local Comprehensive Plans to the extent available
- County Emergency Management
- County Flood Insurance Rate Map, FEMA
- Flood Insurance Study, FEMA
- SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin
- U.S. Army Corps of Engineers
- U.S. Department of Transportation
- United States Geological Survey (USGS)
- Various articles and publications available on the internet

The only centralized source of data for many of the weather-related hazards is the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI). Although it is usually the best and most current source, there are limitations to the data which should be noted. The NCEI documents the occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce. In addition, it is a partial record of other significant meteorological events, such as record maximum or minimum temperatures or precipitation that occurs in connection with another event. Some information appearing in the NCEI may be provided by or gathered from sources outside the National Weather Service (NWS), such as the media, law enforcement and/or other government agencies, private companies, individuals, etc. An effort is made to use the best available information but because of time and resource constraints, information from these sources may be unverified by the NWS. Those using information from NCEI should be cautious as the NWS does not guarantee the accuracy or validity of the information.

The NCEI damage amounts are estimates received from a variety of sources, including those listed above in the Data Sources section. For damage amounts, the NWS makes a best guess using all available data at the time of the publication. Property and crop damage figures should be considered as a broad estimate. Damages reported are in dollar values as they existed at the time of the storm event. They do not represent current dollar values.

The database currently contains data from January 1950 to March 2014, as entered by the NWS. Due to changes in the data collection and processing procedures over time, there are unique periods of record available depending on the event type. The following timelines show the different time spans for each period of unique data collection and processing procedures.

1. Tornado: From 1950 through 1954, only tornado events were recorded.
2. Tornado, Thunderstorm Wind and Hail: From 1955 through 1992, only tornado, thunderstorm wind and hail events were keyed from the paper publications into digital data. From 1993 to 1995, only tornado, thunderstorm wind and hail events have been extracted from the Unformatted Text Files.
3. All Event Types (48 from Directive 10-1605): From 1996 to present, 48 event types are recorded as defined in NWS Directive 10-1605.

Injuries and deaths caused by a storm event are reported on an area-wide basis. When reviewing a table resulting from an NCEI search by county, the death or injury listed in connection with that county search did not necessarily occur in that county.

3.1.4 Hazards Identified

The table below lists in alphabetical order the hazards that significantly impact Schuyler County that were chosen by the MPC for further analysis. Not all hazards impact every jurisdiction. An "X" in the table column indicates the jurisdiction is impacted by the hazard, and an empty cell indicates the hazard is not applicable to that jurisdiction, Each of the hazards listed have an equal likelihood of occurrence throughout the county and its communities, with the exception of dam failure, flooding, and levee failure which by nature are located in low-lying areas downstream from dams, levees, and rivers.

Table 3.2. Hazards Identified for Each Jurisdiction

Jurisdiction	Dam Failure	Drought	Earthquake	Extreme Temperatures	Flooding (River and Flash)	Land Subsidence/Sinkholes	Levee Failure	Severe Winter Weather	Thunderstorm/Lightning/Hail/ High Wind	Tornado	Wildfire	Pandemic
Schuyler County	x	x	x	x	x	x	x	x	x	x	x	x
City of Lancaster	-	x	x	x	x	x	-	x	x	x	x	x
City of Downing	-	x	x	x	x	x	-	x	x	x	x	x
Village of Glenwood	-	x	x	x	x	x	-	x	x	x	x	x
City of Greentop	-	x	x	x	x	x	-	x	x	x	x	x
City of Queen City	-	x	x	x	x	x	-	x	x	x	x	x
Schools and Special Districts												
Schuyler County R-1	-	x	x	x	-	x	-	x	x	x	x	x

3.1.5 Multi-Jurisdictional Risk Assessment

For this multi-jurisdictional plan, the risk assessment assesses each jurisdiction's risk where they deviate from risk's facing the entire county. Schuyler County is not geographically large at 308 square miles, and is fairly uniform in terms of climate and topography, as well as construction characteristics and development trends. Accordingly, overall hazards and vulnerability do not vary greatly across the planning area.

This is an update to the 2014 plan. For this update, all hazards were assessed on a county-wide basis. Some hazards, like flooding, vary in risk across the planning area. Those variations were discussed by the MPC and included in the profile where appropriate. The hazards that vary across the planning area, in terms of risk, are dam failure, flash flood, levee failure, Land Subsidence/Sinkholes and floods.

The county is essentially rural with no city/village exceeding a population of 900. Lancaster, Queen City, and Greentop are all situation near Highway 63. Row crops and silage across the county are susceptible to drought, floods, hail, and high winds. Livestock can be adversely affected by flooding, drought, and extremes of heat and cold. Where appropriate, these extremes will be explained in greater detail in the vulnerability sections of each hazard.

Each hazard identified in Section 3.1, Hazard Identification, is profiled individually in this section in alphabetical order for easier reference. The level of information presented in the profiles varies by hazard based on the information available. With each update of this plan, new information will be incorporated to provide for better evaluation and prioritization of the hazards that affect Schuyler County.

The sources used to collect information for these profiles include those mentioned in Section 3.1.3. and those cited individually in each hazard section. Detailed profiles for each of the identified hazards include information on the following characteristics of the hazard.

Hazard Description

This section consists of a general description of the hazard and the types of impacts it may have on a community. It also includes a ranking to indicate typical warning times and duration of hazard events.

Historical Statistics

This section describes the geographic extent or location of the hazard in the planning area and includes the information on historic incidents and their impacts based upon the sources described in Section 3.1, Hazard Identification and the information provided by the MPC. Where available, maps are utilized to indicate the areas of the planning region that are vulnerable to the subject hazard.

Probability of Future Occurrence

The frequency of past events is used to gauge the likelihood of future occurrences. Where possible, the probability and severity of occurrence was calculated based on historical data. Probability was determined by dividing the number of events observed by the number of years and multiplying by 100. The gives the percent chance of the event happening in any given year. An example would be

three droughts occurring over a 30-year period, which suggests 10 percent chance of drought in any given year.

Magnitude of Severity

The magnitude of the impact of a hazard event (past and perceived) is related directly to the vulnerability of the people, property, and the environment it affects. This is a function of when the event occurs, the location affected, the resilience of the community, and the effectiveness of the emergency response and disaster recovery efforts.

3.2 ASSETS AT RISK

In this section of the plan, the Schuyler County population, structures, critical facilities and infrastructure, and other important assets that may be at risk to hazards are assessed. There were no changes to the planning area since the previously approved plan was adopted.

Missouri Mitigation Viewer

With the 2018 Hazard Mitigation Plan Update, SEMA now provides online access to risk assessment data and associated mapping for the 114 counties in the State, including the independent City of St. Louis. Through the web-based Missouri Hazard Mitigation Viewer, local planners or other interested parties can obtain all State Plan datasets.

The Missouri Hazard Mitigation Viewer includes a Map Viewer with a legend of clearly labeled features, a north arrow, a base map that is either aerial imagery or a street map, risk assessment data symbolized the same as in the 2018 State Plan for easy reference, search and query capabilities, ability to zoom to county level data and capability to download PDF format maps. The Missouri Hazard Mitigation Viewer can be found at this link:

- http://bit.ly/MoHazardMitigationPlanViewer2018
- https://drive.google.com/file/d/1bPkc0jgF9ofwQLnTL9N0u-oPFWi9hkst/view - User Guide

Assets at Risk available from the Mitigation Viewer include:

- State Owned Facilities
- State Leased Facilities
- Department of Higher Education Facilities
- State Owned Bridges

Flood Risk Datasets

Data sources include:

- FEMA Flood Insurance Rate Maps (FIRM)
  https://msc.fema.gov/portal/home
- FEMA National Flood Hazard Layer
  https://hazards.fema.gov/femaportal/wps/portal/NFHLWMS
- FEMA Hazus Program

https://www.fema.gov/hazus

- SEMA Flood Mapping Project Status for Missouri Counties
  http://bit.ly/MOSEMAOutreach
- 2010 US Census Population and Housing Unit Counts
  https://www.census.gov/geo/maps-data/data/tiger-data.html

Flood Risk Datasets will fall into the following categories:

- Good: If a digital FIRM (DFIRM) is not available for the flood risk analysis, use the census block exposure data out of Hazus or available as a Tiger/Line (note links above). If this method is chosen, apply corporate boundaries of jurisdictions in the plan to the GIS data available to parse out assets at risk for each jurisdiction. If this method is chosen, use this exposure data for all hazards so that the analysis is consistent.
- Better: If a DFIRM is available for the flood risk assessment AND parcel data is available in GIS format w/ associated building values—but not in a format that can be imported into Hazus, analysis can be done to show parcels and associated values in the planning area compared against the actual regulatory floodplain. The limitation with this is that your potential loss estimates will not be based on a depth/damage function as they are in Hazus. But, this is still a much more accurate picture of what is vulnerable to flooding than using the Hazus estimated floodplain and census block. If you use this method for the flood risk assessment, it is best to use the parcel data for the total exposure for all hazards so that the analysis is consistent. Contents values are not usually included w/ parcel data structure values. However, using the formulas that Hazus uses, they can be calculated. Residential (50%), Commercial (100%), Industrial (150%), Agricultural (100%).
- Best: If DFIRM with depth grids are available, as produced during the Risk MAP process, AND parcel data is available in GIS format AND parcel data is in a format compatible w/ Hazus' user-defined data, this gives the best analysis. This provides the actual parcels and associated values in the planning area against the actual regulatory floodplain and will also take into account the depth-damage function in Hazus.

3.2.1 Total Exposure of Population and Structures

For the 2018 State Plan, SEMA utilized a structure inventory dataset developed by the University of Missouri GIS Department (MSDIS) to determine the number of structures exposed to risks. MSDIS created a point and/or footprint dataset for every roof line in every county in the state of Missouri. This dataset is attributed with the type of structure such as Residential, Commercial, etc. This dataset, along with additional State Mitigation Planning Resources, was utilized throughout this section.

Unincorporated County and Incorporated Cities

In the following three tables, population data is based on 2010 Census Bureau data. Building counts and building exposure values are based on parcel data developed by the State of Missouri Geographic Information Systems (GIS) database. This data, organized by County, is available on Google Drive through the link provided on the previous page. Contents exposure values were calculated by factoring a multiplier to the building exposure values based on usage type. The multipliers were derived from the Hazus and are defined below in **Table 3.3**. Land values have been purposely excluded from consideration because land remains following disasters, and subsequent market devaluations are frequently short term and difficult to quantify. Another reason for excluding land values is that state and federal disaster assistance programs generally do not

address loss of land (other than crop insurance). It should be noted that the total valuation of buildings is based on county assessors' data which may not be current. In addition, government-owned properties are usually taxed differently or not at all, and so may not be an accurate representation of true value. Public school district assets and special districts assets are included in the total exposure tables assets by community and county.

Table 3.3 shows the total population, building count, estimated value of buildings, estimated value of contents and estimated total exposure to parcels for the unincorporated county and each incorporated city. For multi-county communities, the population and building data may include data on assets located outside the planning area. **Table 3.4** that follows provides the building value exposures for the county and each city in the planning area broken down by usage type. Finally, **Table 3.5** provides the building count total for the county and each city in the planning area broken out by building usage types (residential, commercial, industrial, and agricultural).

Table 3.3. Maximum Population and Building Exposure by Jurisdiction

Jurisdiction	2018 Annual Population Estimate	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
City of Lancaster	853	430	$47,388	$29,178	$76,566
City of Downing	408	217	$24,499	$13,881	$38,380
Village of Glenwood	214	141	$10,662	$5,725	$16,386
City of Greentop	583	163	$18,776	$10,518	$29,294
City of Queen City	694	324	$38,535	$22,354	$60,889
Schuyler County	4,502	4176	$116,255	$55,767	$172,022
Totals		5451	$256,115	$137,422	$393,537

Source: U.S. Bureau of the Census, Annual population estimates/ 5-Year American Community Survey 2018; Building Count and Building Exposure, Missouri GIS Database from SEMA Mitigation Management; Contents Exposure derived by applying multiplier to Building Exposure based on Hazus MH 2.1 standard contents multipliers per usage type as follows: Residential (50%), Commercial (100%), Industrial (150%), Agricultural (100%). For purposes of these calculations, government, school, and utility were calculated at the commercial contents rate.

Table 3.4. Building Values/Exposure by Usage Type

Jurisdiction	Residential	Commercial	Industrial	Agricultural	Total
City of Lancaster	$54,384	$18,900	$0	$82	$76,566
City of Downing	$31,023	$5,481	$0	$42	$38,380
Village of Glenwood	$14,390	$1,323	$0	$140	$16,386
City of Greentop	$24,669	$2,457	$0	$35	$29,294
City of Queen City	$46,535	$7,749	$4,502	$47	$60,889
Schuyler County	$155,677	$7,749	$0	$8,245	$172,022
Totals	$326,678	$43,660	$4,502	$8,592	$393,537

Source: Missouri GIS Database, SEMA Mitigation Management Section

Table 3.5. Building Counts by Usage Type

Jurisdiction	Residential Counts	Commercial Counts	Industrial Counts	Agricultural Counts	Total
City of Lancaster	291	100		33	430
City of Downing	166	29		17	217
Village of Glenwood	77	7		56	141
City of Greentop	132	13		14	163
City of Queen City	249	41	1	19	324
Schuyler County	833	41		3299	4176
Totals	1748	231	1	3438	5451

Source: Missouri GIS Database, SEMA Mitigation Management Section; Public School Districts and Special Districts

Even though schools and special districts' total assets are included in the tables above, additional discussion is needed, based on the data that is available from the districts' completion of the Data Collection Questionnaire and district-maintained websites. The number of enrolled students at the participating public school districts is provided in **Table 3.6** below. Additional information includes the number of buildings, building values (building exposure) and contents value (contents exposure). These numbers will represent the total enrollment and building count for the public school districts regardless of the county in which they are located.

Table 3.6. Population and Building Exposure by Jurisdiction-Public School Districts

Public School District	Enrolment	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
Schuyler County R-2	585	2	$50,452,708		$50,452,708

Source: http://mcds.dese.mo.gov/quickfacts/Pages/District-and-School-Information.aspx

3.2.2 Critical and Essential Facilities and Infrastructure

This section will include information from the Data Collection Questionnaire and other sources concerning the vulnerability of participating jurisdictions' critical, essential, high potential loss, and transportation/lifeline facilities to identified hazards. Definitions of each of these types of facilities are provided below.

- Critical Facility: Those facilities essential in providing utility or direction either during the response to an emergency or during the recovery operation.
- Essential Facility: Those facilities that if damaged, would have devastating impacts on disaster response and/or recovery.
- High Potential Loss Facilities: Those facilities that would have a high loss or impact on the community.
- Transportation and lifeline facilities: Those facilities and infrastructure critical to transportation, communications, and necessary utilities.

Table 3.7 includes a summary of the inventory of critical and essential facilities and infrastructure in the planning area. The list was compiled from the Data Collection Questionnaire as well as the following sources:

- 2018 Missouri State Hazard Mitigation Plan and Hazard Mitigation Viewer
- Interviews with County Emergency Management Director
- Interviews with City Government Employees
- Hazus

Table 3.7. Inventory of Critical/Essential Facilities and Infrastructure by Jurisdiction

Jurisdiction	Airport Facility	Bus Facility	Childcare Facility	Communications Tower	Electric Power Facility	Emergency Operations	Fire Service	Government	Housing	Shelters	Highway Bridge	Hospital/Health Care	Military	Natural Gas Facility	Nursing Homes	Police Station	Potable Water Facility	Rail	Sanitary Pump Stations	School Facilities	Stormwater Pump Stations	Tier II Chemical Facility	Wastewater Facility	TOTAL
City of Lancaster	0	0	3	1	0	0	1	1	1	0	0	2	0	0	0	1	0	0	0	0	0	0	1	11
City of Downing	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
Village of Glenwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
City of Greentop	0	0	2	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
City of Queen City	0	0	3	1	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	10
Schuyler County	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4
Totals	1	0	8	3	1		4	5	1	0	0	3	0	0	1	1	0	0	0	2	0	0	5	35

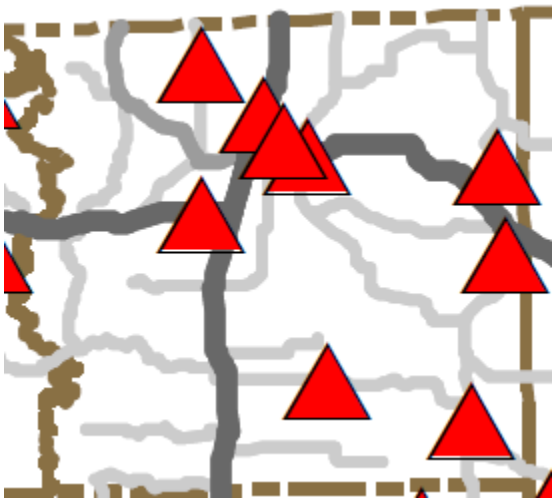
Source: Missouri 2018 State Hazard Mitigation Plan and Hazard Mitigation Viewer; Data Collection Questionnaires; Hazus, etc.

Missouri bridges are rated based on the National Bridge Inspection Standards developed by the Federal Highway Administration. Figure 3.1 indicates there are 122 bridges in Schuyler County with 74 in good condition, 38 in fair condition, and 10 in poor condition according to 2018 data obtained from the Federal Highway National Bridge Inventory. Figure 3.2 indicates the bridges in Schuyler County with a poor rating.

Table 3.8. Schuyler County Bridges

County	Bridge Counts				Bridge Area (Square Meters)			
	All	Good	Fair	Poor	All	Good	Fair	Poor
SCHUYLER (197)	122	74	38	10	18,158	11,105	4,761	2,291

Figure 3.1. Schuyler County Structurally Deficient Bridges



Source:https://www.modot.org/sites/default/files/documents/Statewide_Poor_Bridges_2019_with_insets.pdf

3.2.3 Other Assets

Assessing the vulnerability of the planning area to disaster also requires data on the natural, historic, cultural, and economic assets of the area. This information is important for many reasons.

- These types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy.
- Knowing about these resources in advance allows for consideration immediately following a hazard event, which is when the potential for damages is higher.
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.
- The presence of natural resources can reduce the impacts of future natural hazards, such as wetlands and riparian habitats which help absorb floodwaters.
- Losses to economic assets like these (e.g., major employers or primary economic sectors) could have severe impacts on a community and its ability to recover from disaster.

Schuyler County is home to several threatened and endangered species. **Table 3.9** shows the

Threatened and Endangered Species in Schuyler County.

Table 3.9. Threatened and Endangered Species in Schuyler County

Common Name	Scientific Name	Status
Indiana Bat	Myotis sodalist	Endangered
Northern Long-eared Bat	Myotis septentrionalis	Threatened

Source: U.S. Fish and Wildlife Service, http://www.fws.gov/midwest/Endangered/lists/missouri-cty.html; see also https://ecos.fws.gov/ipac/

The Missouri Department of Conservation (MDC) provides a database of lands the MDC owns, leases, or manages for public use. These assets are listed in **Table 3.9** below for the Schuyler County planning area.

Table 3.10. Parks in Schuyler County

Park / Conservation Area	Address	City
Archangel Access	From Livonia, take Highway 136 east 1 mile to the Chariton River	Livonia, Missouri
Lancaster (Paul Bloch Memorial Pond)	From Lancaster, take Highway 63 north 5 miles	Lancaster, Missouri
Lancaster City Lake	From Lancaster, take Highway 63 south 1 mile	Lancaster, Missouri
Rebel's Cove CA	From Livonia, take Route N north 4.60 miles	Coatsville, Missouri

Source: http://mdc7.mdc.mo.gov/applications/moatlas/AreaList.aspx?txtUserID=guest&txtAreaNm=s

Historic Resources: The National Register of Historic Places is the official list of registered cultural resources worthy of preservation. It was authorized under the National Historic Preservation Act of 1966 as part of a national program. The purpose of the program is to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. The National Register is administered by the National Park Service under the Secretary of the Interior. Properties listed in the National Register include districts, sites, buildings, structures and objects that are significant in American history, architecture, archeology, engineering, and culture.

Table 3.11 below lists the Schuyler County properties that are included in the National Register of Historic Places.

Table 3.11. Schuyler County Properties on the National Register of Historic Places

Property	Address	City	Date Listed
Downing Railroad Depot	City Park	Downing	3/29/1983
Hall, William P., House	1 block W of Courthouse on US 136	Lancaster	4/01/1975

Source: Missouri Department of Natural Resources – Missouri National Register Listings by County http://dnr.mo.gov/shpo/mnrlist.htm

Economic Resources: **Table 3.11** below shows the major Non-Government (private) employers with 10 or more employees within Schuyler County.

Table 3.12. Major Non-Government Employers in Schuyler County

Employer Name	Main Locations	Product or Service	Employees
Western's Smokehouse	Greentop	Food Production	100

Source: Data Collection Questionnaires; local Economic Development Commissions

Agriculture: Agriculture plays an important role Schuyler County economy. According to the USDA's 2017 Census of Agriculture, there are 541 farms in Schuyler County for a total of 166,941 acres. This compares to 95,320 farms in Missouri and 27,781,883 acres. The average size farm in Schuyler County is 309 acres, while the state average is smaller at 291 acres. The number and size of farms in Schuyler County has actually increased since the 2012 Census of Agriculture where the number of farms was at 516 and the total number of acres was 159,387.

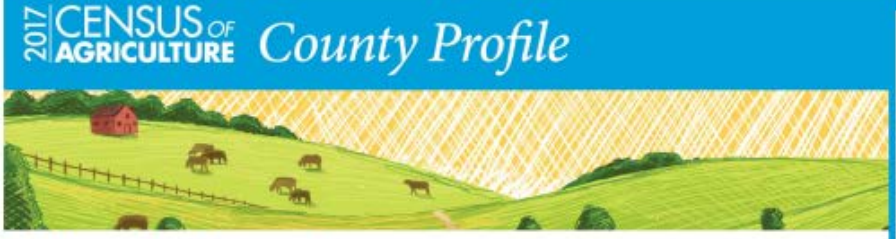
Table 3.13. Agriculture-Related Jobs in Schuyler County

Item		Schuyler
Hired farm labor	farms	98
	workers	194
	$1,000 payroll	1,003
Farms with-		
1 worker	farms	48
	workers	48
2 workers	farms	18
	workers	36
3 or 4 workers	farms	28
	workers	90
5 to 9 workers	farms	4
	workers	20
10 workers or more	farms	-
	workers	-
Workers by days worked:		
150 days or more	farms	40
	workers	75
Farms with-		
1 worker	farms	17
	workers	17
2 workers	farms	17
	workers	34
3 or 4 workers	farms	3
	workers	9
5 to 9 workers	farms	3
	workers	15
10 workers or more	farms	-
	workers	-
Less than 150 days	farms	75
	workers	119
Farms with-		
1 worker	farms	46
	workers	46
2 workers	farms	16
	workers	32
3 or 4 workers	farms	13
	workers	41
5 to 9 workers	farms	-
	workers	-
10 workers or more	farms	-
	workers	-
Reported only workers working 150 days or more	farms	23
	workers	43
	$1,000 payroll	642
Reported only workers working less than 150 days	farms	58
	workers	97
	$1,000 payroll	130
Reported both - workers working 150 days or more and workers working less than 150 days	farms	17
	150 days or more, workers	32
	less than 150 days, workers	22
	$1,000 payroll	230
Total migrant workers	farms	-
	workers	-
Migrant farm labor on farms with hired labor	farms	-
	workers	-
Migrant farm labor on farms reporting only contract labor	farms	-
	workers	-
Unpaid workers	farms	218
	workers	557

Source:https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_County_Level/Missouri/mov1.pdf

Table 3.14. Schuyler County Agricultural Data

2017 CENSUS OF AGRICULTURE *County Profile*



Schuyler County Missouri

Total and Per Farm Overview, 2017 and change since 2012

	2017	% change since 2012
Number of farms	541	+5
Land in farms (acres)	166,941	+5
Average size of farm (acres)	309	(Z)
Total	($)	
Market value of products sold	38,411,000	+26
Government payments	1,729,000	-24
Farm-related income	1,411,000	-65
Total farm production expenses	33,764,000	+8
Net cash farm income	7,786,000	+42
Per farm average	($)	
Market value of products sold	71,000	+21
Government payments (average per farm receiving)	6,780	-5
Farm-related income	6,214	-65
Total farm production expenses	62,410	+3
Net cash farm income	14,393	+35

(Z) Percent of state agriculture sales

Share of Sales by Type (%)

Crops	39
Livestock, poultry, and products	61

Land in Farms by Use (%) [a]

Cropland	48
Pastureland	34
Woodland	12
Other	5

Acres irrigated: 3

(Z)% of land in farms

Land Use Practices (% of farms)

No till	10
Reduced till	9
Intensive till	15
Cover crop	5

Farms by Value of Sales

	Number	Percent of Total [a]
Less than $2,500	160	30
$2,500 to $4,999	44	8
$5,000 to $9,999	32	6
$10,000 to $24,999	98	18
$25,000 to $49,999	74	14
$50,000 to $99,999	60	11
$100,000 or more	73	13

Farms by Size

	Number	Percent of Total [a]
1 to 9 acres	24	4
10 to 49 acres	104	19
50 to 179 acres	203	38
180 to 499 acres	130	24
500 to 999 acres	46	9
1,000 + acres	34	6

Continued….

Market Value of Agricultural Products Sold

	Sales ($1,000)	Rank in State [b]	Counties Producing Item	Rank in U.S. [b]	Counties Producing Item
Total	**38,411**	**84**	**114**	**1,986**	**3,077**
Crops	**14,901**	**79**	**114**	**1,834**	**3,073**
Grains, oilseeds, dry beans, dry peas	12,999	74	112	1,308	2,916
Tobacco	-	-	4	-	323
Cotton and cottonseed	-	-	5	-	647
Vegetables, melons, potatoes, sweet potatoes	158	35	113	1,366	2,821
Fruits, tree nuts, berries	(D)	97	111	(D)	2,748
Nursery, greenhouse, floriculture, sod	(D)	96	108	(D)	2,601
Cultivated Christmas trees, short rotation woody crops	(D)	14	37	(D)	1,384
Other crops and hay	1,720	57	114	1,360	3,040
Livestock, poultry, and products	**23,511**	**66**	**114**	**1,520**	**3,073**
Poultry and eggs	7	99	112	1,843	3,007
Cattle and calves	18,792	45	113	830	3,055
Milk from cows	(D)	(D)	97	(D)	1,892
Hogs and pigs	3,512	46	111	513	2,856
Sheep, goats, wool, mohair, milk	303	18	111	547	2,984
Horses, ponies, mules, burros, donkeys	(D)	(D)	113	(D)	2,970
Aquaculture	-	-	43	-	1,251
Other animals and animal products	(D)	39	111	(D)	2,878

Source: https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Missouri/cp29197.pdf

3.3 LAND USE AND DEVELOPMENT

3.3.1 Development Since Previous Plan Update

According to the data questionnaire there has been slight population growth throughout Schuyler County overall. Growth in the area increases risk for the planning area as there can be more structural damage to the planning area.

The U.S. Census Bureau shows Schuyler County is expected to have grown 1.6% since the last census was performed. **Table 3.13** provides the population growth statistics for all cities in Schuyler County as well as the county as a whole. Population statistics represent the 2010 U.S. Census and the American Community Survey 5-year estimates. The 5-year estimates appear to be slightly inaccurate as the data below shows significant growth in each of the cities in the County but the overall county population did not increase significantly.

Table 3.15. County Population Growth, 2010-2018

Jurisdiction	Total Population 2010	Total Population 2018	2010-2018 # Change	2000-2018 % Change
Schuyler County	4,431	4,502	71	1.60
City of Lancaster	728	853	125	17.17
City of Downing	376	408	32	8.51
Village of Glenwood	196	214	18	9.18
City of Greentop	386	583	197	51.04
City of Queen City	598	694	96	16.05

Source: U.S. Bureau of the Census, Decennial Census, Annual Population Estimates, American Community Survey 5-year Estimates; Population Statistics are for entire incorporated areas as reported by the Census bureau

Population growth or decline is generally accompanied by increases or decreases in the number of housing units. When U.S Bureau of Census was utilized for this information it shows Schuyler County has having a significant decrease in housing units which does not corresponded with the population increase shown in the data above. After visiting with the county it was verified that they did not have a increase in housing units and likely had a decrease in housing units.

Table 3.16. Change in Housing Units, 2010-2018

Jurisdiction	Housing Units 2010	Housing Units 2018	2010-2018 # Change	2000-2018 % Change
Schuyler County	2397	2102	-295	-12.31
City of Lancaster	478	363	-115	-24.06
City of Downing	255	239	-16	-6.27
Village of Glenwood	130	99	-31	-23.85
City of Greentop	211	251	+40	18.96
City of Queen City	430	293	-137	-31.86

Source: U.S. Bureau of the Census, Decennial Census, American Community Survey 5-year Estimates; Population Statistics are for entire incorporated areas as reported by the U.S. Census Bureau

U.S. Census information is compiled every 10 years, with the last Census completed in 2010. 2010 estimates were used for the above data. According to the U.S. Census Bureau estimates, the number of housing units were expected to decrease in 2018 in Schuyler County. Vulnerability to hazards will be affected based on population, and where new housing units have been built. Vulnerability is expected to increase as housing increases in the jurisdictions.

3.3.2 Future Land Use and Development

Schuyler County and the participating jurisdictions are in a very rural area of Northeast Missouri and it is very difficult to attract new development due to the inability to attract employers to the area. The County and participating jurisdictions did not indicate or anticipate any future growth on the data questionnaires.

School District's Future Development

Enrollment in the county's only school district, Schuyler County R-1 for the 2019-2020 school year stands at 585 students. One elementary building and one junior/senior high building serve the entire county and is located in Queen City. There are no plans in the next five years for any additions or major renovations for k-12.

3.4 HAZARD PROFILES, VULNERABILITY, AND PROBLEM STATEMENTS

Each hazard will be analyzed individually in a hazard profile. The profile will consist of a general hazard description, location, strength/magnitude/extent, previous events, future probability, a discussion of risk variations between jurisdictions, and how anticipated development could impact risk. At the end of each hazard profile will be a vulnerability assessment, followed by a summary problem statement.

Hazard Profiles

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the…location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Each hazard identified in Section **3.1.4** will be profiled individually in alphabetical order. The level of information presented in the profiles will vary by hazard based on the information available. With each update of this plan, new information will be incorporated to provide better evaluation and prioritization of the hazards that affect the planning area. Detailed profiles for each of the identified hazards include information categorized as follows:

- **Hazard Description:** This section consists of a general description of the hazard and the types of impacts it may have on a community or school/special district.
- **Geographic Location:** This section describes the geographic areas in the planning area that are affected by the hazard. Where available, maps will be used to indicate the specific locations of the planning area that are vulnerable to the subject hazard. For some hazards, the entire planning area is at risk.
- **Strength/Magnitude/Extent:** This includes information about the strength, magnitude, and extent of a hazard. For some hazards, this is accomplished with description of a value on an established scientific scale or measurement system, such as an EF2 tornado on the Enhanced Fujita Scale. This section will also include information on the typical or expected strength/magnitude/extent of the hazard in the planning area. Strength, magnitude, and extent can also include the speed of onset and the duration of hazard events. Describing the strength/magnitude/extent of a hazard is not the same as describing its potential impacts on a community. Strength/magnitude/extent defines the characteristics of the hazard regardless of the people and property it affects.
- **Previous Occurrences:** This section includes available information on historic incidents and their impacts. Historic event records form a solid basis for probability calculations. Tables are a good way to convey this data when available. When available, tables showing random events for the past 20 years will be included.
- **Probability of Future Occurrence:** The frequency of recorded past events is used to estimate the likelihood of future occurrences. Probability will be determined by dividing the number of recorded events by the number of years of available data and multiplying by 100. This gives the percent chance of the event happening in any given year. For events occurring more than once annually, the probability should be reported as 100% in any given year, with a statement of the average number of events annually. For hazards such as drought that may have gradual onset and extended duration, probability can be based on the number of months in drought in a given time-period and expressed as the probability for any given month to be in drought.

- **Changing Future Conditions Considerations:**

  In addition to the probability of future occurrence, changing future conditions were considered, including the effects of long-term changes in weather patterns and climate on the identified hazards.

Vulnerability Assessments

Requirement §201.6(c)(2)(ii) :[The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

Requirement §201.6(c)(2)(ii)(A) :The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

Requirement §201.6(c)(2)(ii)(B) :[The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Requirement §201.6(c)(2)(ii): (As of October 1, 2008) [The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged in floods.

Following the hazard profile for each hazard will be the vulnerability assessment. The vulnerability assessment further defines and quantifies populations, buildings, critical facilities, and other community assets at risk to damages from natural hazards. The vulnerability assessments should be based on the best available data. The vulnerability assessments can also be based on data that was collected for the 2018 State Hazard Mitigation Plan Update. With the 2018 Hazard Mitigation Plan Update, SEMA is pleased to provide online access to the risk assessment data and associated mapping for the 114 counties in the State, including the independent City of St. Louis. Through the web-based Missouri Hazard Mitigation Viewer, local planners or other interested parties can obtain all State Plan datasets. This effort removes from local mitigation planners a barrier to performing all the needed local risk assessments by providing the data developed during the 2018 State Plan Update.

The Missouri Hazard Mitigation Viewer includes a Map Viewer with a legend of clearly labeled features, a north arrow, a base map that is either aerial imagery or a street map, risk assessment data symbolized the same as in the 2018 State Plan for easy reference, search and query capabilities, ability to zoom to county level data and capability to download PDF format maps. The Missouri Hazard Mitigation Viewer can be found at this link: http://bit.ly/MoHazardMitigationPlanViewer2018.

The vulnerability assessments in the Schuyler County plan will also be based on:

- Written descriptions of assets and risks provided by participating jurisdictions;
- Existing plans and reports;

- Personal interviews with planning committee members and other stakeholders; and
- Other sources as cited.

Within the Vulnerability Assessment, the following sub-headings will be addressed:

- **Vulnerability Overview:**
  An overall summary of each jurisdiction's vulnerability to the identified hazards. The overall summary of vulnerability identifies structures, systems, populations or other community assets as defined by the community that are susceptible to damage and loss for hazard events.

- **Potential Losses to Existing Development:**
  For each participating jurisdiction, the plan will describe the potential impacts of the hazard. Impact refers to the consequences of effect of the hazard on the jurisdiction and its assets. Assets are determined by the community and may include people, structures, facilities, systems, capabilities, and/or activities that have value to the community.

- **Previous and Future Development:**
  This section will include information on how changes in development have impacted the community's vulnerability to this hazard. It will describe how any changes in development that occurred in known hazard prone areas since the previous plan have increased or decreased the community's vulnerability. It will also describe any anticipated future development in the county, and how that would impact hazard risk in the planning area.

- **Hazard Summary by Jurisdiction:**
  For hazard risks that vary by jurisdiction, this section will provide an overview of the variation and the factual basis for that variation.

Problem Statements

Each hazard analysis concludes with a brief summary of the problems created by the hazard in the planning area, and possible ways to resolve those problems. It includes jurisdiction-specific information in those cases where the risk varies across the planning area.

3.4.1 Flooding (Riverine and Flash)

Hazard Profile

Hazard Description

A flood is partial or complete inundation of normally dry land areas. Riverine flooding is defined as the overflow of rivers, streams, drains, and lakes due to excessive rainfall, rapid snowmelt, or ice. There are several types of riverine floods, including headwater, backwater, interior drainage, and flash flooding. Riverine flooding is defined as the overflow of rivers, streams, drains, and lakes due to excessive rainfall, rapid snowmelt or ice melt. The areas adjacent to rivers and stream banks that carry excess floodwater during rapid runoff are called floodplains. A floodplain is defined as the lowland and relatively flat area adjoining a river or stream. The terms "base flood" and "100- year flood" refer to the area in the floodplain that is subject to a one percent or greater chance of flooding in any given year. Floodplains are part of a larger entity called a basin, which is defined as all the land drained by a river and its branches.

Flooding caused by dam and levee failure is discussed in Section 3.4.2 and 3.4.3 respectively. It will not be addressed in this section.

A flash flood occurs when water levels rise at an extremely fast rate as a result of intense rainfall over a brief period, sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil, or impermeable surfaces. Flash flooding can happen in Special Flood Hazard Areas (SFHAs) as delineated by the National Flood Insurance Program (NFIP) and can also happen in areas not associated with floodplains.

Ice jam flooding is a form of flash flooding that occurs when ice breaks up in moving waterways, and then stacks on itself where channels narrow. This creates a natural dam, often causing flooding within minutes of the dam formation.

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

Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area. Flash flooding is a dangerous form of flooding which can reach full peak in only a few minutes. Rapid onset allows little or no time for protective measures. Flash flood waters move at very fast speeds and can move boulders, tear out trees, scour channels, destroy buildings, and obliterate bridges. Flash flooding can result in higher loss of life, both human and animal, than slower developing river and stream flooding.

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

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

Geographic Location

Riverine flooding can occur in any low-lying areas of Schuyler County which are adjacent to rivers and creeks during periods of heavy rain when the ground is already saturated. Many rural roads within the county are dependent upon low water crossings, many of which are not navigable during periods of high water. During times of flooding, these low water crossings can present risk to life and property if an attempt is made to cross.

According to the National Mapping System, major rivers and creeks in Schuyler County include North Fabius River, North Fork Middle Fabius River, South Fork Middle Fabius River, North Fork South Fabius River, South Fork South Fabius River, Chariton River, Elm Creek, Bridge Creek, Tipp Creek, Brushy Creek, Sand Creek, and Winkler Creek. Special Flood Hazard Areas (SFHAs) have not yet been mapped by FEMA and therefore some information for this hazard may be limited.

Figure 3.2. RiskMap, DFRIM and Hazus based Depth Grids used in Hazus Analysis

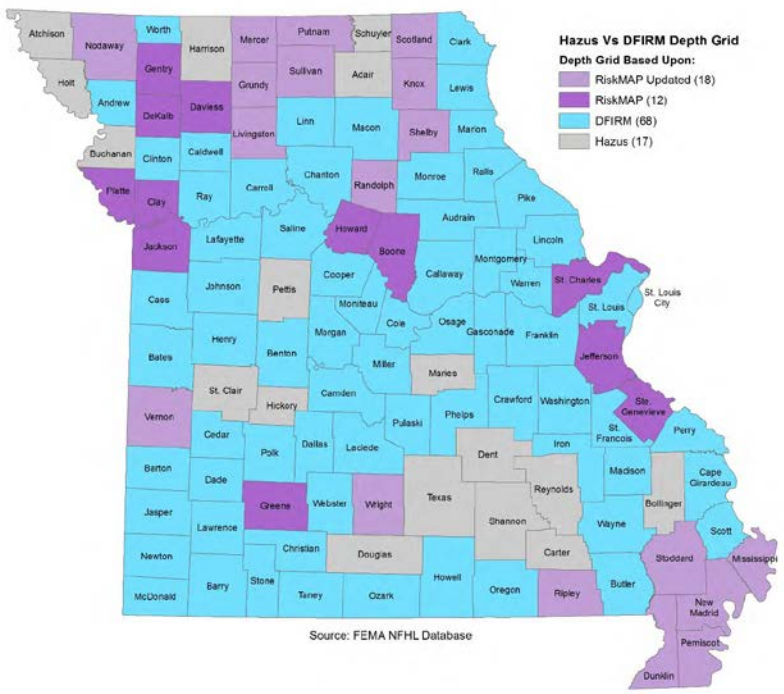
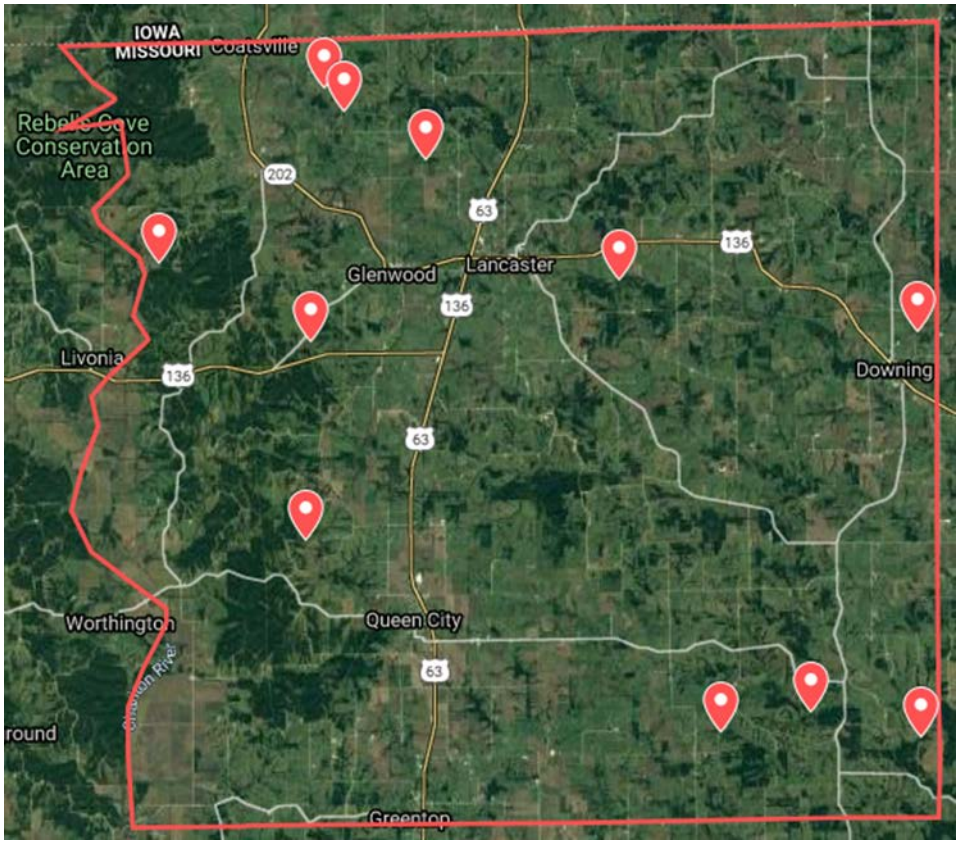


Figure 3.3. Low Water Crossings in Schuyler County



The National Centers for Environmental Information shows there have been 0 flood events in Schuyler County from 1999-2019. Twenty years of history is generally adequate for a trend analysis. Although there have been no flood events in the past 20 years in Schuyler County, this information adequately reflects the low risk to the County for flooding.

Although there has been no riverine flood events recorded by the Nation Centers for Environmental Information, there have been a number of flash flooding events recorded. During the past 20 years (1999-2019) there have been 14 flash flood events recorded. **Table 3.17** reflects this data. Flash flooding occurs in SFHAs and those locations in the planning area that are low-lying. They also occur in areas without adequate drainage to carry away the amount of water that falls during intense rainfall events. Most of the flash flooding events listed below has occurred in unincorporated portions of the Schuyler but there has been flooding in the Cities of Lancaster and Queen City.

Table 3.17. Schuyler County NCEI Flash Flood Events by Location, 1999-2019

Location	# of Events
Unincorporated County	12
Lancaster	1
Queen City	1

Source: National Centers for Environmental Information, 3/24/2020

Strength/Magnitude/Extent

Missouri has a long and active history of flooding over the past century, according to the 2018 State Hazard Mitigation Plan. Flooding along Missouri's major rivers generally results in slow-moving disasters. River crest levels are forecast several days in advance, allowing communities downstream sufficient time to take protective measures, such as sandbagging and evacuations. Nevertheless, floods exact a heavy toll in terms of human suffering and losses to public and private property. By contrast, flash flood events in recent years have caused a higher number of deaths and major property damage in many areas of Missouri.

According to the U.S. Geological Survey, two critical factors affect flooding due to rainfall: rainfall duration and rainfall intensity – the rate at which it rains. These factors contribute to a flood's height, water velocity and other properties that reveal its magnitude.

National Flood Insurance Program (NFIP) Participation

NFIP participation for the communities in the planning area is shown below in **Table 3.18**. Only one community was listed in the NFIP Community Status Book.

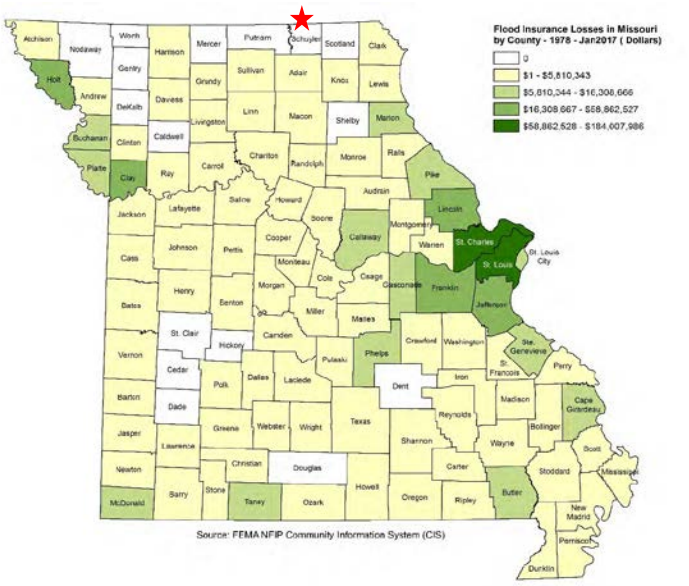
There are no NFIP policies in force in Schuyler County.

Table 3.18. NFIP Participation in Schuyler County

Community ID #	Community Name	NFIP Participant (Y/N/Sanctioned)	Current Effective Map Date	Regular-Emergency Program Entry Date
	City of Lancaster	N		
	City of Downing	N		
	City of Glenwood	N		
	City of Greentop	N		
290988	City of Queen City	N	12/17/2010	
	Schuyler County	N		

Source: NFIP Community Status Book, 3/15/2020; BureauNet, http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book;

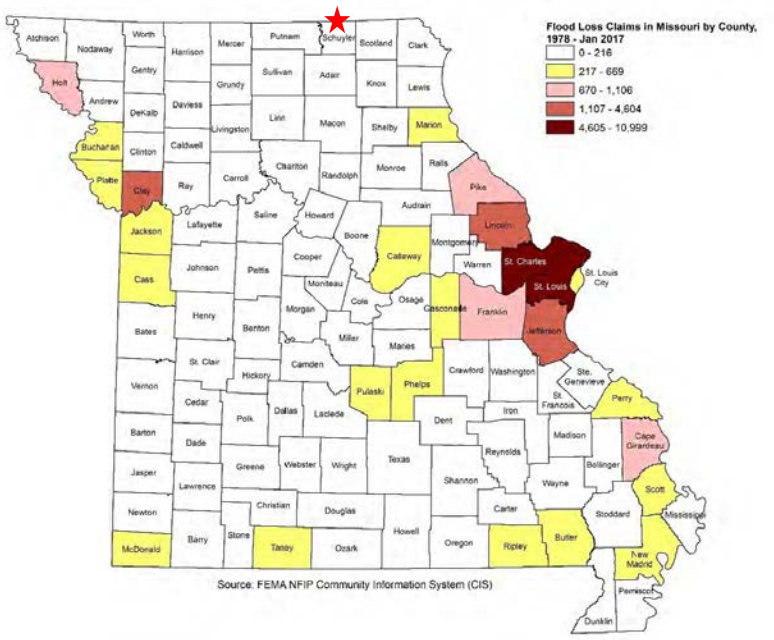
Figure 3.4. Map of Dollars Paid Historically for Flood Insurance Losses in Missouri by County, (1979 – January 2017)



Source: 2018 Missouri State Hazard Mitigation Plan, *Red star denotes Schuyler County

Figure 3.4 shows that during the period of 1978 – January 2017 Schuyler County received $0 in Flood Insurance.

Figure 3.5. Flood Loss Claims in Missouri by County (1978-January 2017)



Source: 2018 Missouri State Hazard Mitigation Plan, *Red star denotes Schuyler County

Figure 3.5 shows that during the period of 1978 – January 2017 Schuyler County had between 0-216 Flood Loss Claims.

Repetitive Loss/Severe Repetitive Loss Properties

Repetitive Loss Properties are those properties with at least two flood insurance payments of $1,000 or more each have been paid under the National Flood Insurance Program (NFIP) within any 10-year period since 1978. According to the Flood Insurance Administration, jurisdictions included in the planning area have a combined total of zero repetitive loss properties.

Severe Repetitive Loss (SRL)

A SRL property is defined it as a single family property (consisting of one-to-four residences) that is covered under flood insurance by the NFIP; and has (1) incurred flood-related damage for which four or more separate claims payments have been paid under flood insurance coverage with the amount of each claim payment exceeding $5,000 and with cumulative amounts of such claims payments exceeding $20,000; or (2) for which at least two separate claims payments have been made with the cumulative amount of such claims exceeding the reported value of the property.

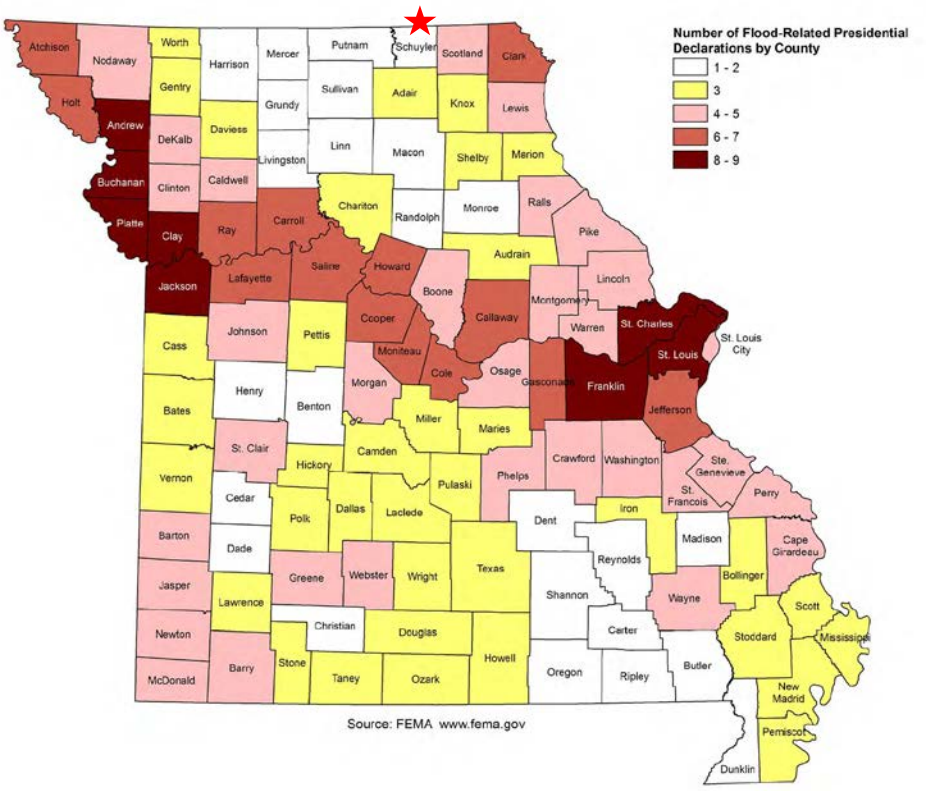
There are zero validated Severe Repetitive Loss properties in the Schuyler County.

Previous Occurrences

Table 3.19. Schuyler County Presidential Declared Flood Events 1999-2019

Declaration Number	Declaration Date	Disaster Description	Total Estimated Damage
DR 1773	June 25, 2008	Severe Storms, Flooding	$28,697,245
DR 1809	November 13, 2008	Severe Storms, Flooding, and a tornado	$21,572,803
DR 1934	August 17, 2010	Severe Storms, Flooding, and tornadoes	$17,450,052
DR 4238	August 7, 2015	Severe Storm	$51,384,706
DR 4451	July 9, 2019	Severe Storms, Flooding, and tornadoes	$7,737,721

Figure 3.6. Number of Flood-Related Presidential Declarations by County



Source: 2018 Missouri State Hazard Mitigation Plan, *Red star shows Schuyler County

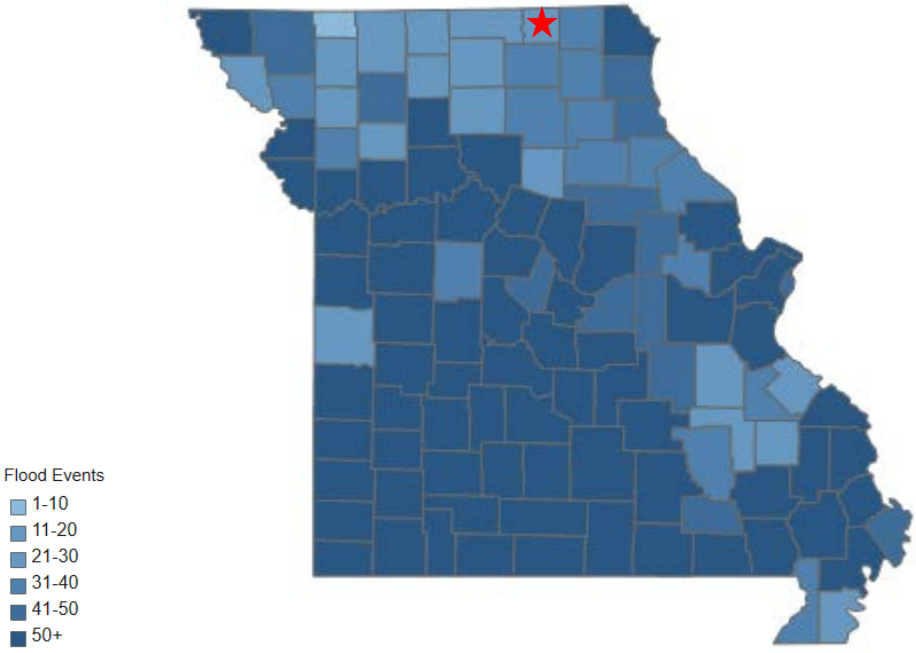
NCEI information for the last 20 years (1999-2019) for flash flooding is shown in Table 3.20 below. There have been no reported riverine flood events in the past 20 year and therefore there is no data listed below for riverine flooding events.

Table 3.20. NCEI Schuyler County Flash Flood Events Summary, 1999 to 2019

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2007	1	0	0	0	0
2008	3	0	0	0	0
2009	1	0	0	0	0
2010	2	1	0	0	0
2014	2	0	0	0	0
2015	5	0	0	0	0

Source: NCEI, data accessed March 2, 2020

Figure 3.7. Historical Flood Impacts for Schuyler County



Probability of Future Occurrence

For flooding events, flash flooding is much more likely to occur in the county than riverine flooding. The flash flood chart above shows 14 flash flood events from 1999 to 2019. Expressed mathematically (14 flash flooding events / 20 years) there is a 70% chance of at least one flash flood event occurring in Schuyler County annually. This basic probability formula is just a measurement tool used to demonstrate the flash flooding prevalence in Schuyler County. As the chart displays, there are some years with multiple flash flooding events while others years had none.

Riverine flooding is far less likely to occur in Schuyler County. In fact, there have been no riverine flood events in Schuyler County from 1999 to 2019. Using the same basic probability formula above (0 riverine flood events / 20 years), there is a 0% chance of a riverine flood occurring in Schuyler County in a given year.

Changing Future Conditions Considerations

If departure from normal with respect to increased precipitation intensity continues, frequency of floods in Missouri is likely to increase as well. Over the last half century, average annual precipitation in most of the Midwest has increased by 5 to 10 percent. But rainfall during the four wettest days of the year has increased about 35 percent, and the amount of water flowing in most streams during the worst flood of the year has increased by more than 20 percent.

It is likely (66-100% probability) that the frequency of heavy precipitation or the proportion of total rainfall from heavy falls will increase in the 21st century across the globe. More specifically, it is “very likely” (90-100% probability) that most areas of the United States will exhibit an increase of at least 5% in the maximum 5-day precipitation by late 21st century. As the number of heavy rain events increase, more flooding and pooling water can be expected.

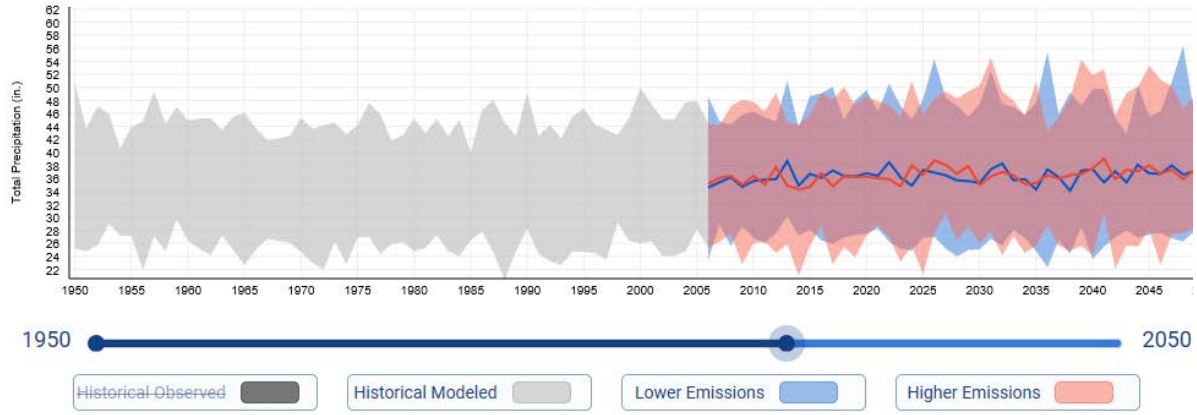
The expected increases in rainfall frequency and intensity are likely to put additional stress on natural

hydrological systems and community stormwater systems. Heavier snowfalls in the winter will lead to intensified spring flooding, and groundwater levels will remain high even in non-floodplain areas. Such changes in climate patterns can lead to the development of compounding events that interact to create extreme conditions. Flooding caused by high groundwater levels typically recedes more slowly than riverine flooding, slowing the response and recovery process. Groundwater-fed rivers and streams are also likely to experience heightened flooding when groundwater levels are high.

Jurisdictions updating or installing stormwater management systems should consider potentially larger future discharge amounts when sizing culverts and drainage ways; storage capacity can also be increased by building retention basins to hold excess stormwater. Communities already prone to flooding should be prepared for a potential increase in facility closures and/or damages, as well as an increase in public demand for flood response and assistance. Natural features that experience repeated flooding may manifest changes in the form of stream bank instability and changing shoreline, floodplain, and wetland boundaries. Communities may also wish to plan for the potential loss of cropland and damage to both private property and public infrastructure such as bridges.

The environmental impacts of flooding include erosion, surface and groundwater contamination, and reduced water quality. The threat of more frequent flood events may thus be a concern particularly for communities who depend on lakes, rivers, or trout streams for tourism. Rural communities may experience increases in well contamination and road washouts, while urban areas may be particularly vulnerable to flash flooding as heavy rain events quickly overwhelm the ability of a more impermeable environment to absorb excess stormwater.

Figure 3.8. U.S. Climate Resilience Toolkit-Annual Total Precipitation Summary for Schuyler County



Source: US Climate Resilience Toolkit; https://toolkit.climate.gov/tools/climate-explorer

Vulnerability

Vulnerability Overview

Flooding presents a danger to life and property, often resulting in injuries, and in some cases, fatalities. Floodwaters themselves can interact with hazardous materials. Hazardous materials stored in large containers could break loose or puncture as a result of flood activity. Examples are bulk propane tanks. When this happens, evacuation of citizens is necessary.

Public health concerns may result from flooding, requiring disease and injury surveillance. Community sanitation to evaluate flood-affected food supplies may also be necessary. Private water

and sewage sanitation could be impacted, and vector control (for mosquitoes and other entomology concerns) may be necessary.

When roads and bridges are inundated by water, damage can occur as the water scours materials around bridge abutments and gravel roads. Floodwaters can also cause erosion undermining road beds. In some instances, steep slopes that are saturated with water may cause mud or rock slides onto roadways. These damages can cause costly repairs for state, county, and city road and bridge maintenance departments. When sewer back-up occurs, this can result in costly clean-up for home and business owners as well as present a health hazard.

According to the figures provided in the 2018 State Hazard Mitigation Plan, Building Exposure in Schuyler County by Flood (100 year) range between $556,304 and $305,094,849 and impacts as many as 588 buildings and up to 753 residents. These figures are provided below.

Figure 3.9. Countywide Base-Flood Scenarios: Building Exposure

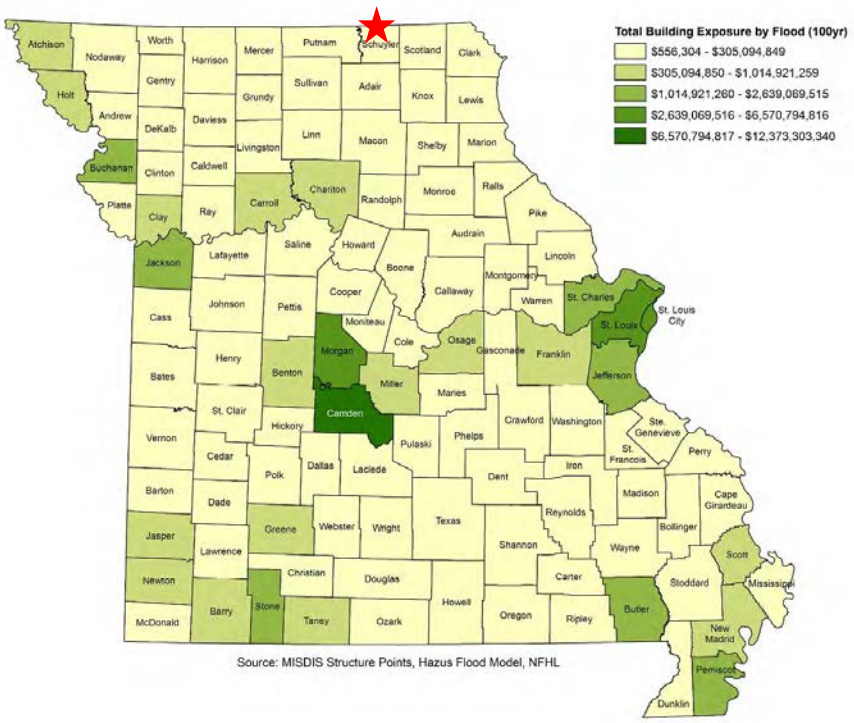


Figure 3.10. Countywide Base-Flood Scenarios: Building Impacted Ratio

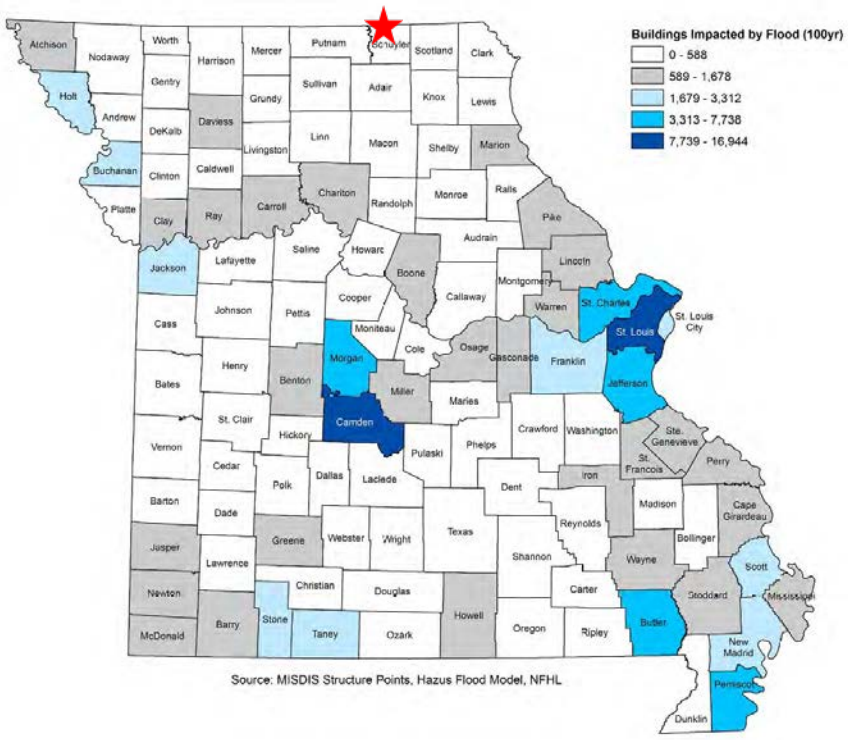
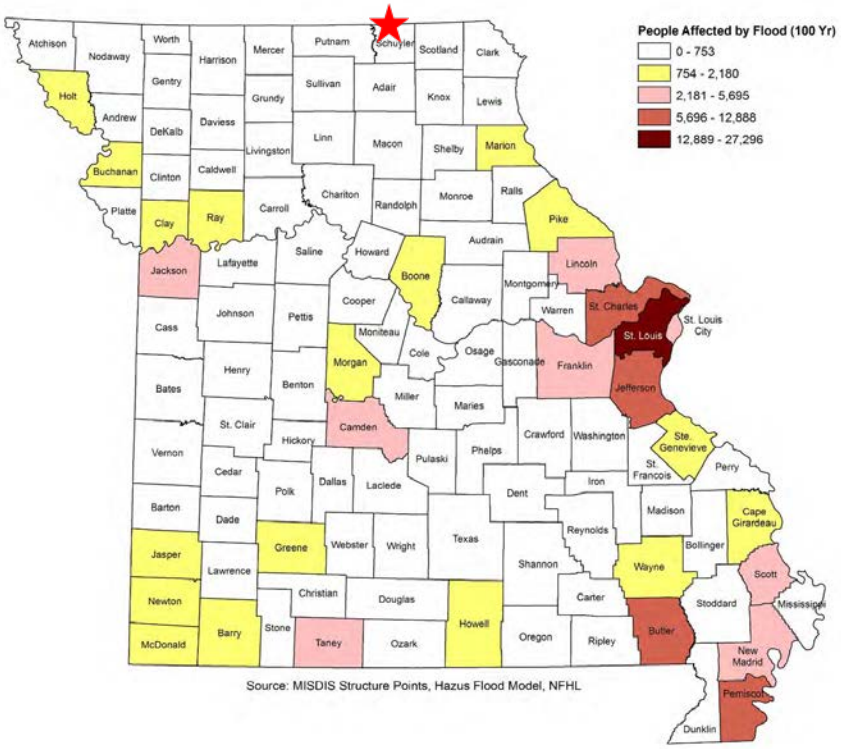


Figure 3.11. Countywide Base-Flood Scenarios: Displaced People



Potential Losses to Existing Development

Flash flooding can occur almost anywhere in Schuyler County where the terrain is hilly and the ground provides little absorption. These areas are generally well-known and development is avoided in these areas. Existing development is minimal in flood areas and therefore there is minimal risk to persons or property in Schuyler County. While flash flooding may cause minimal loss to development, travel related impacts are anticipated and pose a risk to persons as evidenced by the flash flood related death in 2010.

Impact of Previous and Future Development

Although there have been 0 riverine flood events in the past 20 years, any development near the aforementioned rivers and creeks would increase exposure to flooding. Development in these areas has been generally avoided. Schuyler County has not experienced a significant increase in population and therefore new development is currently not an issue.

EMAP Consequence Analysis

Table 3.21 summarizes the detrimental impacts from flooding.

Table 3.21. EMAP Impact Analysis: Flooding

Subject	Detrimental Impacts
Public	Localized impact expected to be severe for incident areas and moderate to light for other adversely affected areas.
Responders	Localized impact expected to limit damage to personnel in the flood areas at the time of the incident.
Continuity of Operations	Damage to facilities/personnel in the area of the incident may require temporary relocation of some operations. Localized disruption of roads, facilities, and/or utilities caused by incident may postpone delivery of some services.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the area of the incident. Some severe damage possible.
Environment	Localized impact expected to be severe for incident areas and moderate to light for other areas affected by the flood or HazMat spills.
Economic Condition of Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

Hazard Summary by Jurisdiction

Riverine flooding is a minor risk to communities as there has been no recorded riverine flooding in the past 20 years in Schuyler County. Flash flooding is more hazardous as there has been 14 flash flood events in the past 20 years one of which claimed the life of a person. Flash flooding poses the most risk to travel ways as roadways historically have been the only infrastructure impacted. Flash flooding occurs mostly in the unincorporated areas of Schuyler County but there have been a few past events located in the cities of Lancaster and Queen City.

Schuyler County R-1 School District doesn't have any buildings located in a floodplain and is not in any danger of flooding. School bus travel does occur on roadways known for flash flooding, however, these routes are well known by the school district and are avoided during heavy rainfall.

Problem Statement

Risk to Schuyler County due to flash and riverine flooding is relatively insignificant due to geography. During the past 20 years, there have been no reported riverine flooding events and only 14 flash flooding events. There are no severe repetitive loss properties in the planning area. There has been one fatality as a result of a flash flood event and therefore, local governments should make a strong effort to improve emergency warning systems to insure future death and injuries do not occur. Local governments should consider making improvements to roads and low water crossings that consistently flood by placing them on a hazard mitigation list and actively seek funding to successfully complete the projects.

3.4.2 Levee Failure

Hazard Profile

Hazard Description

Following is sample language. Levees are earth embankments constructed along rivers and coastlines to protect adjacent lands from flooding. Floodwalls are concrete structures, often components of levee systems, designed for urban areas where there is insufficient room for earthen levees. When levees and floodwalls and their appurtenant structures are stressed beyond their capabilities to withstand floods, levee failure can result in injuries and loss of life, as well as damages to property, the environment, and the economy.

Levees can be small agricultural levees that protect farmland from high-frequency flooding. Levees can also be larger, designed to protect people and property in larger urban areas from less frequent flooding events such as the 100-year and 500-year flood levels. For purposes of this discussion, levee failure will refer to both overtopping and breach as defined in FEMA's Publication "So You Live Behind a Levee" (http://mrcc.isws.illinois.edu/1913Flood/awareness/materials/SoYouLiveBehindLevee.pdf).

Following are the FEMA publication descriptions of different kinds of levee failure.

> **Overtopping: When a Flood Is Too Big**
>
> Overtopping occurs when floodwaters exceed the height of a levee and flow over its crown. As the water passes over the top, it may erode the levee, worsening the flooding and potentially causing an opening, or breach, in the levee.
>
> **Breaching: When a Levee Gives Way**
>
> A levee breach occurs when part of a levee gives way, creating an opening through which floodwaters may pass. A breach may occur gradually or suddenly. The most dangerous breaches happen quickly during periods of high water. The resulting torrent can quickly swamp a large area behind the failed levee with little or no warning.

Earthen levees can be damaged in several ways. For instance, strong river currents and waves can erode the surface. Debris and ice carried by floodwaters—and even large objects such as boats or barges—can collide with and gouge the levee. Trees growing on a levee can blow over, leaving a hole where the root wad and soil used to be. Burrowing animals can create holes that enable water to pass through a levee. If severe enough, any of these situations can lead to a zone of weakness that could cause a levee breach. In seismically active areas, earthquakes and ground shaking can cause a loss of soil strength, weakening a levee and possibly resulting in failure. Seismic activity can also cause levees to slide or slump, both of which can lead to failure.

Geographic Location

Missouri is a state with many levees. Currently, there is no single comprehensive inventory of levee systems in the state. Levees have been constructed across the state by public entities and private entities with varying levels of protection, inspection oversight, and maintenance. The lack of a comprehensive levee inventory is not unique to Missouri.

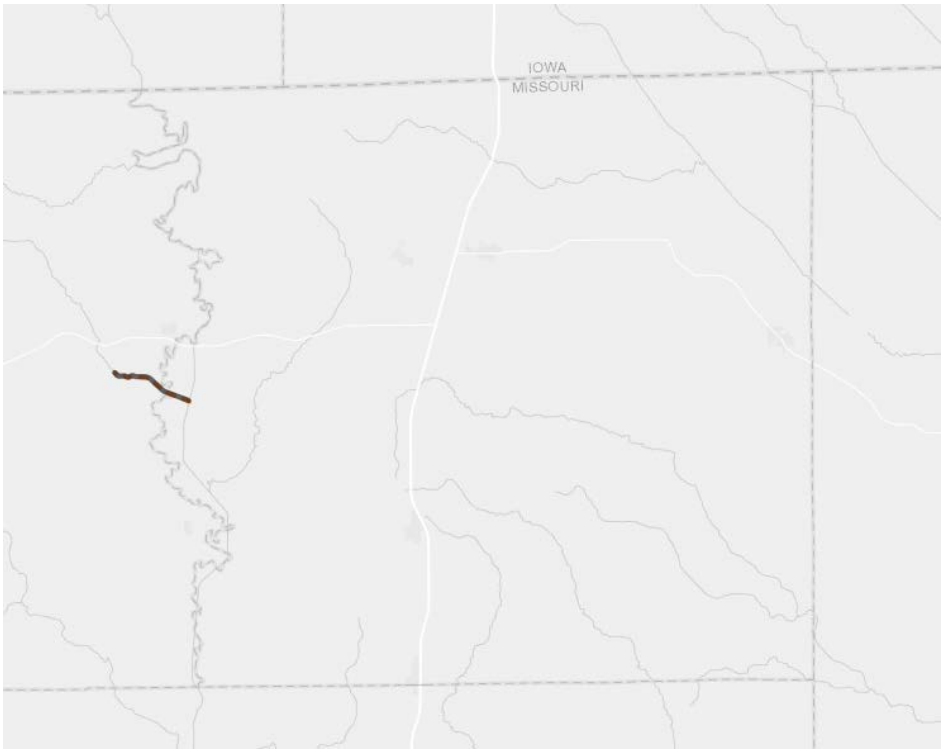
There are two concurrent nation-wide levee inventory development efforts, one led by the United State Army Corps of Engineers (USACE) and one led by Federal Emergency Management Agency (FEMA). The National Levee Database (NLD), developed by USACE, captures all USACE related levee projects, regardless of design levels of protection. The Midterm Levee Inventory (MLI),

developed by FEMA, captures all levee data (USACE and non-USACE) but primarily focuses on levees that provide 1% annual-chance flood protection on FEMA Flood Insurance Rate Maps (FIRMs).

It is likely that agricultural levees and other non-regulated levees within the planning area exist that are not inventoried or inspected. These levees that are not designed to provide protection from the 1-percent annual chance flood would overtop or fail in the 1-percent annual chance flood scenario. Therefore, any associated losses would be taken into account in the loss estimates provided in the Flood Hazard Section.

Schuyler County has one levee on the west most area of the county along Shoal Creek. The Shoal Creek Channel (Leveed ID: 3606000243) was USACE Federally constructed and then turned over to the Shoal Creek Drainage District (sponsor) for operations and maintenance. The levee is 2.38 miles long with portions in both Schuyler and Putnam Counties. The Shoal Creek Channel is listed on the USACE National Levee Database but was not recognized in the 2018 Missouri Hazard Mitigation Plan.

Figure 3.12. Location of the Shoal Creek Channel Levee



Source: USACE National Levee Database

Strength/Magnitude/Extent

Levee failure is typically an additional or secondary impact of another disaster such as flooding or earthquake. The main difference between levee failure and losses associated with riverine flooding is magnitude. Levee failure often occurs during a flood event, causing destruction in addition to what would have been caused by flooding alone. In addition, there would be an increased potential for loss of life due to the speed of onset and greater depth, extent, and velocity of flooding due to levee breach.

As previously mentioned, agricultural levees and levees that are not designed to provide flood protection from at least the 1-percent annual chance flood likely do exist in the planning area. However, none of these levees are shown on the Preliminary DFIRM, nor are they enrolled in the USACE Levee Safety Program. As a result, an inventory of these types of levees is not available for analysis. Additionally, since these types of levees do not provide protection from the 1-percent annual chance flood, losses associated with overtopping or failure are captured in the Flood Section of this plan.

Previous Occurrences

There have been no previous levee breaches or incidents in the planning area. The National Levee Database has the risk for this levee as "Not Screened" and there is no risk characterization summery. It does state that one person and one structure is a risk from levee failure.

There is no levee breaches listed for this levee in either the 2013 or 2018 State Plan.

Probability of Future Occurrence

There are no records of previous events in the planning area and therefore probabilities cannot be calculated. The lack of a centralized database for Missouri levees does impact this analysis.

Changing Future Conditions Considerations

According to the 2018 State Hazard Mitigation Plan, the impact of changing future conditions on levee failure will most likely be related to changes in precipitation and flood likelihood. Climate change projections suggest that precipitation may increase and occur in more extreme events, which may increase risk of flooding, putting stress on levees and increasing likelihood of levee failure. Furthermore, aging levee infrastructure and a lack of regular maintenance (including checking for seepage and removing trees, roots and other vegetation that can weaken a levee) coupled with more extreme weather events may increase risk of future levee failure.

Vulnerability

Vulnerability Overview

The USACE regularly inspects levees within its Levee Safety Program to monitor their overall condition, identify deficiencies, verify that maintenance is taking place, determine eligibility for federal rehabilitation assistance (in accordance with P.L. 84-99), and provide information about the levees on which the public relies. Inspection information also contributes to effective risk assessments and supports levee accreditation decisions for the National Flood Insurance Program administered by the Federal Emergency Management Agency (FEMA).

The USACE now conducts two types of levee inspections. Routine Inspection is a visual inspection to verify and rate levee system operation and maintenance. It is typically conducted each year for all levees in the USACE Levee Safety Program. Periodic Inspection is a comprehensive inspection led by a professional engineer and conducted by a USACE multidisciplinary team that includes the levee sponsor. The USACE typically conducts this inspection every five years on the federally authorized levees in the USACE Levee Safety Program.

Both Routine and Periodic Inspections result in a rating for operation and maintenance. Each levee segment receives an overall segment inspection rating of Acceptable, Minimally Acceptable, or Unacceptable. **Figure 3.13** below defines the three ratings.

Figure 3.13. Definitions of the Three Levee System Ratings

Levee System Inspection Ratings	
Acceptable	All inspection items are rated as Acceptable.
Minimally Acceptable	One or more levee segment inspection items are rated as Minimally Acceptable or one or more items are rated as Unacceptable and an engineering determination concludes that the Unacceptable inspection items would not prevent the segment/system from performing as intended during the next flood event.
Unacceptable	One or more levee segment inspection items are rated as Unacceptable and would prevent the segment/system from performing as intended, or a serious deficiency noted in past inspections (previous Unacceptable items in a Minimally Acceptable overall rating) has not been corrected within the established timeframe, not to exceed two years.

The Shoal Creek Channel levee has not been rated.

Potential Losses to Existing Development

The Shoal Creek Channel Levee is listed in the National Levee Database but has not been screened for risk. The number of people at risk is one and the number of structures at risk is one. The property value of the structure at risk is $55,500.

Impact of Previous and Future Development

There is no known development planned in areas protected by levees and therefore there is no anticipated increase in risk due to levee failure.

EMAP Consequence Analysis

Table 3.22 summarizes the detrimental impacts from levee failure.

Table 3.22. EMAP Impact Analysis: Levee Failure

Subject	Detrimental Impacts
Public	Localized impact expected to be severe for inundation area and moderate to light for other adversely affected areas.
Responders	Localized impact expected to limit damage to personnel in the inundation area at the time of the incident.
Continuity of Operations	Damage to facilities/personnel in the area of the incident may require temporary relocation of some operations. Localized disruption of roads and/or utilities may postpone delivery of some services.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the inundation area of the incident. Some severe damage possible.
Environment	Localized impact expected to be severe for inundation area and moderate to light for other adversely affected areas.
Economic Condition of Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time, depending on damage and length of investigation.

Public Confidence in the Jurisdiction's Governance	Localized impact expected to adversely affect confidence in local, state, and federal government, regardless of the levee owner.

Hazard Summary by Jurisdiction

There are no jurisdictions with levee protected areas nor are there any critical facilities in levee protected areas as well as critical systems that could become inundated. Schuyler County R-1 does not have any facilities located in levee protected areas. Areas impacted by levee failure are mostly farmland and undeveloped area.

Problem Statement

Flooding due to a potential levee breach poses very little hazard to life or property in Schuyler County. However, the Shoal Creek Channel levee is not a levee that is regularly inspected and therefore the stability of the levee is unknown. Regular inspections and maintenance should be preformed on the levee to prevent any future breaches.

3.4.3 Dam Failure

Hazard Profile

Hazard Description

A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams are typically constructed of earth, rock, concrete, or mine tailings. Dam failure is the uncontrolled release of impounded water resulting in downstream flooding, affecting both life and property. Dam failure can be caused by any of the following:

1. Overtopping: Inadequate spillway design, debris blockage of spillways or settlement of the dam crest.
2. Piping: Internal erosion caused by embankment leakage, foundation leakage and deterioration of pertinent structures appended to the dam.
3. Erosion: Inadequate spillway capacity causing overtopping of the dam, flow erosion, and inadequate slope protection.
4. Structural Failure: Caused by an earthquake, slope instability or faulty construction.

Information can be obtained from:

- National Resources Conservation Service: http://www.nrcs.usda.gov
- DamSafetyAction.org: https://damsafety.org/missouri

Data from dams in Schuyler County has been collected from two sources; a listing by the Missouri Department of Natural Resources (MoDNR) and the National Inventory of Dams (NID). Each has its own system of classifying dams. Neither the MoDNR nor the NID hazard potential classification references the condition of the dam. For the risk analysis, data was used from all MoDNR Class I and NID Hazard dams.

Table 3.23. MoDNR Dam Hazard Classification Definitions

Hazard Class	Definition
Class I	Contains 10 or more permanent dwellings or any public building
Class II	Contains 1 to 9 permanent dwellings or 1 or more campgrounds with permanent water, sewer, and electrical services or 1 or more industrial buildings
Class III	Everything else

Source: Missouri Department of Natural Resources, http://dnr.mo.gov/env/wrc/docs/rules_reg_94.pdf

Table 3.24. NID Dam Hazard Classification Definitions

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

Source: National Inventory of Dams

Figure 3.14. Summary of Dams in Schuyler County

Source: https://levees.sec.usace.army.mil/#/levees/system/3605000228/risk

Geographic Location

Figure 3.15. Dams in Schuyler County by Hazard Potential

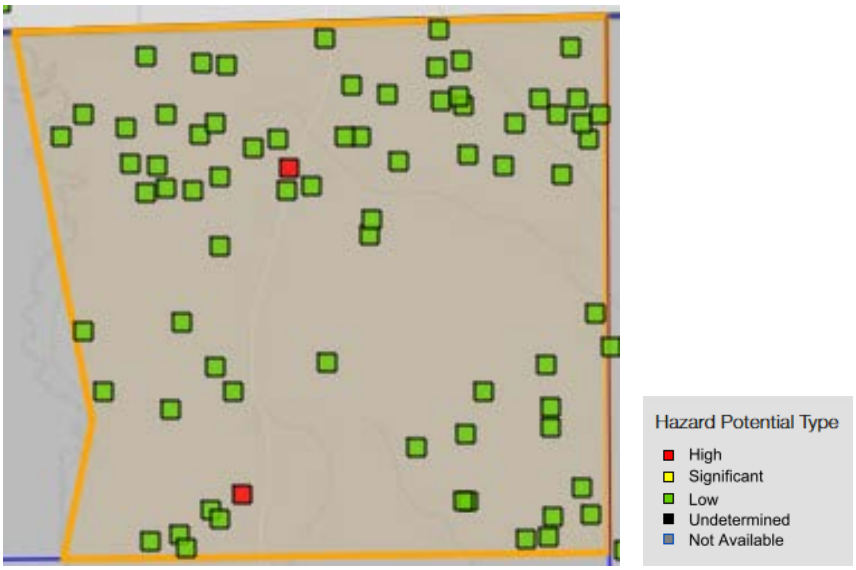
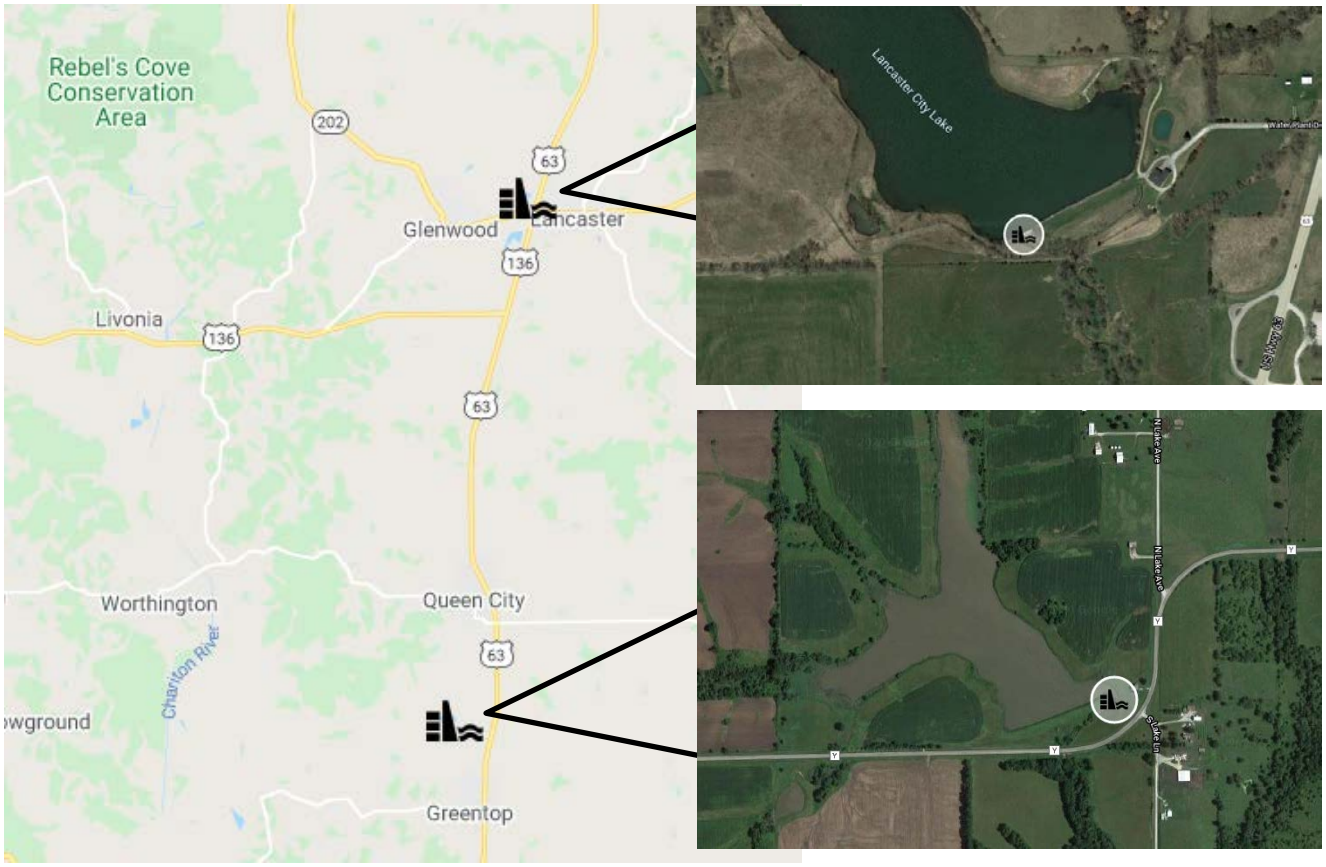


Table 3.25. High Hazard Dams in the Schuyler County Planning Area

Dam Name	Emergency Action Plan (EAP)AP	Dam Height (Ft)	Normal Storage (Acre-Ft)	Last Inspection Date	River	Nearest Downstream City	Distance To Nearest City (Miles)	Dam Owner
QUEEN CITY RESERVOIR DAM		22	330	-		GREENTOP	1	QUEEN CITY,MO
NEWCOMB DAM-SOUTH		30	112	-	TR-SOUTH FORK FABIUS RIVER	CRAWFORD	0	DONALD NEWCOMB

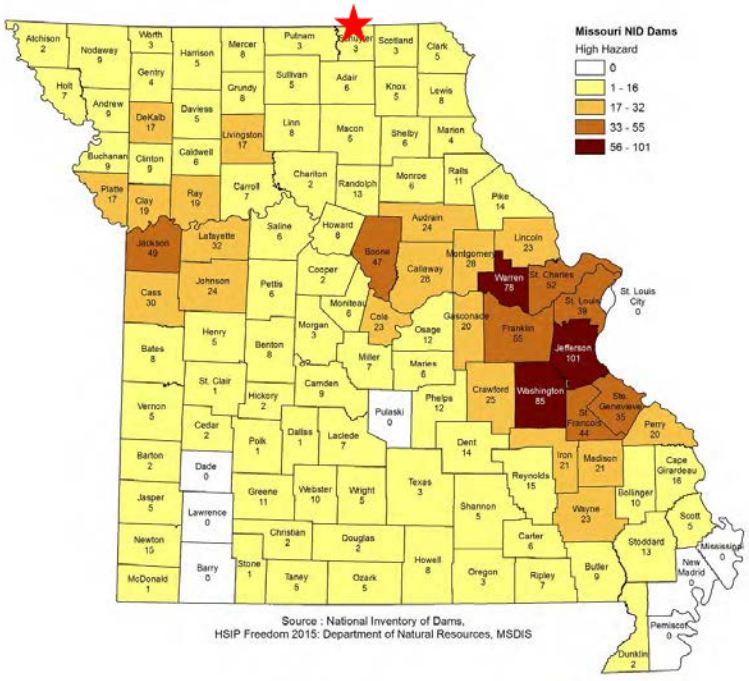
Sources: Missouri Department of Natural Resources, https://dnr.mo.gov/geology/wrc/dam-safety/damsinmissouri.htm and National Inventory of Dams, http://nid.usace.army.mil/cm_apex/f?p=838:12.

Figure 3.16. High Hazard Dam Locations in Schuyler County



Source: GoogleMaps

Figure 3.17. High Hazard Dam and State Regulated Dams



Upstream Dams Outside the Planning Area

The Missouri Department of Natural Resources and the National Inventory of Dams was consulted to see if dams located outside the planning area would cause an impact in the event of failure. There are no upstream dams outside the planning area that are considered able to potentially able to impact Schuyler County in the event of failure.

Strength/Magnitude/Extent

The strength/magnitude of dam failure would be similar in some cases to flood events (see the flood hazard vulnerability analysis and discussion). The strength/magnitude/extent of dam failure is related to the volume of water behind the dam as well as the potential speed of onset, depth, and velocity. Note that for this reason, dam failures could flood areas outside of mapped flood hazards.

Previous Occurrences

To determine previous occurrences of dam failure within Schuyler County, the previously approved county hazard mitigation plan was consulted as well as the 2018 Missouri State Hazard Mitigation Plan and the Stanford University's National Performance of Dams Program (http://npdp.stanford.edu). No record of dam failure within Schuyler County was found.

Probability of Future Occurrence

There are no recorded dam failures in Schuyler County which makes forecasting probability of future failure difficult. There are two factors that can impact dam failure; regulation and inspection. Regulation requires regular inspections which can determine issues that contribute to failure. Of the two High Hazzard dams in Schuyler County, neither are state regulated and neither receive regular inspections.

Failure of either of these two dams could result in loss of life and/or property damage.

Changing Future Conditions Considerations

Studies have been conducted to investigate the impact of climate change scenarios on dam safety. Dam failure is already tied to flooding and the increased pressure flooding places on dams. The impacts of changing future conditions on dam failure will most likely be those related to changes in precipitation and flood likelihood. Changing future conditions projections suggest that precipitation may increase and occur in more extreme events, which may increase risk of flooding, putting stress on dams and increasing likelihood of dam failure.

Vulnerability

Vulnerability Overview

Vulnerability to dam failure is a factor due to multiple dams in the planning area, including two High Hazard Dams, indicating that loss of life is possible in the event of failure. Neighboring communities are also at risk if they are downstream from a dam. As there are no recorded dam failures, the planning committee chose only to address the high hazard dams when funding becomes available.

Potential Losses to Existing Development:

The high hazard dams, if breached could impact 60 structures (both commercial and residential) valued at $40,765,079 and could potentially impact 10 residents. See Figure below.

Table 3.26. Estimated Numbers and Values of Structures and Population Vulnerable to Failure of USACE Dams with Available Inundation Areas

County	Number of Structures	Value of Structures	Population
Schuyler	**60**	**$40,765,079**	**10**
Agriculture	56	$40,096,000	0
Residential	4	$669,079	10

Impact of Previous and Future Development

Schuyler County is largely a rural community with very little evidence of growth within the inundation areas of a dam.

EMAP Consequence Analysis

Table 3.27 summarizes the detrimental impacts from dam failure.

Table 3.27. EMAP Impact Analysis: Dam Failure

Subject	Detrimental Impacts
Public	Localized impact expected to be severe for inundation area and moderate to light for other adversely affected areas.
Responders	Localized impact expected to limit damage to personnel in the inundation area at the time of the incident.
Continuity of Operations	Damage to facilities/personnel in the area of the incident may require temporary relocation of some operations. Localized disruption of roads and/or utilities may postpone delivery of some services. Regulatory waivers may be needed locally. Fulfillment of some contracts may be difficult. Impact may reduce deliveries.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the inundation area of the incident. Some severe damage possible.
Environment	Localized impact expected to be severe for inundation area and moderate to light for other adversely affected areas.
Economic Condition of Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time, depending on damage and length of investigation.
Public Confidence in the Jurisdiction's Governance	Localized impact expected to primarily adversely affect dam owner and local entities.

Hazard Summary by Jurisdiction

The Cities/Villages of Schuyler County are not in danger of being inundated due to a breach of a dam however Unincorporated Schuyler County does have a few dams that would cause that area surrounding danger. It would be helpful for residents and property owners near the high hazard dams in Unincorporated Schuyler County get familiarized with each dam's Emergency Action Plan (EAP) and work closely with County EMD to learn about their risk level.

Problem Statement

Some entities that own or operate dams in Schuyler County do not property inspect and maintain the dam to ensure safety of the people and property that lie within the inundation area of a dam. The lack Possible solutions include the development of a regular maintenance schedule and the identification of qualified staff or a consultant to assist. The high hazard dams that are in Unincorporated Schuyler County pose risk to less densely populated areas but property owners should still rely on the County EMD and the dam's Emergency Action Plan to gauge their risk and preparedness.

3.4.4 Earthquakes

Hazard Profile

Hazard Description

An earthquake is a sudden motion or trembling that is caused by a release of energy accumulated within or along the edge of the earth's tectonic plates. Earthquakes occur primarily along fault zones and tears in the earth's crust. Along these faults and tears in the crust, stresses can build until one side of the fault slips, generating compressive and shear energy that produces the shaking and damage to the built environment. Heaviest damage generally occurs nearest the earthquake epicenter, which is that point on the earth's surface directly above the point of fault movement. The composition of geologic materials between these points is a major factor in transmitting the energy to buildings and other structures on the earth's surface.

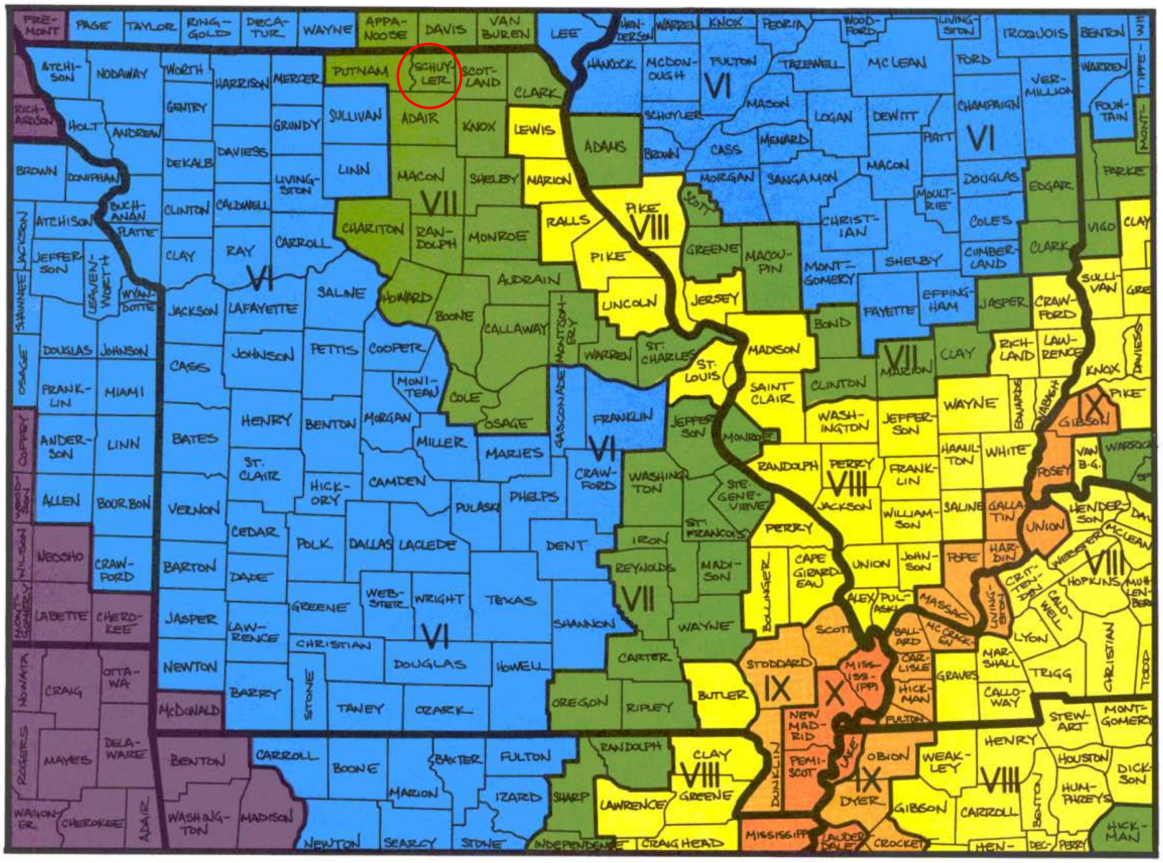
Some earthquakes occur in the middle of plates, as is the case for seismic zones in the Midwestern United States. The most seismically active area in the Midwest is the New Madrid Seismic Zone. The possibility of the occurrence of a catastrophic earthquake in the central and Eastern United States is real as evidenced by history. The impacts of significant earthquakes affect large areas, terminating public services and systems needed to aid the suffering and displaced. As with hurricanes, mass relocation may be necessary, but the residents who are suffering from the earthquake can neither leave the heavily impacted areas nor receive aid or even communication in the aftermath of a significant event.

Geographic Location

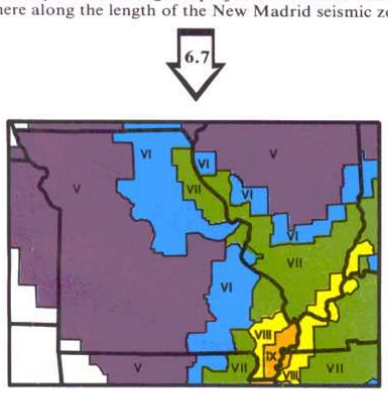
Seismic activity on the New Madrid Seismic Zone of Southeastern Missouri is very significant both historically and at present. On December 16, 1811 and January 23 and February 7 of 1812, three earthquakes struck the central U.S. with magnitudes estimated to be 7.5-8.0. These earthquakes caused violent ground cracking and volcano-like eruptions of sediment (sand blows) over an area of >10,500 km2 , and uplift of a 50 km by 23 km zone (the Lake County uplift). The shaking was felt over a total area of over 10 million km2 (the largest felt area of any historical earthquake). Of all the historical earthquakes that have the U.S., an 1811- style event would do the most damage if it recurred today. If an 1811 earthquake occurred in Schuyler County the earthquake intensity would not vary within the county. Damage would be to buildings of good design and construction, slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures and some chimneys broken.

The following SEMA map (Figure 3.18) shows the highest projected Modified Mercalli intensities by county from a potential magnitude 7.6 earthquake whose epicenter could be anywhere along the length of the New Madrid Seismic Zone. The below figure indicates Schuyler County and the affects that could be felt from the earthquake. Fortunately for Schuyler County and its residents, the county lies within the Category VII impact zone and therefore the effects of a New Madrid quake would likely be relatively minor.

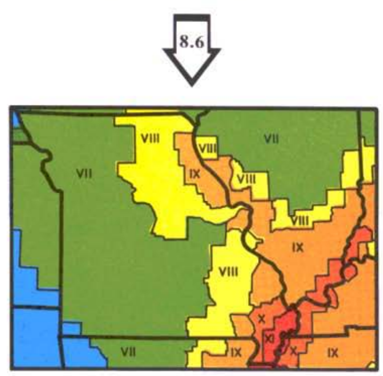
Figure 3.18. Impact Zones for Earthquake Along the New Madrid Fault



This map shows the highest projected Modified Mercalli intensities by county from a potential magnitude – 7.6 earthquake whose epicenter could be anywhere along the length of the New Madrid seismic zone.



This map shows the highest projected Modified Mercalli intensities by county from a potential magnitude – 6.7 earthquake whose epicenter could be anywhere along the length of the New Madrid seismic zone.



This map shows the highest projected Modified Mercalli intensities by county from a potential magnitude – 8.6 earthquake whose epicenter could be anywhere along the length of the New Madrid seismic zone.

Source: https://sema.dps.mo.gov/docs/EQ_Map.pdf

Figure 3.19. Projected Earthquake Intensities

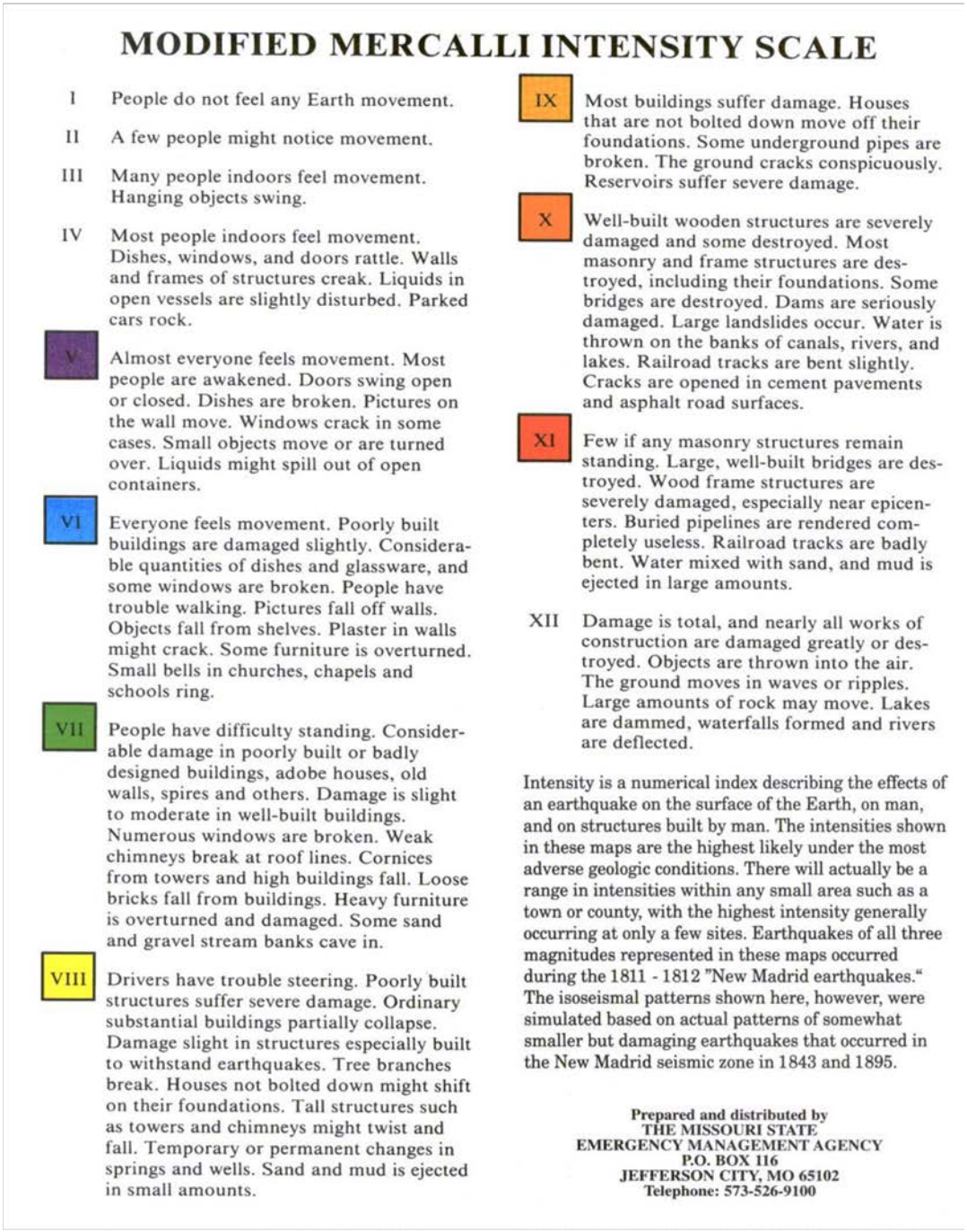
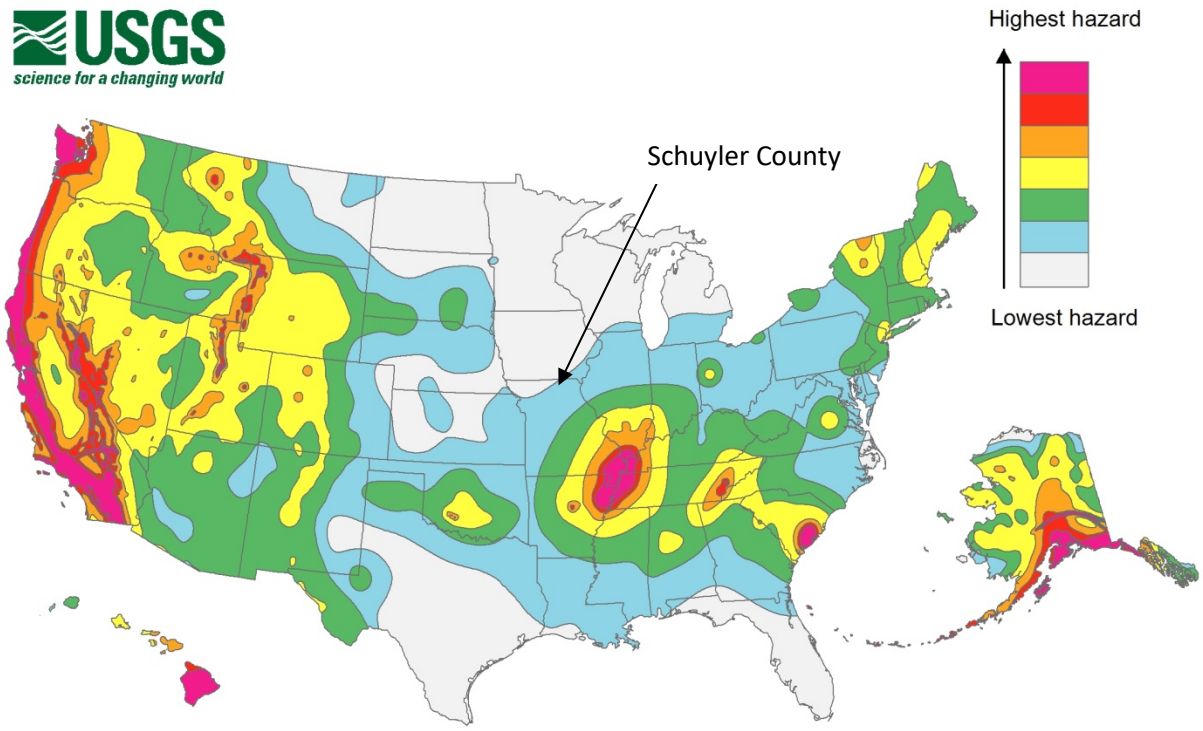


Figure 3.20 shows the seismicity in the United States. Schuyler County is located in the blue portion of the map illustrating the relatively low hazard for the county.

Figure 3.20. United States Seismic Hazard Map



Source: United States Geological Survey at
https://earthquake.usgs.gov/hazards/hazmaps/conterminous/2014/images/HazardMap2014_lg.jpg

Strength/Magnitude/Extent

The extent or severity of earthquakes is generally measured in two ways: 1) the Richter Magnitude Scale is a measure of earthquake magnitude; and 2) the Modified Mercalli Intensity Scale is a measure of earthquake severity. The two scales are defined as follows.

Richter Magnitude Scale

The Richter Magnitude Scale was developed in 1935 as a device to compare the size of earthquakes. The magnitude of an earthquake is measured using a logarithm of the maximum extent of waves recorded by seismographs. Adjustments are made to reflect the variation in the distance between the various seismographs and the epicenter of the earthquakes. On the Richter Scale, magnitude is expressed in whole numbers and decimal fractions. For example, comparing a 5.3 and a 6.3 earthquake shows that the 6.3 quake is ten times bigger in magnitude. Each whole number increase in magnitude represents a tenfold increase in measured amplitude because of the logarithm. Each whole number step in the magnitude scale represents a release of approximately 31 times more energy.

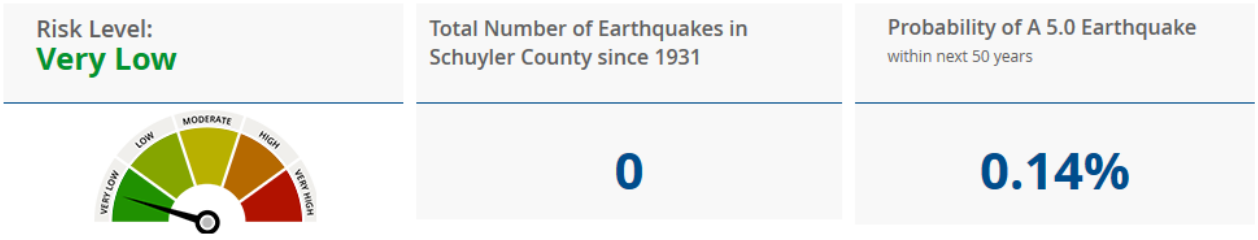
Modified Mercalli Intensity Scale

The intensity of an earthquake is measured by the effect of the earthquake on the earth's surface. The intensity scale is based on the responses to the quake, such as people awakening, movement of furniture, damage to chimneys, etc. The intensity scale currently used in the United States is the Modified Mercalli (MM) Intensity Scale. It was developed in 1931 and is composed of 12 increasing levels of intensity. They range from imperceptible shaking to catastrophic destruction, and each of the twelve levels is denoted by a Roman numeral. The scale does not have a mathematical basis, but is based on observed effects. Its use gives the laymen a more meaningful idea of the severity.

Previous Occurrences

There have been no recorded earthquakes in Schuyler County since 1931 according to the information obtained from homefacts.com as shown in figure 3.21.

Figure 3.21. Earthquake information for Schuyler County



Source: https://www.homefacts.com/earthquakes/Missouri/Schuyler-County.html

Probability of Future Occurrence

As described in Figure 3.21, Schuyler County has a very low earthquake risk, with a total of 0 earthquakes since 1931. Using the established calculation recommended by SEMA for probability of an earthquake would yield a zero probability in Schuyler County. Homefacts.com estimates a 0.14% probability of a 5.0 Earthquake in Schuyler County in the next 50 years.

Changing Future Conditions Considerations

Scientists are beginning to believe there may be a connection between changing climate conditions and earthquakes. Changing ice caps and sea-level redistribute weight over fault lines, which could potentially have an influence on earthquake occurrences. However, currently no studies quantify the relationship to a high level of detail, so recent earthquakes should not be linked with climate change. While not conclusive, early research suggests that more intense earthquakes and tsunamis may eventually be added to the adverse consequences that are caused by changing future conditions. (2018 Missouri State Hazard Mitigation Plan: Chapter 3, Section 3.3.1., Page 3.202.)

Vulnerability

Vulnerability Overview

The 2018 State Plan, Chapter 3, Section 3.3.4, State Vulnerability Overview, annualized loss for Schuyler County as $2,000, with per capita loss of $0.50.

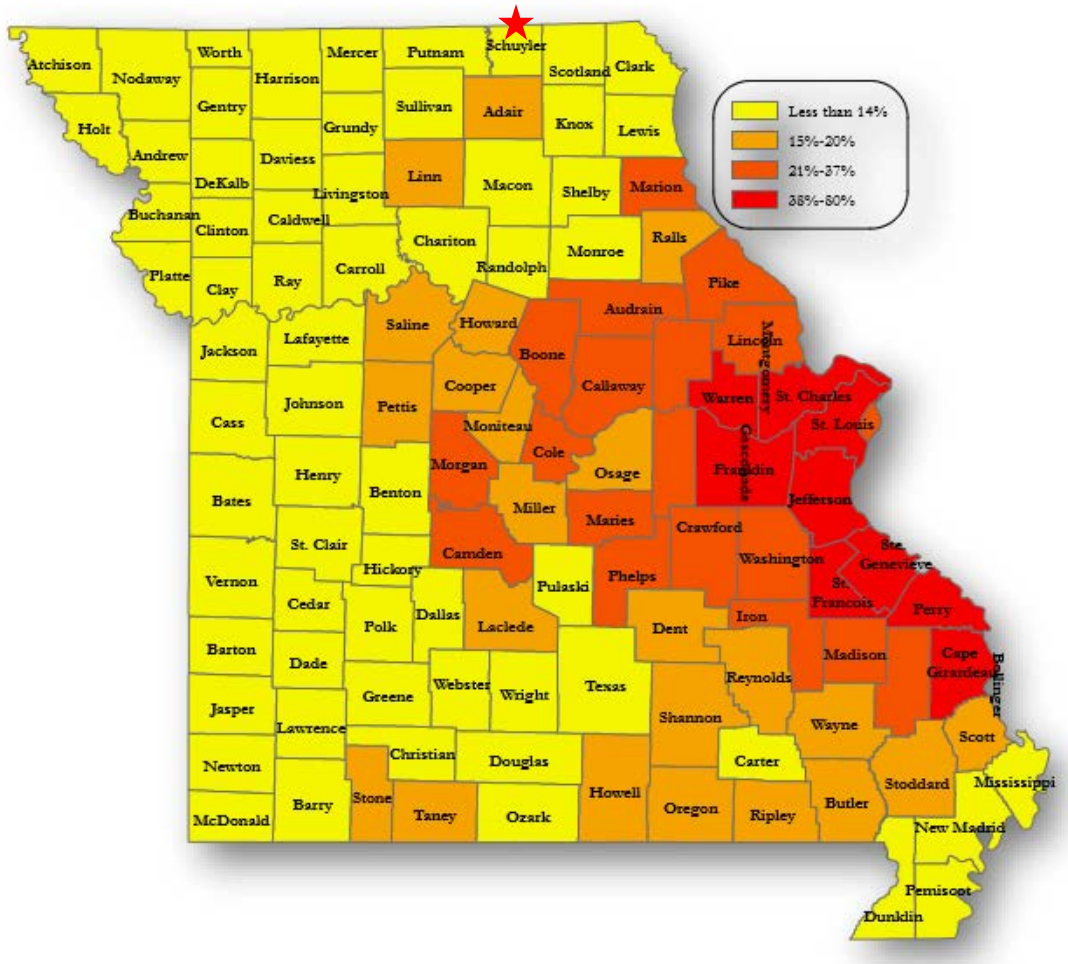
Missouri is the third largest market for earthquake insurance among the states, exceeded only by California and Washington. A study by the U.S. Geological Survey estimates the probability of a magnitude 7.5 or greater earthquake in the New Madrid zone over the next 50 years is 7-10 percent. The probability of an earthquake exceeding magnitude 6 over the same period is 25-40 percent. A joint assessment by the Mid-America Earthquake Center of the University of Illinois and the Federal Emergency Management Agency predicts the New Madrid event could constitute the highest total economic loss of any natural disaster in U.S. history. Earthquake coverage is not included on most homeowners insurance policies. It must be purchased as separate coverage, called an "endorsement." This type of insurance requires that the earthquake is the direct cause of damage to the property. Natural disasters can, in many instances, trigger other events that may also damage property. One example is earthquakes causing bodies of water to produce waves, resulting in flooding.

Earthquake insurance usually features two high deductibles: Rather than a dollar amount, it's a percentage of the cost of rebuilding the home and a separate deductible for the home's contents. Deductibles of 10-15 percent are common. For example, with a 15 percent deductible, the owner of a $200,000 home could expect to pay up to $30,000 in deductibles for damage to the dwelling before receiving any benefit from their earthquake insurance policy.

The material used to build the home can also determine premiums or whether your home is even insurable. For instance, rates may be cheaper for wood-frame homes, which withstand tremors better than homes made of masonry such as brick and stone. Single-story homes may also receive better rates as they tend to sustain less damage from an earthquake. Age of the home can also affect premiums. Some insurers will not offer earthquake insurance for masonry homes.

In Schuyler County, earthquake insurance premiums have gone up nearly 125% since 2000 and the average Annual Earthquake premium is $60. As shown in Figure 3.22, only a small percentage of residences in Schuyler County have earthquake coverage. According to a 2019 report generated by the Department of Insurance, Financial Institutions, and Professional Registration states that only 5.2% of Schuyler County residences have Earthquake coverage.

Figure 3.22. Percent of Residences with Earthquake Insurance, 2018



Source:https://insurance.mo.gov/earthquake/documents/EarthquakeInsuranceMarketsInMissouriReport20197-8-2019_000.pdf

Potential Losses to Existing Development

The Hazus building inventory counts are based on the 2010 census data adjusted to 2014 numbers using the Dun & Bradstreet Business Population Report. Inventory values reflect 2014 valuations, based on RSMeans (a supplier of construction cost information) replacement costs. Population counts are 2010 estimates from the U.S. Census Bureau.

Figure 3.23. HAZUS-MH Earthquake Loss Estimation 2% Probability of Exceedance in 50 Years Scenario Direct Economic Losses Results Summary for Schuyler County

County	Cost Structural Damage	Cost Non-Structural Damage	Cost Contents Damage	Inventory Loss	Loss Ratio	Relocation Loss	Capital Related loss	Wage Losses	Rental Income Loss	Total Loss
Schuyler	$358	$664	$163	$3	0.25	$229	$34	$66	$89	$1,607

Source: 2013 Missouri State Hazard Mitigation Plan
*All values are in thousands **Loss ratio is the sum of structural and nonstructural damage divided by the entire building inventory value within a county.

Impact of Previous and Future Development

Future development is not expected to increase the risk other than contributing to the overall exposure of what could become damaged as a result of an event.

EMAP Consequence Analysis

Table 3.28 summarizes the detrimental impacts from earthquakes.

Table 3.28. EMAP Impact Analysis: Earthquakes

Subject	Detrimental Impacts
Public	Adverse impact expected to be severe for unprotected personnel and moderate to light for protected personnel.
Responders	Adverse impact expected to be severe for unprotected personnel and moderate to light for protected personnel.
Continuity of Operations	Damage to facilities/personnel in the area of the incident may require relocation of operations and lines of succession execution. Disruption of lines of communication and destruction of facilities may extensively postpone delivery of services.
Property, Facilities, and Infrastructure	Damage to facilities and infrastructure in the area of the incident may be extensive for facilities, people, infrastructure, and HazMat.
Environment	May cause extensive damage, creating denial or delays in the use of some areas. Remediation needed.
Economic Condition of Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

Hazard Summary by Jurisdiction

Earthquake intensity is not likely to vary greatly throughout Schuyler County and therefore the risk will be the same throughout. Damages could differ if there were structural variations in the planning area built-environment, however, each community in Schuyler County has roughly the same built-environment.

Problem Statement

Schuyler County has a low probability of suffering an earthquake with only superficial damage forecast. In Schuyler County there are very few buildings in excess of three stories which reduces the issue of earthquake damage. It would be helpful for the communities that don't have building codes to adopt them and the ones that have building codes to update them to incorporate potential damages and to address seismic provisions.

3.4.5 Land Subsidence/Sinkholes

Hazard Profile

Hazard Description

Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that naturally can be dissolved by ground water circulating through them. As the rock dissolves, spaces and caverns develop underground. The sudden collapse of the land surface above them can be dramatic and range in size from broad, regional lowering of the land surface to localized collapse. However, the primary causes of most subsidence are human activities: underground mining of coal, groundwater or petroleum withdrawal, and drainage of organic soils. In addition, sinkholes can develop as a result of subsurface void spaces created over time due to the erosion of subsurface limestone (karst).

Land subsidence occurs slowly and continuously over time, as a general rule. On occasion, it can occur abruptly, as in the sudden formation of sinkholes. Sinkhole formation can be aggravated by flooding.

In the case of sinkholes, the rock below the surface is rock that has been dissolving by circulating groundwater. As the rock dissolves, spaces and caverns form, and ultimately the land above the spaces collapse. In Missouri, sinkhole problems are usually a result of surface materials above openings into bedrock caves eroding and collapsing into the cave opening. These collapses are called “cover collapses” and geologic information can be applied to predict the general regions where collapse will occur. Sinkholes range in size from several square yards to hundreds of acres and may be quite shallow or hundreds of feet deep.

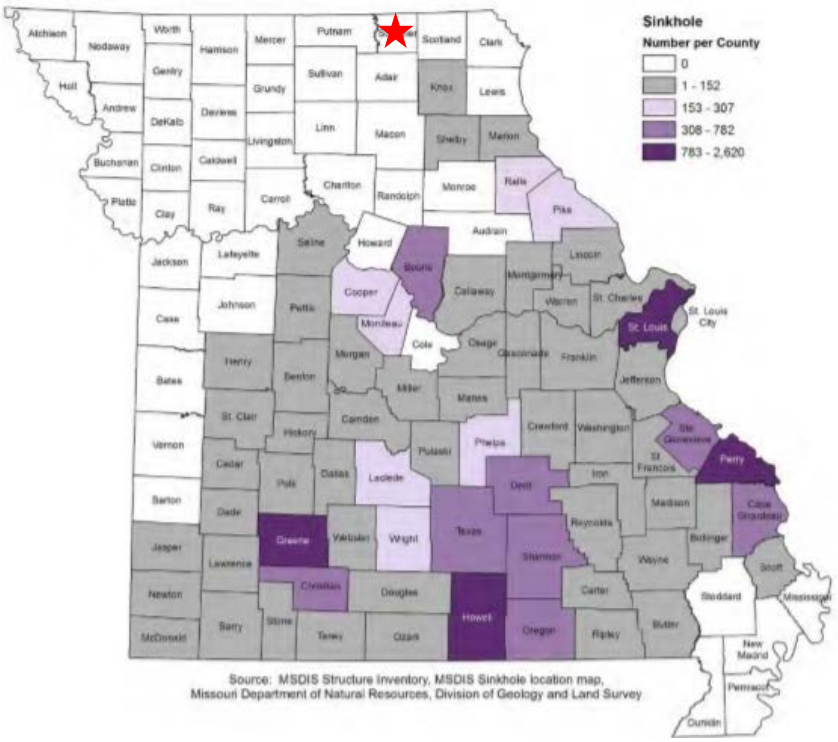
According to the U.S. Geological Survey (USGS), the most damage from sinkholes tends to occur in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania. Fifty-nine percent of Missouri is underlain by thick, carbonate rock that makes Missouri vulnerable to sinkholes. Sinkholes occur in Missouri on a fairly frequent basis. Most of Missouri‘s sinkholes occur naturally in the State‘s karst regions (areas with soluble bedrock). They are a common geologic hazard in southern Missouri, but also occur in the central and northeastern parts of the State. Missouri sinkholes have varied from a few feet to hundreds of acres and from less than one to more than 100 feet deep. The largest known sinkhole in Missouri encompasses about 700 acres in western Boone County southeast of where Interstate 70 crosses the Missouri River. Sinkholes can also vary is shape like shallow bowls or saucers whereas other have vertical walls. Some hold water and form natural ponds.

According to the 2018 State Hazard Mitigation Plan, there are 14 mines in Schuyler County and 0 sinkholes.

Geographic Location

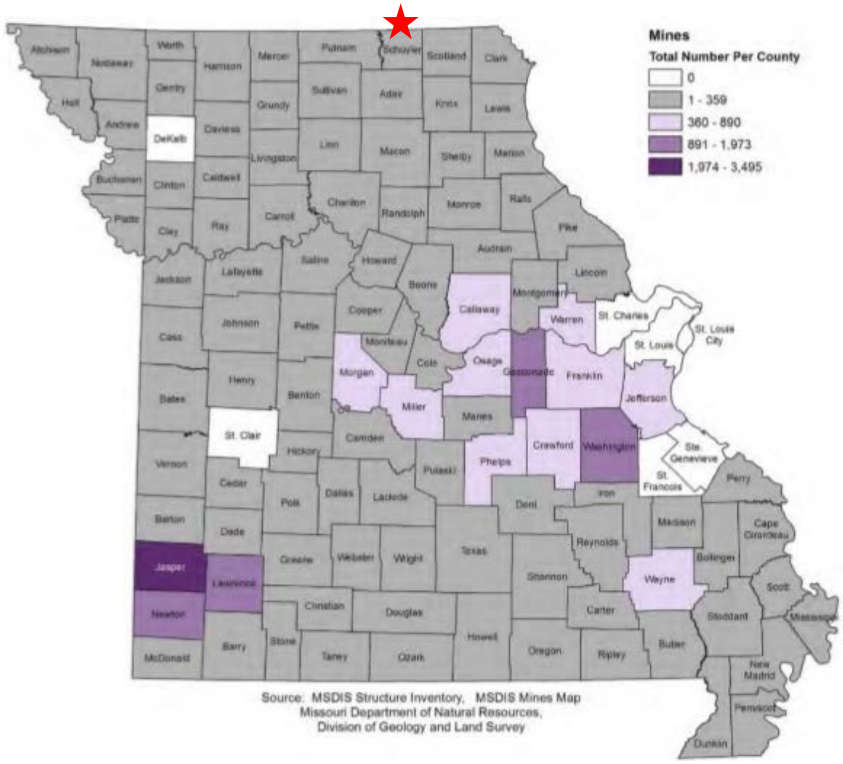
Figure 3.24 shows the number of sinkholes in Schuyler County and Figure 3.25 shows the number of mines in the County.

Figure 3.24. Sinkholes in Schuyler County



Source: 2018 Missouri State Hazard Mitigation Plan; Star indicates Schuyler County

Figure 3.25. Mines in Schuyler County



Source: 2018 Missouri State Hazard Mitigation Plan; Star indicates Schuyler County

Strength/Magnitude/Extent

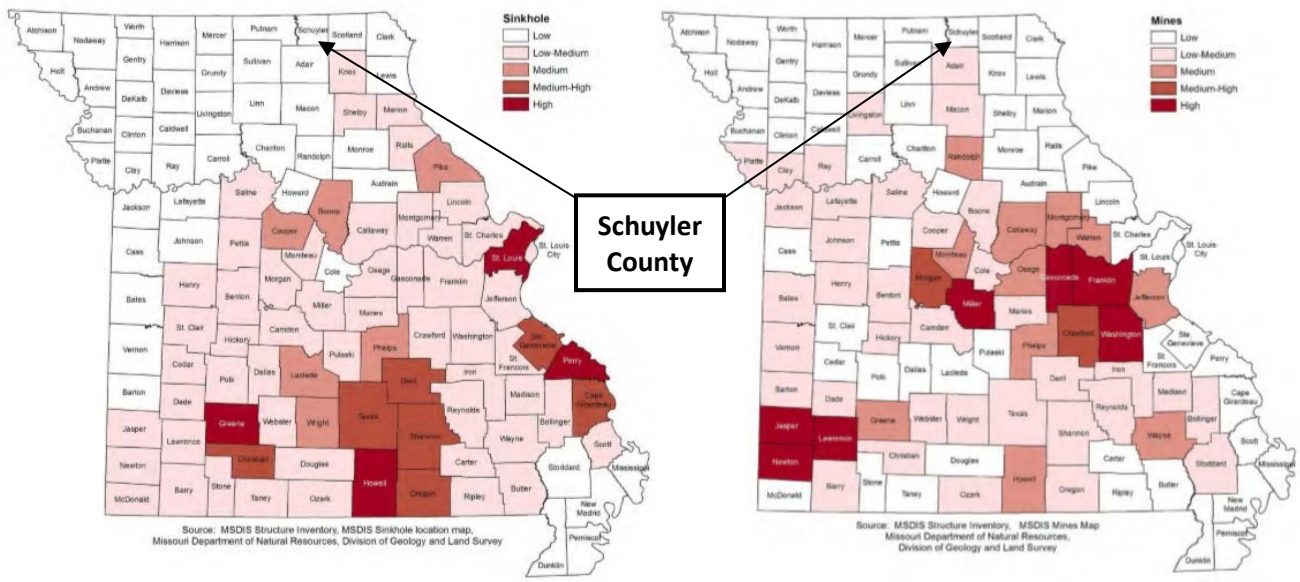
Sinkholes vary in size and location, and these variances will determine the impact of the hazard. A sinkhole could result in the loss of a personal vehicle, a building collapse, or damage to infrastructure such as roads, water, or sewer lines. Groundwater contamination is also possible from a sinkhole. Because of the relationship of sinkholes to groundwater, pollutants captured or dumped in sinkholes could affect a community's groundwater system. Sinkhole collapse could be triggered by large earthquakes. Sinkholes located in floodplains can absorb floodwaters but make detailed flood hazard studies difficult to model.

Previous Occurrences

As noted in the 2018 State Plan, sinkholes are a regular occurrence in Missouri, but rarely are the events of any significance. There has be no occurrence of sink hold induced damage in Schuyler County.

Sinkholes in the planning area are not a common occurrence due to the composition of land. While some sinkholes may be considered a slow changing nuisances, others are more sudden, catastrophic collapses that can destroy property, delay construction projects and contaminate ground water resources.

Figure 3.26. Sinkhole and Mine Rating Values by County



Source: Missouri State Hazard Mitigation Plan, 2018

Probability of Future Occurrence

There are no records of previous event dates in the planning area and therefore the probability of future occurrences cannot accurately be determined due to the limited information. As represented in the figures above, the sinkholes and mines located in Schuyler County have a low rating value.

Changing Future Conditions Considerations

Direct effects from changing climate conditions such as an increase in droughts could contribute to an

increase in sinkholes. These changes raise the likelihood of extreme weather, meaning the torrential rain and flooding conditions which often lead to the exposure of sinkholes are likely to become increasingly common. Certain events such as a heavy precipitation following a period of drought can trigger a sinkhole due to low levels of groundwater combined with a heavy influx of rain.

Vulnerability

Vulnerability Overview

Sinkholes in the planning area are not a common occurrence due to the composition of the land. While some sinkholes may be considered a slow changing nuisance; other more sudden, catastrophic collapses can destroy property, delay construction projects, and contaminate ground water resources.

The Missouri Department of Natural Resources shows no sinkholes for the planning area.

Potential Losses to Existing Development

The potential impact of sinkholes on existing structures is difficult to determine due to the lack of centralized data on historic damages caused by sinkholes and mapping of potential sinkholes is difficult if not impossible to predict where a sinkhole will collapse and how significant the collapse will be. Because sinkhole collapse is not predictable and previous events have not occurred in the rural area, there is not significant data to estimate the future losses due to a sinkhole.

Impact of Previous and Future Development

As more development occurs in unmapped rural areas, the vulnerability to hazards will increase; however, sinkholes are unpredictable and the development in rural areas is difficult to limit due to the lack of occurrence. There are currently no sinkholes in the planning area, and the Schuyler County participating jurisdictions have no plans to limit construction due to sinkholes.

EMAP Consequence Analysis

Table 3.29 summarizes the detrimental impacts from land subsidence/sinkholes.

Table 3.29. EMAP Impact Analysis: Land Subsidence/Sinkholes

Subject	Detrimental Impacts
Public	Localized impact expected to be moderate to light for incident areas and light for other adversely affected areas.
Responders	Localized impact expected to limit damage to personnel in the areas at the time of the incident.
Continuity of Operations	Damage to facilities/personnel in the area of the incident may require temporary relocation of some operations. Localized disruption of roads, facilities, and/or utilities caused by incident may postpone delivery of some services.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the area of the incident. Some severe damage possible.
Environment	Localized impact expected to be moderate to light for incident areas and moderate to light for other areas affected by the sinkhole.
Economic Condition of Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response and recovery not timely and effective.

Hazard Summary by Jurisdiction

The risk for the development of sinkholes is uniform throughout Schuyler County and has not affected one jurisdiction specifically.

Problem Statement

Sinkholes can develop anywhere in the County without warning and grow to varying sizes with disruption of services, specifically to transportation and utilities. The most inexpensive method for remediating sinkholes is to bring in fill material. It will be helpful for Schuyler County to be aware of the possibility of a sinkhole occurring at any time.

3.4.6 Drought

Hazard Profile

Hazard Description

Drought is generally defined as a condition of moisture levels significantly below normal for an extended period of time over a large area that adversely affects plants, animal life, and humans. A drought period can last for months, years, or even decades. There are four types of drought conditions relevant to Missouri, according to the State Plan, which are as follows.

- Meteorological drought is defined in terms of the basis of the degree of dryness (in comparison to some "normal" or average amount) and the duration of the dry period. A meteorological drought must be considered as region-specific since the atmospheric conditions that result in deficiencies of precipitation are highly variable from region to region.

- Hydrological drought is associated with the effects of periods of precipitation (including snowfall) shortfalls on surface or subsurface water supply (e.g., streamflow, reservoir and lake levels, ground water). The frequency and severity of hydrological drought is often defined on a watershed or river basin scale. Although all droughts originate with a deficiency of precipitation, hydrologists are more concerned with how this deficiency plays out through the hydrologic system. Hydrological droughts are usually out of phase with or lag the occurrence of meteorological and agricultural droughts. It takes longer for precipitation deficiencies to show up in components of the hydrological system such as soil moisture, streamflow, and ground water and reservoir levels. As a result, these impacts also are out of phase with impacts in other economic sectors.

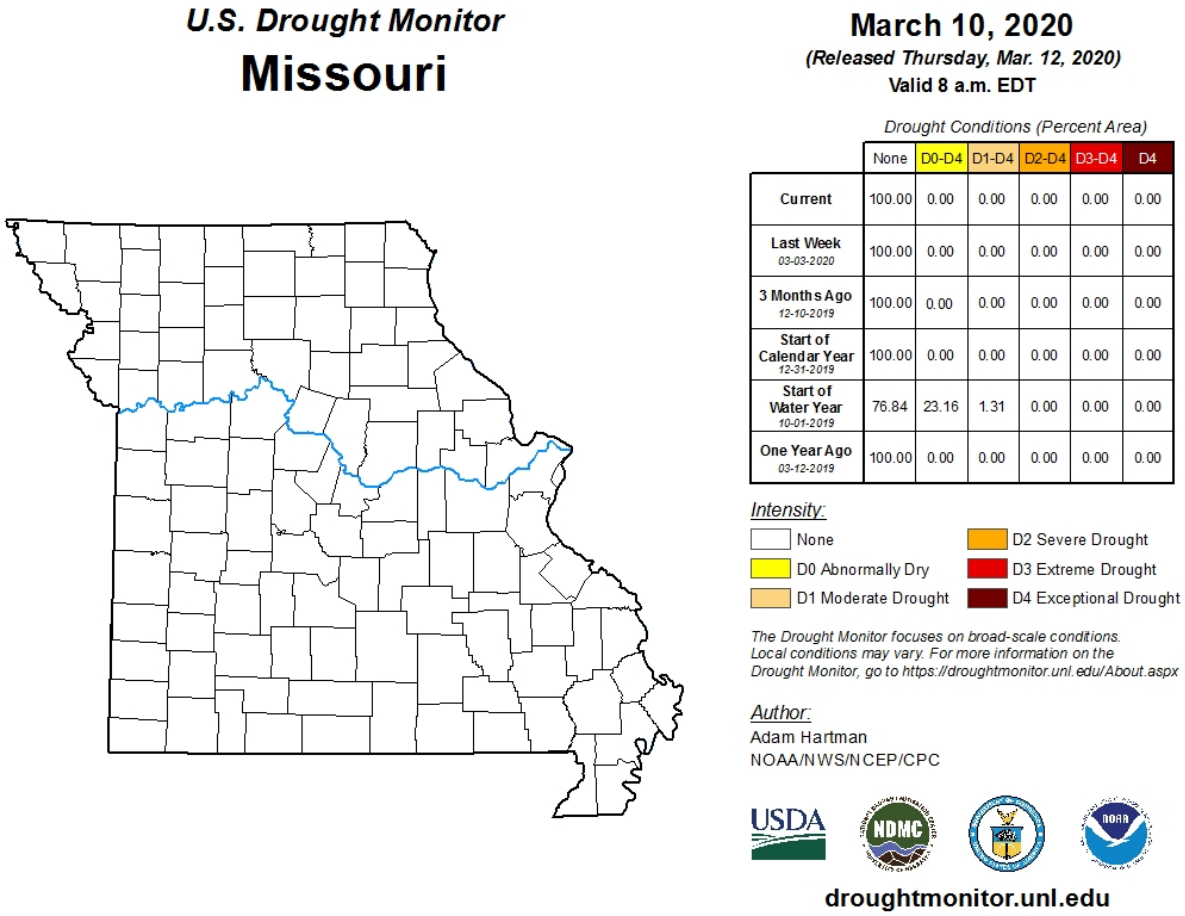
- Agricultural drought focus is on soil moisture deficiencies, differences between actual and potential evaporation, reduced ground water or reservoir levels, etc. Plant demand for water depends on prevailing weather conditions, biological characteristics of the specific plant, its stage of growth, and the physical and biological properties of the soil.

- Socioeconomic drought refers to when physical water shortage begins to affect people.

Geographic Location

Droughts are regional in nature. All areas of the United States are vulnerable to the risk of drought and extreme heat. Droughts can be widespread or localized events. The extent of the droughts varies both in terms of the extent of the heat and range of precipitation. The severity of a drought depends on locations, duration, and geographical extent. Additionally, drought severity depends on the water supply, usage demands made by human activities, vegetation and agricultural operations. Drought brings several different problems which must be addressed. The quality and quantity of crops, livestock and other agricultural assets will be affected during a drought. Drought can adversely impacts forested areas leading to increased potential for extremely destructive forest and woodland fires that could threaten residential, commercial, and recreational structures. According to the 2012 Census of Agriculture, Schuyler county consist of 159,378 acres of land in farms, crop sales generated $14,841,000 and livestock sales generated $15,560,000. A drought would directly impact livestock and crop production in Schuyler County.

Figure 3.27. U.S. Drought Monitor Map of Missouri on March 10, 2020



Source: U.S. Drought Monitor, https://droughtmonitor.unl.edu/Maps/MapArchive.aspx

Strength/Magnitude/Extent

The Palmer Drought Indices measure dryness based on recent precipitation and temperature. The indices are based on a "supply-and-demand model" of soil moisture. Calculation of supply is relatively straightforward, using temperature and the amount of moisture in the soil. However, demand is more complicated as it depends on a variety of factors, such as evapotranspiration and recharge rates. These rates are harder to calculate. Palmer tried to overcome these difficulties by developing an algorithm that approximated these rates and based the algorithm on the most readily available data — precipitation and temperature.

The Palmer Index has proven most effective in identifying long-term drought of more than several months. However, the Palmer Index has been less effective in determining conditions over a matter of weeks. It uses a "0" as normal, and drought is shown in terms of negative numbers; for example, negative 2 is moderate drought, negative 3 is severe drought, and negative 4 is extreme drought. Palmer's algorithm also is used to describe wet spells, using corresponding positive numbers.

Palmer also developed a formula for standardizing drought calculations for each individual location based on the variability of precipitation and temperature at that location. The Palmer index can therefore be applied to any site for which sufficient precipitation and temperature data is available.

Previous Occurrences

Figure 3.30 shows crop losses attributable to drought from January 2009 through December 2019. For the 11 year period, crop losses due to drought totaled 11,857,318. Four years showed no losses while 2012 showed the most loss at $5,480,725 and 2018 the second highest loss year at $2,434,581.

Table 3.30. Drought Losses 2009-2019

Year	Dollars
2011	$1,008,347
2012	$5,480,725
2013	$1,648,499
2014	$457
2016	$9,538
2017	$1,257,007
2018	$2,434,581
2019	$18,164
Total	$11,857,318

Probability of Future Occurrence

According to the 2018 State Hazard Mitigation Plan, Schuyler County has a medium total rating for droughts and is likely to experience droughts in the future, with a 10.72% likelihood of severe drought as depicted in the following table.

Although drought is not predictable, long-range outlooks and predicted impacts of climate change could indicate an increased chance of drought.

Table 3.31. Vulnerability of Schuyler County to Drought

County	SOVI Index Rating	USDA RMA Total Drought Crop Claims	Average Annualized Crop Claims	USDA Claims Rating	2012 Crop Exposure	Crop Exposure Rating	Likeli-hood of Severe Drought (%)	Drought Occurrence Rating	Total Rating	Total Rating (Text) Drought
Schuyler	3	$8,181,908	$909,101	2	$14,841,000	2	10.72	5	12	Medium

Table 3.32. Ranges for Drought Vulnerability Factor Ratings

Factors Considered	Low (1)	Low-medium (2)	Medium (3)	Medium-high-4	High (5)
Social Vulnerability Index	1	2	3	4	5
Crop Exposure Ratio Rating	$886,000 - $10,669,000	$10,669,001 - $33,252,000	$33,252,001 - $73,277,000	$73,277,001 - $155,369,000	$155,369,001 - $256,080,000
Annualized USDA Crop Claims Paid	< $340,000	$670,000-$669,999	$670,000-$999,999	$1M-$1,299,999	> $1,300,000
Likelihood of Occurrence of severe or extreme drought	1-1.9%	2-3.9%	4-5.9%	6-8.9%	9-10.72%
Total Drought Vulnerability Rating	7-8	9-10	11-12	13-14	15-17

Changing Future Conditions Considerations

According to the 2018 State Hazard Mitigation Plan, severe drought is a natural part of Missouri's climate and is a risk to this agriculture-dependent state. Future increases in evaporation rates due to higher temperatures may increase the intensity of naturally-occurring droughts.

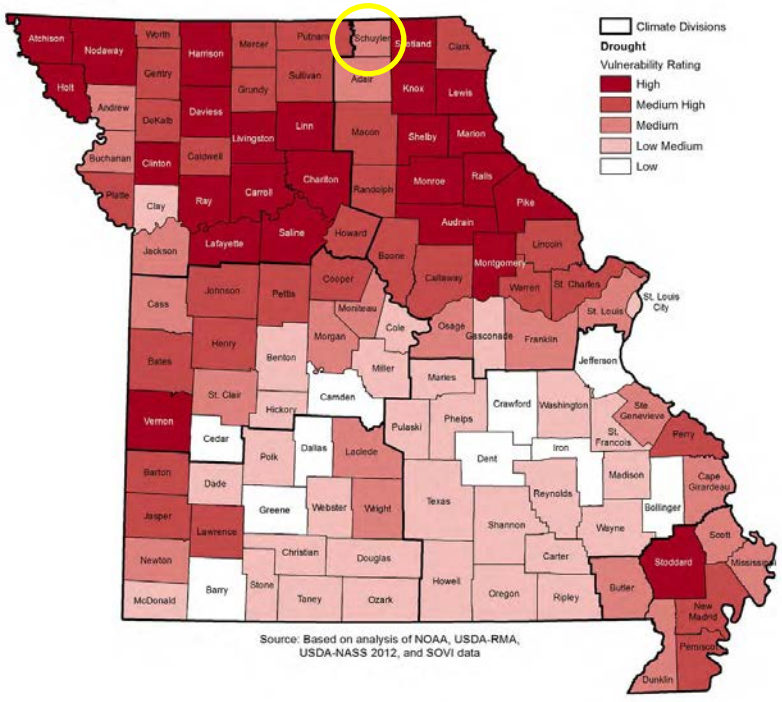
The number of heavy rainfall events is predicted to increase, yet researchers currently expect little change in total rainfall amounts, indicating that the periods between heavy rainfalls will be marked by an increasing number of dry days. Higher temperatures and increased evapotranspiration increase the likelihood of drought. This could lead to agricultural drought and suppressed crop yields.

Vulnerability

Vulnerability Overview

According to the analysis from the 2018 State Plan, (Chapter 3, Section 3.3.6, State Vulnerability Overview) Schuyler County is a Low Medium vulnerable county for droughts.

Figure 3.28. Missouri Drought Vulnerability by County



Potential Losses to Existing Development

The National Drought Monitor Center at the University of Nebraska at Lincoln summarized the potential impacts of drought as follows: Drought can create economic impacts on agriculture and related sectors, including forestry and fisheries, because of the reliance of these sectors on surface and subsurface water supplies. In addition to losses in yields in crop and livestock production, drought is associated with increases in insect infestations, plant disease, and wind erosion. Droughts also bring increased problems with insects and disease to forests and reduce growth. The incidence of forest and range fires increases substantially during extended droughts, which in turn place both human and wildlife populations at higher levels of risk. Income loss is another indicator used in assessing the impacts of drought because so many sectors are affected. Finally, while drought is

rarely a direct cause of death, the associated heat, dust and stress can all contribute to increased mortality.

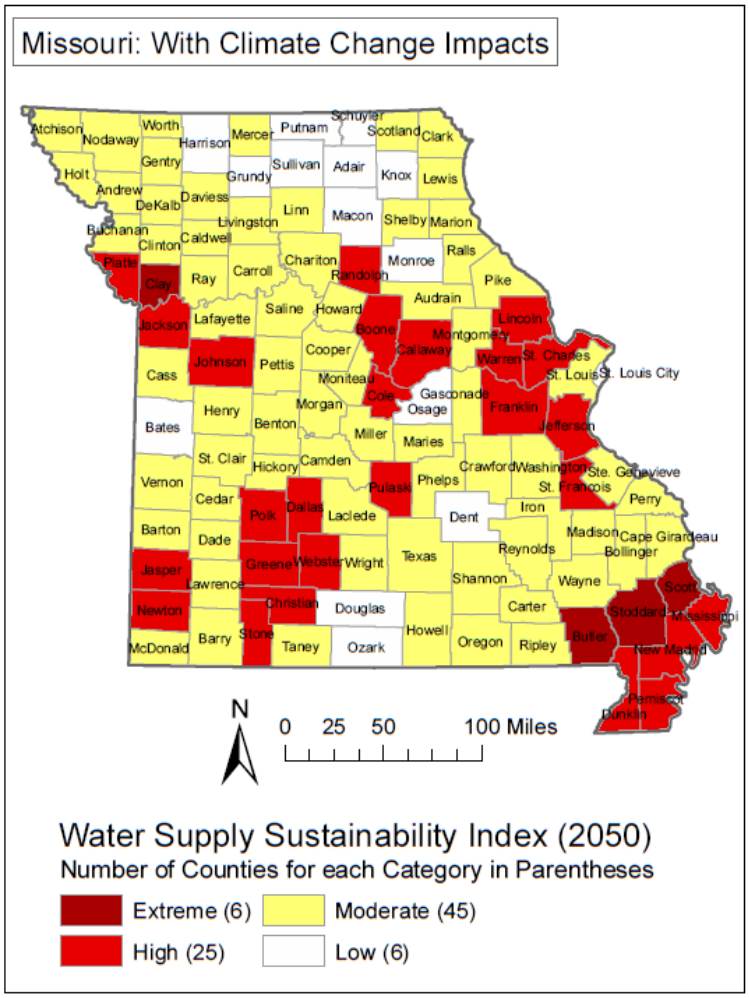
Impact of Previous and Future Development

Future development in the county will remain vulnerable to drought. Typically, some urban and rural areas are more susceptible than others. For example, urban areas are subject to water shortages during periods of drought due the their higher populations and consumption. In rural areas, crops and livestock may suffer from extended periods of heat and drought. As the size of farms increase more crops increase, more crops will be exposed to drought-related agricultural losses. Dry conditions can lead to the ignition of wildfires that could threaten residential, commercial, and recreational areas.

Changing Future Conditions Considerations

A new analysis, performed for the Natural Resources Defense Council, examined the effects of climate change on water supply and demand in the contiguous United States. The study found that more than 1,100 counties will face higher risks of water shortages by mid-century as a result of climate change. Two of the principal reasons for the projected water constraints are shifts in precipitation and potential evapotranspiration (PET). Climate models project decreases in precipitation in many regions of the U.S., including areas that may currently be described as experiencing water shortages of some degree.

Figure 3.29. Missouri Water Supply Sustainability by County With Climate Change Impacts



Source: https://www.nrdc.org/sites/default/files/Missouri_With_Climate_Change.pdf

Table 3.33. EMAP Impact Analysis: Drought

Subject	Detrimental Impacts
Public	Most damage expected to be agricultural in nature. However, water supply disruptions may adversely affect people.
Responders	Nature of hazard expected to minimize any serious damage to properly equipped and trained personnel.
Continuity of Operations	Unlikely to necessitate execution of the Continuity of Operations Plan. Nature of hazard expected to minimize serious damage to services, except for moderate impact on water utilities.
Property, Facilities, and Infrastructure	Nature of hazard expected to minimize any serious damage to facilities.
Environment	May cause disruptions in wildlife habitat, increasing interface with people, and reducing numbers of animals.
Economic Condition of Jurisdiction	Local economy and finances dependent on abundant water supply adversely affected for duration of drought.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

Hazard Summary by Jurisdiction

The entire planning area will be affected by drouth to some degree. The unincorporated agricultural areas of Schuyler County are the most vulnerable to drought. Drought conditions in cities would be the same as those experienced in rural areas, but the impacts would be different such as lawns and local gardens impacted. In addition, building foundations could be weakened due to shrinking and expanding soils.

Problem Statement

Schuyler county is at a medium/moderate risk for severe drought. Possible solutions include the development of agreements with neighboring communities for a secondary water supply source and review of local ordinances/regulation for inclusion of water-use restrictions during periods of drought.

3.4.7 Extreme Temperatures

Hazard Profile

Hazard Description

Extreme temperature events, both hot and cold, can impact human health and mortality, natural ecosystems, agriculture and other economic sectors. According to information provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Ambient air temperature is one component of heat conditions, with relative humidity being the other. The relationship of these factors creates what is known as the apparent temperature. The Heat Index chart shown in Figure 3.11 uses both of these factors to produce a guide for the apparent temperature or relative intensity of heat conditions.

Extreme cold often accompanies severe winter storms and can lead to hypothermia and frostbite in people without adequate clothing protection. Cold can cause fuel to congeal in storage tanks and supply lines, stopping electric generators. Cold temperatures can also overpower a building's heating system and cause water and sewer pipes to freeze and rupture. Extreme cold also increases the likelihood for ice jams on flat rivers or streams. When combined with high winds from winter storms, extreme cold becomes extreme wind chill, which is hazardous to health and safety.

The National Institute on Aging estimates that more than 2.5 million Americans are elderly and especially vulnerable to hypothermia, with the isolated elders being most at risk. About 10 percent of people over the age of 65 have some kind of bodily temperature-regulating defect, and 3-4 percent of all hospital patients over 65 are hypothermic.

Also at risk, are those without shelter, those who are stranded, or who live in a home that is poorly insulated or without heat. Other impacts of extreme cold include asphyxiation (unconsciousness or death from a lack of oxygen) from toxic fumes from emergency heaters; household fires, which can be caused by fireplaces and emergency heaters; and frozen/burst pipes.

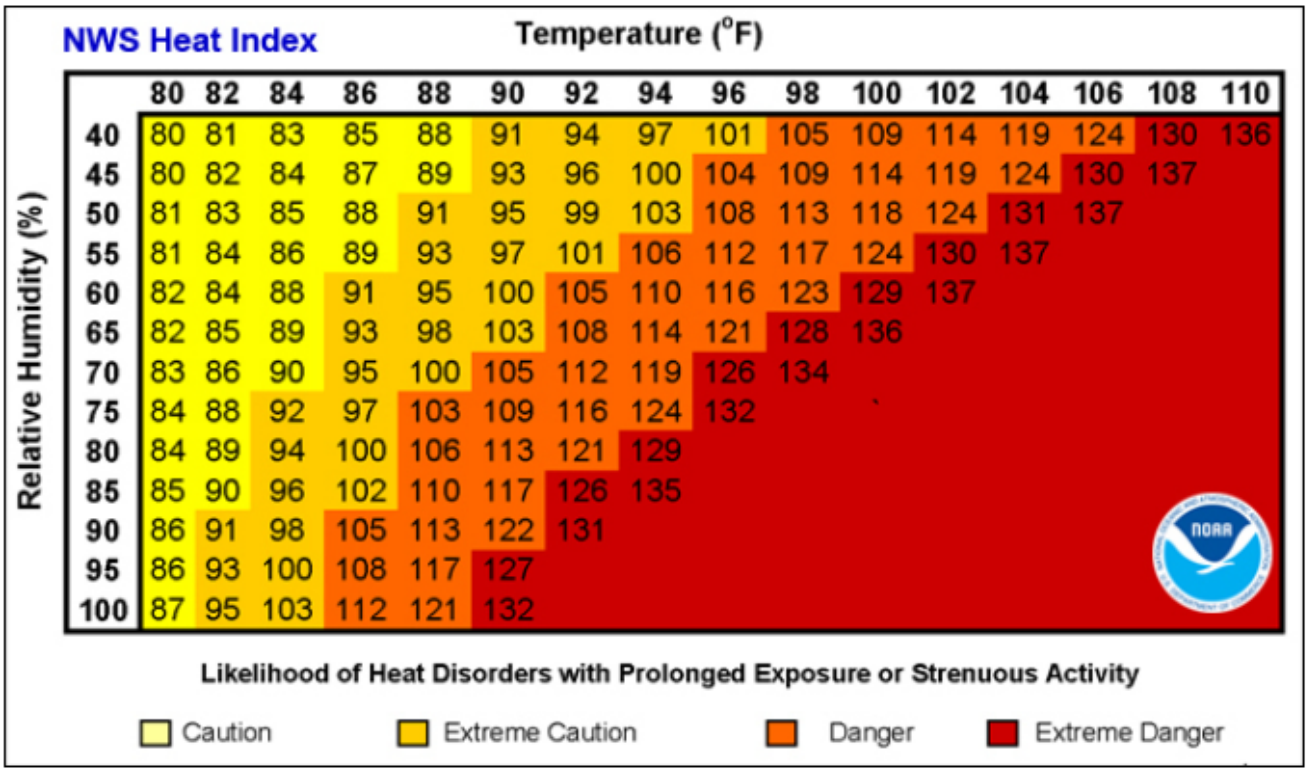
Geographic Location

Extreme heat is an area-wide hazard event, and the risk of extreme heat does not vary across the planning area.

Strength/Magnitude/Extent

The National Weather Service (NWS) has an alert system in place (advisories or warnings) when the Heat Index is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. A common guideline for issuing excessive heat alerts is when for two or more consecutive days: (1) when the maximum daytime Heat Index is expected to equal or exceed 105 degrees Fahrenheit (°F); and the night time minimum Heat Index is 80°F or above. A heat advisory is issued when temperatures reach 105 degrees and a warning is issued at 115 degrees.

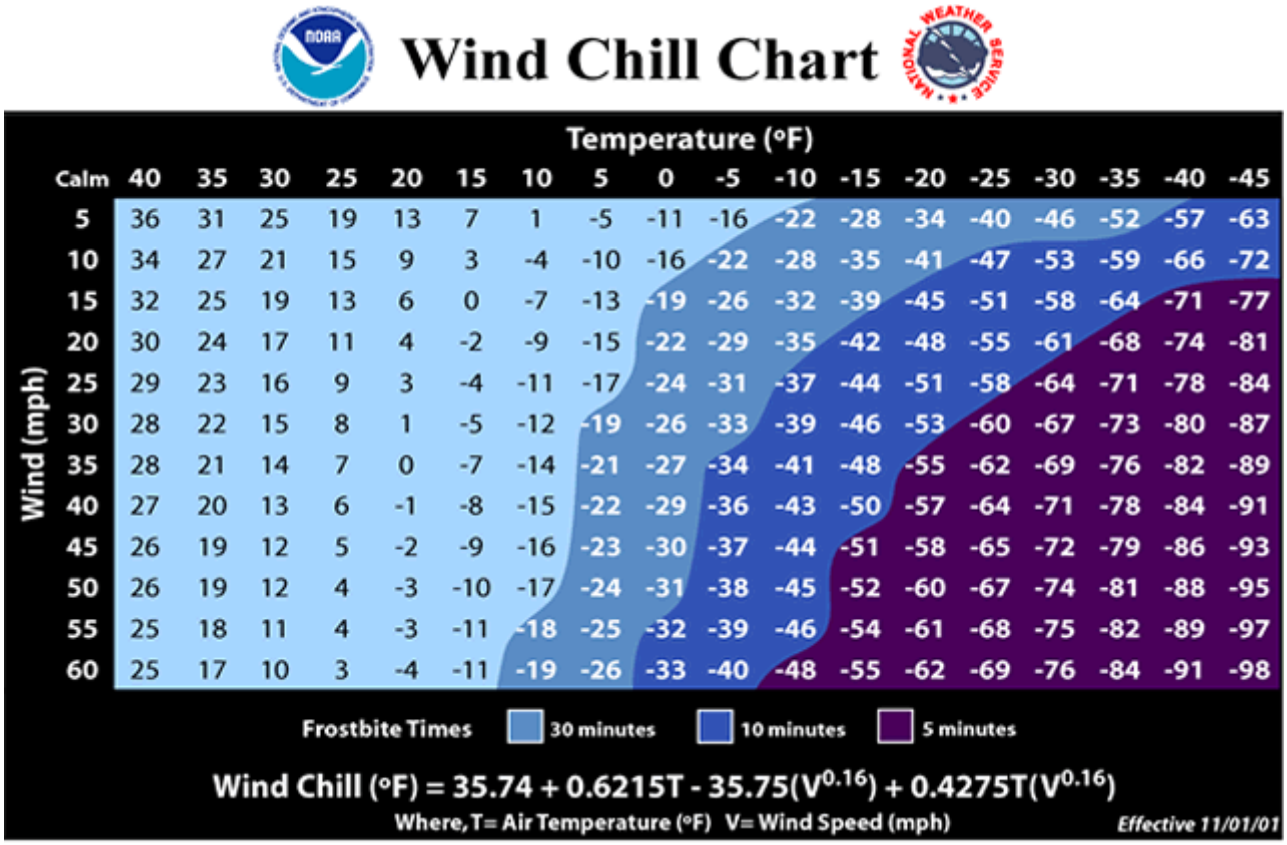
Figure 3.30. Heat Index (HI) Chart



Source: National Weather Service (NWS); https://www.weather.gov/safety/heat-index
Note: Exposure to direct sun can increase Heat Index values by as much as 15°F. The shaded zone above 105°F corresponds to a HI that may cause increasingly severe heat disorders with continued exposure and/or physical activity.

The NWS Wind Chill Temperature (WCT) index uses advances in science, technology, and computer modeling to provide an accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures. The figure below presents wind chill temperatures which are based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature.

Figure 3.31. Wind Chill Chart



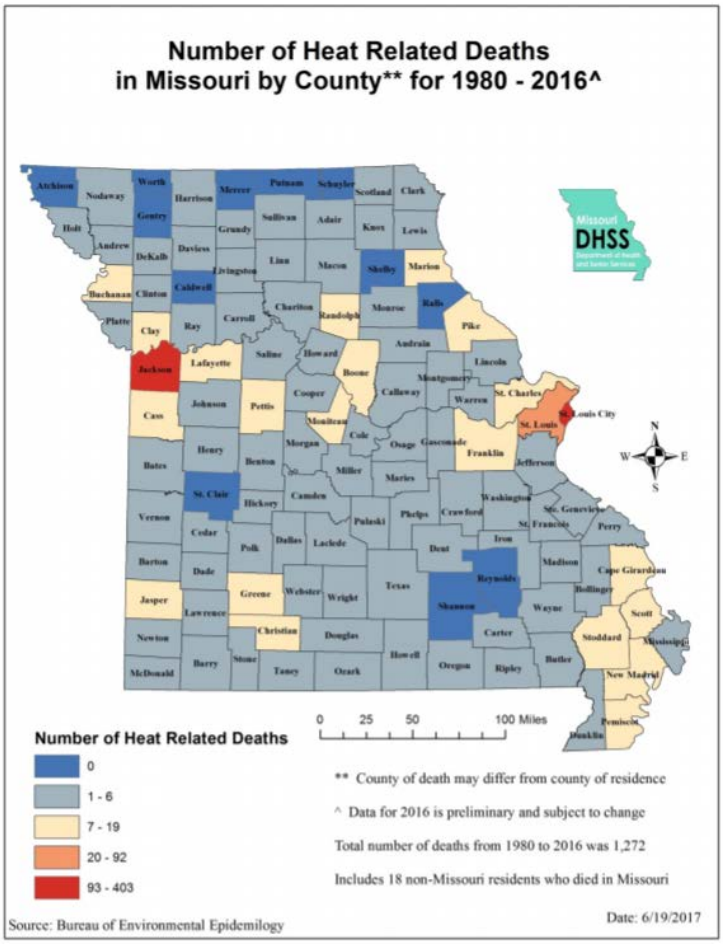
Source: https://www.weather.gov/safety/cold-wind-chill-chart

Previous Occurrences

According to the National Centers for Environmental Information (NCEI) database, there have been 2 recorded “excessive heat” events in Schuyler County in the 20 year period between 1991 and 2019. There were also 3 recorded “extreme cold/wind chill” events in Schuyler County during the same 20 year period. No death or injury has been associated with any of the excessive heat or extreme cold/wind chill events in Schuyler County.

Figure 3.32 illustrates there have been 0 heat related deaths in Schuyler County from 1980 to 2016.

Figure 3.32. Heat Related Deaths in Missouri 1980 - 2016



Source: https://health.mo.gov/living/healthcondiseases/hyperthermia/pdf/stat-report.pdf

Extreme heat can cause stress to crops and animals. According to USDA Risk Management Agency, losses to insurable crops during the 10-year time period from 2009 to 2019 were $221,830.28. Extreme heat can also strain electricity delivery infrastructure overloaded during peak use of air conditioning during extreme heat events. Another type of infrastructure damage from extreme heat is road damage. When asphalt is exposed to prolonged extreme heat, it can cause buckling of asphalt-paved roads, driveways, and parking lots.

From 1988-2011, there were 3,496 fatalities in the U.S. attributed to summer heat. This translates to an annual national average of 146 deaths. During the same period, 0 deaths were recorded in the planning area, according to NCEI data. The National Weather Service stated that among natural hazards, no other natural disaster—not lightning, hurricanes, tornadoes, floods, or earthquakes—causes more deaths.

Probability of Future Occurrence

NCEI, indicates only 2 years with an excessive heat event in the past 20 years. Based on this historical data, the calculated probability of an excessive heat event in any given year is 10%. This probability was determined by taking the number of years with an excessive heat event (2) and dividing it by the number of years data was obtained for (20).

NCEI, indicates only 2 years (3 total events) with an extreme cold/wind chill event in the past 20 years. There were two events in one year (2000). Based on this historical data, the calculated probability of an extreme cold/wind chill event in any given year is 10%. This probability was determined by taking the number of years with an extreme heat event (2) and dividing it by the number of years data was obtained for (20).

Changing Future Conditions Considerations

According to the 2018 State Hazard Mitigation Plan, average annual temperatures are projected to most likely exceed historical record levels by the middle of the 21st century. The impacts of extreme heat events are experienced most acutely by the elderly and other vulnerable populations. High temperatures are exacerbated in urban environments, a phenomenon known as the urban heat island effect, which in turn tend to have higher concentrations of vulnerable populations. Higher demand for electricity as people try to keep cool amplifies stress on power systems and may lead to an increase in the number of power outages. Atmospheric concentrations of ozone occur at higher air temperatures, resulting in poorer air quality, while harmful algal blooms flourish in warmer water temperatures, resulting in poorer water quality.

Vulnerability

Vulnerability Overview

Those at greatest risk for heat-related illness include infants and children up to five years of age, people 65 years of age and older, people who are overweight, and people who are ill or on certain medications. However, even young and healthy individuals are susceptible if they participate in strenuous physical activities during hot weather. In agricultural areas, the exposure of farm workers, as well as livestock, to extreme temperatures is a major concern.

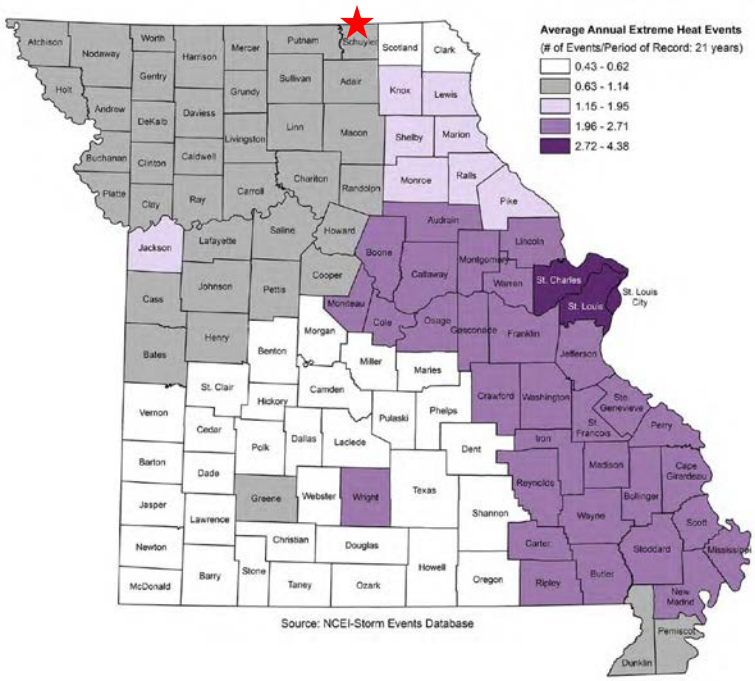
Table 3.34 lists typical symptoms and health impacts due to exposure to extreme heat.

Table 3.34. Typical Health Impacts of Extreme Heat

Heat Index (HI)	Disorder
80-90° F (HI)	Fatigue possible with prolonged exposure and/or physical activity
90-105° F (HI)	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and/or physical activity
105-130° F (HI)	Heatstroke/sunstroke highly likely with continued exposure

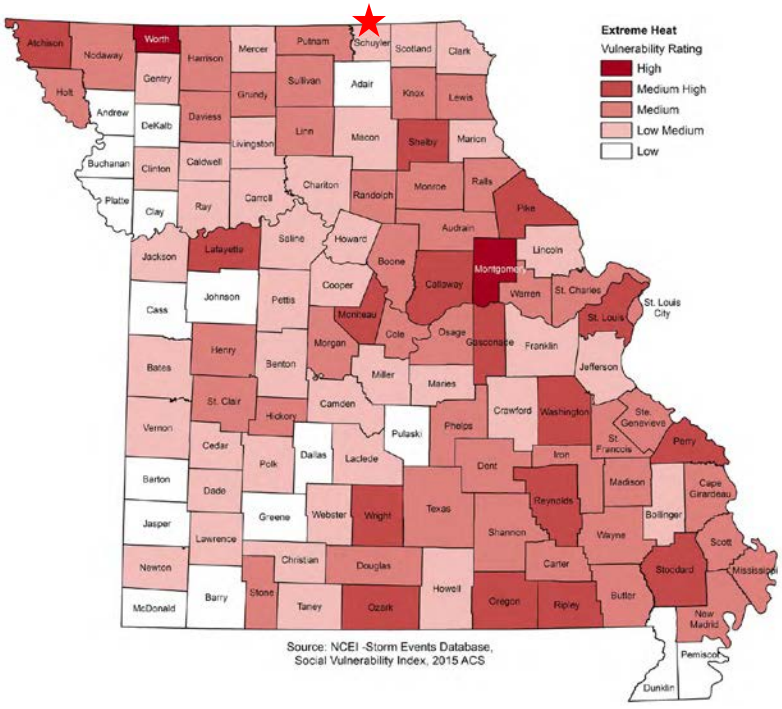
Source: National Weather Service Heat Index Program, www.weather.gov/os/heat/index.shtml

Figure 3.33. Average Annual Occurrence for Extreme Heat



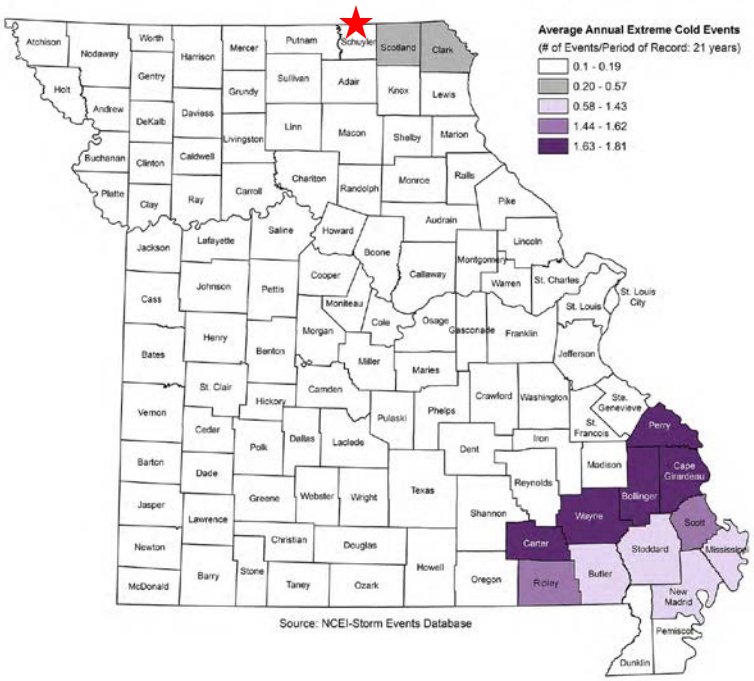
Source: Missouri State Hazard Mitigation Plan, 2018

Figure 3.34. Vulnerability Summary for Extreme Heat



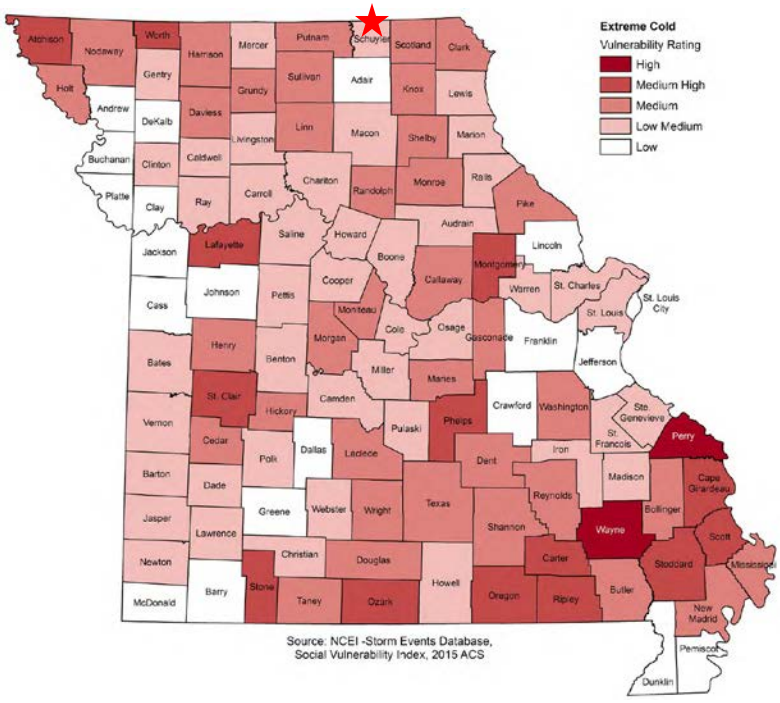
Source: Missouri State Hazard Mitigation Plan, 2018

Figure 3.35. Average Annual Occurrence for Extreme Cold



Source: Missouri State Hazard Mitigation Plan, 2018

Figure 3.36. Vulnerability Summary for Extreme Cold



Source: Missouri State Hazard Mitigation Plan, 2018

Potential Losses to Existing Development

During extreme heat events, structural, road, and electrical infrastructure and vulnerable to damages. Depending upon temperatures and duration of extreme heat, losses will vary.

Impact of Previous and Future Development

Population growth can result in increases in the age-groups that are most vulnerable to extreme heat. Population growth also increases the strain on electricity infrastructure, as more electricity is needed to accommodate the growing population.

According to the American Community Survey, all jurisdictions in Schuyler County experienced minimal changes to their population in the past 10 years and as a result there will be very little, if any, variance in impact as a result of population growth.

EMAP Consequence Analysis

Table 3.35 summarizes the detrimental impacts from extreme temperatures.

Table 3.35. EMAP Impact Analysis: Extreme Temperatures

Subject	Detrimental Impacts
Public	Localized impact expected to be severe for incident areas and moderate to light for other adversely affected areas.
Responders	Localized impact expected to limit damage to personnel in the areas at the time of the incident.
Continuity of Operations	Unlikely to necessitate execution of the Continuity of Operations Plan. Extent of agricultural damage depends on duration. Water supplies and electricity may be disrupted.
Property, Facilities, and Infrastructure	Nature of hazard expected to minimize any serious damage to facilities. Asphalt parking lots and roads are routinely damaged during periods of extreme heat as the hot asphalt becomes less rigid and can be displaced by heavy equipment or automobiles.
Environment	Potential for crop damage; May cause disruptions in wildlife habitat, increase interface with people, and reduce numbers of animals.
Economic Condition of Jurisdiction	Local economy and finances dependent on stable electricity and water supply adversely affected for duration of heat wave.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

Table 3.36. Schuyler County Population Under Age 5 and Over Age 65, 2010 Census Data

Jurisdiction	Population Under 5 yrs	Population 65 yrs and over
*Schuyler County	227	1012
City of Lancaster	108	217
City of Downing	17	104
Village of Glenwood	-	31
City of Greentop	29	94
City of Queen City	19	174

Source: U.S. Census Bureau, (*) includes entire population of each city

Hazard Summary by Jurisdiction

Those at greatest risk for extreme cold and heat-related illness and deaths include children up to five years of age, people 65 years of age and older, people who are overweight, and people who are ill or on certain medications. To determine jurisdictions within the planning area with populations more vulnerable to extreme heat/extreme cold, demographic data was obtained from the 2010 census on population percentages in each jurisdiction comprised of those under age 5 and over age 65. Data was not available for overweight individuals and those on medications vulnerable to extreme heat/extreme cold. **Table 3.36** above summarizes vulnerable populations in the participating jurisdictions. Note that school and special districts are not included in the table because students and those working for the special districts are not customarily in these age groups.

Problem Statement

Schuyler County has a slightly growing population of residents over 65 years, who are at a greater risk for extreme heat/cold related illnesses, injuries, and death. This is a county wide with each jurisdiction having a high percent of population over 65. Possible solutions include organizing outreach to the vulnerable elderly populations, including establishing and promoting accessible heating or cooling centers in the community and creating a database in coordination with the Health Department to track those individuals at high risk.

3.4.8 Severe Thunderstorms Including High Winds, Hail, and Lightning

Hazard Profile

Hazard Description

Thunderstorms

A thunderstorm is defined as a storm that contains lightning and thunder which is caused by unstable atmospheric conditions. When cold upper air sinks and warm moist air rises, storm clouds or 'thunderheads' develop resulting in thunderstorms. This can occur singularly, as well as in clusters or lines. The National Weather Service defines a thunderstorm as "severe" if it includes hail that is one inch or more, or wind gusts that are at 58 miles per hour or higher. At any given moment across the world, there are about 1,800 thunderstorms occurring. Severe thunderstorms most often occur in Missouri in the spring and summer, during the afternoon and evenings, but can occur at any time. Other hazards associated with thunderstorms are heavy rains resulting in flooding (discussed separately in **Section 3.4.1**) and tornadoes (discussed separately in **Section 3.4.9**).

High Winds

A severe thunderstorm can produce winds causing as much damage as a weak tornado. The damaging winds of thunderstorms include downbursts, microbursts, and straight-line winds. Downbursts are localized currents of air blasting down from a thunderstorm, which induce an outward burst of damaging wind on or near the ground. Microbursts are minimized downbursts covering an area of less than 2.5 miles across. They include a strong wind shear (a rapid change in the direction of wind over a short distance) near the surface. Microbursts may or may not include precipitation and can produce winds at speeds of more than 150 miles per hour. Damaging straight-line winds are high winds across a wide area that can reach speeds of 140 miles per hour.

Lightning

All thunderstorms produce lightning which can strike outside of the area where it is raining and is has been known to fall more than 10 miles away from the rainfall area. Thunder is simply the sound that lightning makes. Lightning is a huge discharge of electricity that shoots through the air causing vibrations and creating the sound of thunder.

Hail

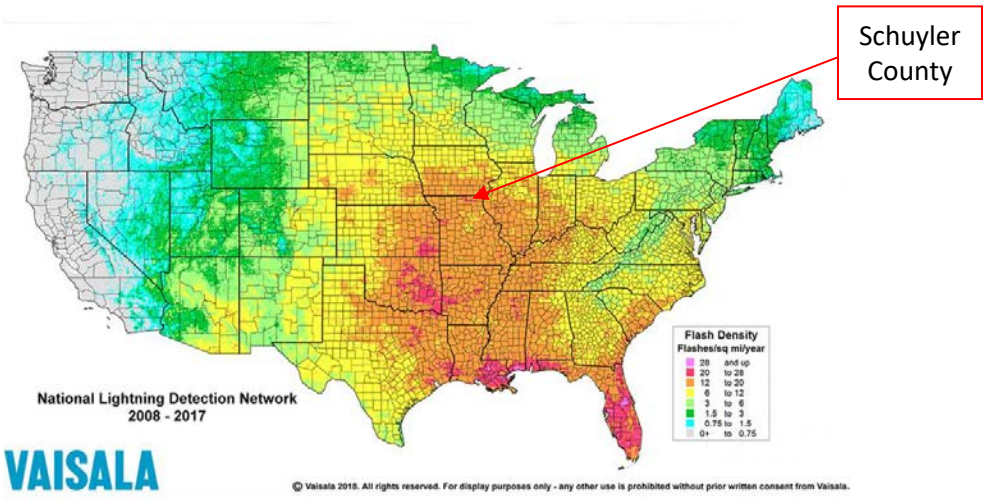
According to the National Oceanic and Atmospheric Administration (NOAA), hail is precipitation that is formed when thunderstorm updrafts carry raindrops upward into extremely cold atmosphere causing them to freeze. The raindrops form into small frozen droplets. They continue to grow as they come into contact with super-cooled water which will freeze on contact with the frozen rain droplet. This frozen droplet can continue to grow and form hail. As long as the updraft forces can support or suspend the weight of the hailstone, hail can continue to grow before it hits the earth.

At the time when the updraft can no longer support the hailstone, it will fall down to the earth. For example, a ¼" diameter or pea sized hail requires updrafts of 24 miles per hour, while a 2 ¾" diameter or baseball sized hail requires an updraft of 81 miles per hour. According to the NOAA, the largest hailstone in diameter recorded in the United States was found in Vivian, South Dakota on July 23, 2010. It was eight inches in diameter, almost the size of a soccer ball. Soccer-ball-sized hail is the exception, but even small pea-sized hail can do damage.

Geographic Location

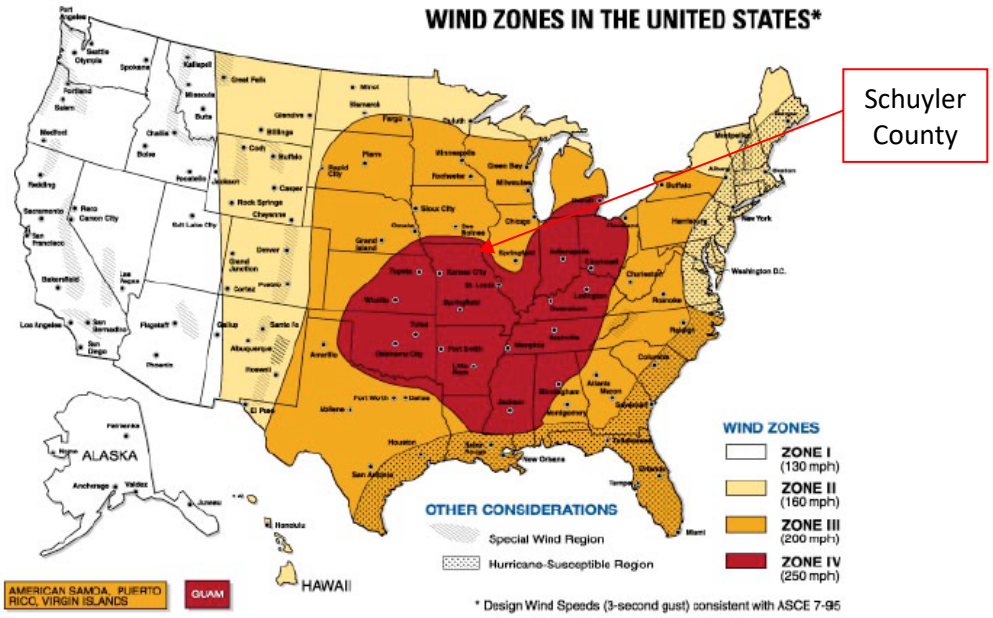
Thunderstorms/high winds/hail/lightning events are an area-wide hazard that can happen anywhere in the county. Although these events occur similarly throughout the planning area, they are more frequently reported in more urbanized areas. In addition, damages are more likely to occur in more densely developed urban areas.

Figure 3.37. Location and Frequency of Lightning in Missouri



Source: National Weather Service, http://www.vaisala.com/en/products/thunderstormandlightningdetectionsystems/Pages/NLDN.aspx
Planning area indicated by arrow

Figure 3.38. Wind Zones in the United States



Source: FEMA 320, Taking Shelter from the Storm, 3rd edition, https://www.fema.gov/pdf/library/ism2_s1.pdf Planning area indicated by arrow

Strength/Magnitude/Extent

Based on information provided by the Tornado and Storm Research Organization (TORRO), **Table 3.34** below describes typical damage impacts of the various sizes of hail.

Table 3.37. Tornado and Storm Research Organization Hailstorm Intensity Scale

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

Source: Tornado and Storm Research Organization (TORRO), Department of Geography, Oxford Brookes University
Notes: In addition to hail diameter, factors including number and density of hailstones, hail fall speed and surface wind speeds affect severity. http://www.torro.org.uk/site/hscale.php

Straight-line winds are defined as any thunderstorm wind that is not associated with rotation (i.e., is not a tornado). It is these winds, which can exceed 100 miles per hour, which represent the most common type of severe weather. They 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.

The onset of thunderstorms with lightning, high wind, and hail is generally rapid. Duration is less than six hours and warning time is generally six to twelve hours. Nationwide, lightning kills 75 to 100 people each year. Lightning strikes can also start structural and wildland fires, as well as damage electrical systems and equipment.

Previous Occurrences

Limitations to the use of NCEI reported lightning events include the fact that only lightning events that result in fatality, injury and/or property and crop damage are in the NCEI.

The tables below (**Table 3.38 through Table 3.41**) summarize past crop damages as indicated by crop insurance claims. The tables illustrate the magnitude of the impact on the planning area's agricultural economy.

Table 3.38. Crop Insurance Claims Paid in Schuyler County from Thunderstorms, 2009-2019.

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
	NO REPORTS		
Total			

Source: USDA Risk Management Agency, Insurance Claims, https://www.rma.usda.gov/data/cause

Table 3.39. Crop Insurance Claims Paid in Schuyler County from High Winds, 2009-2019.

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2015	Corn	Wind/Excess Wind	$61,232.50
Total			**$61,232.50**

Source: USDA Risk Management Agency, Insurance Claims, https://www.rma.usda.gov/data/cause

Table 3.40. Crop Insurance Claims Paid in Schuyler County from Lightning, 2009-2019.

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
	NO REPORTS		
Total			

Source: USDA Risk Management Agency, Insurance Claims, https://www.rma.usda.gov/data/cause

Table 3.41. Crop Insurance Claims Paid in Schuyler County from Hail, 2009-2019.

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2009	Soybeans	Hail	$3,161.00
2011	Soybeans	Hail	$8,821.00
2015	Corn	Hail	$468.00
2018	Soybeans	Hail	$5,573.00
Total			**$18,023.00**

Source: USDA Risk Management Agency, Insurance Claims, https://www.rma.usda.gov/data/cause

Probability of Future Occurrence

Thunderstorms: Based on NCEI data, there have been 8 “thunderstorm wind” events in the past 10 years (2009-2019), with three years having two events in one year. Using this data, the probability of a thunderstorm occurring in any given year is 40%. Probability was calculated by taking the number of years with thunderstorm events (4) and dividing by the number of years assessed (10).

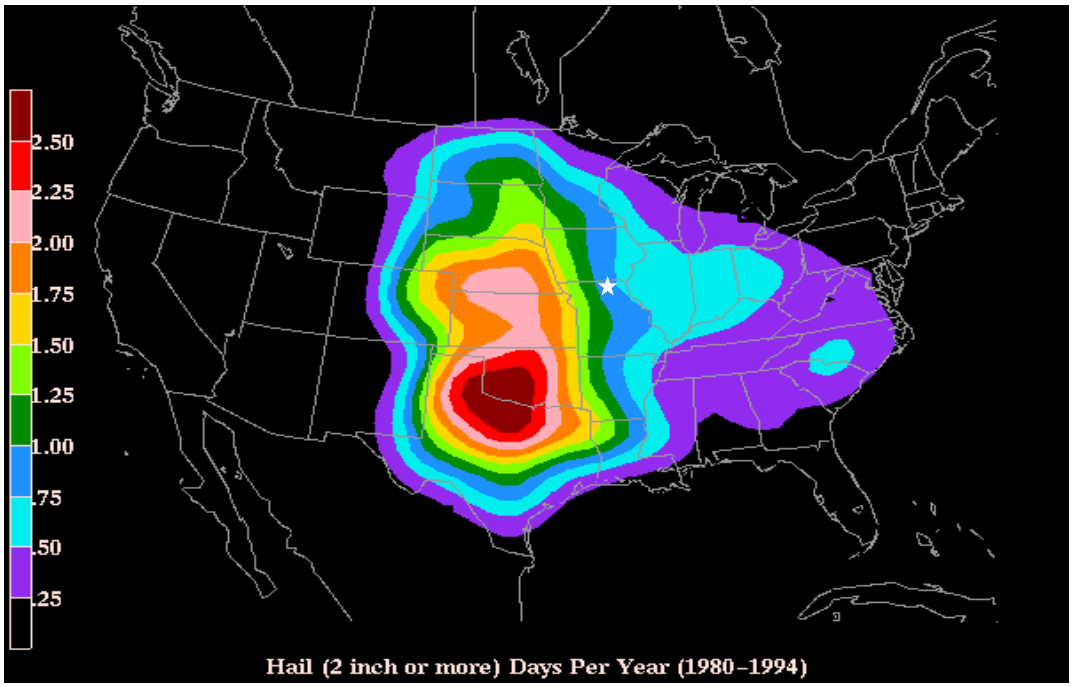
High Winds: Based on NCEI data, there have been 0 “high wind” or “strong wind” events in the past 10 years (2009-2019). Based on this data, the probability of a high wind event occurring in any given year could not be calculated.

Lightning: Based on NCEI data, there have been 0 Lightning events in the past 10 years (2009-2019). Based on this data, the probability of a Lightning event occurring in any given year could not be calculated.

Hail: Based on NCEI data, there have been 11 hail events in the past 10 years (2009-2019), with multiple years having two events in one year. Using this data, the probability of a thunderstorm occurring in any given year is 50%. Probability was calculated by taking the number of years with thunderstorm events (5) and dividing by the number of years assessed (10).

Figure 3.39 is based on hailstorm data from 1980-1994. It shows the probability of hailstorm occurrence (2" diameter or larger) based on number of days per year. Schuyler County is located in the .75 and 1.00 probability range.

Figure 3.39. Annual Hailstorm Probability (2" diameter or larger), U 1980- 1994



Source: NSSL, http://www.nssl.noaa.gov/users/brooks/public_html/bighail.gif Note: White star indicates Schuyler County

Changing Future Conditions Considerations

According to the 2018 Missouri Hazard Mitigation Plan, predicted increases in temperature could help create atmospheric conditions that are fertile breeding grounds for severe thunderstorms and tornadoes in Missouri. Possible impacts include an increased risk to life and property in both the public and private sectors. Public utilities and manufactured housing developments will be especially prone to damages. Jurisdictions already affected should be prepared for more of these events, and should thus prioritize mitigation actions such as construction of safe rooms for vulnerable populations, retrofitting and/or hardening existing structures, improving warning systems and public education, and reinforcing utilities and additional critical infrastructure.

Vulnerability

Vulnerability Overview

Severe thunderstorm losses are usually attributed to the associated hazards of hail, downburst winds, lightning and heavy rains. Losses due to hail and high wind are typically insured losses that are localized and do not result in presidential disaster declarations. However, in some cases,

impacts are severe and widespread and assistance outside state capabilities is necessary. Hail and wind also can have devastating impacts on crops. Severe thunderstorms/heavy rains that lead to flooding are discussed in the flooding hazard profile. Hailstorms cause damage to property, crops, and the environment, and can injure and even kill livestock. In the United States, hail causes more than $1 billion in damage to property and crops each year. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are also commonly damaged by hail. Hail has been known to cause injury to humans, occasionally fatal injury.

In general, assets in Schuyler County vulnerable to thunderstorms with lightning, high winds, and hail include people, crops, vehicles, and built structures. Although this hazard results in high annual losses, private property insurance and crop insurance usually cover the majority of losses. Considering insurance coverage as a recovery capability, the overall impact on jurisdictions is reduced.

Most lightning damages occur to electronic equipment located inside buildings. But structural damage can also occur when a lightning strike causes a building fire. In addition, lightning strikes can cause damages to crops, if fields or forested lands are set on fire. Communications equipment and warning transmitters and receivers can also be knocked out by lightning strikes.

Potential Losses to Existing Development

Most lightning damages occur to electronic equipment located inside buildings. But structural damage can also occur when a lightning strike causes a building fire. Communications equipment and warning transmitters and receivers can also be knocked out by lightning strikes. There has not been any fatalities or injuries due to lightning in Schuyler County during the 10 year review period. When the review period was extended to 20 years, there were 0 reported lightning events with individuals injured. There have been several insurance claims due to wind, lightning, and hail due to loss of property.

Hail: There were 4 reported crop insurance claims for a 10 year period resulting in $18,023 in insurance payments.

High Winds: There was one reported crop insurance claim for a 10 year period resulting in $61,232.50 in insurance payments.

Lightning: The total number of lightning crop insurance claims for a 10 year period could not be determined as claims were listed under “Other (Snow, Lightning, etc.)”

Previous and Future Development

Schuyler County’s trend in a slight increase in development will likely increase vulnerability to thunderstorms, high winds, hail and lightning. If there is more development of housing neighborhoods and businesses, the increased population will be vulnerable to all the aforementioned hazards.

EMAP Consequence Analysis

Table 3.38 summarizes the detrimental impacts from severe thunderstorms.

Table 3.42. EMAP Impact Analysis: Severe Thunderstorms

Subject	Detrimental Impacts
Public	Localized impact expected to be severe for incident areas and moderate to light for other adversely affected areas.

Subject	Detrimental Impacts
Responders	Localized impact expected to limit damage to personnel in the areas at the time of the incident.
Continuity of Operations	Damage to facilities/personnel in the area of the incident may require temporary relocation of some operations. Localized disruption of roads, facilities, and/or utilities caused by incident may postpone delivery of some services.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the area of the incident. Some severe damage possible.
Environment	Localized impact expected to be severe for incident areas and moderate to light for other areas affected by the storm or HazMat spills.
Economic Condition of Jurisdiction	Losses to private structures covered, for the most part, by private insurance.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

Hazard Summary by Jurisdiction

Thunderstorms/high winds/lightening/hail events are area-wide and NCEI data did not seem to indicate any particular community had higher losses as compared to another.

Problem Statement

Thunderstorms can damage power lines with the high winds or fallen debris such as tree limbs. Not everyone in the county utilizes social media, texting, or have access to a weather radio. Communities would benefit from updated sirens. Possible solutions include review of local ordinance and building codes to address high winds and/or construction techniques to include structural bracing, straps and clips, or anchor bolts.

3.4.9 Severe Winter Weather

Hazard Profile

Hazard Description

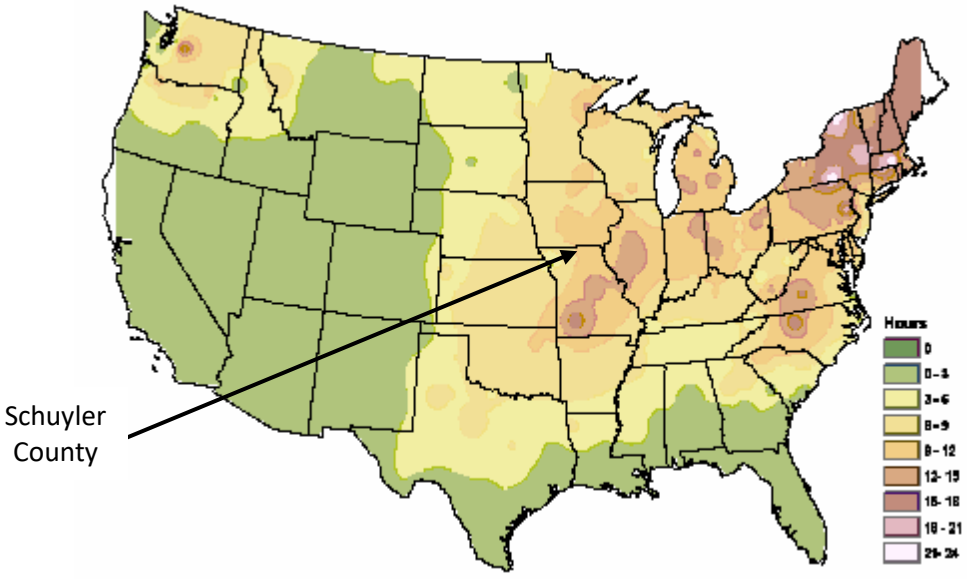
A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. The National Weather Service describes different types of winter storm events as follows.

- **Blizzard**—Winds of 35 miles per hour or more with snow and blowing snow reducing visibility to less than ¼ 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.

Geographic Location

The entire county is vulnerable to heavy snow, ice, extreme cold temperatures and freezing rain. **Figure 3.40** below shows the average number of hours per year with freezing rain and the approximate location of Schuyler County on the map.

Figure 3.40. NWS Statewide Average Number of Hours per Year with Freezing Rain



Source: American Meteorological Society. "Freezing Rain Events in the United States." http://ams.confex.com/ams/pdfpapers/71872.pdf

Strength/Magnitude/Extent

Severe winter storms include heavy snowfall, ice, and strong winds which can push the wind chill well below zero degrees in the planning area.

For severe weather conditions, the National Weather Service issues some or all of the following products as conditions warrant across the State of Missouri. NWS local offices in Missouri may collaborate with local partners to determine when an alert should be issued for a local area.

- Winter Weather Advisory — Winter weather conditions are expected to cause significant inconveniences and may be hazardous. If caution is exercised, these situations should not become life threatening. Often the greatest hazard is to motorists.
- Winter Storm Watch — Severe winter conditions, such as heavy snow and/or ice are possible within the next day or two.
- Winter Storm Warning — Severe winter conditions have begun or are about to begin.
- Blizzard Warning — Snow and strong winds will combine to produce a blinding snow (near zero visibility), deep drifts, and life-threatening wind chill.
- Ice Storm Warning -- Dangerous accumulations of ice are expected with generally over one quarter inch of ice on exposed surfaces. Travel is impacted, and widespread downed trees and power lines often result.
- Wind Chill Advisory -- Combination of low temperatures and strong winds will result in wind chill readings of -20 degrees F or lower.
- Wind Chill Warning -- Wind chill temperatures of -35 degrees F or lower are expected. This is a life-threatening situation.

Previous Occurrences

Table 3.43. NCEI Schuyler County Winter Weather Events Summary, 2009-2019

Type of Event	Inclusive Dates	Magnitude	# of Injuries	Property Damages	Crop Damages
Heavy Snow	2/20/2009		0	$0	$0
Blizzard	12/7/2009		0	$0	$0
Winter Storm	1/6/2010		0	$0	$0
Winter Weather	2/7/2010		0	$0	$0
Winter Storm	2/21/2010		0	$0	$0
Winter Weather	1/10/2011		0	$0	$0
Blizzard	2/1/2011		0	$0	$0
Winter Storm	2/24/2011		0	$0	$0
Winter Weather	12/8/2011		0	$0	$0
Winter Weather	1/11/2012		0	$0	$0
Winter Weather	1/27/2012		0	$0	$0
Winter Weather	1/27/2012		0	$0	$0
Winter Weather	2/13/2012		0	$0	$0
Winter Weather	2/24/2012		0	$0	$0
Winter Storm	12/20/2012		0	$0	$0
Winter Storm	2/21/2013		0	$0	$0

Winter Storm	12/21/2013		0	$0	$0
Cold/Wind Chill	1/5/2014		0	$0	$0
Heavy Snow	2/4/2014		0	$0	$0
Extreme Cold/Wind Chill	2/6/2014		0	$0	$0
Heavy Snow	1/31/2015		0	$0	$0
Heavy Snow	2/1/2015		0	$0	$0
Winter Storm	12/27/2015		0	$0	$0
Ice Storm	1/15/2017		0	$0	$0
Blizzard	11/25/2018		0	$0	$0
Winter Storm	1/11/2019		0	$0	$0
Ice Storm	2/7/2019		0	$0	$0

Source: NCEI, data accessed 3/23/2020

Table 3.44. Presidential Declarations for Winter Storms in Schuyler County

Declaration Date	Disaster No.	Incident Type	Counties Declared	Type of Assistance
02/06/2006	DR-1403	Ice Storm	Schuyler	IA
12/12/2007	DR-3281	Severe Winter Storm	All Counties	PA
12/27/2007	DR-1736	Severe Winter Storm	Schuyler	PA
01/30/2009	DR-3803	Severe Winter Storm	All Counties	PA
03/23/2011	DR-1961	Severe Winter Storm	Schuyler	PA

Source: https://www.fema.gov/data-visualization-summary-disaster-declarations-and-grants

Winter storms, cold, frost and freeze take a toll on crop production in the planning area. **Table 3.45** shows the USDA's Risk Management Agency payments for insured crop losses in the planning area as a result of cold conditions and snow for the past 10 years.

Table 3.45. Crop Insurance Claims Paid in Schuyler County as a Result of Cold Conditions and Snow 2009-2019

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid ($)
2009	WHEAT	Cold Wet Weather	$10,508.00
2009	SOYBEANS	Frost	$14,578.00
2009	SOYBEANS	Frost	$7,733.00
2009	SOYBEANS	Freeze	$8,671.00
2009	SOYBEANS	Cold Wet Weather	$13,577.00
2010	CORN	Cold Wet Weather	$3,024.00
2011	CORN	Cold Wet Weather	$1,827.00
2011	CORN	Cold Wet Weather	$2,505.00
2011	SOYBEANS	Cold Wet Weather	$849.00
2012	CORN	Cold Wet Weather	$6,896.00
2012	SOYBEANS	Cold Wet Weather	$3,013.00
2013	CORN	Cold Wet Weather	$38,465.00
2013	SOYBEANS	Cold Wet Weather	$6,780.00
2014	WHEAT	Cold Winter	$146.00
2014	WHEAT	Cold Winter	$1,427.00
2014	WHEAT	Cold Wet Weather	$1,113.00
2014	SOYBEANS	Cold Wet Weather	$1,806.00
2015	WHEAT	Cold Winter	$3,458.07

2015	CORN	Cold Wet Weather	$863.00
2016	SOYBEANS	Cold Wet Weather	$319.00
2016	CORN	Cold Wet Weather	$2,748.00
2017	CORN	Cold Wet Weather	$10,277.00
2017	SOYBEANS	Cold Wet Weather	$17,238.00
2018	SOYBEANS	Cold Wet Weather	$23,221.00
2018	SOYBEANS	Cold Wet Weather	$3,048.00
2018	SOYBEANS	Cold Wet Weather	$4,937.60
2019	WHEAT	Cold Wet Weather	$15,121.00
2019	WHEAT	Cold Wet Weather	$2,375.00
2019	CORN	Cold Wet Weather	$13,963.00
2019	CORN	Cold Wet Weather	$4,800.00
2019	CORN	Cold Wet Weather	$-
2019	SOYBEANS	Cold Wet Weather	$48,622.00
2019	SOYBEANS	Cold Wet Weather	$6,615.00
Total			**$280,523.67**

Source: USDA Risk Management Agency, https://www.rma.usda.gov/data/cause

Probability of Future Occurrence

The entire planning area is vulnerable to the effects of winter storm/blizzard, ice storms, winter weather, cold/wind chill and heavy snow. All effects of winters tend to make driving more treacherous and can impact the response of emergency vehicles. The probability of utility and infrastructure failure increases during winter weather due to the freezing rain accumulation on utility poles and power lines. Elderly populations are considered particularly vulnerable to the impact of winter weather.

Changing Future Conditions Considerations

According to the 2018 Missouri State Hazard Mitigation Plan, a shorter overall winter season and fewer days of extreme cold may have both positive and negative indirect impacts. Warmer winter temperatures may result in changing distributions of native plant and animal species and/or an increase in pests and non-native species. Warmer winter temperatures will result in a reduction of lake ice cover. Reduced lake ice cover impacts aquatic ecosystems by raising water temperatures. Water temperature is linked to dissolved oxygen levels and many other environmental parameters that affect fish, plant, and other animal populations. A lack of ice cover also leaves lakes exposed to wind and evaporation during a time of year when they are normally protected. As both temperature and precipitation increase during the winter months, freezing rain will be more likely. Additional wintertime precipitation in any form will contribute to saturation and increase the risk and/or severity of spring flooding. A greater proportion of wintertime precipitation may fall as rain rather than snow.

Vulnerability

Vulnerability Overview

Heavy snow can bring a community to a standstill by inhibiting transportation (in whiteout conditions), weighing down utility lines, and by causing structural collapse in buildings not designed to withstand the weight of the snow. Repair and snow removal costs can be significant. Ice buildup can collapse utility lines and communication towers, as well as make transportation difficult and hazardous. Ice can also become a problem on roadways if the air temperature is high enough that precipitation falls as freezing rain rather than snow.

Buildings with overhanging tree limbs are more vulnerable to damage during winter storms when limbs fall. Businesses experience loss of income as a result of closure during power outages. In

general heavy winter storms increase wear and tear on roadways though the cost of such damages is difficult to determine. Businesses can experience loss of income as a result of closure during winter storms.

Overhead power lines and infrastructure are also vulnerable to damages from winter storms. In particular ice accumulation during winter storm events damage to power lines due to the ice weight on the lines and equipment. Damages also occur to lines and equipment from falling trees and tree limbs weighted down by ice. Potential losses could include cost of repair or replacement of damaged facilities, and lost economic opportunities for businesses.

Secondary effects from loss of power could include burst water pipes in homes without electricity during winter storms. Public safety hazards include risk of electrocution from downed power lines. Specific amounts of estimated losses are not available due to the complexity and multiple variables associated with this hazard. Standard values for loss of service for utilities reported in FEMA's 2009 BCA Reference Guide, the economic impact as a result of loss of power is $126 per person per day of lost service.

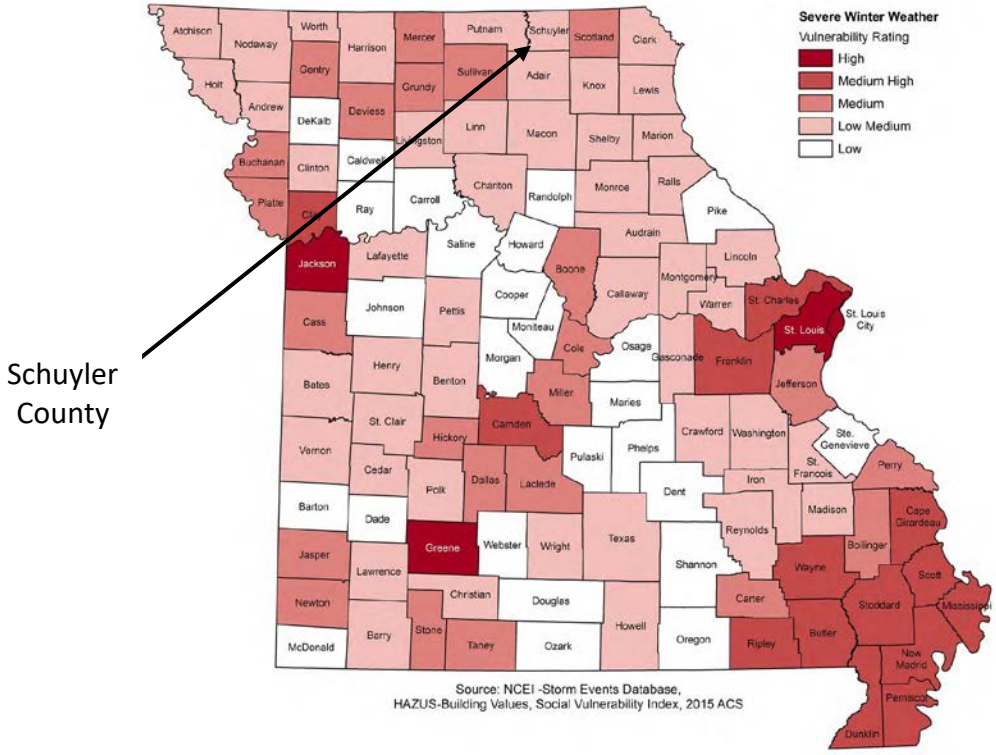
Table 3.46. Ranges of Severe Winter Weather Vulnerability Factor Rating

Factors Considered	Low (1)	Low Medium (2)	Medium (3)	Medium High (4)	High (5)
Common Factors					
Housing Density (# per sq. mile)	4.11-44.23	44.24-134.91	134.92-259.98	259.99-862.69	862.70-2836.23
Building Exposure ($)	$269,532-$3,224,641	$3,224,642-$8,792,829	$8,792,830-$22,249,768	$22,249,769-$46,880,213	$46,880,214-$138,887,850
Social Vulnerability	1	2	3	4	5
Likelihood of Occurrence (# of events/ yrs. of data)	1.05-1.43	1.44-1.76	1.77-2.10	2.11-2.67	2.68-4.57
Average Annual Property Loss (annual property loss/ yrs. Of data)	$0-$143,095.24	$143,095.25-$406,666.67	$406,666.68-$1,191,000.95	$1,191,000.96-$3,184,761.90	$3,184,761.91-$5,861,666.67

Table 3.47. Ranges for Severe Winter Weather Combined Vulnerability Rating

	Low (1)	Low-medium (2)	Medium (3)	Medium-high-4	High (5)
Severe Winter Weather Combined Vulnerability	7-8	8-10	10-12	12-15	15-22

Figure 3.41. Vulnerability Summary for Severe Winter Weather



Potential Losses to Existing Development

The next severe winter storm will most likely close schools and businesses for multiple days, and make roadways hazardous for travel. Heavy ice accumulation may damage electrical infrastructures causing prolonged power outages for large portions of the region. In addition, freezing temperatures make water lines vulnerable to freeze/thaw. Fallen tree limbs also pose a threat to various structures/infrastructures across the county.

Previous and Future Development

Future development could potentially increase vulnerability to this hazard by increasing demand on the utilities and increasing the exposure of infrastructure networks.

EMAP Consequence Analysis

Table 3.48 summarizes the detrimental impacts from severe winter weather. to summarize the detrimental impacts from severe winter weather.

Table 3.48. EMAP Impact Analysis: Severe Winter Weather

Subject	Detrimental Impacts
Public	Localized impact expected to be severe for affected areas and moderate to light for other less affected areas.
Responders	Adverse impact expected to be severe for unprotected personnel and moderate to light for trained, equipped, and

Subject	Detrimental Impacts
	protected personnel.
Continuity of Operations	Unlikely to necessitate execution of the Continuity of Operations Plan. Localized disruption of roads and/or utilities caused by incident may postpone delivery of some services.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the areas of the incident. Power lines and roads most adversely affected.
Environment	Environmental damage to trees, bushes, etc.
Economic Condition of Jurisdiction	Local economy and finances may be adversely affected, depending on damage.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

Hazard Summary by Jurisdiction

Although crop loss as a result of severe winter storm occurs more in the unincorporated portions of the planning area, the density of vulnerable populations is higher in the urban areas of the planning areas. It is considered that the magnitude of this hazard is relatively equal. The factors of probability, warning time, and duration are also equal across the planning area. Therefore, the conclusion is the hazard does not substantially vary by jurisdiction.

Problem Statement

Schuyler County is expected to experience at least one severe winter weather event annually as the county has a low-medium vulnerability rating. Jurisdictions should enhance their weather monitoring to be better prepared for severe weather hazards. If jurisdictions monitor winter weather, they can dispatch road crews to prepare for the hazard. County and city crews can also trim trees along power lines to minimize the potential for outages due to snow and ice. Citizens should also be educated about the benefits of being proactive to alleviate property damage as well as preparing for power outages. Education needs to occur to ensure all residents are aware of the shelters in the County, the proper emergency supplies to have, and the utilization of social media and texting increases.

3.4.10 Tornado

Hazard Profile

Hazard Description

Essentially, tornadoes are a vortex storm with two components of winds. The first is the rotational winds that can measure up to 500 miles per hour, and the second is an uplifting current of great strength. The dynamic strength of both these currents can cause vacuums that can overpressure structures from the inside.

Although tornadoes have been documented in all 50 states, most of them occur in the central United States. The unique geography of the central United States allows for the development of thunderstorms that spawn tornadoes. The jet stream, which is a high-velocity stream of air, determines which area of the central United States will be prone to tornado development. The jet stream normally separates the cold air of the north from the warm air of the south. During the winter, the jet stream flows west to east from Texas to the Carolina coast. As the sun "moves" north, so does the jet stream, which at summer solstice flows from Canada across Lake Superior to Maine. During its move northward in the spring and its recession south during the fall, the jet stream crosses Missouri, causing the large thunderstorms that breed tornadoes.

Tornadoes spawn from the largest thunderstorms. The associated cumulonimbus clouds can reach heights of up to 55,000 feet above ground level and are commonly formed when Gulf air is warmed by solar heating. The moist, warm air is overridden by the dry cool air provided by the jet stream. This cold air presses down on the warm air, preventing it from rising, but only temporarily. Soon, the warm air forces its way through the cool air and the cool air moves downward past the rising warm air. This air movement, along with the deflection of the earth's surface, can cause the air masses to start rotating. This rotational movement around the location of the breakthrough forms a vortex, or funnel. If the newly created funnel stays in the sky, it is referred to as a funnel cloud. However, if it touches the ground, the funnel officially becomes a tornado.

A typical tornado can be described as a funnel-shaped cloud that is "anchored" to a cloud, usually a cumulonimbus that is also in contact with the earth's surface. This contact on average lasts 30 minutes and covers an average distance of 15 miles. The width of the tornado (and its path of destruction) is usually about 300 yards. However, tornadoes can stay on the ground for upward of 300 miles and can be up to a mile wide. The National Weather Service, in reviewing tornadoes occurring in Missouri between 1950 and 1996, calculated the mean path length at 2.27 miles and the mean path area at 0.14 square mile.

The average forward speed of a tornado is 30 miles per hour but may vary from nearly stationary to 70 miles per hour. The average tornado moves from southwest to northeast, but tornadoes have been known to move in any direction. Tornadoes are most likely to occur in the afternoon and evening, but have been known to occur at all hours of the day and night.

Geographic Location

Tornadoes can occur anywhere in the planning area and no areas are immune from tornado damage.

Strength/Magnitude/Extent

Tornadoes are the most violent of all atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 miles per hour and damage paths can be more than one mile wide and 50 miles long. Tornadoes have been known to lift and move objects weighing more than 300 tons a

distance of 30 feet, toss homes more than 300 feet from their foundations, and siphon millions of tons of water from water bodies. Tornadoes also can generate a tremendous amount of flying debris or "missiles," which often become airborne shrapnel that causes additional damage. If wind speeds are high enough, missiles can be thrown at a building with enough force to penetrate windows, roofs, and walls. However, the less spectacular damage is much more common.

Tornado magnitude is classified according to the EF- Scale (or the Enhance Fujita Scale, based on the original Fujita Scale developed by Dr. Theodore Fujita, a renowned severe storm researcher). The EF-Scale (see **Table 3.49**) attempts to rank tornadoes according to wind speed based on the damage caused. This update to the original F Scale was implemented in the U.S. on February 1, 2007.

Table 3.49. Enhanced F Scale for Tornado Damage

FUJITA SCALE			DERIVED EF SCALE		OPERATIONAL EF SCALE	
F Number	Fastest ¼-mile (mph)	3 Second Gust (mph)	EF Nu	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

Source: The National Weather Service, www.spc.noaa.gov/faq/tornado/ef-scale.html

The wind speeds for the EF scale and damage descriptions are based on information on the NOAA Storm Prediction Center as listed in **Table 3.50**. The damage descriptions are summaries. For the actual EF scale it is necessary to look up the damage indicator (type of structure damaged) and refer to the degrees of damage associated with that indicator. Information on the Enhanced Fujita Scale's damage indicators and degrees or damage is located online at www.spc.noaa.gov/efscale/ef-scale.html.

Table 3.50. Enhanced Fujita Scale with Potential Damage

Enhanced Fujita Scale			
Scale	Wind Speed (mph)	Relative Frequency	Potential Damage
EF0	65-85	53.5%	Light. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e. those that remain in open fields) are always rated EF0).
EF1	86-110	31.6%	Moderate. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	10.7%	Considerable. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes complete destroyed; large trees snapped or uprooted; light object missiles generated; cars lifted off ground.
EF3	136-165	3.4%	Severe. Entire stores of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some
EF4	166-200	0.7%	Devastating. Well-constructed houses and whole frame houses completely levelled; cars thrown and small missiles generated.

EF5	>200	<0.1%	Explosive. Strong frame houses levelled off foundations and swept away; automobile-sized missiles fly through the air in excess of 300 ft.; steel reinforced concrete structure badly damaged; high rise buildings have significant structural deformation; incredible phenomena will occur.

Source: NOAA Storm Prediction Center, http://www.spc.noaa.gov/efscale/ef-scale.html

Enhanced weather forecasting has provided the ability to predict severe weather likely to produce tornadoes days in advance. Tornado watches can be delivered to those in the path of these storms several hours in advance. Lead time for actual tornado warnings is about 30 minutes. Tornadoes have been known to change paths very rapidly, thus limiting the time in which to take shelter. Tornadoes may not be visible on the ground if they occur after sundown or due to blowing dust or driving rain and hail.

Previous Occurrences

There are limitations to the use of NCEI tornado data that must be noted. For example, one tornado may contain multiple segments as it moves geographically. A tornado that crosses a county line or state line is considered a separate segment for the purposes of reporting to the NCEI. Also, a tornado that lifts off the ground for less than 5 minutes or 2.5 miles is considered a separate segment. If the tornado lifts off the ground for greater than 5 minutes or 2.5 miles, it is considered a separate tornado. Tornadoes reported in Storm Data and the Storm Events Database are in segments.

Table 3.51. Recorded Tornadoes in Schuyler County, 1993 – Present

Date	Beginning Location	Ending Location	Length (miles)	Width (yards)	F/EF Rating	Death	Injury	Property Damage	Crop Damages
04/30/2003	3 NW Greentop	3 NE Greentop	6	300	F0	0	0	$0	$0
7/17/2006	2 SSE Lancaster	3 SSE Lancaster	1.1	75	F1	0	0	$15,000	$0
6/29/2014	3 NW Germania	3 W Downing	4.74	300	EF1	0	0	$0	$0
	Total							$15,000	$0

Source: National Centers for Environmental Information, http://www.NCEI.noaa.gov/stormevents/

Figure 3.42. Schuyler County Map of Historic Tornado Events

Source: Missouri Tornado History Project, http://www.tornadohistoryproject.com/tornado/Missouri

Data from the USDA Risk Management Agency showed 0 insurance payments paid in the past 10

years (2009-2019) for crop damages as a result of tornado damage in Schuyler County.

Probability of Future Occurrence

The National Centers for Environmental Information reported three tornadoes in Schuyler County in a 26-year time period (1993-Present), which calculates to a 11.5% chance of a tornado in any given year. Therefore, it is a low probability that some portion of Schuyler County will experience tornado activity in any given year.

Changing Future Conditions Considerations

According to the 2018 Missouri State Hazard Mitigation Plan, scientists do not know how the frequency and severity of tornadoes will change. Research published in 2015 suggests that changes in heat and moisture content in the atmosphere, brought on by a warming world, could be playing a role in making tornado outbreaks more common and severe in the U.S. The research concluded that the number of days with large outbreaks have been increasing since the 1950s and that densely concentrated tornado outbreaks are on the rise. It is notable that the research shows that the area of tornado activity is not expanding, but rather the areas already subject to tornado activity are seeing the more densely packed tornadoes. Because Missouri experiences on average around 39.6 tornadoes a year, such research is closely followed by meteorologists in the state.

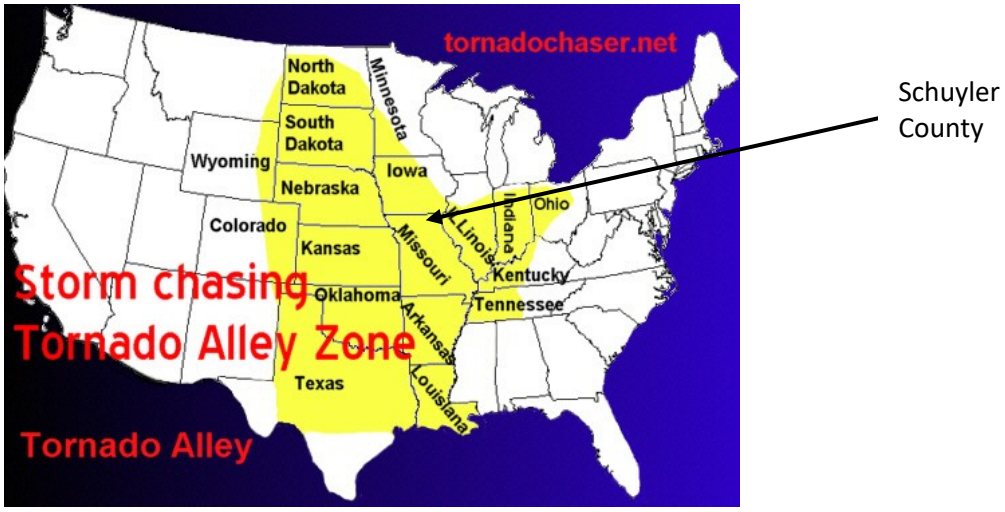
Vulnerability

Vulnerability Overview

Schuyler County is located in a region of the U.S. with high frequency of dangerous and destructive tornadoes referred to as “Tornado Alley”. **Figure 3.43** illustrates areas where dangerous tornadoes historically have occurred.

From the statistical data collected, six factors were considered in determining overall vulnerability to tornadoes as follows: building exposure, population density, social vulnerability, percentage of mobile homes, likelihood of occurrence, and annual property loss. Based on natural breaks in the statistical data, a rating value of 1 through 5 was assigned to each factor. These rating values correspond to the following descriptive terms: 1) Low 2) Low-medium 3) Medium 4) Medium-high 5) High.

Figure 3.43. Tornado Alley in the U.S.



Source: http://www.tornadochaser.net/tornalley.html

Table 3.52. Ranges for Tornado Vulnerability Factor Ratings

Factors Considered	Low (1)	Low-medium (2)	Medium (3)	Medium-High (4)	High (5)
Common Factors					
Building Exposure ($)	$269,532-$3,224,641	$3,224,642-$8,792,829	$8,792,830-$22,249,768	$22,249,769-$46,880,213	$46,880,214-$138,887,850
Population Density (#per sq. mile)	4.11-44.23	44.24-134.91	134.92-259.98	259.99-862.69	862.70-2,836.23
Social Vulnerability	1	2	3	4	5
Percent Mobile Homes	0.2-4.5%	4.51-8.8%	8.81-14%	14.01-21.2%	21.21-33.2%
Likelihood of Occurrence (# of events/ yrs. of data)	0.119 - 0.208	0.209 - 0.313	0.314 - 0.417	0.418 - 0.552	0.553 - 0.791
Total Annualized Property Loss ($ / yrs. of data)	$974 - $281,874	$281,875 - $991,825	$991,826 - $2,099,000	$2,099,001 - $5,047,474	$5,047,475 - $42,467,109

Source: 2018 Missouri Hazard Mitigation Plan

Table 3.53. Ranges for Tornado Combined Vulnerability Rating

	Low (1)	Low-medium (2)	Medium (3)	Medium-High (4)	High (5)
Tornado Combined Vulnerability	7-10	11-12	13-14	15-16	17-21

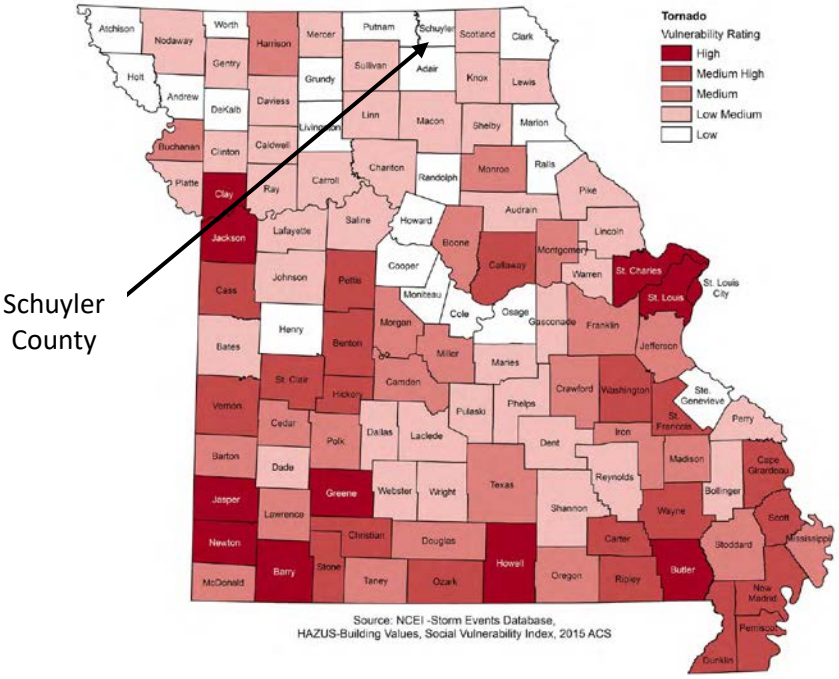
Source: 2018 Missouri Hazard Mitigation Plan

Table 3.54. Building Exposure, Population Density, SOVI, and Mobile Home Data for Schuyler County

County	Total Building Exposure (Hazus)	Exposure Rating	Population Density	Population Rating	SOVI Index Ranking	SOVI Rating	Percent Mobile Homes	Mobile Home Rating
Schuyler	$401,800,000	1	14.44	1	Medium	3	9.4	3

Source: 2018 Missouri Hazard Mitigation Plan

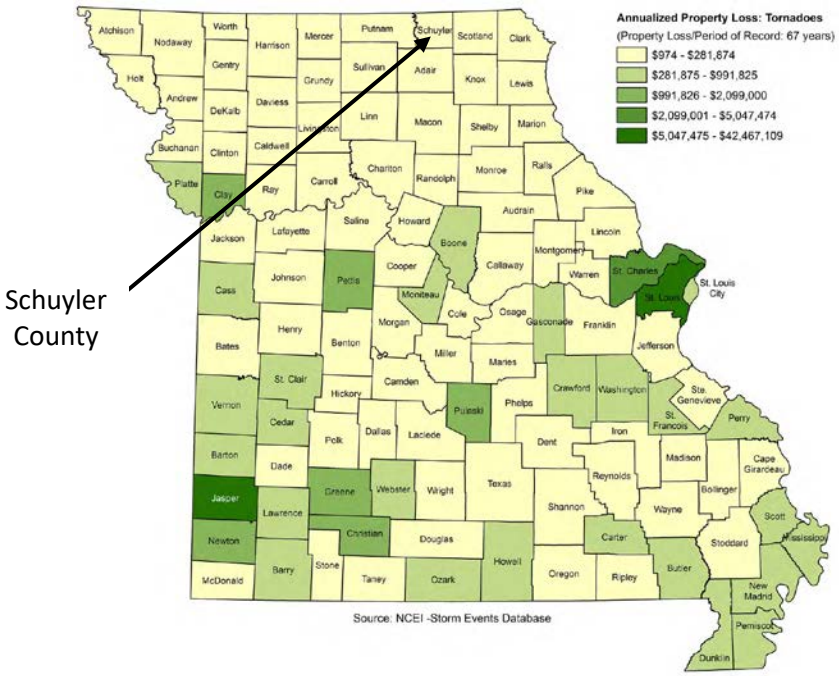
Figure 3.44. County Vulnerability to Tornadoes



Potential Losses to Existing Development

In the past 67 years Schuyler County has had minimal annualized property loss from tornadoes ($974-$281,874). See figure 3.45 below.

Figure 3.45. Annualized Property Loss for Tornadoes



Previous and Future Development

Vulnerability to tornadoes is anticipated to remain the same. Future development for public buildings such as schools, government offices, and other buildings with a high occupancy as well as mobile home parks and campgrounds should consider including a tornado safe room to protect occupants in the event of a tornado.

EMAP Consequence Analysis

Table 3.55 summarizes the detrimental impacts from tornadoes.

Table 3.55. EMAP Impact Analysis: Tornadoes

Subject	Detrimental Impacts
Public	Localized impact expected to be severe for incident areas and moderate to light for other adversely affected areas.
Responders	Localized impact expected to limit damage to personnel in the areas at the time of the incident.
Continuity of Operations	Damage to facilities/personnel in the area of the incident may require temporary relocation of some operations. Localized disruption of roads, facilities, and/or utilities caused by incident may postpone delivery of some services.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the area of the incident. Some severe damage possible.
Environment	Localized impact expected to be severe for incident areas and moderate to light for other areas affected by the storm or HazMat spills.
Economic Condition of Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

Hazard Summary by Jurisdiction

Tornado event could occur anywhere in the planning area, but the Cities/Villages having more dense population would suffer heavier damages because of the age of the housing or the high concentration of mobile homes. Communities that have adopted building codes may also be less vulnerable to damages but no communities have building codes in place.

Problem Statement

Schuyler County has inadequate tornado shelters throughout the county, not everyone utilizes social media and/or texting for warning messages, and rural areas do not have warning sirens. There is also a lack of awareness for available shelters and an overall need for education on this hazard. Possible include promoting the use of NOAA weather radios and conducting public education and outreach activities to increase awareness of tornado risk.

3.4.11 Wildfire

Hazard Profile

Hazard Description

The fire incident types for wildfires include: 1) natural vegetation fire, 2) outside rubbish fire, 3) special outside fire, and 4) cultivated vegetation, crop fire.

The Forestry Division of the Missouri Department of Conservation (MDC) is responsible for protecting privately owned and state-owned forests and grasslands from wildfires. To accomplish this task, eight forestry regions have been established in Missouri for fire suppression. The Forestry Division works closely with volunteer fire departments and federal partners to assist with fire suppression activities. Currently, more than 900 rural fire departments in Missouri have mutual aid agreements with the Forestry Division to obtain assistance in wildfire protection if needed.

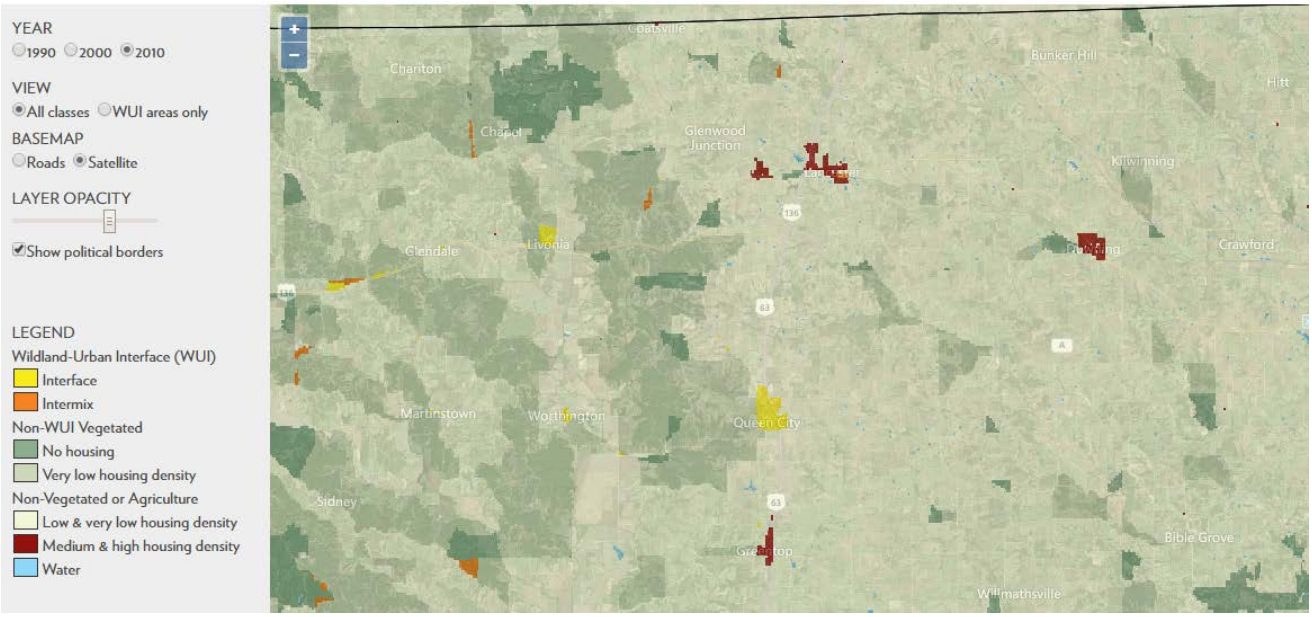
Most of Missouri fires occur during the spring season between February and May. The length and severity of wildland fires depend largely on weather conditions. Spring in Missouri is usually characterized by low humidity and high winds. These conditions result in higher fire danger. In addition, due to the recent lack of moisture throughout many areas of the state, conditions are likely to increase the risk of wildfires. Drought conditions can also hamper firefighting efforts, as decreasing water supplies may not prove adequate for firefighting. It is common for rural residents burn their garden spots, brush piles, and other areas in the spring. Some landowners also believe it is necessary to burn their forests in the spring to promote grass growth, kill ticks, and reduce brush. Therefore, spring months are the most dangerous for wildfires. The second most critical period of the year is fall. Depending on the weather conditions, a sizeable number of fires may occur between mid-October and late November.

Geographic Location

Damages due to wildfires are higher in communities with more wildland–urban interface (WUI) areas.

The term refers to the zone of transition between unoccupied land and human development and needs to be defined in the plan. Within the WUI, there are two specific areas identified: 1) Interface and 2) Intermix. The interface areas are those areas that abut wildland vegetation and the Intermix areas are those areas that intermingle with wildland areas.

Figure 3.46. Wildland-Urban Interface in Schuyler County



Source: University of Wisconsin Slivis Lab, http://silvis.forest.wisc.edu/maps/wui/2010/download

Strength/Magnitude/Extent

Wildfires damage the environment, killing some plants and occasionally animals. Firefighters have been injured or killed, and structures can be damaged or destroyed. The loss of plants can heighten the risk of soil erosion and landslides. Although Missouri wildfires are not the size and intensity of those in the Western United States, they could impact recreation and tourism in and near the fires.

Wildland fires in Missouri have been mostly a result of human activity rather than lightning or some other natural event. Wildfires in Missouri are usually surface fires, burning the dead leaves on the ground or dried grasses. They do sometimes "torch" or "crown" out in certain dense evergreen stands like eastern red cedar and shortleaf pine. However, Missouri does not have the extensive stands of evergreens found in the western US that fuel the large fire storms seen on television news stories.

While very unusual, crown fires can and do occur in Missouri native hardwood forests during prolonged periods of drought combined with extreme heat, low relative humidity, and high wind. Tornadoes, high winds, wet snow and ice storms in recent years have placed a large amount of woody material on the forest floor that causes wildfires to burn hotter and longer. These conditions also make it more difficult for fire fighters suppress fires safely.

Often wildfires in Missouri go unnoticed by the general public because the sensational fire behavior that captures the attention of television viewers is rare in the state. Yet, from the standpoint of destroying homes and other property, Missouri wildfires can be quite destructive.

Previous Occurrences

According to the Missouri Division of Fire Safety (MDFS) Website as well as the Missouri Department of Conversation Wildfire Data Search, there were 55 reported wildland or grass fires in Schuyler County from 2009-2019. In total, these 55 fires burned 1,065 acres but no injuries were reported. During the reporting period, 7 of the fires had an unknown cause for starting and burned 437 acres, 26 were started by debris and burnt 243 acres, 9 of the fires were started by equipment and burnt

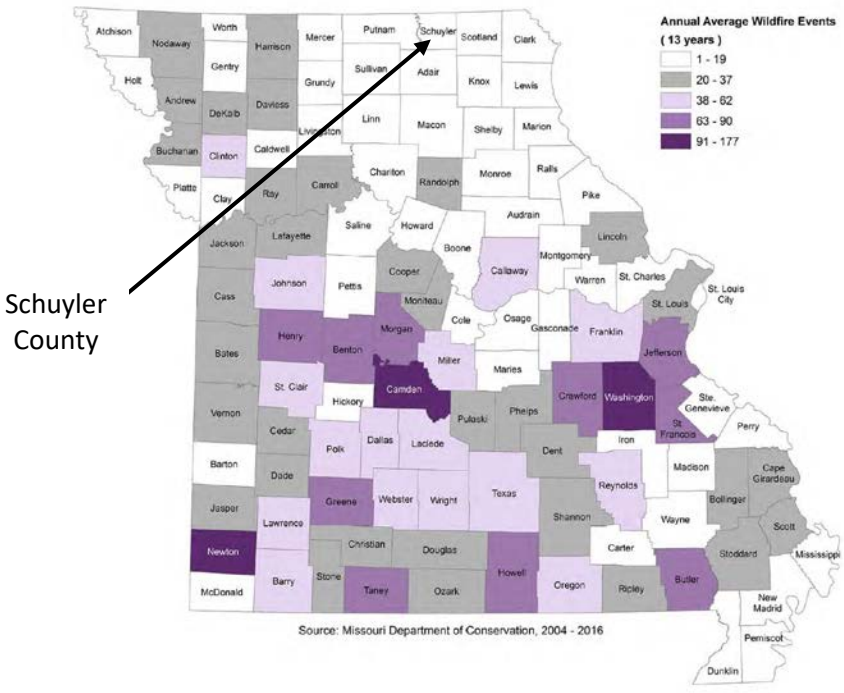
51acres, and 10 of the fires were started by miscellaneous causes and burnt 247 acres. The three remaining fires were caused by smoking and burnt 87 acres.

At this time, no information is available from school districts and special districts about previous fire events and the damages resulting from them.

Probability of Future Occurrence

Wildfires in the planning area are most likely to occur every year with very little resulting damage. The wildfires typically occur in the unincorporated areas and are limited to undeveloped land. The jurisdictions and school districts are largely surrounded by undeveloped land but have not been affected by wildfires. In years of significant drought or excessive heat, the potential for a wildfire in the planning area increases. There were no structural fires reported since 2009 and therefore the probability of a wildfire resulting in structural damaged occurring in any given year was unable to be calculated. However, there were 55 wildfires reported between 2009 and 2019 and therefore it is reasonable to predict an probability of 5 wildfires occurring in any given year with a likelihood of less than 100 acres impacted from those fires.

Figure 3.47. Likelihood of Wildfire Events



Source: 2018 Missouri State Hazard Mitigation Plan

Changing Future Conditions Considerations

According to the 2018 Missouri State Hazard Mitigation Plan, higher temperatures and changes in rainfall are unlikely to substantially reduce forest cover in Missouri, although the composition of trees in the forests may change. More droughts would reduce forest productivity, and changing future conditions are also likely to increase the damage from insects and diseases. But longer growing seasons and increased carbon dioxide concentrations could more than offset the losses from those

factors. Forests cover about one-third of the state, dominated by oak and hickory trees. As the climate changes, the abundance of pines in Missouri's forests is likely to increase, while the population of hickory trees is likely to decrease 0.

Higher temperatures will also reduce the number of days prescribed burning can be performed. Reduction of prescribed burning will allow for growth of understory vegetation – providing fuel for destructive wildfires. Drought is also anticipated to increase in frequency and intensity during summer months under projected future scenarios. Drought can lead to dead or dying vegetation and landscaping material close to structures which creates fodder for wildfires within both the urban and rural settings.

Vulnerability

Vulnerability Overview

With over 14 million acres, Missouri ranks seventh in the northeast region of the U.S. in forest land area. From the data obtained from the Department of Conservation, the likelihood of occurrence and the annualized acres burned were determined for Schuyler County and listed in the section below.

Potential Losses to Existing Development

According to the 2018 Missouri State Hazard Mitigation Plan, Schuyler County is estimated to have an average of 1,265 acres burned by wildfire per year with a potential loss of $84,355,932.

Table 3.56. Statistical Data for Wildfire Vulnerability for Schuyler County

County	Number of Wildfires 2004-2016	Likelihood of Occurrence (#/year)	Total Acres Burned	Average Annual Acreage Burned
Schuyler	70	5.38	1,264.85	97

Table 3.57. Estimated Numbers and Values of Structures and Population Vulnerable to Wildfire in Schuyler County

County	Number of Structures	Value of Structures	Population
Schuyler	**330**	**$84,355,932**	**654**
Agriculture	26	$18,616,000	
Commercial	36	$20,412,468	
Government	1	$666,417	
Residential	267	$44,661,048	

Table 3.58. Wildfire Potential Loss Estimates for Schuyler County

County	Total WUI Acreage	Total Structure Value Within WUI	Average Value/Acre within WUI	Average Annual Acreage Burned	Potential Loss
Schuyler	769.96	$84,355,932	$109,558	97	$10,627,161

Impact of Previous and Future Development

Future and previous development in the wildland-urban interface would increase vulnerability to the hazard.

EMAP Consequence Analysis

Table 3.59 summarizes the detrimental impacts from wildfire.

Table 3.59. EMAP Impact Analysis: Wildfire

Subject	Detrimental Impacts
Public	Localized impact expected to be severe for incident areas and moderate to light for other adversely affected areas.
Responders	Localized impact expected to limit damage to personnel in the incident areas at the time of the incident.
Continuity of Operations	Damage to facilities/personnel in the area of the incident may require temporary relocation of some operations. Localized disruption of roads and/or utilities caused by incident may postpone delivery of some services.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the area of the incident. Some severe damage possible.
Environment	Localized impact expected to be severe for incident areas and moderate to light for other areas affected by smoke or HazMat remediation.
Economic Condition of Jurisdiction	Local economy and finances may be adversely affected, depending on damage and length of investigations.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

Hazard Summary by Jurisdiction

The rural jurisdictions in the planning area are all surrounded by undeveloped agricultural land and face the possibility of wildfire. The school district is located in a rural area but does not face danger from wildfire due to barriers in place around the school. As long as drought conditions are not seriously inflamed, future wildfires in Schuyler County should have a negligible adverse impact on the community, as it would affect a small percentage of the population. Nonetheless, homes and businesses located in unincorporated areas are at a higher risk from wildfires due to proximity to wood and distances from fire services. Variations in both structural/urban wildfires are not able to be determined at this time due to lack of data; however, both fire types are expected to occur on

an annual basis across the county.

Problem Statement

Residents do not comply with burn bans, education is not available for the level of burn bans, residents lack education in fire safety, and not all residents utilize social media and texting for wildfire warning systems. Education needs to occur on the dangers associated with not complying with the burn bans as well more education on general fire safety. The use of social media and texting for wildfire warning should be encouraged. Due to Schuyler County's high drought rating, they may be more susceptible to fires.

3.4.12 Pandemic

Hazard Profile

Hazard Description

According to the Center for Disease Control, a pandemic is a global outbreak of disease. Pandemics happen when a new virus emerges to infect people and can spread between people sustainably. Because there is little to no pre-existing immunity against the new virus, it spreads worldwide.

Geographic Location

All of Schuyler County is susceptible to a pandemic outbreak due to its main characteristic of being on a global level.

Strength/Magnitude/Extent

Risk depends on characteristics of the virus, including how well it spreads between people; the severity of resulting illness; and the medical or other measures available to control the impact of the virus (for example, vaccines or medications that can treat the illness) and the relative success of these. In the absence of vaccine or treatment medications, nonpharmaceutical interventions become the most important response strategy. These are community interventions that can reduce the impact of disease.

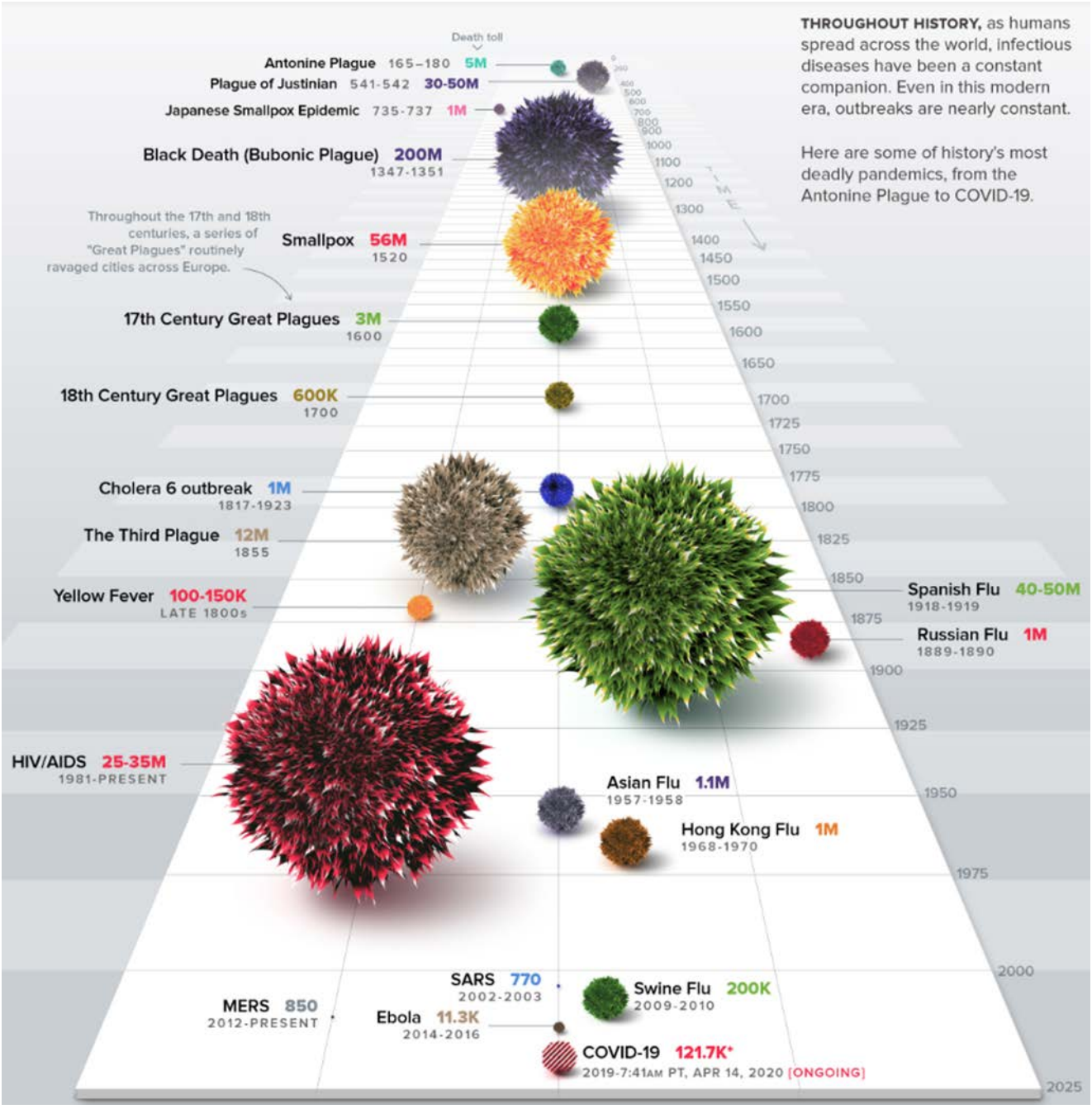
Previous Occurrences

The planning area, in addition to others across the globe, is currently in the midst of a pandemic. The virus that causes COVID-19 is infecting people and spreading easily from person-to-person. On March 11, 2020 the COVID-19 outbreak was characterized as a pandemic by the World Health Organization. According to the Center for Disease Control, this is the first pandemic known to be caused by a new coronavirus. In the past century, there have been four pandemics caused by the emergence of new influenza viruses. As a result, most research and guidance around pandemics is specific to influenza, but the same premises can be applied to the current COVID-19 pandemic. Pandemics of respiratory disease follow a certain progression outlined in a "Pandemic Intervals Framework." Pandemics begin with an investigation phase, followed by recognition, initiation, and acceleration phases. The peak of illnesses occurs at the end of the acceleration phase, which is

followed by a deceleration phase, during which there is a decrease in illnesses. Different countries can be in different phases of the pandemic at any point in time and different parts of the same country can also be in different phases of a pandemic.

As humans have spread across the world, so have infectious diseases. Even in this modern era, outbreaks are nearly constant, though not every outbreak reaches pandemic level. Figure 3.71 below outlines the history of pandemics dating back to 165.

Figure 3.48. History of Pandemics



Source: https://www.visualcapitalist.com/history-of-pandemics-deadliest/

Probability of Future Occurrence

The threat of pandemics in the planning area, and across the globe, remains a concern.

Changing Future Conditions Considerations

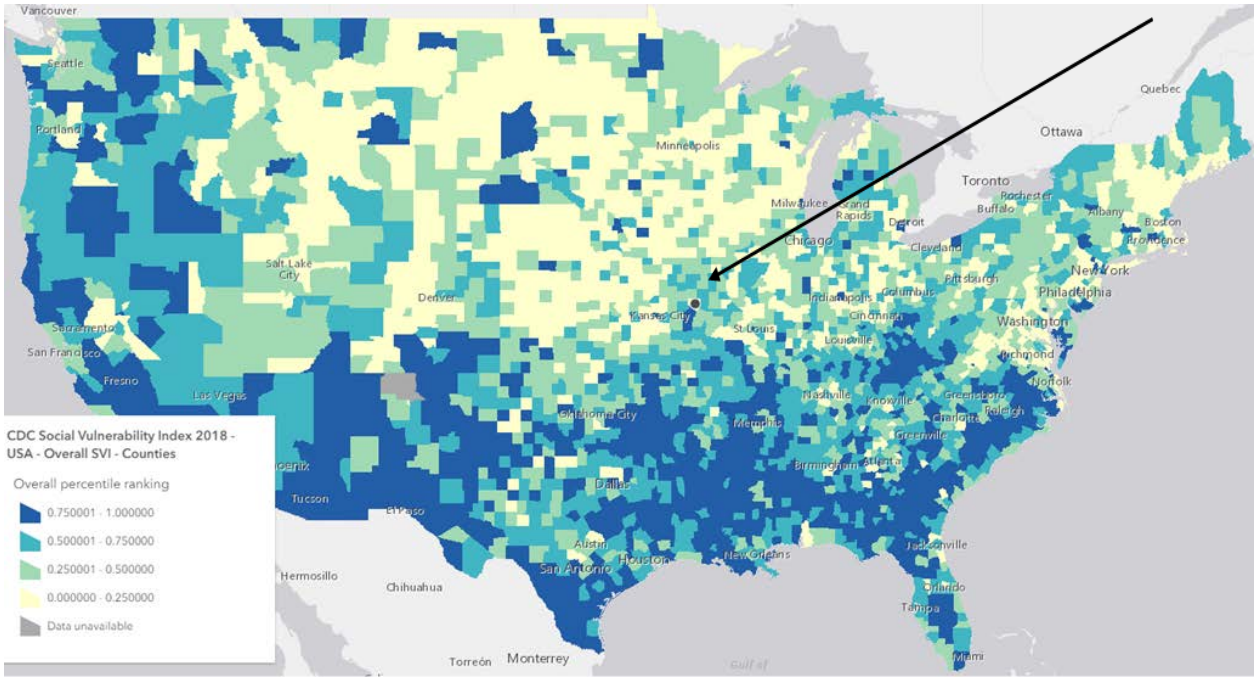
Climate change and weather patterns are widely thought to have direct impacts on the probability and severity of future pandemic outbreaks. Habitat loss due to climate is bringing animals that can transmit disease in contact with humans more often. Floods can enhance the spread of infectious agents like insects, bacteria, and viruses. Increasing temperatures and humidity affect the development, survival and spread of not only pathogens, but also their hosts (often animals).

Vulnerability

Vulnerability Overview

Each jurisdiction and its population, businesses, and school districts are vulnerable to a pandemic outbreak. Due to an increasing elderly population throughout the planning area, an outbreak of an infectious or viral disease could have major impacts on the communities and the assets each possess.

Figure 3.49. Social Vulnerability Rating in the United States



Source: https://livingatlas.arcgis.com/policy/browse/?loc=-94.542,39.439,5&col=88f17b4580e846609f92c9f75a9d9eee,2c8fdc6267e4439e968837020e7618f3,48638a1be455429287d6756985013910,02a82293e2dd475391cb3699b5e82d61,d89c527f2e6b4d658db0948ea9d49cd9,48a70b524601428ba297e3106b751401,be559110b5c3

4591b1a767fbb807bcbf,e0427fbc472f4a45b7d94d182a5e9591,142e65436bed4063973380feae6ed248&viz=2c8fdc6267e4439e968837020e7618f3&hs=1 *Arrow indicates Schuyler County

Potential Losses to Existing Development

During a pandemic, COVID-19 for example, people have been ordered to stay home, schools adjourned the remainder of the year, restaurants and bars are forced to close their doors. It is very likely the livelihood of the population and some of the planning area's most beloved assets and businesses will not be able to recover the pandemic due to extreme economic loss and health threats.

Impact of Previous and Future Development

Pandemics create unprecedented disruption for global health and the development of communities. Urbanization in the developing world is bringing more and more rural residents into denser neighborhoods, while population increases are putting greater pressure on the environment. In conjunction, air traffic nearly doubled in the past decade. These macro trends are having major impacts on the spread of infectious disease.

Hazard Summary by Jurisdiction

The planning area is largely rural and many have a sense of "safeness" when it comes to an infectious or viral pandemic, in the sense that most of the population can securely distance themselves from one another, whereas larger cities do not have that luxury. Unfortunately, pandemics happen on a global level and no community is immune.

Problem Statement

In order to keep transmission rates low during a pandemic outbreak, residents need to safely distance themselves as best as possible and follow the numerous Center for Disease Control guidelines. Due to the lack of accessibility to ongoing public health information and broadband connectivity, it is especially challenging to inform residents about current and upcoming pandemic updates. It is an issue in rural America to convey the severity of pandemic outbreaks and provide preparedness instruction because social media, website posts, podcasts, etc. are not an option for every resident in the planning area.

44 CFR Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section presents the mitigation strategy updated by the Mitigation Planning Committee (MPC) based on the risk assessment. The mitigation strategy was developed through a collaborative group process. The process included review of general goal statements to guide the jurisdictions in lessening disaster impacts as well as specific mitigation actions to directly reduce vulnerability to hazards and losses. The following definitions are taken from FEMA's *Local Hazard Mitigation Review Guide (October 1, 2012)*.

- **Mitigation Goals** are general guidelines that explain what you want to achieve. Goals are long-term policy statements and global visions that support the mitigation strategy. The goals address the risk of hazards identified in the plan.

- **Mitigation Actions** are specific actions, projects, activities, or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. Implementing mitigation actions helps achieve the plan's mission and goals.

4.1 Goals

44 CFR Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

This planning effort is an update to Schuyler County's existing hazard mitigation plan approved by FEMA in 2014. Therefore, the goals from the 2014 Schuyler County Hazard Mitigation Plan were reviewed to see if they were still valid, feasible, practical, and applicable to the defined hazard impacts. The MPC conducted a discussion session to review and update the plan goals. To ensure that the goals developed for this update were comprehensive and supported State goals, the 2018 State Hazard Mitigation Plan goals were reviewed. The MPC also reviewed the goals from current surrounding county plans.

Goal 1: Public Awareness- Using a variety of communications avenues to increase the citizens' awareness of and promote education about the natural hazards that they may face. Their vulnerability to these hazards, and how to lessen the effect of future natural hazards.

Goal 2: Strengthen communication and coordination between local governments, emergency personnel, public agencies, and citizens to mitigate the effects of future natural hazards.

Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties; on natural resources; on infrastructure; and on the local economy.

It was determined the broadly stated goals were still valid for the 2020 update.

4.2 Identification and Analysis of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): 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.

During the MPC planning meeting, the results of the risk assessment update were provided to the MPC members for review and the key issues were identified for specific hazards. Changes in risk since adoption of the previously approved plan were discussed. Actions from the previous plan included completed actions, on-going actions, and actions upon which progress had not been made. The MPC discussed SEMA's identified funding priorities and the types of mitigation actions generally recognized by FEMA.

The MPC included problem statements in the plan update at the end of each hazard profile. The problem statements summarize the risk to the planning area presented by each hazard and include possible methods to reduce that risk. Use of the problem statements allowed the MPC to recognize new and innovative strategies for mitigate risks in the planning area.

During the Planning Meeting, the mitigation strategy was reviewed. For a comprehensive range of mitigation actions to consider, the MPC reviewed the following information during the Planning Meeting:

- A list of actions proposed in the previous mitigation plan, the current State Plan, and approved plans in surrounding counties,
- Key issues from the risk assessments, including the problem statements concluding each hazard profile and vulnerability analysis,
- State priorities established for HMA grants, and
- Public input during meetings, responses to data collection questionnaires, and other efforts to involve the public in the plan development process.

For Meeting #3, individual jurisdictions, including school and special districts, developed final mitigation strategy for submission to the MPC. They were encouraged to review the details of the risk assessment vulnerability analysis specific to their jurisdiction. They were also provided a link to the FEMA's publication, *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).* This document was developed by FEMA as a resource for identification of a range of potential mitigation actions for reducing risk to natural hazards and disasters.

The MPC reviewed the actions from the previously approved plan for progress made since the plan had been adopted, using worksheets included in Appendix A of this plan. Prior to the Planning Meeting, the list of actions for each jurisdiction was emailed to that jurisdiction's MPC representative along with the worksheets. Each jurisdiction was instructed to provide information regarding the "Action Status" with one of the following status choices:

- Completed, with a description of the progress;
- Ongoing, with a description of the progress made to date; or

- Not Yet Started, with a discussion of the reasons for lack of progress.

Additionally, the future inclusion of each mitigation action in the plan update was identified as either keep, delete, or modify. Based on the status updates, there were 0 completed actions, 0 continuing actions (either ongoing or modified), and 37 deleted actions.

Table 4.1 provides a summary of the action statuses for each jurisdiction:

Table 4.1. Action Status Summary

Jurisdiction	Completed Actions	Continuing Actions (ongoing or modify)	Deleted Actions
All Jurisdictions	0	0	37

Table 4.2 provides a summary of the completed and deleted actions from the previous plan.

Table 4.2. Summary of Completed and Deleted Actions from the Previous Plan

Completed Actions	Completion Details (date, amount, funding source)
None	NA
Deleted Actions	**Reason for Deletion**
Implement education program on personal and business emergency preparedness (turning off utilities, preparing emergency survival kits that include water, blankets, flashlights, etc.)	Action item was not jurisdiction specific.
Encourage cities to obtain early warning systems and improved communication systems.	Action item was not jurisdiction specific.
Promote use of weather radios by local residents and schools to ensure advanced warning about threatening weather.	Action item was not jurisdiction specific.
Partner with local radio stations to ensure that appropriate warning is provided to county residents of impending disasters.	Action item was not jurisdiction specific.
Enact tree trimming programs dead tree removal programs.	Action item was not jurisdiction specific.
Examine potential road and bridge upgrades that would reduce danger to residents during occurrences of natural disasters.	Action item was not jurisdiction specific.
Promote a self-inspection program at critical facilities to assure that the building infrastructure is earthquake and tornado resistant.	Action item was not jurisdiction specific.
Encourage businesses to develop emergency plans.	Action item was not jurisdiction specific.
The County of Schuyler and the Cities of Downing, Glenwood, Greentop, Lancaster, and Queen City will work towards compliance and implementation of NFIP requirements to reduce the flood risks associated with Flood Hazard Areas.	Action item was not jurisdiction specific.
Use regulation to ensure that development will not put people in harm's way or increase threats to existing properties.	Action item was not jurisdiction specific.

Encourage minimum standards for building codes in all cities.	Action item was not jurisdiction specific.
Encourage local governments to develop and implement regulations for the securing of hazardous materials tanks and mobile homes to reduce hazards during flooding and high winds.	Action item was not jurisdiction specific.
Distribute SEMA brochures at public facilities and events.	Action item was not jurisdiction specific.
Distribute press releases from county and city EMD offices concerning hazards, where they strike, frequency and preparation.	Action item was not jurisdiction specific.
Inspire local residents to purchase weather radios through press releases and brochures.	Action item was not jurisdiction specific.
Ask SEMA mitigation specialists to present information to city councils, county commission and the Northeast Missouri Regional Planning Commission meetings.	Action item was not jurisdiction specific.
Cities/Counties should continually re-evaluate hazard mitigation plan and merge with other community planning.	Action item was not jurisdiction specific.
Distribute press releases by cities/county regarding adopted mitigation measures to keep public abreast of changes and/or new regulations.	Action item was not jurisdiction specific.
Foster county health department and local American Red Cross chapter to use publicity campaigns that make residents aware of proper measures to take during times of threatening conditions.	Action item was not jurisdiction specific.
Publicize county or citywide drills.	Action item was not jurisdiction specific.
Facilitate joint meetings of different organizations/agencies for mitigation planning.	Action item was not jurisdiction specific.
Organize joint training (or drills) between agencies, public & private entities (including schools/businesses).	Action item was not jurisdiction specific.
Pool different agency resources to achieve widespread mitigation planning results.	Action item was not jurisdiction specific.
Coordinate meetings between EMD, city/county and SEMA to familiarize officials with mitigation planning and implementation and budgeting for mitigation projects.	Action item was not jurisdiction specific.
Encourage communities to budget for enhanced warning systems.	Action item was not jurisdiction specific.
Convince all communities to develop storm water management plans	Action item was not jurisdiction specific.

Coordinate and integrate hazard mitigation activities where appropriate, with emergency operations plans and procedures.	Action item was not jurisdiction specific.
Encourage cities to require contractor storm water management plans in all new development- both residential and commercial properties.	Action item was not jurisdiction specific.
Advocate local governments to purchase properties in the floodplain as funds become available and convert that land into public space/recreation area.	Action item was not jurisdiction specific.
Encourage communities to discuss zoning repetitive loss properties in the floodplain as open space.	Action item was not jurisdiction specific.
Work with SEMA Region I coordinator to learn about new mitigation funding opportunities.	Action item was not jurisdiction specific.
Structure funds for road/bridge upgrades so that hazard mitigation concerns are also met.	Action item was not jurisdiction specific.
Work with state/local/federal agencies to include mitigation in all economic and community development projects.	Action item was not jurisdiction specific.
Encourage local governments to budget for mitigation projects.	Action item was not jurisdiction specific.
Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.	Action item was not jurisdiction specific.
Implement public awareness program about the benefits of hazard mitigation projects, both public and private.	Action item was not jurisdiction specific.
Prioritize mitigation projects, based on cost-effectiveness and starting with those sites facing the greatest threat to life, health and property.	Action item was not jurisdiction specific.

Source: Previously approved County Hazard Mitigation Plan; Data Collection Questionnaires.

4.3 Implementation of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include an action strategy describing how the actions identified in paragraph (c)(2)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefits review of the proposed projects and their associated costs.

Jurisdictional MPC members were encouraged to meet with others in their community to finalize the actions to be submitted for the updated mitigation strategy. Throughout the MPC consideration and discussion, emphasis was placed on the importance of a benefit-cost analysis in determining project priority. The Disaster Mitigation Act requires benefit-cost review as the primary method by which mitigation projects should be prioritized. The MPC decided to pursue implementation according to when and where damage occurs, available funding, political will, jurisdictional priority, and priorities identified in the 2018 Missouri State Hazard Mitigation Plan. The benefit/cost review at the planning stage primarily consisted of a qualitative analysis and was not the detailed process required grant funding application. For each action, the plan sets forth a narrative describing the types of benefits that could be realized from action implementation. The cost was estimated as closely as possible, with further refinement to be supplied as project development occurs.

FEMA's STAPLEE methodology was used to assess the costs and benefits, overall feasibility of mitigation actions, and other issues impacting project 7(a). During the prioritization process, the jurisdictions used worksheets to assign scores. The worksheets posed questions based on the STAPLEE elements as well as the potential mitigation effectiveness of each action. Scores were based on the responses to the questions as follows:

Definitely YES = 3 points
Maybe YES = 2 points
Probably NO = 1 points
Definitely NO = 0 points

The following questions were asked for each proposed action.

S: Is the action socially acceptable?
T: Is the action technically feasible and potentially successful?
A: Does the jurisdiction have the administrative capability to successfully implement this action?
P: Is the action politically acceptable?
L: Does the jurisdiction have the legal authority to implement the action?
E: Is the action economically beneficial?
E: Will the project have an environmental impact that is either beneficial or neutral? (score "3" if positive and "2" if neutral)

Will the implemented action result in lives saved?
Will the implanted action result in a reduction of disaster damage?

The final scores are listed below in the analysis of each action. The worksheets are attached to this plan as Appendix C. The STAPLEE final score for each action, absent other considerations, such as a localized need for a project, determined the priority. Low priority action items were those that had a total score of between 0 and 24. Moderate priority actions were those scoring between 25 and 29. High priority actions scored 30 or above. A blank STAPLEE worksheet is shown in Figure 4.1

Figure 4.1. Blank STAPLEE Worksheet

STAPLEE Worksheet		
Name of Jurisdiction:		
Action or Project		
Action/Project Number:	Insert a unique action number for this action for future tracking purposes. This can be a combination of the jurisdiction name, followed by the goal number and action number (i.e. Joplin1.1)	
Name of Action or Project:		
Mitigation Category:	Prevention; Structure and Infrastructure Projects; Natural Systems Protection; Education and Outreach; Emergency Services	
STAPLEE Criteria **Evaluation Rating** Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0		**Score**
S: Is it **Socially** Acceptable		
T: Is it **Technically** feasible and potentially successful?		
A: Does the jurisdiction have the **Administrative** capacity to execute this action?		
P: Is it **Politically** acceptable?		
L: Is there **Legal** authority to implement?		
E: Is it **Economically** beneficial?		
E: Will the project have either a neutral or positive impact on the natural **Environment**?		
Will historic structures be saved or protected?		
Could it be implemented quickly?		
STAPLEE SCORE		
Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives will be saved.	
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	
MITIGATION EFFECTIVENESS SCORE		
TOTAL SCORE (STAPLEE + Mitigation Effectiveness)		

☐ **High Priority (30+ points)**	☐ **Medium Priority (25 - 29 points)**	☐ **Low Priority (<25 points)**

Completed by
(Name, Title, Phone Number) _____

ACTION WORKSHEET

Action Worksheet	
Name of Jurisdiction:	
Risk / Vulnerability	
Hazard(s) Addressed:	List the hazard or hazards that will be addressed by this action
Problem being Mitigated:	Provide a brief description of the problem that the action will address. Utilize the problem statement developed in the risk assessment.
Action or Project	
Applicable Goal Statement:	Choose the goal statement that applies to this action
Action/Project Number:	Insert a unique action number for this action for future tracking purposes. This can be a combination of the jurisdiction name, followed by the goal number and action number (i.e. Joplin1.1)
Name of Action or Project:	
Mitigation Category:	Prevention; Structure and Infrastructure Projects; Natural Systems Protection; Education and Outreach; Emergency Services
Action or Project Description:	Describe the action or project.
Estimated Cost:	Provide an estimate of the cost to implement this action. This can be accomplished with a range of estimated costs.
Benefits:	Provide a narrative describing the losses that will be avoided by implementing this action. If dollar amounts of avoided losses are known, include them as well.
Plan for Implementation	
Responsible Organization/Department:	Which organization will be responsible for tracking this action? Be specific to include the specific department or position within a department.
Supporting Organization/Department:	Which organization/department will assist in implementation of this action?
Action/Project Priority:	Include the STAPLEE score and Priority (H, M, L)
Timeline for Completion:	How many months/years to complete.
Potential Fund Sources:	List specific funding sources that may be used to pay for the implementation of the action.
Local Planning Mechanisms to be Used in Implementation, if any:	
Progress Report	
Action Status:	Indicate status as New, Continuing Not Started, or Continuing in Progress)
Report of Progress:	For Continuing actions only, indicate the report on progress. If the action is not started, indicate any barriers encountered to initiate the action. If the action is in progress, indicate the activity that has occurred to date.

Action Worksheet	
Name of Jurisdiction:	Schuyler County
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Participate in the NFIP
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Schuyler County 2020.1
Name of Action or Project:	NFIP Participation
Mitigation Category:	Natural Systems Protection, Structure and Infrastructure Projects, Emergency Services, Education and Outreach
Action or Project Description:	Initiate Schuyler County's participation in the National Flood Insurance Program.
Estimated Cost:	NA
Benefits:	Protection of life and reduction of damages due to accessibility to citizens in times of need.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	High Priority
Timeline for Completion:	1 Year
Potential Fund Sources:	County Funds
Local Planning Mechanisms to be Used in Implementation, if any:	
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Schuyler County
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Flooding Throughout the County
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Schuyler County 2020.2
Name of Action or Project:	Flood Mitigation
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Implement flood mitigation activities to eliminate effects on Schuyler County residents.
Estimated Cost:	$1,000,000
Benefits:	Mitigation actions will limit the future harm to structures and lives in the County.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Schuyler County
Risk / Vulnerability	
Hazard(s) Addressed:	All Hazards
Problem being Mitigated:	Early Warning Sirens
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Schuyler County 2020.3
Name of Action or Project:	Install/Upgrade Warning Sirens
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Installation or upgrade of warning sirens in areas of the County needing a siren or one upgraded.
Estimated Cost:	$75,000
Benefits:	Mitigation actions will limit the future harm to structures and lives in the County.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Schuyler County
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorms, Winter Weather
Problem being Mitigated:	Protecting lives from natural hazards
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Schuyler County 2020.4
Name of Action or Project:	Maintain Transportation Infrastructure
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Project will make necessary improvements to roads, culverts, low water crossings, road elevations, bank stabilizations, bridges and the general transportation infrastructure throughout the city.
Estimated Cost:	$750,000
Benefits:	The project protects citizens from harm due to damaged transportation infrastructure.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Schuyler County
Risk / Vulnerability	
Hazard(s) Addressed:	Pandemic
Problem being Mitigated:	Protecting lives from pandemic outbreaks.
Action or Project	
Applicable Goal Statement:	Goal 2: Strengthen communication and coordination between local governments, emergency personnel, public agencies, and citizens to mitigate the effect of future natural hazards
Action/Project Number:	Schuyler County 2020.5
Name of Action or Project:	Response to Pandemic
Mitigation Category:	Emergency Services, Prevention, Public Education
Action or Project Description:	Project will provide necessary resources for the response to pandemic outbreaks.
Estimated Cost:	$500,000
Benefits:	The project protects citizens from harm due to pandemic outbreaks.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Schuyler County
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Thunderstorms
Problem being Mitigated:	Lack of shelter for residents.
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Schuyler County 2020.6
Name of Action or Project:	Safe Rooms and Storm Shelters
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Build safe rooms and establish local ordinances requiring community storm shelters within sizable mobile home parks and subdivisions.
Estimated Cost:	$1,000,000
Benefits:	The project protects citizens from harm due to tornados or severe thunderstorms.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Schuyler County
Risk / Vulnerability	
Hazard(s) Addressed:	Extreme Temperature, Severe Thunderstorm, Severe Winter Weather, Tornado
Problem being Mitigated:	Generator for Shelter(s)
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Schuyler County 2020.7
Name of Action or Project:	Generator for Shelter(s)
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Obtain a generator for shelters as funds become available.
Estimated Cost:	$65,000
Benefits:	Generator will allow for continued use of shelters for service to citizens in the event of an outage, this would be beneficial during any hazard.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds / RHSOC
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Schuyler County
Risk / Vulnerability	
Hazard(s) Addressed:	All Hazards
Problem being Mitigated:	Need for central emergency operation center in the event of disaster.
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Schuyler County 2020.8
Name of Action or Project:	Emergency Operations Center
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services, Response
Action or Project Description:	Obtain funds to build and equip an emergency operations center.
Estimated Cost:	$1,000,000
Benefits:	An established EOC allows a designated area to be utilized for emergency situations.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	Low Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Lancaster
Risk / Vulnerability	
Hazard(s) Addressed:	Extreme Temperature, Severe Thunderstorm, Severe Winter Weather, Tornado
Problem being Mitigated:	Lack of Generator for Shelter(s)
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Lancaster 2020.1
Name of Action or Project:	Generator for Shelter(s)
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Obtain a generator for shelters as funds become available.
Estimated Cost:	$30,000
Benefits:	Generator will allow for continued use of shelters for service to citizens in the event of an outage, this would be beneficial during any hazard.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds / RHSOC
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Lancaster
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorms, Winter Storms
Problem being Mitigated:	Protecting lives from natural hazards
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Lancaster 2020.2
Name of Action or Project:	Maintain Transportation Infrastructure
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services, Response
Action or Project Description:	Project will make necessary improvements to roads, culverts, low water crossings, road elevations, bank stabilizations, bridges and the general transportation infrastructure throughout the City.
Estimated Cost:	$400,000
Benefits:	The project protects citizens from harm due to damaged transportation infrastructures.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Lancaster
Risk / Vulnerability	
Hazard(s) Addressed:	All Hazards
Problem being Mitigated:	Early Warning Siren
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Lancaster 2020.3
Name of Action or Project:	Installation/Upgrade Sirens
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Installation or the upgrade of warning sirens in areas of the City needing a siren or the siren upgraded.
Estimated Cost:	$25,000
Benefits:	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Lancaster
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Participate in the NFIP
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Lancaster 2020.4
Name of Action or Project:	NFIP Participation
Mitigation Category:	Natural Systems Protection, Structure and Infrastructure Projects, Emergency Services, Education and Outreach
Action or Project Description:	Initiate the City of Lancaster participation and good standing in the National Flood Insurance Program.
Estimated Cost:	NA
Benefits:	Protection of life and reduction of damages due to accessibility to citizens in times of need.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1 Year
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Queen City
Risk / Vulnerability	
Hazard(s) Addressed:	Extreme Temperature, Severe Thunderstorm, Severe Winter Weather, Tornado
Problem being Mitigated:	Lack of Generator for Shelter(s)
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Queen City 2020.1
Name of Action or Project:	Generator for Shelter(s)
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Obtain a generator for shelters as funds become available.
Estimated Cost:	$30,000
Benefits:	Generator will allow for continued use of shelters for service to citizens in the event of an outage, this would be beneficial during any hazard.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds / RHSOC
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Queen City
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorms, Winter Storms
Problem being Mitigated:	Protecting lives from natural hazards
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Queen City 2020.2
Name of Action or Project:	Maintain Transportation Infrastructure
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services, Response
Action or Project Description:	Project will make necessary improvements to roads, culverts, low water crossings, road elevations, bank stabilizations, bridges and the general transportation infrastructure throughout the City.
Estimated Cost:	$400,000
Benefits:	The project protects citizens from harm due to damaged transportation infrastructures.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Queen City
Risk / Vulnerability	
Hazard(s) Addressed:	All Hazards
Problem being Mitigated:	Early Warning Siren
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Queen City 2020.3
Name of Action or Project:	Installation/Upgrade Sirens
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Installation or the upgrade of warning sirens in areas of the City needing a siren or the siren upgraded.
Estimated Cost:	$25,000
Benefits:	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Queen City
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Participate in the NFIP
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Queen City 2020.4
Name of Action or Project:	NFIP Participation
Mitigation Category:	Natural Systems Protection, Structure and Infrastructure Projects, Emergency Services, Education and Outreach
Action or Project Description:	Initiate the City of Queen City's participation and good standing in the National Flood Insurance Program.
Estimated Cost:	NA
Benefits:	Protection of life and reduction of damages due to accessibility to citizens in times of need.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1 Year
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Greentop
Risk / Vulnerability	
Hazard(s) Addressed:	Extreme Temperature, Severe Thunderstorm, Severe Winter Weather, Tornado
Problem being Mitigated:	Lack of Generator for Shelter(s)
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Greentop 2020.1
Name of Action or Project:	Generator for Shelter(s)
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Obtain a generator for shelters as funds become available.
Estimated Cost:	$30,000
Benefits:	Generator will allow for continued use of shelters for service to citizens in the event of an outage, this would be beneficial during any hazard.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds / RHSOC
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Greentop
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorms, Winter Storms
Problem being Mitigated:	Protecting lives from natural hazards
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Greentop 2020.2
Name of Action or Project:	Maintain Transportation Infrastructure
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services, Response
Action or Project Description:	Project will make necessary improvements to roads, culverts, low water crossings, road elevations, bank stabilizations, bridges and the general transportation infrastructure throughout the City.
Estimated Cost:	$400,000
Benefits:	The project protects citizens from harm due to damaged transportation infrastructures.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Lancaster
Risk / Vulnerability	
Hazard(s) Addressed:	All Hazards
Problem being Mitigated:	Early Warning Siren
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Greentop 2020.3
Name of Action or Project:	Installation/Upgrade Sirens
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Installation or the upgrade of warning sirens in areas of the City needing a siren or the siren upgraded.
Estimated Cost:	$25,000
Benefits:	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Greentop
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Participate in the NFIP
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Greentop 2020.4
Name of Action or Project:	NFIP Participation
Mitigation Category:	Natural Systems Protection, Structure and Infrastructure Projects, Emergency Services, Education and Outreach
Action or Project Description:	Initiate the City of Greentop participation and good standing in the National Flood Insurance Program.
Estimated Cost:	NA
Benefits:	Protection of life and reduction of damages due to accessibility to citizens in times of need.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1 Year
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Village of Glenwood
Risk / Vulnerability	
Hazard(s) Addressed:	All Hazards
Problem being Mitigated:	Early Warning Siren
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Village of Glenwood 2020.1
Name of Action or Project:	Installation/Upgrade Sirens
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Installation or the upgrade of warning sirens in areas of the Village needing a siren or the siren upgraded.
Estimated Cost:	$25,000
Benefits:	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Village of Glenwood
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorms, Winter Storms
Problem being Mitigated:	Protecting lives from natural hazards
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Village of Glenwood 2020.2
Name of Action or Project:	Maintain Transportation Infrastructure
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services, Response
Action or Project Description:	Project will make necessary improvements to roads, culverts, low water crossings, road elevations, bank stabilizations, bridges and the general transportation infrastructure throughout the Village.
Estimated Cost:	$400,000
Benefits:	The project protects citizens from harm due to damaged transportation infrastructures.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Village of Glenwood
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Participate in the NFIP
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Village of Glenwood 2020.3
Name of Action or Project:	NFIP Participation
Mitigation Category:	Natural Systems Protection, Structure and Infrastructure Projects, Emergency Services, Education and Outreach
Action or Project Description:	Begin Glenwood's participation in the National Flood Insurance Program.
Estimated Cost:	NA
Benefits:	Protection of life and reduction of damages due to accessibility to citizens in times of need.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1 Year
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain Ordinance
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Downing
Risk / Vulnerability	
Hazard(s) Addressed:	All Hazards
Problem being Mitigated:	Early Warning Siren
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Downing 2020.1
Name of Action or Project:	Installation/Upgrade Sirens
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Installation or the upgrade of warning sirens in areas of the City needing a siren or the siren upgraded.
Estimated Cost:	$25,000
Benefits:	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Downing
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorms, Winter Storms
Problem being Mitigated:	Protecting lives from natural hazards
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Downing 2020.2
Name of Action or Project:	Maintain Transportation Infrastructure
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services, Response
Action or Project Description:	Project will make necessary improvements to roads, culverts, low water crossings, road elevations, bank stabilizations, bridges and the general transportation infrastructure throughout the City.
Estimated Cost:	$300,000
Benefits:	The project protects citizens from harm due to damaged transportation infrastructures.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Downing
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Thunderstorms
Problem being Mitigated:	Lack of shelter for residents.
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Downing 2020.3
Name of Action or Project:	Safe Rooms and Storm Shelters
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Build safe rooms and establish local ordinances requiring community storm shelters within sizable mobile home parks and subdivisions.
Estimated Cost:	$800,000
Benefits:	The project protects citizens from harm due to tornados or severe thunderstorms.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	City of Downing
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Participate in the NFIP
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	City of Downing 2020.4
Name of Action or Project:	NFIP Participation
Mitigation Category:	Natural Systems Protection, Structure and Infrastructure Projects, Emergency Services, Education and Outreach
Action or Project Description:	Begin City of Downing's participation in the National Flood Insurance Program.
Estimated Cost:	NA
Benefits:	Protection of life and reduction of damages due to accessibility to citizens in times of need.
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High Priority
Timeline for Completion:	1 Year
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Schuyler County R-1
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Thunderstorms, Earthquake
Problem being Mitigated:	Lack of shelter for students and employees of the district.
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Schuyler County R-1 2020.1
Name of Action or Project:	Safe Rooms
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Build safe rooms
Estimated Cost:	$1,000,000
Benefits:	Protect human lives.
Plan for Implementation	
Responsible Organization/Department:	Schuyler County R-1 Superintendent
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Action Worksheet	
Name of Jurisdiction:	Schuyler County R-1
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Thunderstorms, Earthquake
Problem being Mitigated:	Lack of intercom system throughout entire school.
Action or Project	
Applicable Goal Statement:	Goal 3: Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties.
Action/Project Number:	Schuyler County R-1 2020.2
Name of Action or Project:	Intercom System
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services, Outreach
Action or Project Description:	Upgrade intercom system.
Estimated Cost:	$150,000
Benefits:	Protect human lives.
Plan for Implementation	
Responsible Organization/Department:	Schuyler County R-1 Superintendent
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 Year
Potential Fund Sources:	Hazard Mitigation Grant Funds
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	NEW
Report of Progress:	NEW Project

Table 4.3. Mitigation Action Matrix

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
	Prevention Public Education							
Schuyler County 2020.2	Flood Mitigation	Schuyler County	High	3	Flooding	✓	✓	
Schuyler County 2020.3	Install/Upgrade Warning Sirens	Schuyler County	Medium	3	All Hazards	✓		
Schuyler County 2020.4	Maintain Transportation Infrastructure	Schuyler County	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
Schuyler County 2020.5	Response to Pandemic	Schuyler County	Medium	2	Pandemic	✓	✓	
Schuyler County 2020.6	Safe Rooms and Storm Shelters	Schuyler County	High	3	Tornado, Severe Thunderstorms	✓		
Schuyler County 2020.7	Generator for Shelter(s)	Schuyler County	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
Schuyler County 2020.8	Emergency Operations Center	Schuyler County	Low	3	All Hazards	✓	✓	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Lancaster 2020.1	Generator for Shelter(s)	City of Lancaster	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Lancaster 2020.2	Maintain Transportation Infrastructure	City of Lancaster	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Lancaster 2020.3	Installation/Upgrade Sirens	City of Lancaster	Medium	3	All Hazards	✓		
City of Queen City 2020.1	Generator for Shelter(s)	City of Queen City	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Queen City 2020.2	Maintain Transportation Infrastructure	City of Queen City	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Queen City 2020.3	Installation/Upgrade Sirens	City of Queen City	Medium	3	All Hazards	✓		

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Greentop 2020.1	Generator for Shelter(s)	City of Greentop	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Greentop 2020.2	Maintain Transportation Infrastructure	City of Greentop	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Greentop 2020.3	Installation/Upgrade Sirens	City of Greentop	Medium	3	All Hazards	✓		
Village of Glenwood 2020.1	Installation/Upgrade Sirens	Village of Glenwood	High	3	All Hazards	✓		
Village of Glenwood 2020.2	Maintain Transportation Infrastructure	Village of Glenwood	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Downing 2020.1	Installation/Upgrade Sirens	City of Downing	High	3	All Hazards	✓		
City of Downing 2020.2	Maintain Transportation Infrastructure	City of Downing	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Downing 2020.3	Safe Rooms and Storm Shelters	City of Downing	High	3	Tornado, Severe Thunderstorms	✓		
Schuyler County R-1 2020.1	Safe Rooms	Schuyler County R-1	High	3	Tornado, Severe Thunderstorms, Earthquake	✓		

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
Schuyler County R-1 2020.2	Intercom System	Schuyler County R-1	Medium	3	Tornado, Severe Thunderstorms, Earthquake	✓		
	Structure and Infrastructure Projects					✓		
Schuyler County 2020.1	Participate in the NFIP	Schuyler County	High	3	Flooding			✓
Schuyler County 2020.2	Flood Mitigation	Schuyler County	High	3	Flooding	✓	✓	
Schuyler County 2020.3	Install/Upgrade Warning Sirens	Schuyler County	Medium	3	All Hazards	✓		
Schuyler County 2020.4	Maintain Transportation Infrastructure	Schuyler County	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
Schuyler County 2020.6	Safe Rooms and Storm Shelters	Schuyler County	High	3	Tornado, Severe Thunderstorms	✓		
Schuyler County 2020.7	Generator for Shelter(s)	Schuyler County	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
Schuyler County 2020.8	Emergency Operations Center	Schuyler County	Low	3	All Hazards	✓	✓	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Lancaster 2020.1	Generator for Shelter(s)	City of Lancaster	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Lancaster 2020.2	Maintain Transportation Infrastructure	City of Lancaster	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Lancaster 2020.3	Installation/Upgrade Sirens	City of Lancaster	Medium	3	All Hazards	✓		
City of Lancaster 2020.4	NFIP Participation	City of Lancaster	High	3	Flooding			✓
City of Queen City 2020.1	Generator for Shelter(s)	City of Queen City	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Queen City 2020.2	Maintain Transportation Infrastructure	City of Queen City	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Queen City 2020.3	Installation/Upgrade Sirens	City of Queen City	Medium	3	All Hazards	✓		

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Queen City 2020.4	NFIP Participation	City of Queen City	High	3	Flooding			✓
City of Greentop 2020.1	Generator for Shelter(s)	City of Greentop	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Greentop 2020.2	Maintain Transportation Infrastructure	City of Greentop	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Greentop 2020.3	Installation/Upgrade Sirens	City of Greentop	Medium	3	All Hazards	✓		
City of Greentop 2020.4	NFIP Participation	City of Greentop	High	3	Flooding			✓
Village of Glenwood 2020.1	Installation/Upgrade Sirens	Village of Glenwood	High	3	All Hazards	✓		
Village of Glenwood 2020.2	Maintain Transportation Infrastructure	Village of Glenwood	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
Village of Glenwood 2020.3	NFIP Participation	Village of Glenwood	High	3	Flooding			✓
City of Downing 2020.1	Installation/Upgrade Sirens	City of Downing	High	3	All Hazards	✓		

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Downing 2020.2	Maintain Transportation Infrastructure	City of Downing	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Downing 2020.3	Safe Rooms and Storm Shelters	City of Downing	High	3	Tornado, Severe Thunderstorms	✓		
City of Downing 2020.4	NFIP Participation	City of Downing	High	3	Flooding			✓
Schuyler County R-1 2020.1	Safe Rooms	Schuyler County R-1	High	3	Tornado, Severe Thunderstorms, Earthquake	✓		
Schuyler County R-1 2020.2	Intercom System	Schuyler County R-1	Medium	3	Tornado, Severe Thunderstorms, Earthquake	✓		
	Natural Systems Protection							
Schuyler County 2020.1	Participate in the NFIP	Schuyler County	High	3	Flooding			✓
City of Lancaster 2020.4	NFIP Participation	City of Lancaster	High	3	Flooding			✓
City of Queen City 2020.4	NFIP Participation	City of Queen City	High	3	Flooding			✓
City of Greentop 2020.4	NFIP Participation	City of Greentop	High	3	Flooding			✓
Village of Glenwood 2020.3	NFIP Participation	Village of Glenwood	High	3	Flooding			✓

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Downing 2020.4	NFIP Participation	City of Downing	High	3	Flooding			✓
	Emergency Services							
Schuyler County 2020.1	Participate in the NFIP	Schuyler County	High	3	Flooding			✓
Schuyler County 2020.3	Install/Upgrade Warning Sirens	Schuyler County	Medium	3	All Hazards	✓		
Schuyler County 2020.4	Maintain Transportation Infrastructure	Schuyler County	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
Schuyler County 2020.5	Response to Pandemic	Schuyler County	Medium	2	Pandemic	✓	✓	
Schuyler County 2020.6	Safe Rooms and Storm Shelters	Schuyler County	High	3	Tornado, Severe Thunderstorms	✓		
Schuyler County 2020.7	Generator for Shelter(s)	Schuyler County	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
Schuyler County 2020.8	Emergency Operations Center	Schuyler County	Low	3	All Hazards	✓	✓	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Lancaster 2020.1	Generator for Shelter(s)	City of Lancaster	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Lancaster 2020.2	Maintain Transportation Infrastructure	City of Lancaster	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Lancaster 2020.3	Installation/Upgrade Sirens	City of Lancaster	Medium	3	All Hazards	✓		
City of Lancaster 2020.4	NFIP Participation	City of Lancaster	High	3	Flooding			✓
City of Queen City 2020.1	Generator for Shelter(s)	City of Queen City	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Queen City 2020.2	Maintain Transportation Infrastructure	City of Queen City	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Queen City 2020.3	Installation/Upgrade Sirens	City of Queen City	Medium	3	All Hazards	✓		

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Queen City 2020.4	NFIP Participation	City of Queen City	High	3	Flooding			✓
City of Greentop 2020.1	Generator for Shelter(s)	City of Greentop	High	3	Extreme Temperature, severe Thunderstorm, Severe Winter Weather, Tornado	✓		
City of Greentop 2020.2	Maintain Transportation Infrastructure	City of Greentop	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Greentop 2020.3	Installation/Upgrade Sirens	City of Greentop	Medium	3	All Hazards	✓		
City of Greentop 2020.4	NFIP Participation	City of Greentop	High	3	Flooding			✓
Village of Glenwood 2020.1	Installation/Upgrade Sirens	Village of Glenwood	High	3	All Hazards	✓		
Village of Glenwood 2020.2	Maintain Transportation Infrastructure	Village of Glenwood	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
Village of Glenwood 2020.3	NFIP Participation	Village of Glenwood	High	3	Flooding			✓
City of Downing 2020.1	Installation/Upgrade Sirens	City of Downing	High	3	All Hazards	✓		

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
City of Downing 2020.2	Maintain Transportation Infrastructure	City of Downing	High	3	Flooding, Severe Thunderstorms, Winter Weather	✓		
City of Downing 2020.3	Safe Rooms and Storm Shelters	City of Downing	High	3	Tornado, Severe Thunderstorms	✓		
City of Downing 2020.4	NFIP Participation	City of Downing	High	3	Flooding			✓
Schuyler County R-1 2020.1	Safe Rooms	Schuyler County R-1	High	3	Tornado, Severe Thunderstorms, Earthquake	✓		
Schuyler County R-1 2020.2	Intercom System	Schuyler County R-1	Medium	3	Tornado, Severe Thunderstorms, Earthquake	✓		
	Education and Outreach							
Schuyler County 2020.1	Participate in the NFIP	Schuyler County	High	3	Flooding			✓
Schuyler County 2020.5	Response to Pandemic	Schuyler County	Medium	2	Pandemic	✓	✓	
City of Lancaster 2020.4	NFIP Participation	City of Lancaster	High	3	Flooding			✓
City of Queen City 2020.4	NFIP Participation	City of Queen City	High	3	Flooding			✓
City of Greentop 2020.4	NFIP Participation	City of Greentop	High	3	Flooding			✓

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
Village of Glenwood 2020.3	NFIP Participation	Village of Glenwood	High	3	Flooding			✓
City of Downing 2020.4	NFIP Participation	City of Downing	High	3	Flooding			✓

5 PLAN MAINTENANCE PROCESS

This chapter provides an overview of the overall strategy for plan maintenance and outlines the method and schedule for monitoring, updating and evaluating the plan. The chapter also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

5.1 Monitoring, Evaluating, and Updating the Plan

44 CFR Requirement 201.6(c)(4): The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

5.1.1 Responsibility for Plan Maintenance

The Schuyler County MPC is an advisory body and can only make recommendations to the County, city, and district elected officials. Its primary duty is to see the plan successfully carried out and to report to the community governing boards and the public on the status of plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, hearing stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information in areas accessible to the public.

5.1.2 Plan Maintenance Schedule

The MPC agrees to meet annually and after a state or federally declared hazard event as appropriate to monitor progress and update the mitigation strategy. The Schuyler County Emergency Management Director will be responsible for initiating the plan reviews and will invite members of the MPC to the meeting.

In coordination with all participating jurisdictions, the Emergency Management Director will be responsible for initiating a five-year written update of the plan to be submitted to the Missouri State Emergency Management Agency (SEMA) and FEMA Region VII per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule.

5.1.3 Plan Maintenance Process

Progress on the proposed actions can be monitored by evaluating changes in vulnerabilities identified in the plan. The MPC during the annual meeting should review changes in vulnerability identified as follows:

- Decreased vulnerability as a result of implementing recommended actions,
- Increased vulnerability as a result of failed or ineffective mitigation actions,
- Increased vulnerability due to hazard events, and/or
- Increased vulnerability as a result of new development (and/or annexation).

Future 5-year updates to this plan will include the following activities:

- Consideration of changes in vulnerability due to action implementation,
- Documentation of success stories where mitigation efforts have proven effective,
- Documentation of unsuccessful mitigation actions and why the actions were not effective,
- Documentation of previously overlooked hazard events that may have occurred since the previous plan approval,
- Incorporation of new data or studies with information on hazard risks,
- Incorporation of new capabilities or changes in capabilities,
- Incorporation of growth data and changes to inventories, and
- Incorporation of ideas for new actions and changes in action prioritization.

In order to best evaluate any changes in vulnerability as a result of plan implementation, the participating jurisdictions will adopt the following process:

- Each proposed action in the plan identified an individual, office, or agency responsible for action implementation. This entity will track and report on an annual basis to the jurisdictional MPC (or designated responsible entity) member on action status. The entity will provide input on whether the action as implemented meets the defined objectives and is likely to be successful in reducing risk.
- If the action does not meet identified objectives, the jurisdictional MPC (or designated responsible entity) member will determine necessary remedial action, making any required modifications to the plan.

Changes will be made to the plan to remedy actions that have failed or are not considered feasible. Feasibility will be determined after a review of action consistency with established criteria, time frame, community priorities, and/or funding resources. Actions that were not ranked high but were identified as potential mitigation activities will be reviewed as well during the monitoring of this plan. Updating of the plan will be accomplished by written changes and submissions, as the MPC (or designated responsible entity) deems appropriate and necessary. Changes will be approved by the Schuyler County Commission and the governing boards of the other participating jurisdictions.

5.2 Incorporation into Existing Planning Mechanisms

44 CFR 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 improvement plans, when appropriate.

For the most part the participating jurisdiction did not incorporate the previously approved mitigation plan into other planning mechanism due to the other plans already being approved.

Where possible, plan participants, including school and special districts, will use existing plans and/or programs to implement hazard mitigation actions. Those existing plans and programs were described in Section 2 of this plan. Based on the capability assessments of the participating jurisdictions, communities in Schuyler County will continue to plan and implement programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through the following plans:

- General or master plans of participating jurisdictions;
- Ordinances of participating jurisdictions;
- Schuyler County Emergency Operations Plan;
- Capital improvement plans and budgets;
- School and Special District Plans and budgets; and
- Other plans and policies outlined in the capability assessment sections for each jurisdiction in Chapter 2 of this plan.

The MPC (or designated responsible entity) members involved in updating these existing planning mechanisms will be responsible for integrating the findings and actions of the mitigation plan, as appropriate. The MPC (or designated responsible entity) is also responsible for monitoring this integration and incorporation of the appropriate information into the five-year update of the multi-jurisdictional hazard mitigation plan.

Additionally, after the annual review of the Hazard Mitigation Plan, the Schuyler County Emergency Management Director will provide the updated Mitigation Strategy with current status of each mitigation action to the County Commission as well as all Mayors, City Clerks, and School District Superintendents. The Emergency Manager Director will request that the mitigation strategy be incorporated, where appropriate, in other planning mechanisms.

Table 5.1 below lists the planning mechanisms by jurisdiction into which the Hazard Mitigation Plan will be integrated.

Table 5.1. Planning Mechanisms Identified for Integration of Hazard Mitigation Plan

Jurisdiction	Planning Mechanisms	Integration Process for Previous Plan	Integration Process for Current Plan
Unincorporated Schuyler County	- County Emergency Operations Plan - Road and Bridge Project List	County Commissioners attended all planning meetings and identified actions relating to transportation infrastructure.	Commissioners will continue to evaluate all Mitigation action items thorough the County Emergency Operations Plan. They will continue to develop a project list for transportation infrastructure that would need mitigation action to prevent future hazard events.
City of Lancaster	- City Emergency Operations Plan - Local Budget	The previous plan was not integrated into previous plans due to the items not applicable to being added in previous plans.	The Hazard Mitigation Plan will be used in updating the City EOP and evaluating possible new action items to be added. The Hazard Mitigation Plan will be integrated into City budget process in order to budget possible match for action items the City has identified.
City of Downing	- Local Budget	The previous plan was not integrated into previous plans due to the items not applicable to being added in previous plans.	The Hazard Mitigation Plan will be integrated into City budget process in order to budget match for action items the City has identified.
Village of Glenwood	- Local Budget	The previous plan was not integrated into previous plans due to the items not applicable to being added in previous plans.	The Hazard Mitigation Plan will be integrated into Village budget process in order to budget possible match for action items the Village has identified.
City of Greentop	- Local Budget	The previous plan was not integrated into previous plans due to the items not applicable to being added in previous plans.	The Hazard Mitigation Plan will be integrated into City budget process in order to budget possible match for action items the City has identified.
City of Queen City	- Local Budget	The previous plan was not integrated into	The Hazard Mitigation Plan will be integrated

		previous plans due to the items not applicable to being added in previous plans.	into City budget process in order to budget possible match for action items the City has identified.
Schuyler County R-I	Master Plan	The previous plan was not integrated into previous plans due to the items not applicable to being added in previous plans.	The Hazard Mitigation Plan will be integrated into future plans by evaluating current action items to pursue while also evaluating if action items need to be added.

5.3 Continued Public Involvement

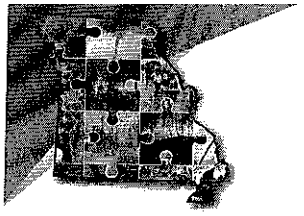
44 CFR Requirement §201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

The hazard mitigation plan update process provides an opportunity to publicize success stories resulting from the plan's implementation and seek additional public comment. Information about the annual reviews will be posted in the local newspaper following each annual review of the mitigation plan and will solicit comments from the public based on the annual review. When the MPC reconvenes for the five-year update, it will coordinate with all stakeholders participating in the planning process. Included in this group will be those who joined the MPC after the initial effort, to update and revise the plan. Public notice will be posted and public participation will be actively solicited, at a minimum, through available website postings and press releases to local media outlets, primarily newspapers.

APPENDIX A
REFERENCES

- Missouri State Hazard Mitigation Plan (2010 and 2018)
- Federal Emergency Management Agency, https://www.fema.gov/data-visualization-summary-disaster-declarations-and-grants
- State Emergency Management Agency (SEMA)- http://sema.dps.mo.gov/programs/mitigation_management.php
- Department of Elementary and Secondary Education (DESE)- http://mcds.dese.mo.gov/quickfacts/Pages/District-and-School-Information.aspx
- Data Collection Questionnaires completed by each jurisdiction
- Previously approved planning area Hazard Mitigation Plan 2014
- Transportation for America- http://t4america.org/maps-tools/bridges/
- U.S. Department of Transportation- http://www.fhwa.dot.gov/bridge/nbi/no10/county.cfm
- U.S. Fish and Wildlife Service- , http://www.fws.gov/midwest/Endangered/lists/missouri-cty.html
- Missouri Department of Conservation- https://nature.mdc.mo.gov/discover-nature/places
- Missouri Department of Natural Resources- http://dnr.mo.gov/shpo/mnrlist.htm
- Missouri Economic Research and Information Center- https://www.missourieconomy.org/employers/default.aspx
- USDA Ag Census- https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Missouri/st29_2_007_007.pdf
- Missouri Economic Research Brief- https://www.missourieconomy.org/pdfs/missouri_farms_and_agribusiness.pdf

Appendix B



SEMA Mitigation Management

LOCAL MITIGATION PLAN FORMAT GUIDANCE
KICKOFF MEETING INVITATION FOR JURISDICTIONS

Subject: Schuyler County Multi-Jurisdictional Hazard Mitigation Plan Update

On behalf of Schuyler County, you are invited to the conference call planning meeting to update the Schuyler County Multi-Jurisdictional Hazard Mitigation Plan.

Schuyler County Multi-Jurisdictional Hazard Mitigation Plan Update
Kickoff Meeting
November 16, 2020
Meeting Time: 10:00 AM
Call-in Number: (844)844-0414
Access Code: 511868

Schuyler County is beginning the process to update the Schuyler County Multi-Jurisdictional Hazard Mitigation Plan to better protect the people and property of Schuyler County from the effects of natural hazard events. The existing plan was approved by FEMA in April 2015. The plan update will be prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations. These regulations establish the requirements that hazard mitigation plans must meet in order for Schuyler County and the participating jurisdictions, to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). Because Schuyler County is subject to many kinds of hazards, access to these federal programs is vital.

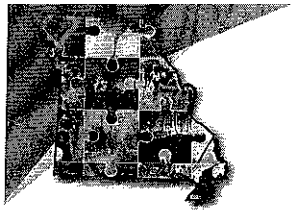
What is a Hazard Mitigation Plan?
A hazard mitigation plan is the result of a planning process which identifies policies and actions that can be implemented over the long term to reduce the risk and future losses resulting from hazard events. The Schuyler County Multi-Jurisdictional Hazard Mitigation Plan Update will address a comprehensive list of natural hazards likely to impact the County. The identified mitigation policies and actions will be based on an assessment of hazards, vulnerabilities, and risks.

The hazard mitigation planning process is also heavily dependent on the participation of representatives from local government agencies and departments, the public, and other stakeholder groups. A Hazard Mitigation Planning Committee will be formed to support this project and will include representatives from the County, cities, school districts, private-non-profit entities, business partners, academic institutions, and other local, state, and federal agencies acting in or serving Schuyler County.

What is My Role in the Planning Process?
The Northeast Missouri Regional Planning Commission has taken the lead in updating this plan. The point of contact is Derek Weber, Executive Director. To successfully complete this project and ensure your organization is eligible for FEMA hazard mitigation assistance funding, we need your participation and input. Jurisdictions (including county and city governments and public school districts) that do not participate in an approved Hazard Mitigation Plan are **NOT eligible** to apply for FEMA's Hazard Mitigation Assistance grants. Participation in the planning process will include:

- Contributing in the planning committee meetings;
- Providing requested data (as available);
- Reviewing and providing comments on plan drafts;
- Advertising, coordinating, and participating in the public input process; and
- Coordinating the formal adoption of the plan.

What can I expect by participating in the planning committee?
The planning committee will be provided with information on what activities are required to be performed to be included in the plan. Required activities include the following:



SEMA Mitigation Management

LOCAL MITIGATION PLAN FORMAT GUIDANCE
KICKOFF MEETING INVITATION FOR JURISDICTIONS

- **Required Activities include:** Participating jurisdictions will be required to complete as much of the data questionnaire as possible and return, complete critical/essential facilities and non-government employer form. Review planning meeting PowerPoint including federal planning requirements. Review project timeline.
- **Risk Assessment Meeting.** Review and provide comments on the risk assessment.
- **Mitigation Strategy Meeting.** Updating of existing mitigation actions and identification and development of new mitigation strategies based upon the risk assessment.

Additional Resources
The following links provide additional information on hazard mitigation and the planning process.

- **Schuyler County Multi-Jurisdictional Hazard Mitigation Plan, April 2015**
  http://www.nemorpc.org/wp-content/uploads/2019/02/Schuyler-County-Hazard-Mitigation-Plan-3_05_2015-rd.pdf

- **The requirements and procedures for state, tribal and local mitigation plans as presented in the Code of Federal Regulations (CFR) at Title 44, Chapter 1, Part 201**
  https://www.fema.gov/hazard-mitigation-planning-laws-regulations-policies

- **Frequently Asked Questions regarding hazard mitigation planning**
  https://www.fema.gov/hazard-mitigation-planning-frequently-asked-questions

Please confirm your attendance or provide contact information for your designated alternate by responding to Derek Weber at (660)465-7281 Ext. 1 or derekweber@nemorpc.org.

Thank you,

Derek Weber
Executive Director
Northeast Missouri Regional Planning Commission

Schuyler County
Multi-Jurisdictional Hazard Mitigation Plan Update
Conference Call Planning Meeting
November 16, 2020
10:00 A.M.

Agenda

Welcome/Introductions — Derek Weber, Executive Director, Northeast Missouri RPC

Hazard Mitigation Planning Purpose/Grant Programs

Data Collection Questionnaires

Participation Requirements/Status

Discussion of Hazards

Update Mitigation Goals

Discuss Mitigation Action Updates

Next Steps/Timeline

Questions?

Schuyler County Multi-Jurisdictional Hazard Mitigation Plan Update
Kickoff Meeting—Sign-in Sheet

Project:	Schuyler County, Missouri Multi-jurisdictional Hazard Mitigation Plan Update	**Meeting Date/Time:**	Schuyler County HMP Conference Call November 16, 2020, 10:00 A.M.
Facilitator:	Derek Weber, Executive Director Northeast Missouri Regional Planning Commission	**Call-In #:**	(844)844-0414 Access Code: 511868

Name	Title	Department/Agency	Email	Phone #	Signature
Rodney Cooper	Presiding Commissioner	Schuyler County			
Jim Werner	Northern Dist. Commissioner	Schuyler County	jcwerner@socket.net		
Jeff Lindquist	Southern Dist. Commissioner	Schuyler County	Jefflind454@hotmail.com		
Bree Lawson	Clerk	Schuyler County	breezy_shaw@yahoo.com		
Margaret Reynolds	City Clerk	City of Lancaster	cityhall@marktwain.net		
Jim Foster	Mayor	City of Lancaster			
Carol Dryden	Clerk	City of Downing	cityhallofdowning@outlook.com	660-379-2515	
Alan	Garrett	City of Downing	cityhallofdowning@outlook.com	660-379-2515	
Denny Brummer	Clerk	Village of Glenwood		660-341-3104	
Charlene Long	Mayor	City of Greentop	gtclerk@marktwain.net	660-949-2520	

Schuyler County Multi-Jurisdictional Hazard Mitigation Plan Update
Kickoff Meeting—Sign-in Sheet

Project:	Schuyler County, Missouri Multi-jurisdictional Hazard Mitigation Plan Update	**Meeting Date/Time:**	Schuyler County HMP Conference Call November 16, 2020, 10:00 A.M.
Facilitator:	Derek Weber, Executive Director Northeast Missouri Regional Planning Commission	**Call-In #:**	(844)844-0414 Access Code: 511868

Name	Title	Department/Agency	Email	Phone #	Signature
Martha Chapman	Clerk	City of Greentop	gtclerk@marktwain.net	660-949-2520	
John March	Mayor	City of Queen City	Cityofqueencity63561@gmail.com	660-766-2735	
Traci Walker	Clerk	City of Queen City	Cityofqueencity63561@gmail.com	660-766-2735	
Kyle Windy	Principal	Schuyler County R-1	kwindy@schuyler.k12.mo.us		
Rick Roberts	Superintendent	Schuyler County R-1	rroberts@schuyler.k12.mo.us		
Joe Wuebeker	Sheriff	Schuyler County			
Derek Weber	Executive Director	NEMO RPC	derekweber@nemorpc.org	660-465-7281 Ext. 1	
Darla Campbell	County Engagement Specialist	MU Extension – Schuyler County			
Kathryn Magers	Administrator	Schuyler County Health Dept.			

To	**Schuyler County Hazard Mitigation Planning Committee**
From	**Derek Weber, Executive Director** **Northeast Missouri Regional Planning Commission**
Tel / E-mail	**(660)465-7281 Ext. 1 / derekweber@nemorpc.org**
Date	**November 16th, 2020**
Subject	**Minutes from Schuyler County Hazard Mitigation Planning Conference Call held on November 16th 2020 at 10:00 AM**

This document is a record of attendance and a summary of the issues discussed during the above meeting. The presentation began with an introduction on the purpose of hazard mitigation planning, grant programs linked to an approved plan, and the benefits of a multi-jurisdictional approach. The hazard mitigation planning process was reviewed to include requirements for participation and public involvement and the use of data collection questionnaires. The planning committee participated in a discussion of the hazards that have the potential to impact Schuyler County, including preliminary research on each hazard. The sources for compiling a GIS layer of critical facilities were also discussed and additional sources identified by planning committee members were noted. The meeting concluded with a discussion of the next steps in the planning process. The meeting was held at the via conference call beginning at 10:00 AM.

Attendees

Name		Title	Jurisdiction
Rodney	Cooper	Presiding Commissioner	Schuyler County
Jim	Werner	Northern Dist. Commissioner	Schuyler County
Jeff	Lindquist	Southern Dist. Commissioner	Schuyler County
Bree	Lawson	County Clerk	Schuyler County
Margaret	Reynolds	City Clerk	City of Lancaster
Jim	Foster	Mayor	City of Lancaster
Carol	Dryden	City Clerk	City of Downing
Alan	Garrett	Mayor	City of Downing
Denny	Brummer	City Clerk	Village of Glenwood
Charlene	Long	Mayor	City of Greentop
Martha	Chapman	Clerk	City of Greentop
John	March	Mayor	City of Queen City
Traci	Wheeler	City Clerk	City of Queen City
Kyle	Windy	Principal	Schuyler County R-1
Rick	Roberts	Superintendent	Schuyler County R-1
Joe	Wuebeker	Sheriff	Schuyler County
Derek	Weber	Executive Director	NEMO RPC
Darla	Campbell	County Engagement Specialist	MU Extension – Schuyler County
Kathryn	Magers	Administrator	Schuyler County Health Dept.

Introductions

Derek Weber, Executive Director with Northeast Missouri Regional Planning Commission began the meeting by welcoming and thanking the attendees for coming and having all attendees introduce themselves and the jurisdiction or entity they were representing.

Hazard Mitigation Planning Purpose

Derek Weber, Executive Director with NEMO RPC presented information on the purpose of Hazard Mitigation Planning and the Disaster Mitigation Act of 2000. The attendees were reminded this is an update of the Schuyler County Hazard Mitigation Plan, previously approved in April, 2015. The current plan expires in April 2020.

Grant Programs Linked to Approved Plan

Derek Weber briefly discussed the FEMA Hazard Mitigation Assistance grants that require participation in an approved Hazard Mitigation Plan for jurisdictions to be eligible to apply. These include: Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program

Participation Requirements

Derek Weber also described the role of the MPC. Each jurisdiction participating in development of the plan must meet the following minimum requirements:

1. Designate a representative to serve on the Schuyler County MPC.
2. Provide data for and assist in the development of the updated risk assessment that describes how various hazards impact your jurisdiction,
3. Provide data to describe current capabilities,
4. Develop/update mitigation actions (at least one) specific to your jurisdiction,
5. Provide comments on plan drafts as requested,
6. Provide documentation to show time donated to the planning effort (if a FEMA planning grant was awarded to the county); and
7. Formally adopt the mitigation plan.

Jurisdictions that choose not to participate in development of a FEMA-approved mitigation plan **will not** be eligible applicants for FEMA Hazard Mitigation Assistance Grants.

Data Collection Questionnaires

Representatives from local governments and school districts were provided with hard copies of Data Collection Questionnaires. The Data Collection Questionnaire is designed to collect information on existing capabilities within each jurisdiction to implement mitigation initiatives as well as collect information on previous hazard events. The questionnaires are different for local units of government and schools. The Data Collection Questionnaires were reviewed as a group and then meeting participants were given time to review the forms individually and note any questions about the forms.

Discussion/Prioritization of Hazards

Initial research information was presented on the hazards being considered for inclusion in the hazard mitigation plan. The attendees agreed to continue with all of the previous natural hazards covered in the previous plan and also add Pandemic Hazard.

Update Mitigation Goals

Following the discussion of the risk assessment, Derek Weber, facilitated a discussion of the mitigation goals. Common categories of mitigation goals were presented as well as the 2018 State Hazard Mitigation Plan goals.

This planning effort is an update to an existing hazard mitigation plan. As a result, the goals from the previous hazard mitigation plan were reviewed. The updated goals are as follows:

1. Public Awareness- Using a variety of communication avenues to increase the citizens awareness of and to promote education about the natural hazards that they may face, their vulnerability to these hazards, and how to lessen the effect of future natural hazards.
2. Strengthen communication and coordination between local governments, emergency personnel, public agencies, and citizens to mitigate the effects of future natural hazards.
3. Investigate, implement, maintain, and enforce mitigation policies and programs that limit the impact of natural hazards: on the loss of life; on new and existing properties; on natural resources; on infrastructure; and on the local economy.

Mitigation Actions Updates

The planning committee members informed they would be contacted to review past mitigation actions and how they wanted to proceed with new mitigation actions. Jurisdictions were informed they were required to have at least one mitigation action.

For each Continuing and New action to be included in the plan, the responsible jurisdiction must complete the STAPLEE Worksheet and record the results on either the spreadsheet OR action plan worksheet. The STAPLEE worksheet provides a framework to determine the general effectiveness in accomplishing the goals of life safety and/or reduction or prevention of damage from a hazard event. This method analyzes the Social, Technical, Administrative, Political, Legal, Economic and Environmental aspects of a project and is commonly used by public administration officials and planners for making planning decisions.

Next Steps

The meeting concluded with a discussion of the remaining steps to complete the planning process. Participants were informed they would be contacted for completion of mitigation action items. Resolutions will need to be adopted by each jurisdiction and a sample will be emailed.

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Local Governments

County: Schuyler County

Jurisdiction: Unincorporated Schuyler County

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: Jim Werner County Commission

Phone: _____

Email: _____

Date: _____

Please return questionnaires by mail, email, or fax to:

Name: Derek Weber

Address: 121 S. Cecil St. Memphis, MO 63555

Email: derekweber@nemorpc.org

Fax: 660-465-7163

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan. Although some of this information may have been captured in your previous mitigation plan, it is important to ensure this information is current in the plan update.

Please indicate which of the following your jurisdiction has in place. For elements that do not pertain to your type of public entity, please indicate with "N/A". If applicable, please provide a completion date for the element. If your jurisdiction does not have a particular element, and a higher level of government has the authority pertaining to your jurisdiction, please indicate this in the comments column. If your jurisdiction has any of the **underlined and bolded** elements, please provide a copy of the document to the contact listed on the front and indicate method in the comments column (i.e. available on the web, will email or mail).

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	Date:	No
Builder's Plan	Date:	NO
Capital Improvement Plan	Date:	No
City Emergency Operations Plan	Date:	NA
County Emergency Operations Plan	Date:	Yes
Local Recovery Plan	Date:	No
County Recovery Plan	Date:	NO
City Mitigation Plan	Date:	NA
County Mitigation Plan	Date:	Yes
Debris Management Plan	Date:	NO
Economic Development Plan	Date:	NO
Transportation Plan	Date:	NO
Land-use Plan	Date:	NO
Flood Mitigation Assistance (FMA) Plan	Date:	NO
Watershed Plan	Date:	NO
Firewise or other fire mitigation plan	Date:	NO
Critical Facilities Plan (Mitigation/Response/Recovery)	Date:	No

Element	Yes, No, N/A	Comments and/or Weblink
Policies/Ordinance		
Zoning Ordinance		Yes
Building Code	Version:	NO
Floodplain Ordinance	Date:	NO
Subdivision Ordinance		NO
Tree Trimming Ordinance		NO
Nuisance Ordinance		NO
Stormwater Ordinance		NO
Drainage Ordinance		NO
Site Plan Review Requirements		NO
Historic Preservation Ordinance		NO
Landscape Ordinance		NO
Program		
Zoning/Land Use Restrictions		NO
Codes Building Site/Design		NO
Hazard Awareness Program		NO
National Flood Insurance Program (NFIP)		NO
NFIP Community Rating System (CRS) program		If so, what is your current level rating?
National Weather Service (NWS) Storm Ready Certification		NO
Firewise Community Certification		NO
Building Code Effectiveness Grading (BCEGs)		NO
ISO Fire Rating	Rating: 6	
Economic Development Program		NO
Land Use Program		NO
Public Education/Awareness		NO
Property Acquisition		NO
Planning/Zoning Boards		Yes
Stream Maintenance Program		NO
Tree Trimming Program		NO
Engineering Studies for Streams (Local/County/Regional)		NO

Element	Yes, No, N/A	Comments and/or Weblink
Mutual Aid Agreements	Yes	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	NO	
Hazard Analysis/Risk Assessment (County)	NO	
Evacuation Route Map	NO	
Critical Facilities Inventory	NO	
Vulnerable Population Inventory	NO	
Land Use Map	NO	
Staff/Department		**Full Time or Part Time?**
Building Code Official	No	
Building Inspector	No	
Mapping Specialist (GIS)	No	
Engineer	No	
Development Planner	No	
Public Works Official	NO	
Emergency Management Coordinator	Yes	
NFIP Floodplain Administrator	No	
Emergency Response Team	Yes	
Hazardous Materials Expert	NO	
Local Emergency Planning Committee	Yes	
County Emergency Management Commission	No	
Sanitation Department	No	
Transportation Department	NO	
Economic Development Department	NO	
Housing Department	No	
Historic Preservation	NO	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	No	
Salvation Army	No	
Veterans Groups	Yes	

Element	Yes, No, N/A	Comments and/or Weblink
Local Environmental Organization	No	
Homeowner Associations	No	
Neighborhood Associations	No	
Chamber of Commerce	No	
Community Organizations (Lions, Kiwanis, etc.	Yes	Rotary

Financial Resources	Is your jurisdiction able to? Yes or No
Apply for Community Development Block Grants	Yes
Fund projects thru Capital Improvements funding	No
Authority to levy taxes for specific purposes	Yes
Fees for water, sewer, gas, or electric services	No
Impact fees for new development	No
Incur debt through general obligation bonds	No
Incur debt through special tax bonds	No
Incur debt through private activities	No
Withhold spending in hazard prone areas	No

For plan updates, the plan maintenance process outlined in your previous plan requires all participating jurisdictions to incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate. A key element of effective implementation of mitigation is for the mitigation plan to be incorporated in existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	
Builder's Plan	
Capital Improvement Plan	
Local Recovery Plan	
County Recovery Plan	
Debris Management Plan	
Economic Development Plan	
Transportation Plan	
Land-use Plan	
Watershed Plan	
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

   Commission 3 members

2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.

   No

3. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities. Be sure to include pending or approved projects submitted for FEMA mitigation grants.

   No

4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers.

   NA

5. How many outdoor warning sirens are in your community?

   None

   How are they activated (indicate responsible department/personnel)?

   NA

6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.

   No

7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?

   (Yes), No

   Please provide address locations:

   Schuyler County Courthouse

8. List residential, commercial and industrial development in your jurisdiction since last plan update.

Westerns Smokehouse / Hart Systems / Wind Farm System

9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas.

NA

10. Are any new facilities or infrastructure planned for construction during the next five years? If so, please provide facility name and purpose along with proposed locations, if known.

No

11. Please list major employers in your jurisdiction with an estimated number of employees.

Western's 120

12. Please list Mitigation Planning Committee members who served during the development of the previously approved plan. Was the process set forth for monitoring the implementation of the previously approved mitigation plan adhered to? Did the Committee meet as was specified in the previously approved plan? Why or why not?

Jim Werner
Jeff Lindquist
Rodney Cooper

13. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

NA

VULNERABILITY ASSESSMENT

The purpose of this worksheet is to assess the vulnerable buildings, populations, critical facilities, infrastructure, and other important assets in your community by using the best available data to complete the table. Use the table on the next page to compile a detailed inventory of specific assets at risk including critical facilities and infrastructure; natural, cultural, and historical assets; and economic assets. In the natural hazard column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Natural Hazards	
Flooding (Major & Flash) - **RF**	Drought - **D**
Levee Failure - **LF**	Extreme Temperature - **ET**
Dam Failure - **DF**	Severe Thunderstorm (incl. winds, hail, lightning) - **ST**
Earthquake - **EQ**	Severe Winter Weather (incl. snow, ice, severe cold) - **SWW**
Land Subsidence / Sinkholes - **LSS**	Tornadoes - **T**
	Wildfire - **WF**

Critical Facilities and Infrastructure

A critical facility may be defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. FEMA's HAZUS-MH loss estimation software uses the following three categories of critical assets. 'Essential facilities' are those that if damaged would have devastating impacts on disaster response and/or recovery. 'High potential loss facilities' are those that would have a high loss or impact on the community. Transportation and lifeline facilities are third category of critical assets; examples are provided below.

Essential Facilities
Hospitals and other medical facilities
Police stations
Fire station
Emergency Operations Centers

High Potential Loss Facilities
Power plants
Dams/levees
Military installations
Hazardous material sites
Schools
Shelters
Day care centers
Nursing homes
Main government buildings

Transportation and Lifeline
Highways, bridges, and tunnels
Railroads and facilities
Bus facilities
Airports
Water treatment facilities
Natural gas facilities and pipelines
Oil facilities and pipelines
Communications facilities

Economic Assets

Economic assets at risk may include major employers or primary economic sectors, such as agriculture, whose losses or inoperability would have severe impacts on the community and its ability to recover from disaster.

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Local Governments

County: Schuyler County

Jurisdiction: City of Lancaster

Return by: 1

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: Margaret Reynolds

Phone: 660 457 3022

Email: Cityhall@marktwain.net

Date: Jan. 13, 2021

Please return questionnaires by mail, email, or fax to:

Name: Derek Weber

Address: 121 S. Cecil St. Memphis, MO 63555

Email: derekweber@nemorpc.org

Fax: 660-465-7163

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan. Although some of this information may have been captured in your previous mitigation plan, it is important to ensure this information is current in the plan update

Please indicate which of the following your jurisdiction has in place. For elements that do not pertain to your type of public entity, please indicate with "N/A". If applicable, please provide a completion date for the element. If your jurisdiction does not have a particular element, and a higher level of government has the authority pertaining to your jurisdiction, please indicate this in the comments column. If your jurisdiction has any of the **underlined and bolded** elements, please provide a copy of the document to the contact listed on the front and indicate method in the comments column (i.e. available on the web, will email or mail).

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	Date: No	A
Builder's Plan	Date: No	
Capital Improvement Plan	Date: No	
City Emergency Operations Plan	Date: Yes	
County Emergency Operations Plan	Date: No	
Local Recovery Plan	Date: No	
County Recovery Plan	Date: Yes	
City Mitigation Plan	Date: No	
County Mitigation Plan	Date: Yes	
Debris Management Plan	Date: No	
Economic Development Plan	Date:	
Transportation Plan	Date: No	
Land-use Plan	Date: No	
Flood Mitigation Assistance (FMA) Plan	Date: No	
Watershed Plan	Date:	
Firewise or other fire mitigation plan	Date: No	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date: No	

Element	Yes, No, N/A	Comments and/or Weblink
Policies/Ordinance		
Zoning Ordinance	No	
Building Code	Version: NO	
Floodplain Ordinance	Date: No	
Subdivision Ordinance	No	
Tree Trimming Ordinance	No	
Nuisance Ordinance	Yes	
Stormwater Ordinance	No	
Drainage Ordinance	No	
Site Plan Review Requirements	No	
Historic Preservation Ordinance	No	
Landscape Ordinance	No	
Program		
Zoning/Land Use Restrictions	No	
Codes Building Site/Design	NO	
Hazard Awareness Program	No	
National Flood Insurance Program (NFIP)	No	
NFIP Community Rating System (CRS) program	No	If so, what is your current level rating?
National Weather Service (NWS) Storm Ready Certification	No	
Firewise Community Certification	No	
Building Code Effectiveness Grading (BCEGs)	No	
ISO Fire Rating	Rating: 6	
Economic Development Program	No	
Land Use Program	No	
Public Education/Awareness	No	
Property Acquisition	No	
Planning/Zoning Boards	No	
Stream Maintenance Program	No	
Tree Trimming Program	No	
Engineering Studies for Streams (Local/County/Regional)		

Element	Yes, No, N/A	Comments and/or Weblink
Mutual Aid Agreements	Yes	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	No	
Hazard Analysis/Risk Assessment (County)	No	
Evacuation Route Map	No	
Critical Facilities Inventory	No	
Vulnerable Population Inventory	No	
Land Use Map	No	
Staff/Department		**Full Time or Part Time?**
Building Code Official	No	
Building Inspector	No	
Mapping Specialist (GIS)	No	
Engineer	No	
Development Planner	No	
Public Works Official	Yes	
Emergency Management Coordinator	No	
NFIP Floodplain Administrator	No	
Emergency Response Team	Yes	Lancaster Fire
Hazardous Materials Expert	No	
Local Emergency Planning Committee	Yes	Lancaster Fire
County Emergency Management Commission	Yes	Sheriff
Sanitation Department	No	
Transportation Department	No	
Economic Development Department	No	
Housing Department	No	
Historic Preservation	No	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	No	
Salvation Army	No	
Veterans Groups	No	

Element	Yes, No, N/A	Comments and/or Weblink
Local Environmental Organization	No	
Homeowner Associations	No	
Neighborhood Associations	No	
Chamber of Commerce	No	
Community Organizations (Lions, Kiwanis, etc.		Rotary

Financial Resources	Is your jurisdiction able to? Yes or No
Apply for Community Development Block Grants	Yes
Fund projects thru Capital Improvements funding	Yes
Authority to levy taxes for specific purposes	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	Yes
Withhold spending in hazard prone areas	No

For plan updates, the plan maintenance process outlined in your previous plan requires all participating jurisdictions to incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate. A key element of effective implementation of mitigation is for the mitigation plan to be incorporated in existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
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County Recovery Plan	
Debris Management Plan	
Economic Development Plan	
Transportation Plan	
Land-use Plan	
Watershed Plan	
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

   Mayor 2 Northward Council member
   2 Southward Council member

2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.

   No

3. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities. Be sure to include pending or approved projects submitted for FEMA mitigation grants.

   No

4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers.

   /

5. How many outdoor warning sirens are in your community? 2

   How are they activated (indicate responsible department/personnel)? Yes,

   Lancaster Fast Responders, Council, Police Dept.

6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.

   No

7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?

   NO

   Please provide address locations:

8. List residential, commercial and industrial development in your jurisdiction since last plan update.

Heat Systems 9th St.

9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas.

No

10. Are any new facilities or infrastructure planned for construction during the next five years? If so, please provide facility name and purpose along with proposed locations, if known.

Retail Store

11. Please list major employers in your jurisdiction with an estimated number of employees.

Court House - Schuyler 15 people

12. Please list Mitigation Planning Committee members who served during the development of the previously approved plan. Was the process set forth for monitoring the implementation of the previously approved mitigation plan adhered to? Did the Committee meet as was specified in the previously approved plan? Why or why not?

13. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Local Governments

County: Schuyler County

Jurisdiction: City of Queen City

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: Traci Walker _____

Phone: 660-766-2735 _____

Email: _____

Date:12/17/20 _____

Please return questionnaires by mail, email, or fax to:

Name: Derek Weber

Address: 121 S. Cecil St. Memphis, MO 63555

Email: derekweber@nemorpc.org

Fax: 660-465-7163

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan. Although some of this information may have been captured in your previous mitigation plan, it is important to ensure this information is current in the plan update

Please indicate which of the following your jurisdiction has in place. For elements that do not pertain to your type of public entity, please indicate with "N/A". If applicable, please provide a completion date for the element. If your jurisdiction does not have a particular element, and a higher level of government has the authority pertaining to your jurisdiction, please indicate this in the comments column. If your jurisdiction has any of the **underlined and bolded** elements, please provide a copy of the document to the contact listed on the front and indicate method in the comments column (i.e. available on the web, will email or mail).

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	No	
Builder's Plan	No	
Capital Improvement Plan	No	
City Emergency Operations Plan	No	
County Emergency Operations Plan	Yes	
Local Recovery Plan	No	
County Recovery Plan	No	
City Mitigation Plan	No	
County Mitigation Plan	Yes	
Debris Management Plan	No	
Economic Development Plan	No	
Transportation Plan	No	
Land-use Plan	No	
Flood Mitigation Assistance (FMA) Plan	No	
Watershed Plan	No	
Firewise or other fire mitigation plan	No	
Critical Facilities Plan (Mitigation/Response/Recovery)	No	

Element	Yes, No, N/A	Comments and/or Weblink
Policies/Ordinance		
Zoning Ordinance	No	
Building Code	No	
Floodplain Ordinance	No	
Subdivision Ordinance	No	
Tree Trimming Ordinance	No	
Nuisance Ordinance	Yes	
Stormwater Ordinance	No	
Drainage Ordinance	No	
Site Plan Review Requirements	No	
Historic Preservation Ordinance	No	
Landscape Ordinance	No	
Programs		
Zoning/Land Use Restrictions	No	
Codes Building Site/Design	No	
Hazard Awareness Program	No	
National Flood Insurance Program (NFIP)	No	
NFIP Community Rating System (CRS) program	Na	If so, what is your current level rating?
National Weather Service (NWS) Storm Ready Certification	No	
Firewise Community Certification	No	
Building Code Effectiveness Grading (BCEGs)	No	
ISO Fire Rating	Rating:6	
Economic Development Program	No	
Land Use Program	No	
Public Education/Awareness	No	
Property Acquisition	No	
Planning/Zoning Boards	No	
Stream Maintenance Program	No	
Tree Trimming Program	No	
Engineering Studies for Streams (Local/County/Regional)	No	

Element	Yes, No, N/A	Comments and/or Weblink
Mutual Aid Agreements	Yes	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	No	
Hazard Analysis/Risk Assessment (County)	No	
Evacuation Route Map	No	
Critical Facilities Inventory	No	
Vulnerable Population Inventory	No	
Land Use Map	No	
Staff/Department		**Full Time or Part Time?**
Building Code Official	No	
Building Inspector	No	
Mapping Specialist (GIS)	No	
Engineer	No	
Development Planner	No	
Public Works Official	No	
Emergency Management Coordinator	No	
NFIP Floodplain Administrator	No	
Emergency Response Team	Yes	Queen City Fire Dept.
Hazardous Materials Expert	No	
Local Emergency Planning Committee	Yes	
County Emergency Management Commission	No	
Sanitation Department	No	
Transportation Department	No	
Economic Development Department	No	
Housing Department	No	
Historic Preservation	No	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	No	
Salvation Army	No	
Veterans Groups	No	

Element	Yes, No, N/A	Comments and/or Weblink
Local Environmental Organization	No	
Homeowner Associations	No	
Neighborhood Associations	No	
Chamber of Commerce	Yes	
Community Organizations (Lions, Kiwanis, etc.	Yes	

Financial Resources	Is your jurisdiction able to? Yes or No
Apply for Community Development Block Grants	Yes
Fund projects thru Capital Improvements funding	Yes
Authority to levy taxes for specific purposes	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	No
Withhold spending in hazard prone areas	No

For plan updates, the plan maintenance process outlined in your previous plan requires all participating jurisdictions to incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate. A key element of effective implementation of mitigation is for the mitigation plan to be incorporated in existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	
Builder's Plan	
Capital Improvement Plan	
Local Recovery Plan	
County Recovery Plan	
Debris Management Plan	
Economic Development Plan	
Transportation Plan	
Land-use Plan	
Watershed Plan	
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

   Mayor – 4 Aldermen

2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.

   None

3. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities. Be sure to include pending or approved projects submitted for FEMA mitigation grants.

   None

4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers.

   None

5. How many outdoor warning sirens are in your community?
   1

   How are they activated (indicate responsible department/personnel)?
   Fire Dept.

6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.
   No

7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?
   No

   Please provide address locations:

8. List residential, commercial and industrial development in your jurisdiction since last plan update.

None

9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas.

None

10. Are any new facilities or infrastructure planned for construction during the next five years? If so, please provide facility name and purpose along with proposed locations, if known.

None

11. Please list major employers in your jurisdiction with an estimated number of employees.

None

12. Please list Mitigation Planning Committee members who served during the development of the previously approved plan. Was the process set forth for monitoring the implementation of the previously approved mitigation plan adhered to? Did the Committee meet as was specified in the previously approved plan? Why or why not?

NA

13. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

NA

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Local Governments

County: Schuyler County

Jurisdiction: City of Downing

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: Carol Dryden

Phone: 660-379-2515 _____

Email: _____

Date:12/14/20 _____

Please return questionnaires by mail, email, or fax to:

Name: Derek Weber

Address: 121 S. Cecil St. Memphis, MO 63555

Email: derekweber@nemorpc.org

Fax: 660-465-7163

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan. Although some of this information may have been captured in your previous mitigation plan, it is important to ensure this information is current in the plan update

Please indicate which of the following your jurisdiction has in place. For elements that do not pertain to your type of public entity, please indicate with "N/A". If applicable, please provide a completion date for the element. If your jurisdiction does not have a particular element, and a higher level of government has the authority pertaining to your jurisdiction, please indicate this in the comments column. If your jurisdiction has any of the **underlined and bolded** elements, please provide a copy of the document to the contact listed on the front and indicate method in the comments column (i.e. available on the web, will email or mail).

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	NO	
Builder's Plan	No	
Capital Improvement Plan	No	
City Emergency Operations Plan	No	
County Emergency Operations Plan	Yes	
Local Recovery Plan	No	
County Recovery Plan	No	
City Mitigation Plan	No	
County Mitigation Plan	Yes	
Debris Management Plan	No	
Economic Development Plan	No	
Transportation Plan	No	
Land-use Plan	No	
Flood Mitigation Assistance (FMA) Plan	No	
Watershed Plan	No	
Firewise or other fire mitigation plan	No	
Critical Facilities Plan (Mitigation/Response/Recovery)	No	

Element	Yes, No, N/A	Comments and/or Weblink
Policies/Ordinance		
Zoning Ordinance	No	
Building Code	No	
Floodplain Ordinance	No	
Subdivision Ordinance	No	
Tree Trimming Ordinance	No	
Nuisance Ordinance	No	
Stormwater Ordinance	No	
Drainage Ordinance	No	
Site Plan Review Requirements	No	
Historic Preservation Ordinance	No	
Landscape Ordinance	No	
Program		
Zoning/Land Use Restrictions	No	
Codes Building Site/Design	No	
Hazard Awareness Program	No	
National Flood Insurance Program (NFIP)	No	
NFIP Community Rating System (CRS) program	Na	If so, what is your current level rating?
National Weather Service (NWS) Storm Ready Certification	No	
Firewise Community Certification	No	
Building Code Effectiveness Grading (BCEGs)	No	
ISO Fire Rating	Rating:6	
Economic Development Program	No	
Land Use Program	No	
Public Education/Awareness	No	
Property Acquisition	No	
Planning/Zoning Boards	No	
Stream Maintenance Program	No	
Tree Trimming Program	No	
Engineering Studies for Streams (Local/County/Regional)	No	

Element	Yes, No, N/A	Comments and/or Weblink
Mutual Aid Agreements	Yes	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	No	
Hazard Analysis/Risk Assessment (County)	No	
Evacuation Route Map	No	
Critical Facilities Inventory	No	
Vulnerable Population Inventory	No	
Land Use Map	No	
Staff/Department		**Full Time or Part Time?**
Building Code Official	No	
Building Inspector	No	
Mapping Specialist (GIS)	No	
Engineer	No	
Development Planner	No	
Public Works Official	No	
Emergency Management Coordinator	No	
NFIP Floodplain Administrator	No	
Emergency Response Team	Yes	Downing Fire Dept
Hazardous Materials Expert	No	
Local Emergency Planning Committee	Yes	
County Emergency Management Commission	No	
Sanitation Department	No	
Transportation Department	No	
Economic Development Department	No	
Housing Department	No	
Historic Preservation	No	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	No	
Salvation Army	No	
Veterans Groups	No	

Element	Yes, No, N/A	Comments and/or Weblink
Local Environmental Organization	No	
Homeowner Associations	No	
Neighborhood Associations	No	
Chamber of Commerce	No	
Community Organizations (Lions, Kiwanis, etc.	No	

Financial Resources	Is your jurisdiction able to: Yes or No
Apply for Community Development Block Grants	Yes
Fund projects thru Capital Improvements funding	Yes
Authority to levy taxes for specific purposes	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	No
Withhold spending in hazard prone areas	No

For plan updates, the plan maintenance process outlined in your previous plan requires all participating jurisdictions to incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate. A key element of effective implementation of mitigation is for the mitigation plan to be incorporated in existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	
Builder's Plan	
Capital Improvement Plan	
Local Recovery Plan	
County Recovery Plan	
Debris Management Plan	
Economic Development Plan	
Transportation Plan	
Land-use Plan	
Watershed Plan	
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

   Mayor – 3 Aldermen

2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.

   None

3. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities. Be sure to include pending or approved projects submitted for FEMA mitigation grants.

   None

4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers.

   None

5. How many outdoor warning sirens are in your community?
   1

   How are they activated (indicate responsible department/personnel)?
   Downing Fire

6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.
   No

7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?
   No

   Please provide address locations:

8. List residential, commercial and industrial development in your jurisdiction since last plan update.

None

9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas.

None

10. Are any new facilities or infrastructure planned for construction during the next five years? If so, please provide facility name and purpose along with proposed locations, if known.

None

11. Please list major employers in your jurisdiction with an estimated number of employees.

Hammer Mill Bar and Grill, Bank of Downing

12. Please list Mitigation Planning Committee members who served during the development of the previously approved plan. Was the process set forth for monitoring the implementation of the previously approved mitigation plan adhered to? Did the Committee meet as was specified in the previously approved plan? Why or why not?

NA

13. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

NA

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Local Governments

County: Schuyler County

Jurisdiction: Village of Glenwood

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: Denny Brummer_____

Phone: 660-341-3104 _____

Email: _____

Date:12/17/20 _____

Please return questionnaires by mail, email, or fax to:

Name: Derek Weber

Address: 121 S. Cecil St. Memphis, MO 63555

Email: derekweber@nemorpc.org

Fax: 660-465-7163

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan. Although some of this information may have been captured in your previous mitigation plan, it is important to ensure this information is current in the plan update

Please indicate which of the following your jurisdiction has in place. For elements that do not pertain to your type of public entity, please indicate with "N/A". If applicable, please provide a completion date for the element. If your jurisdiction does not have a particular element, and a higher level of government has the authority pertaining to your jurisdiction, please indicate this in the comments column. If your jurisdiction has any of the **underlined and bolded** elements, please provide a copy of the document to the contact listed on the front and indicate method in the comments column (i.e. available on the web, will email or mail).

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	No	
Builder's Plan	No	
Capital Improvement Plan	No	
City Emergency Operations Plan	No	
County Emergency Operations Plan	Yes	
Local Recovery Plan	No	
County Recovery Plan	No	
City Mitigation Plan	No	
County Mitigation Plan	Yes	
Debris Management Plan	No	
Economic Development Plan	No	
Transportation Plan	No	
Land-use Plan	No	
Flood Mitigation Assistance (FMA) Plan	No	
Watershed Plan	No	
Firewise or other fire mitigation plan	No	
Critical Facilities Plan (Mitigation/Response/Recovery)	No	

Element	Yes, No, N/A	Comments and/or Weblink
Policies/Ordinance		
Zoning Ordinance	No	
Building Code	No	
Floodplain Ordinance	No	
Subdivision Ordinance	No	
Tree Trimming Ordinance	No	
Nuisance Ordinance	No	
Stormwater Ordinance	No	
Drainage Ordinance	No	
Site Plan Review Requirements	No	
Historic Preservation Ordinance	No	
Landscape Ordinance	No	
Program		
Zoning/Land Use Restrictions	No	
Codes Building Site/Design	No	
Hazard Awareness Program	No	
National Flood Insurance Program (NFIP)	No	
NFIP Community Rating System (CRS) program	Na	If so, what is your current level rating?
National Weather Service (NWS) Storm Ready Certification	No	
Firewise Community Certification	No	
Building Code Effectiveness Grading (BCEGs)	No	
ISO Fire Rating	Rating:6	
Economic Development Program	No	
Land Use Program	No	
Public Education/Awareness	No	
Property Acquisition	No	
Planning/Zoning Boards	No	
Stream Maintenance Program	No	
Tree Trimming Program	No	
Engineering Studies for Streams (Local/County/Regional)	No	

Element	Yes, No, N/A	Comments and/or Weblink
Mutual Aid Agreements	Yes	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	No	
Hazard Analysis/Risk Assessment (County)	No	
Evacuation Route Map	No	
Critical Facilities Inventory	No	
Vulnerable Population Inventory	No	
Land Use Map	No	
Staff/Department		**Full Time or Part Time?**
Building Code Official	No	
Building Inspector	No	
Mapping Specialist (GIS)	No	
Engineer	No	
Development Planner	No	
Public Works Official	No	
Emergency Management Coordinator	No	
NFIP Floodplain Administrator	No	
Emergency Response Team	No	
Hazardous Materials Expert	No	
Local Emergency Planning Committee	Yes	
County Emergency Management Commission	No	
Sanitation Department	No	
Transportation Department	No	
Economic Development Department	No	
Housing Department	No	
Historic Preservation	No	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	No	
Salvation Army	No	
Veterans Groups	No	

Element	Yes, No, N/A	Comments and/or Weblink
Local Environmental Organization	No	
Homeowner Associations	No	
Neighborhood Associations	No	
Chamber of Commerce	No	
Community Organizations (Lions, Kiwanis, etc.	No	

Financial Resources	Is your jurisdiction able to? Yes or No
Apply for Community Development Block Grants	Yes
Fund projects thru Capital Improvements funding	Yes
Authority to levy taxes for specific purposes	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	No
Withhold spending in hazard prone areas	No

For plan updates, the plan maintenance process outlined in your previous plan requires all participating jurisdictions to incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate. A key element of effective implementation of mitigation is for the mitigation plan to be incorporated in existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	
Builder's Plan	
Capital Improvement Plan	
Local Recovery Plan	
County Recovery Plan	
Debris Management Plan	
Economic Development Plan	
Transportation Plan	
Land-use Plan	
Watershed Plan	
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

   Mayor – 4 Aldermen

2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.

   None

3. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities. Be sure to include pending or approved projects submitted for FEMA mitigation grants.

   None

4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers.

   None

5. How many outdoor warning sirens are in your community?
   1

   How are they activated (indicate responsible department/personnel)?
   City Clerk

6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.
   No

7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?
   No

   Please provide address locations:

8. List residential, commercial and industrial development in your jurisdiction since last plan update.

None

9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas.

None

10. Are any new facilities or infrastructure planned for construction during the next five years? If so, please provide facility name and purpose along with proposed locations, if known.

None

11. Please list major employers in your jurisdiction with an estimated number of employees.

None

12. Please list Mitigation Planning Committee members who served during the development of the previously approved plan. Was the process set forth for monitoring the implementation of the previously approved mitigation plan adhered to? Did the Committee meet as was specified in the previously approved plan? Why or why not?

NA

13. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

NA

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Local Governments

County: Schuyler County

Jurisdiction: City of Greentop

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: Martha Chapman _____

Phone: 660-949-2520 _____

Email: _____

Date: _____

Please return questionnaires by mail, email, or fax to:

Name: Derek Weber

Address: 121 S. Cecil St. Memphis, MO 63555

Email: derekweber@nemorpc.org

Fax: 660-465-7163

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan. Although some of this information may have been captured in your previous mitigation plan, it is important to ensure this information is current in the plan update

Please indicate which of the following your jurisdiction has in place. For elements that do not pertain to your type of public entity, please indicate with "N/A". If applicable, please provide a completion date for the element. If your jurisdiction does not have a particular element, and a higher level of government has the authority pertaining to your jurisdiction, please indicate this in the comments column. If your jurisdiction has any of the **underlined and bolded** elements, please provide a copy of the document to the contact listed on the front and indicate method in the comments column (i.e. available on the web, will email or mail).

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	No	
Builder's Plan	No	
Capital Improvement Plan	No	
City Emergency Operations Plan	No	
County Emergency Operations Plan	Yes	
Local Recovery Plan	No	
County Recovery Plan	No	
City Mitigation Plan	No	
County Mitigation Plan	Yes	
Debris Management Plan	No	
Economic Development Plan	No	
Transportation Plan	No	
Land-use Plan	No	
Flood Mitigation Assistance (FMA) Plan	No	
Watershed Plan	No	
Firewise or other fire mitigation plan	No	
Critical Facilities Plan (Mitigation/Response/Recovery)	No	

Element	Yes, No, N/A	Comments and/or Weblink
Policies/Ordinance		
Zoning Ordinance	No	
Building Code	No	
Floodplain Ordinance	No	
Subdivision Ordinance	No	
Tree Trimming Ordinance	No	
Nuisance Ordinance	Yes	
Stormwater Ordinance	No	
Drainage Ordinance	No	
Site Plan Review Requirements	No	
Historic Preservation Ordinance	No	
Landscape Ordinance	No	
Programs		
Zoning/Land Use Restrictions	No	
Codes Building Site/Design	No	
Hazard Awareness Program	No	
National Flood Insurance Program (NFIP)	No	
NFIP Community Rating System (CRS) program	Na	If so, what is your current level rating?
National Weather Service (NWS) Storm Ready Certification	No	
Firewise Community Certification	No	
Building Code Effectiveness Grading (BCEGs)	No	
ISO Fire Rating	Rating:6	
Economic Development Program	No	
Land Use Program	No	
Public Education/Awareness	No	
Property Acquisition	No	
Planning/Zoning Boards	No	
Stream Maintenance Program	No	
Tree Trimming Program	No	
Engineering Studies for Streams (Local/County/Regional)	No	

Element	Yes, No, N/A	Comments and/or Weblink
Mutual Aid Agreements	Yes	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	No	
Hazard Analysis/Risk Assessment (County)	No	
Evacuation Route Map	No	
Critical Facilities Inventory	No	
Vulnerable Population Inventory	No	
Land Use Map	No	
Staff/Department		**Full Time or Part Time?**
Building Code Official	No	
Building Inspector	No	
Mapping Specialist (GIS)	No	
Engineer	No	
Development Planner	No	
Public Works Official	No	
Emergency Management Coordinator	No	
NFIP Floodplain Administrator	No	
Emergency Response Team	Yes	Greentop Fire Association
Hazardous Materials Expert	No	
Local Emergency Planning Committee	Yes	
County Emergency Management Commission	No	
Sanitation Department	No	
Transportation Department	No	
Economic Development Department	No	
Housing Department	No	
Historic Preservation	No	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	No	
Salvation Army	No	
Veterans Groups	No	

Element	Yes, No, N/A	Comments and/or Weblink
Local Environmental Organization	No	
Homeowner Associations	No	
Neighborhood Associations	No	
Chamber of Commerce	Yes	
Community Organizations (Lions, Kiwanis, etc.	Yes	

Financial Resources	Is your jurisdiction able to? Yes or No
Apply for Community Development Block Grants	Yes
Fund projects thru Capital Improvements funding	Yes
Authority to levy taxes for specific purposes	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	No
Withhold spending in hazard prone areas	No

For plan updates, the plan maintenance process outlined in your previous plan requires all participating jurisdictions to incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate. A key element of effective implementation of mitigation is for the mitigation plan to be incorporated in existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	
Builder's Plan	
Capital Improvement Plan	
Local Recovery Plan	
County Recovery Plan	
Debris Management Plan	
Economic Development Plan	
Transportation Plan	
Land-use Plan	
Watershed Plan	
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

   Mayor – 4 Aldermen

2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.

   None

3. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities. Be sure to include pending or approved projects submitted for FEMA mitigation grants.

   None

4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers.

   None

5. How many outdoor warning sirens are in your community?
   1

   How are they activated (indicate responsible department/personnel)?
   Fire Dept.

6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.
   No

7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?
   No

   Please provide address locations:

8. List residential, commercial and industrial development in your jurisdiction since last plan update.

Western's Smokehouse Expansioin

9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas.

None

10. Are any new facilities or infrastructure planned for construction during the next five years? If so, please provide facility name and purpose along with proposed locations, if known.

None

11. Please list major employers in your jurisdiction with an estimated number of employees.

Western's Smokehouse / 120

12. Please list Mitigation Planning Committee members who served during the development of the previously approved plan. Was the process set forth for monitoring the implementation of the previously approved mitigation plan adhered to? Did the Committee meet as was specified in the previously approved plan? Why or why not?

NA

13. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

NA

1-660-341-3727

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

Derek Weber
Sio Hans

For School Districts and Educational Institutions

County: Schuyler

School District / Educational Institution Name: Schuyler R-1 School District

Return by:

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Prepared by: Vickie Pierce

Phone: 660-956-4125

Email: vpierce@schuyler.k12.mo.us

Date: 3/11/21

Please return questionnaires by mail, email, or fax to:

Name:

Address:

Email:

Fax:

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan.

Please indicate which of the following your school district / institution has in place. For elements that do not pertain to you, please indicate with "N/A". If applicable, please provide a completion date for the element. If your school district / institution has any of the **underlined and bolded** elements, please provide a copy of the document to the contact indicated on the front of this questionnaire and indicate method in the comments column (i.e. available on the web, will email or mail).

Planning Elements	Yes/No	Date of Latest Version	Comments
Master Plan			
Capital Improvement Plan			
School Emergency Plan Shelter in place protocols Evacuation protocols	yes		
Weapons Policy	yes		

Administrative/Technical

Identify the technical and personnel resources responsible for activities related to hazard mitigation/loss prevention within your school district / institution.

Personnel Resources	Yes/No	Department/Position	Comments
Full-time building official (i.e. Principal)	Yes		
Emergency Manager	no		
Grant Writer	no		
Public Information Officer	yes		Superintendent

Financial Resources

Identify whether your school district /institution has access to or is eligible to use the following financial resources for hazard mitigation.

Financial Resources	Accessible/Eligible to Use (Y/N)	Comments
Capital improvements project funding		
Local funds		
General obligation bonds		
Special tax bonds		
Private activities/donations		
State and federal funds		

Additional Capabilities Questions

1. Are your buildings equipped with a public address (PA) system or other emergency alert system? Please describe. Yes

2. Does your school buildings' have NOAA Weather Radios? No

3. List any past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect facilities or provide education regarding hazards that could occur.

4. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities.

5. Do any of your buildings have designated tornado shelters or "saferooms"? If so, are they constructed in accordance with FEMA standards? Yes - not Fema Standards

6. Did your school district / institution make any additions to buildings or construction new buildings since the last plan update (2010)? Please list the buildings and the improvement.
Yes - Hallway to connect buildings

7. Does your school district / institution plan to remodel or construct any buildings in the next 5 years? If so, please list the building or proposed building and planned improvements. Are any planned construction activities in known hazard areas? No

8. What percentage is your projected enrollment expected to increase or decrease in the next five years?

9. Do you have your own campus police? Please explain your police department or who you rely on for security needs. Yes - SRO - Deputy he is employed by Schuylkill County

VULNERABILITY ASSESSMENT

Asset Inventory

The purpose of this worksheet is to assist in the assessment of the vulnerable populations and facilities owned by your school district / institution. Use the table below to compile a detailed inventory of specific assets at risk. In the natural hazard column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Natural Hazards	
Flooding (Major & Flash) - **RF**	Drought - **D**
Levee Failure - **LF**	Extreme Temperature - **ET**
Dam Failure - **DF**	Severe Thunderstorm (incl. winds, hail, lightning) - **ST**
Earthquake - **EQ**	Severe Winter Weather (incl. snow, ice, severe cold) - **SWW**
Land Subsidence / Sinkholes - **LSS**	Tornadoes - **T**
Drought - **D**	Wildfire - **WF**

Please list buildings owned by your school district / institution including the square feet, values, and occupancy/capacity. If not applicable or not available, enter "N/A". Add as many rows as needed. **If you have this data in GIS formats, or other formats, please provide in lieu of this.**

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards

PROGRAM COVERAGE SUMMARY

PROPERTY COVERAGES
Blanket Replacement Cost per Member's Statement of Values
$1,000,000,000 per Occurrence limit (refer to "Basic Property Coverages" in the Coverage Summary for any applicable sublimits)
MUSIC's Self-Insured Retention (SIR): $1,000,000 per Occurrence
Member Property Deductible $1,000 per Occurrence

Real and Personal Property Property
of Others, Newly Acquired Property
Earthquake Coverage - $450,000,000 limit
Flood Coverage - $450,000,000 limit - $25,000,000 limit for Flood Zone A
Terrorism Coverage - $50,000,000 limit
Inland Marine Coverage
Automatic Builder's Risk
Business Interruption
Automobile Physical Damage
Garagekeepers Legal Liability
Rental Reimbursement Coverage
$25,000 Environmental Expense Sublimit

CRIME COVERAGES
MUSIC's SIR: $250,000 per Occurrence

$2,000,000 limit for each of the Crime Coverages listed below:
Employee Theft, Forgery, Computer Systems Fraud
$1,000,000 per Occurrence limit for each of the Crime Coverages listed below:
Money Orders and Counterfeit Currency Fraud, On Premises, In Transit, Client Theft, Funds Transfer Fraud, Corporate Credit Card Fraud
$500,000 per Occurrence limit for Employee Theft, when there is no segregation of duties between those who write checks or deposit funds, and those who reconcile monthly bank statements
$500,000 per Occurrence limit for Public Official Faithful Performance of Duty
$350,000 per Occurrence for Social Engineering Fraud with Official Authorization
$25,000 per Occurrence for Computer Program and Electronic Data Extra Expense Coverage
$5,000 per Occurrence limit for the Crime Coverage listed below: Claims and Computer Investigations Expenses (No SIR applies to this particular coverage)
$1,000 Deductible

TREASURER'S BOND
$50,000 limit*

Including Faithful Performance

***Note: The stated limit does not apply if coverage is otherwise available under Crime Coverages.**

EQUIPMENT BREAKDOWN COVERAGE
$100,000,000 per Occurrence limit
$1,000 Deductible per Occurrence

GENERAL LIABILITY/AUTOMOBILE LIABILITY COVERAGES
$3,000,000 per Occurrence limit* MUSIC's SIR: $1,000,000 per Occurrence

Bodily Injury, Property Damage, Personal Injury, Products and Completed Operations, Teachers Liability,
Corporal Punishment, and other Special Coverages such as AIDS Discrimination
Miscellaneous Medical Malpractice
Nurses, Student Nurses, and Allied Health Practitioners

Abuse or Molestation Coverage - $100,000 Deductible if Designated and MUSIC Approved Training not

conducted annually
$20,000,000 Aggregate Annual MUSIC Pool Limit for Abuse or Molestation Coverage (Limit does not apply to MUSICs $1,000,000 per Occurrence SIR)
Non-Pecuniary Damages Defense Costs - $1,000 Deductible - $30,000 per Occurrence limit subject to $60,000 Combined Annual Aggregate with School Board Liability Coverage
Limited Punitive Damages Coverage - $200,000 per Occurrence or Wrongful Act limit, and in the Annual Aggregate per Member**
Garage Liability

UNINSURED MOTORIST/UNDERINSURED MOTORIST COVERAGES

Uninsured Motorist Coverage - $50,000 per person, $100,000 per Occurrence
Underinsured Motorist Coverage - $50,000 per person, $100,000 per Occurrence

SCHOOL BOARD LEGAL LIABILITY

$3,000,000 per Occurrence* $6,000,000 Annual Aggregate per Member

MUSIC's SIR: $1,000,000 per Occurrence or Wrongful Act

Errors and Omissions Coverage
Employment Practices Liability
IEP Due Process - $1,000 Deductible - $30,000 limit
Non-Pecuniary Damages (see General Liability Coverage Summary above)
Limited Punitive Damages Coverage - $200,000 per Occurrence or Wrongful Act, and in the Annual Aggregate per Member**

***Note: The stated per Occurrence limits apply per Combined Liability Coverage Agreement part, but $3,000,000 is the most we will pay regardless of how many coverage parts are involved.**

****Note: The stated per Occurrence or Wrongful Act limit for Limited Punitive Damages Coverage is subject to and not in addition to the $3,000,000 per Occurrence limit and is included within that limit.**

WORKERS' COMPENSATION COVERAGES
Statutory limit
MUSIC's SIR: $$1,000,000 per Occurrence
Employer's Liability - $1,000,000

CATASTROPHIC VIOLENT ACTS COVERAGE
Limit - $250,000
Grief Counselors - $25,000
Media/Public Relations - $25,000
Extra Costs/Expenses - $200,000

CYBER COVERAGE
Limit - $2,000,000
MUSIC's SIR: $100,000
Social Engineering Coverage excluded
$10,000 Member Deductible

POLLUTION COVERAGE

Pollution coverage is provided through Ironshore Specialty Insurance Company via a separate policy See Attachment 1 for the terms and conditions of coverage.
Limit - $1,000,000 each Incident
$50,000 Deductible
$500,000 Limit for loss, claim expense and remediation for Mold and Legionella

SPECIAL EVENTS LIABILITY
$1,000,000 limit - $0 Deductible per claimant
Note: This coverage is optional, is on an "as needed" basis, and is not shown in this Coverage Summary.

MUSIC

COVERAGE SUMMARY

Commercial Property Coverage

NAMED INSURED:	Missouri United School Insurance Council	
DOCUMENT PERIOD:	12/31/20-21, 12:01 am	
LOCATIONS COVERED:	Schedule Submitted by MUSIC Member	
TERRITORY:	Worldwide	
LIMITS AND SUBJECTS OF COVERAGE:	$1,000,000,000	Property Damage, per Occurrence
	$2,000,000	EDP, including Extra Expense
	$10,000,000	Time Element which includes Rental Income, Business Income, Tuition and Fees, and Extra Expense
	$5,000,000	Fine Arts and Valuable Papers and Records
	$450,000,000	Earth Movement- per Occurrence and Aggregate for the Program
	$450,000,000	Flood- per Occurrence and Aggregate for the Program
	$25,000,000	Flood Zone A per Occurrence and Aggregate for the Program
	$500,000	Property in Transit per Occurrence
	$5,000,000	Demolition and Increased Cost of Construction, combined
	$15,000,000	Newly Acquired Property (90 Days)
	$50,000,000	Automatic Builder's Risk
	$500,000	Athletic Fields and Tracks
	$100,000	Real and Personal Property at Unnamed Locations
	$50,000,000	Terrorism- subject to separate coverage wording
	$10,000	Claim Data Expense
	$25,000	Limited Environmental Expense (This is in addition to the First Party Remediation Expense and Disinfection Event Expense coverage provided by the Ironshore pollution policy procured by MUSIC and may be used to meet in part the $50,000 deductible in said policy.)
	$100,000	Fiber Optic Lines
	$1,000,000	Foundation Damage from Covered Peril
	$100,000	Paved Surfaces Adjoining a Scheduled Building
SPECIAL COVERAGES:	Automobile Physical Damage & Garagekeepers Legal Liability	
DEDUCTIBLES: (only one deductible applies per loss)	$1,000	Combined Property Damage and Time Element - Buildings
	$1,000	Contents

$1,000	Earth Movement - Combined Property Damage and Time Element
$1,000	Flood - Combined Property Damage and Time Element
$1,000	Automobile Physical Damage, per Occurrence

CANCELLATION, NON-RENEWAL OR MATERIAL MODIFICATION:
90 Days Written Notice
10 Days for Non-Payment of Premium

COVERED CAUSES OF LOSS:
All risks of direct physical damage to the property covered, except as excluded

COVERAGE INCLUDES:

1. Blanket Real and Personal Property
2. Time Element, Including Business Income Ordinary Payroll, Tuition and Fees, Extra Expense, and Rental Value, Limit
3. EDP Media & Equipment, including Extra Expense - Applies
4. Fine Arts
5. Leasehold Interests
6. Valuable Papers and Records
7. Lender's Loss Payable Endorsement
8. Property in Care. Custody & Control of the Member
9. Automobile Physical Damage
10. Service Interruption - Property Damage and Time Element
11. Accounts Receivable
12. Earth Movement
13. Flood
14. Transportation, excluding Backhaul
15. Expediting Expense
16. Protection and Preservation of Property
17. Debris Removal ($2,000,000 or 25% of Direct Physical Loss, whichever is less)
18. Property Removed from Described Premises
19 Joint Loss Agreement
20. Glass Coverage
21. Athletic Fields and Tracks
22. Outdoor Property
23. Builder's Risk

PROPERTY COVERED:

1. Real Property in which the Member has an insurable interest
2. Personal Property owned by the Member
3. Personal Property, other than motor vehicles, of officers and employees of the Member
4. Personal Property of others in the custody of the Member which the Member is under obligation to keep covered for physical damage of the type covered against under this Document
5. Personal Property of others in the custody of the Member to the extent of the Member's legal liability for physical loss or damage of the type covered against under this Document
6. School buses and other Member-owned or leased motor vehicles
7. Vehicles rented by the Member

VALUATION:

1. Blanket Limits
2. Real and Personal Property - Replacement Cost
3. Valuable Papers and Records - Repair or Restore to pre-loss condition
4. Business Interruption - Actual loss sustained
5. Film and Records - Value plus cost of copying from backup
6. Data - Cost of transferring from backup
7. Agreed Value
8. Automobile Physical Damage - Actual Cash Value

Appendix C

Schuyler County, Missouri RESOLUTION NO. 011121

A RESOLUTION OF THE **SCHUYLER COUNTY,** MISSOURI ADOPTING THE **SCHUYLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN** AND THE EFFORT TO BECOME A DISASTER RESISTANCE COMMUNITY.

WHEREAS the **SCHUYLER COUNTY** recognizes the threat that natural hazards pose to people and property within the **SCHUYLER COUNTY**; and

WHEREAS the **SCHUYLER COUNTY** has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the **SCHUYLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN**, hereafter referred to as the *Plan*, in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the **SCHUYLER *COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN*** identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in **SCHUYLER COUNTY** from the impacts of future hazards and disasters; and

WHEREAS **SCHUYLER COUNTY** recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the **SCHUYLER COUNTY** will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by **SCHUYLER COUNTY** demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY THE COUNTY COMMISSIONERS OF SCHUYLER COUNTY, in the State of Missouri, THAT:

SCHUYLER COUNTY HEREBY adopts the **SCHUYLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN.**

ADOPTED by SCHUYLER COUNTY COMMISSION, this 11 day of January, 2021.

Rodney Cooper, Presiding Commissioner

Jim Werner, Northern District Commissioner

Jeff Lindquist, Sothern District Commissioner

SCHUYLER COUNTY COMMISSION SEAL MISSOURI

ATTEST:

Bree Lawson, County Clerk