CHARITON COUNTY

MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN



2025

Chariton County - Keytesville - Brunswick - Salisbury - Sumner - Mendon - Brunswick R-II

CONTRIBUTORS

Chariton County Hazard Mitigation Planning Committee

Jurisdictional Representatives

Name	Title	Department	Jurisdiction/Agency/Organization
Diane Rice	Mayor	Administration	City of Brunswick
Evan Emmerich	Presiding Commissioner	Administration	Chariton County
Cara Engelbrecht	Superintendent	Administration	Brunswick R-II School District
Mary Hafemeister	Office Manager	Administration	Lower Chariton River Levee District
Lois Rogers	Mayor	Administration	City of Mendon
Steve Kacvinsky	Mayor	Administration	City of Salisbury
Julia McKenzie	Mayor	Administration	City of Keytesville
Steve Winkey	Alderman	Administration	City of Sumner

Stakeholder Representatives

Name	Title	Agency/Organization
Name	Title	Jurisdiction/Agency/Organization
Mary Hafemeister	Office Manager	Lower Chariton River Levee District
Terry Milford	County Commissioner	Chariton County Commission
Kevin Dickerson	EMS	Chariton County Ambulance
Donald Cravens	EMS	Chariton County Ambulance
Deb Smith	Volunteer	Chariton County Food Pantry
Wendell Turner	Volunteer	Chariton County Food Pantry/City Council
Diane Rice	Mayor	City of Brunswick
Tina Reichert	Brunswick Grant Administrator/	City of Brunswick
Evan Emmerich	Presiding County Commissioner	Chariton County
Mitzi Schuchmann	County Clerk	Chariton County
Zach Jones	Salisbury Fire Department	Salisbury Fire Department
Courtney Cole	City Clerk	City of Salisbury
Steve Sanders	Salisbury Alderman	City of Salisbury
Jared Meyer	County Commissioner	Chariton County
Christina Brashear	Chariton County EMD	Chariton County
Robert Snider	Mayor of Glasgow	Glasgow (Neighboring Jurisdiction)
Steve Kacvinsky	Mayor	City of Salisbury
Lesa Longfield	City Clerk	City of Mendon
Lois Rogers	Mayor	City of Mendon
Tom Burkhart	City Employee	City of Salisbury
Joe Smedley	City Employee	City of Salisbury
Mike Humphrey	City Employee	City of Salisbury
Julia McKenzie	Mayor	City of Keytesville
Delaina Sommerfeld	City Clerk	City of Keytesville
Erick Billups	Sheriff	Chariton County
Jeff Gulley	Police Department	City of Brunswick
Bill Jackson	Citizen	L-246 Levee
Paula Buckhart	Citizen	City of Brunswick
Tom Buckhart	Citizen	City of Brunswick

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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. Chariton 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 on July 14, 2020. 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 Chariton County Multi-Hazard Mitigation Plan is a multi-jurisdictional plan that covers the following jurisdictions that participated in the planning process:

- Chariton County
- City of Brunswick
- City of Keytesville
- City of Mendon
- City of Salisbury
- City of Sumner
- Brunswick R-II School District

Chariton County and the entities listed above developed a Multi-Jurisdictional Hazard Mitigation Plan that was approved by FEMA on July 14, 2020 (hereafter referred to as the *2020 Chariton County 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 Chariton County and participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to Chariton 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 tornados are among the hazards that historically have had a significant impact.

Based upon the risk assessment and the Missouri State Hazard Mitigation Plan, the MPC updated goals for reducing risk from hazards. The goals are listed below:

- Goal 1: Eliminate loss of life, minimize injuries and reduce property damage caused by tornadoes, severe thunderstorms including high winds, hail, and lightning.
- Goal 2: Minimize property damage due to flooding, levee failure, and dam failure; including high hazard potential dams (HHPD).
- Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire.
- Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather.
- Goal 5: Minimize injuries and property damage due to seismic and/or geological events.

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
	Structure and Infrastructure Projects							
CC 2025.1	Continue Participation in NFIP	Chariton County	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
CC 2025.2	Drainage Ditch Debris Removal	Chariton County	High	1,2	Flooding, Dam Failure, Levee Failure, Severe Thunderstorms			
CC 2025.3	Installation and Upgrade Warning Sirens	Chariton County	High	1,3,4,5	Tornadoes, Severe Thunderstorms, Wildfire, Severe Winter Weather, Earthquake			
CC 2025.4	Maintain Transportation Infrastructure	Chariton County	High	1,2,4	Flooding, Severe Thunderstorms, Winter Weather	X	X	
CC 2025.5	Safe Rooms and Storm Shelters	Chariton County	High	1,3	Tornado, Severe Thunderstorms, Extreme Temperatures, Severe Winter Weather		X	
K 2025.1	Update Warning Siren	Keytesville	High	1,3,4,5	Tornadoes, Severe Thunderstorm, Wildfire, Severe Winter Weather, Earthquake			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
K 2025.3	Drainage Ditch Debris Removal	Keytesville	High	1,2	Flooding, Dam Failure, Severe Thunderstorms, Winter Weather			
K 2025.2	Safe Room	Keytesville	High	1,3,5	Tornado, Severe Thunderstorm, Earthquake, Extreme Temperatures	X	X	
K 2025.4	Protection of Water Well Field	Keytesville	High	1,2,4	Flooding, Severe Thunderstorms, Levee Failure, Winter Weather		X	
K 2025.5	Continue to Participate in the NFIP	Keytesville	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
M 2025.1	Maintain Transportation Infrastructure	Mendon	High	1,2,4				
S 2025.1	Installation of Warning Siren	Salisbury	High	1,2,3,4,5	Severe Thunderstorms, Severe Winter Weather, Tornado, Wildfire, Extreme Temperatures, Flooding, Earthquakes			
S 2025.2	Generator for City Hall/Municipal Utility Office	Salisbury	High	1,4	Extreme Temperature, Severe Thunderstorm, Severe Winter Weather, Tornado			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
S 2025.3	Continued Participation in NFIP	Salisbury	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
B 2025.1	Continued Participation in NFIP	Brunswick	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
B 2025.2	Property Acquisition and Structure Demolition	Brunswick	High	2	Flooding, Dam Failure, Levee Failure			X
B 2025.3	Early Warning Siren	Brunswick	High	1,3,4,5	Severe Thunderstorms, Tornado, Wildfire, Earthquake			
B 2025.4	Maintain Transportation Infrastructure	Brunswick	High	1,2,3,4,5	Flooding, Severe Thunderstorms, Winter Weather		X	
B 2025.5	Generator for City Hall/Municipal Utility Office	Brunswick	High	1,4	Extreme Temperature, Severe Thunderstorms, Severe Winter Weather, Tornado			
S 2025.1	Flood Mitigation – Sewer	Sumner	High	2	Flooding, Dam Failure, Levee Failure		X	
S 2025.2	Install/Update Warning Siren	Sumner	High	1,2,4,5	Thunderstorms, Severe Winter Weather, Tornado, Wildfire, Flooding, Levee Failure, Dam Failure, Earthquake			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
S 2025.4	Continue Participation in NFIP	Sumner	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
BR-II 2025.1	Safe Room	Brunswick R-II	High	1,2,3,4,5	Tornado, Severe Thunderstorms, Earthquake, Extreme Temperature, Severe Winter Weather		X	
	Natural Systems Protection							
CC 2025.1	Continue Participation in NFIP	Chariton County	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
CC 2025.2	Drainage Ditch Debris Removal	Chariton County	High	1,2	Flooding, Dam Failure, Levee Failure, Severe Thunderstorms			
CC 2025.4	Maintain Transportation Infrastructure	Chariton County	High	1,2,4	Flooding, Severe Thunderstorms, Winter Weather	X	X	
CC 2025.6	Educate on best practices during Drought	Chariton County	Med.	3	Drought, Wildfire			
K 2025.4	Protection of Water Well Field	Keytesville	High	1,2,4	Flooding, Severe Thunderstorms, Levee Failure, Winter Weather		X	
K 2025.5	Continue to Participate in the NFIP	Keytesville	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
K 2025.6	Educate on Best Practices During Drought	Keytesville	High	3	Drought, Wildfire			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
M 2025.1	Maintain Transportation Infrastructure	Mendon	High	1,2,4	Flooding, Severe Thunderstorms, Winter Weather, Levee Failure, Dam Failure		X	
M 2025.3	Educate on Best Practices During Drought	Mendon	High	3	Drought, Wildfire			
S 2025.3	Continued Participation in NFIP	Salisbury	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
S 2025.4	Education on Best Practices During Drought	Salisbury	High	3	Drought, Wildfire			
B 2025.1	Continued Participation in NFIP	Brunswick	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
B 2025.6	Flood Mitigation	Brunswick	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
S 2025.3	Educate on Best Practices During Drought	Sumner	High	3	Drought, Wildfire			
S 2025.4	Continue Participation in NFIP	Sumner	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
	Planning and Regulation							
CC 2025.1	Continue Participation in NFIP	Chariton County	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
CC 2025.2	Drainage Ditch Debris Removal	Chariton County	High	1,2	Flooding, Dam Failure, Levee Failure, Severe Thunderstorms			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
K 2025.3	Drainage Ditch Debris Removal	Keytesville	High	1,2	Flooding, Dam Failure, Severe Thunderstorms, Winter Weather			
K 2025.5	Continue to Participate in the NFIP	Keytesville	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
B 2025.1	Continued Participation in NFIP	Brunswick	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
S 2025.4	Continue Participation in NFIP	Sumner	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
	Education and Outreach							
CC 2025.1	Continue Participation in NFIP	Chariton County	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
CC 2025.6	Educate on best practices during Drought	Chariton County	High	3	Drought, Wildfire			
CC 2025.7	Educate on mitigation measures for various hazards in Chariton County	Chariton County	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
K 2025.7	Educate on Mitigation Measures for Keytesville	Keytesville	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			
K 2025.5	Continue to Participate in the NFIP	Keytesville	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
K 2025.6	Educate on Best Practices During Drought	Keytesville	High	3	Drought, Wildfire			
M 2025.2	NOAA Radios	Mendon	High	1,2,3,4,5	Flooding, Earthquakes, Severe Thunderstorms, Severe Winter Weather, Tornado, Wildfire			
M 2025.3	Educate on Best Practices During Drought	Mendon	High	3	Drought, Wildfire			
M 2025.4	Educate on Mitigation Measures for Mendon	Mendon	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
S 2025.3	Continued Participation in NFIP	Salisbury	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
S 2025.4	Education on Best Practices During Drought	Salisbury	High	3	Drought, Wildfire			
S 2025.5	Educate on Mitigation Measures for Salisbury	Salisbury	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			
B 2025.1	Continued Participation in NFIP	Brunswick	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
B 2025.7	Educate on Mitigation Measures for Brunswick	Brunswick	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			
B 2025.8	Educate on Best Practices During Drought	Brunswick	High	3	Drought, Wildfire			
S 2025.3	Educate on Best Practices During Drought	Sumner	High	3	Drought, Wildfire			
S 2025.4	Continue Participation in NFIP	Sumner	High	2	Flooding, Dam Failure, Levee Failure	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
S 2025.4	Educate on Mitigation Measures for Sumner	Sumner	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			
BR-II 2025.0	Educate on Mitigation Measures for Brunswick R-II School District Residents	Brunswick R-II	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			

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 E, 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 INTRODUCTION AND PLANNING PROCESS 1.1
1.1 Purpose *1.1*
1.2 Background and Scope *1.2*
1.3 Plan Organization *1.2*
1.4 Planning Process *1.4*
1.4.1 Multi-Jurisdictional Participation 1.5
1.4.2 The Planning Steps 1.8

1.1 PURPOSE

Hazard mitigation is defined as “any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards”. While natural hazards will continue to occur and at their worst will result in death and destruction of both property and infrastructure, this plan was undertaken to minimize the impact that these hazards will have on the people and property of Chariton County. Chariton County and the participating jurisdictions and school districts developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses from inevitable hazardous events.

The jurisdictions participating in this plan are the unincorporated areas of Chariton County, The City of Brunswick, the city of Keytesville, the city of Mendon, the city of Sumner, the city of Salisbury, and the Brunswick R-II School District. The jurisdictions participating in this plan understand that adopting the plan is a prerequisite for mitigation grant eligibility and understand that failure to adopt this plan will make them ineligible for mitigation grants.

The following legislation gives FEMA authority to require these plans: Robert T Stafford Disaster and Emergency Act (Public Law 93-288) as amended by the Disaster Mitigation Act of 2000 (Public Law 106-390), 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.

The following publications from FEMA were used as guidance in the development of this hazard mitigation plan for Chariton County. FEMA’s Local Mitigation Planning Handbook, May 2023, FEMA’s Local Mitigation Plan Review Guide, October 1, 2011, and the Local Mitigation Planning Policy Guide April 19, 2023. The previous Chariton County Hazard Mitigation Plan, which was approved on 7/14/2020, was also used in the development of this update.

1.2 BACKGROUND AND SCOPE

The Chariton County Hazard Mitigation Plan is the update of a plan that was approved in July of 2020. Hazard Mitigation Plans must be renewed every five years and then must be adopted by the participating jurisdictions within the plan. Both the plan and the update were prepared pursuant to the requirements of the Disaster Mitigation Act of 2000. This plan once completed and adopted will result in eligibility for the Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grant Programs.

The following local governments and school districts participated in both the original plan as well as the plan updates. This will allow them to adopt the plan and secure eligibility for Hazard Mitigation Grant Funding.

- Chariton County
- The City of Brunswick
- The City of Keytesville
- The City of Mendon
- The City of Salisbury
- The City of Sumner
- Brunswick R-II School District

Chariton County and the participating entities listed above developed a Multi-Jurisdictional Hazard Mitigation Plan that was approved by FEMA in July of 2020 (hereafter referred to as the 2020 Hazard Mitigation Plan). This current planning effort serves to update that previously approved plan.

The information that is contained in the Chariton County Hazard Mitigation Plan will be used to help guide and coordinate mitigation activities for local land use policy and decisions in the future.

1.3 PLAN ORGANIZATION

This latest (2025) updated version of the Chariton County Hazard Mitigation Plan involved review, evaluation, and amendment of the existing plan. It addresses the same natural hazards that were addressed in the original plan, with changes outlined in the table below (See Table 1.1 below). Following is a breakdown of the organization of the 2025 Chariton County Hazard Mitigation Plan Update.

- Chapter 1: Introduction and Planning Process
  This section of the plan provides an introduction to the multi-jurisdictional planning process and a detailed look at the participation of the local jurisdictions and school districts. It also detailed the purpose of local hazard mitigation planning and outlined the requirements enacted by the Federal Emergency Management Agency.
- Chapter 2: Planning Area Profile and Capabilities
  This section of the plan provides general background information and demographic statistics for Chariton County and its various jurisdictions as well as the disaster response and recovery capabilities found in the county. This section identifies key personnel, organizational leaders, and outlines existing emergency plans. Additionally, it provides a brief assessment of each municipality's readiness regarding hazard

mitigation.

- Chapter 3: Risk Assessment
  This section of the plan, the risk assessment, identifies and explores the types of natural hazards that pose a risk to the county, and the likelihood that each hazard will occur. It provides a profile of identified hazards and explains the impact to the County and the various jurisdictions should such hazards occur.
- Chapter 4: Mitigation Strategy
  This section of the plan presents the multi-jurisdiction mitigation strategies in response to the risk assessment. This chapter outlines the overall goals to reduce a disaster's impact, specific objectives toward achieving those goals, and implementation plans for the county to complete.
- Chapter 5: Plan Implementation and Maintenance
  The final chapter outlines the Hazard Mitigation Plan maintenance procedures.
- Appendix A: Sources
- Appendix B: Planning Documentation & Invitations
- Appendix C: Questionnaires, Surveys, Public Comment, and STAPLEE Worksheets
- Appendix D: List of Critical Facilities (Redacted from Public View)
- Appendix E: Resolutions of Adoptions, Floodplain Ordinances, Dam Inspection Report

The following table (Table 1.1) below identifies significant changes in the 2025 update of the Hazard Mitigation Plan for Chariton County.

Table 1.1. Changes Made in Plan Update

Plan Section	Summary of Updates
Executive Summary	• Added Mitigation Action Matrix Table • Revised the executive summary and resolution to match order of template • Updated goals from previous plan to better reflect hazards mitigated by current proposed actions
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	• Changes include updating maps, identifying most current state plan, and updating demographic data using 2020 Census and American Community Survey Information • inviting neighboring jurisdictions to participate. • Updated charts, graphs, tables, maps, and other information where necessary
Chapter 3 – Risk Assessment	• Combined extreme heat and extreme cold into one hazard: extreme temperatures. • Updated section with current Census information, agricultural summary, and confirming that current data is correct. • Incorporated information from the current 2023 Missouri State Hazard Mitigation Plan

	• Previous events updated for each hazard • Discussion of each hazard's impact updated to include "Changing Future Conditions Considerations and the Impact of Climate Change"
Chapter 4 - Mitigation Strategy	• 2020 mitigation goals and strategies reviewed by planning committee and updated • The mitigation category of each action was added to the action worksheets
Chapter 5 - Plan Implementation and Maintenance	• Updated the MPC meeting for evaluating and updating the plan to annually

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.

Chariton County, Missouri contracted with the Green Hills Regional Planning Commission (GHRPC) to facilitate and coordinate the update of the multi-jurisdictional, local hazard mitigation plan. In fulfillment of the role, GHRPC:

- Assisted in establishing a Mitigation Planning Committee (MPC) as defined by the Disaster Mitigation Act (DMA),
- Assessed whether there was adherence to the process set forth in the previously approved plan for maintenance (example, did the MPC meet regularly as specified in the previously approved plan), and explain how adherence occurred, and/or why it did not occur,
- 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,
- Assisted in soliciting public input,
- Produced the draft and final plan update in a FEMA-approvable document and coordinate the Missouri State Emergency Management Agency (SEMA) and (FEMA) plan reviews.

This plan was developed after the release of *FEMA's Local Mitigation Planning Policy Guide, Effective April 19, 2023*.

The following table (**Table 1.2)** shows the MPC members and the entities they represent, along with their titles. Each of the following representatives participated directly with the development of the plan. They attended the meetings and actively participated in the development of the plan. The MPC was comprised of representatives from each jurisdiction on a voluntary basis rather than as an official act by any of the jurisdictions. Each member of the MPC was actively involved in the meetings and the decisions for the Hazard Mitigation Plan. These members were either present at the public meetings or met individually with the GHRPC staff member in charge

of developing the plan. All jurisdictions met their responsibilities for the planning process by:

- Attending at least one meeting
- Completing the Data Questionnaire to the best of their ability
- Reviewing and returning the Action Worksheets
- Returning the Adoption Resolution (Found in Appendix E)

Table 1.2. Jurisdictional Representatives of Chariton County Mitigation Planning Committee

Name	Title	Department	Jurisdiction/Agency/Organization
Diane Rice	Mayor	City Government	City of Brunswick
Evan Emmerich	Presiding Commissioner	County Government	Chariton County
Cara Engelbrecht	Superintendent	Public School	Brunswick R-II School District
Mary Hafemeister	Office Manager	Lower Chariton River Levee District	Lower Chariton River Levee District
Lois Rogers	Mayor	City Government	City of Mendon
Steve Kacvinsky	Mayor	City Government	City of Salisbury
Julia McKenzie	Mayor	City Government	City of Keytesville
Steve Winkey	Alderman	City Government	City of Sumner

Table 1.3. Participants of the Chariton County Hazard Mitigation Plan

Name	Title	Jurisdiction/Agency/Organization
Mary Hafemeister	Office Manager	Lower Chariton River Levee District
Terry Milford	County Commissioner	Chariton County Commission
Kevin Dickerson	EMS	Chariton County Ambulance
Donald Cravens	EMS	Chariton County Ambulance
Deb Smith	Volunteer	Chariton County Food Pantry
Wendell Turner	Volunteer	Chariton County Food Pantry/City Council
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Erick Billups	Sheriff	Chariton County
Jeff Gulley	Police Department	City of Brunswick
Bill Jackson	Citizen	L-246 Levee
Paula Buckhart	Citizen	City of Brunswick
Tom Buckhart	Citizen	City of Brunswick

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.

The Disaster Mitigation Act requires that each jurisdiction participate in the planning process and officially adopt the plan. Minimum criteria for participation were determined at the planning meeting that each jurisdiction must attend one meeting to be considered a "participant." These plan participation requirements include:

- Designation of a representative to serve on the MPC;
- Participation in at least one meeting, including planning, MPC meetings, by either direct participation or authorized representation, or one-on-one with planning staff;
- Provision of sufficient information to support plan development by completion and return of Data Collection Questionnaires and validating/correcting critical facility inventories;
- Provision of progress reports on mitigation actions from the previously approved plan and identified 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;
- Actively solicit input from the public, local officials, and other interested parties about the planning process and provide an opportunity for them to comment on the plan;
- Provide documentation to show time donated to the planning effort; and
- Formally adopt the mitigation plan.

Data for this plan was gathered in part through a series of meetings held within Chariton County. The planning process for the Chariton County Hazard Mitigation Plan began during the summer of 2024, with discussions involving elected officials, community members, and other interested parties, and the planning committee was formed. (See Table 1.2 and Table 1.3)

Participants that were involved were asked to identify critical infrastructure, rank the likelihood of disaster occurrence, perform a susceptibility analysis based on these factors, and determine appropriate mitigation strategies for each individual disaster. This data was recorded and assimilated into this plan by GHRPC staff. The MPC membership showed a range of knowledge and abilities to address the mitigation categories shown in Table 1.4.

Table 1.4. MPC Capability with Six Mitigation Categories

Community Department/Office	Preventative Measures	Structure and Infrastructure Projects		Natural Resource Protection	Public Information	Emergency Services
		Property Protection	Structural Flood Control Projects			
Mayor – City of Brunswick		X	X	X	X	
Chariton County Presiding Commissioner		X	X	X	X	
Cara Engelbrecht	X	X			X	X
Lower Chariton River Levee District – Mary Hafemeister (Office Manager)	X	X	X	X		
Mayor – City of Mendon	X	X		X	X	X
Mayor – City of Salisbury	X	X	X	X		
Mayor – City of Keytesville	X	X	X	X	X	X
Mayor – City of Sumner		X		X	X	X

In accordance with Missouri's "sunshine law" (RSMo 610.010, 610.020, 610.023, and 610.024), the public was notified each time the plan was presented for review. Input from each public official (city and county) was solicited by email or mailing an explanatory letter with notice of the posted draft on the Green Hills Planning Commission's website. These were disbursed on a schedule that allowed officials sufficient time to review the draft prior to the next public County Commission or City Council meeting. Participation was solicited by letter or email from each of the following jurisdictions:

- Chariton County
- City of Brunswick
- City of Mendon
- City of Salisbury
- City of Sumner
- City of Keytesville

Finally, city and county officials were encouraged to invite others from any county, state, or federal agency as well as local businesses that had interest in contributing to the planning process. Input from the public was solicited through reminders at public gatherings, press releases, letters to various businesses and community organizations, and a Public Survey. Surrounding jurisdictions were invited to review the county's plan draft via the GHRPC website. The plan draft was available for review for 30 days.

Table 1.5 below shows the representation of each participating jurisdiction at the planning meetings, the provision of responses to the Data Collection Questionnaire, and update or development of mitigation actions. Sign-in sheets and other documentation for participation are in Appendix B.

Table 1.5. Jurisdictional Participation in Planning Process

Jurisdiction	Kick-off Meeting	Meeting #2	Meeting #3	Data Collection Questionnaire Response	Update/Develop Mitigation Actions
Chariton County Commission	X	X	X	X	X
City of Brunswick	X	X	X	X	X
City of Mendon		X		X	X
City of Keytesville		X	X	X	X
City of Sumner		X	X	X	X
City of Salisbury	X	X	X	X	X
Brunswick R-II		X		X	X

1.4.2 The Planning Steps

The sources utilized for the plan and development process used the following: FEMA's Local Mitigation Planning Handbook (May 2023), Local Mitigation Plan Review Guide (October 1, 2011), Local Mitigation Planning Policy Guide (April 19, 2023), and Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials (March 1, 2013). The United States Census Bureau, the United States Geological Society, the United States Army Corps of Engineers, the Missouri Department of Natural Resources, the Missouri Department of Conservation, the Center for Agriculture, Resources and Environmental Systems at the University of Missouri-Columbia, Chariton County HAZUS data, the National Climatic Data Center, and the Missouri State Hazard Mitigation Plan provided additional information regarding severe thunderstorm and winter weather, wildfire, tornado, earthquake, and flood hazards effecting Chariton County. Other sources utilized for this plan are included in Section 3.

The development of this plan update followed the 10-step planning process adapted from FEMA's Community Rating System (CRS) and Flood Mitigation Assistance programs, so to ensure funding eligibility requirements for the Hazard Mitigation Grant Program, Building Resilient Infrastructure and Communities, Community Rating System, and Flood Mitigation Assistance Program.

Table 1.6. 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)

Step 1: Organize the Planning Team
(Handbook Tasks 1, 2, and 5)

- The initial "Kick-off" meetings in Chariton County were scheduled on three separate dates and in the three largest jurisdictions: City of Brunswick, City of Keytesville (the County Seat), and the City of Salisbury as follows:
    - City of Brunswick; May 16, 2024, at City Hall 3-4:30PM.
    - City of Keytesville; May 21, 2024, in the Courthouse at 3-4:30PM.
    - City of Salisbury; May 23, 2024, at City Hall 3-4:30PM.
- At the "Kick-off" meeting in Brunswick there were 8 attendees. Attendees provided email addresses and phone numbers to be notified of the next meetings, questions about the Hazard Mitigation Planning process were answered, outreach strategies were discussed, and data collection questionnaires were distributed to the individuals that were representing a jurisdiction. Some individuals also took the Hazard Questionnaire, to give out to the public or other stakeholders.
- At the "Kick-off" meeting in Keytesville there were 2 attendees. Attendees provided contact information in order to be informed about upcoming meetings. At this meeting, both attendees had participated in the last Hazard Mitigation Plan, so the focus of the discussion was about outreach. The Chariton County Commissioner was planning on posting the Hazard Questionnaire on the County's Facebook page and would solicit members of the public to complete the survey.
- At the "Kick-off" meeting in Salisbury there were seven attendees present. Some of the attendees had not participated in the hazard mitigation plan development in the past, so the hazard mitigation plan development process was discussed. Additionally, the individuals present at the meeting discussed outreach strategies and potential projects or mitigation measures that would benefit their jurisdictions.
- Outreach was discussed at all "Kick-off" meetings, with special consideration for underserved populations and vulnerable populations. The meeting attendees suggested sending invitations to area churches, community organizations, food pantries, senior centers, area clinics, and other non-profit agencies in the planning area. A complete list of invitees can be found in Appendix B.
- The planning partners present at these meetings determined to have the next meeting scheduled during the same time of day with the addition of a nighttime meeting to accommodate people that would be working during the day and discussed other stakeholders that should be aware of the meetings. They will speak with these individuals and let them know about the next scheduled meetings and the GHRPC staff will include them when sending out the invitations for the next meeting.
- At the Risk Assessment meeting in Chariton County were conducted on three separate

dates and in the three largest jurisdictions: City of Brunswick, City of Keytesville (the County Seat), and the City of Salisbury as follows:
    - City of Keytesville; June 20, 2024, in the courthouse at 5pm
    - City of Brunswick; June 25, 2024, at city hall at 3pm
    - City of Salisbury; June 27, 2024, at city hall at 3pm
- At the Risk Assessment Meeting in Keytesville there were 3 attendees. Discussion of the hazards faced in the jurisdictions were discussed, Hazard Questionnaires were collected, and the FIRM map for Chariton County was displayed.
- At the Risk Assessment Meeting in Brunswick there were 10 attendees. Discussion of the hazards faced in the jurisdiction was discussed, hazard questionnaires were collected, the FIRM map for Chariton County was displayed. Possible mitigation actions were discussed and the goals for the plan were determined. The participants came to a consensus to modify the goal statements from the last plan to aid with organizing the updated plan.
- At the Risk Assessment Meeting in Salisbury there were 9 attendees. Discussion of the hazards faced in the jurisdiction was discussed, hazard questionnaires were collected, the FIRM map for Chariton County was displayed. Possible mitigation actions were discussed and the goals for the plan were determined. The participants came to a consensus to modify the goal statements from the last plan to aid with organizing the updated plan.
- There was a meeting in the City of Keytesville with the Mayor and City Clerk. They had not been able to attend the previous public meetings but wanted to participate in the plan. The GHRPC staff member met with the Mayor and City Clerk at City Hall on October 29, 2024. All aspects of the plan were discussed from Risk Assessment to Possible Mitigation Actions for the upcoming plan. STAPLEE forms were filled out to prioritize the proposed actions.
- There was a meeting in the City of Brunswick with the Mayor. This meeting took place on October 29, 2024. This meeting was held to discuss the Jurisdictional Questionnaire for the plan, and possible upcoming actions were discussed. STAPLEE forms were submitted to the mayor online, but the discussion did prioritize the actions that will be included in the plan.
- On December 9, 2024, there was a meeting with the County Commissioners and the County Clerk to discuss plan adoption and the STAPLEE worksheets were explained. The County Commissioners returned the STAPLEE worksheets via email, they are included in Appendix C.
- On December 12, 2024, the GHRPC planner met with officials in Salisbury to discuss the actions. They completed the STAPLEE worksheets at this meeting. The worksheets are included in Appendix C.
- On December 12, 2024, the GHRPC planner met with an Alderman of Sumner to prioritize actions. Prioritization of the actions was determined at this meeting. Due to the lack of funding available, the only action with a high priority was determined to be the frequent flooding of the city's sewer system. All other actions were given a medium priority.

Table 1.7. Schedule of MPC Meetings

Meeting	Topic	Date

Kick-Off Meeting	Introduction to the Hazard Mitigation Plan and Process; requirements for each jurisdiction; handouts; selecting a delegate; and distributing data collection questionnaires, and outreach strategies for additional participants.	5/16/2024, 5/21/2024, 5/23/2024
Planning Meeting #2 "Risk Assessment"	Hazard Mitigation Process, the responsibilities of the jurisdictional representatives, outreach strategy and suggested participants. The focus of these meetings was the "risk assessment" potential actions were discussed. Goals were determined for the plan.	6/20/2024, 6/25/2024, 6/27/2024
Planning Meeting #3	Actions were determined for the final draft of the plan, potential actions scored (STAPLEE) to prioritize. Jurisdictions were made aware that plan must be Adopted to qualify as a participating jurisdiction.	10/29/2024, 12/9/2024, 12/12/2024

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.

- Prior to the kick-off meetings scheduled in Chariton County, the GHRPC staff produced press releases for local papers and radio stations. The meetings were also advertised on the GHRPC website and Facebook pages, and the Facebook post was also forwarded to the following: Chariton County, City of Brunswick, and the City of Salisbury for them to post on their website or Facebook. (Copies of the press release and the Facebook post can be found in Appendix B).
- Prior to the kick-off meeting scheduled in Chariton County invitation letters were sent out to the various jurisdictions in the planning area, civic organizations, food pantries, churches, emergency services, and special districts. (Please see Appendix B for a complete list).
- Additionally, the neighboring communities, located outside of the county, but with populations and structures located within Chariton County were also invited to attend. (Please see Appendix B for a complete list of people and organizations invited to attend).
- The initial meetings for the Hazard Mitigation Plan for Chariton County were conducted in person with representatives from the County. At the Kick-off meeting in Brunswick, the new FEMA requirements for public participation were mentioned. The members of the community that were present were also informed that the more participants that they can recruit to help with the development of the plan, the less costly it is for the jurisdiction. The attendees at the meeting brainstormed who they thought would like to participate in the development of the plan, and they determined that they would try to contact these individuals prior to the next meeting in their jurisdiction.
- Public surveys were distributed and representatives from the city of Brunswick took copies to distribute as people came into the City Hall.
- Press releases were sent to the local media about the following meetings and other matters related to the HMP, they are as follows:
    - Kick-off meeting.
    - 2nd planning meeting

    - 3rd planning meeting
- The Hazard Mitigation Committee also agreed to mention the upcoming meetings at their respective churches, civic organizations, meetings, and in passing when speaking with people from the community.
- The draft of the plan was made available to the public and members of the planning committee; there was a draft of the plan on the GHRPC website. The plan was made available for review from 12/7/2024 to 1/14/2025. The availability of this plan for public review was advertised on local social media pages.
- All available information about the public meetings, attendance, press releases, paperwork completed at meetings, public surveys, questionnaires, agendas, power point presentation, and all other available documentation can be found in the Appendices as follows:
    - Planning Documentation & Invitations: Appendix B
    - Questionnaires & Completed Surveys: Appendix C
    - Action Plans/STAPLEE Worksheets: Appendix C

The public survey received 11 responses. The data collected is listed below.

Figure 1.1. Question 1

During the past 5 years, in the county you currently reside in, have you or someone in your household directly experienced a natural disaster such as an earthquake, severe windstorm, flood wildfire, or other type of natural disaster?

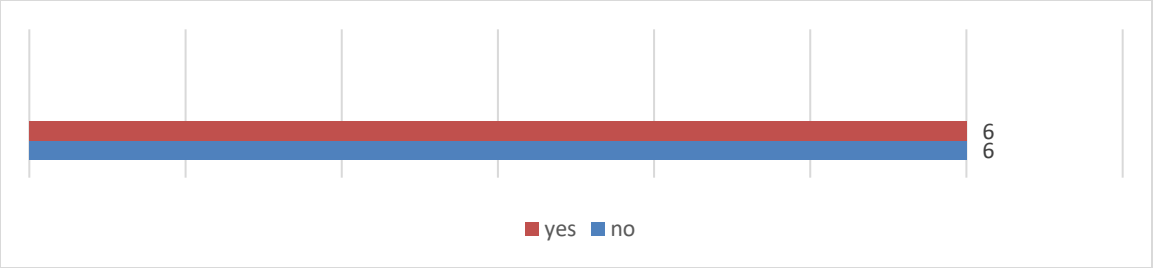


Figure 1.2. Question 2

If “YES”. Which of these natural disasters have you or someone in your household experienced in the past five years? (Please check all that apply)

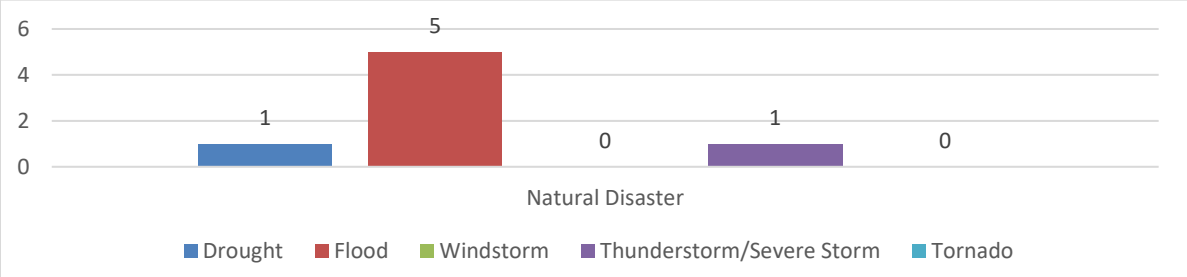


Figure 1.3. Question 3

How concerned are you about the following natural disasters affecting your county?

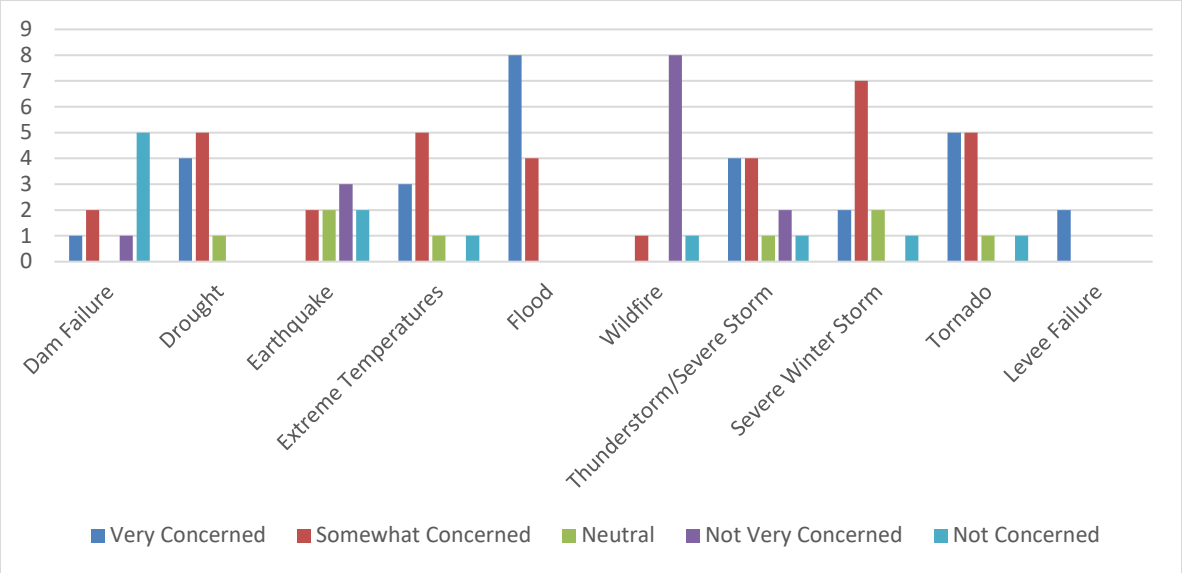


Figure 1.4. Question 4

Have you ever received information about how to make members of your household and your home safer from natural disasters?

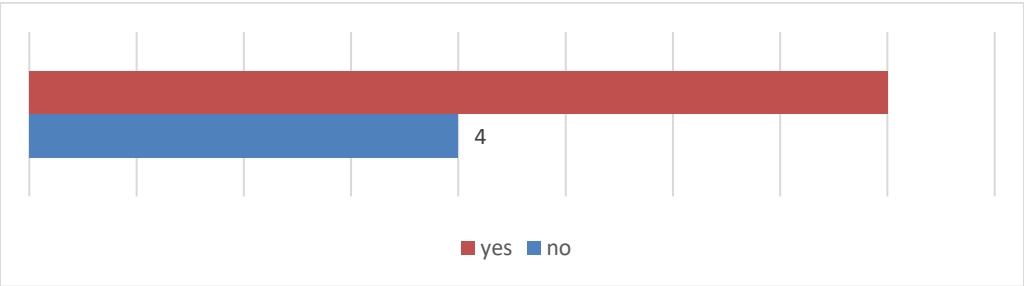


Figure 1.5. Question 5

If “yes”, how recently?

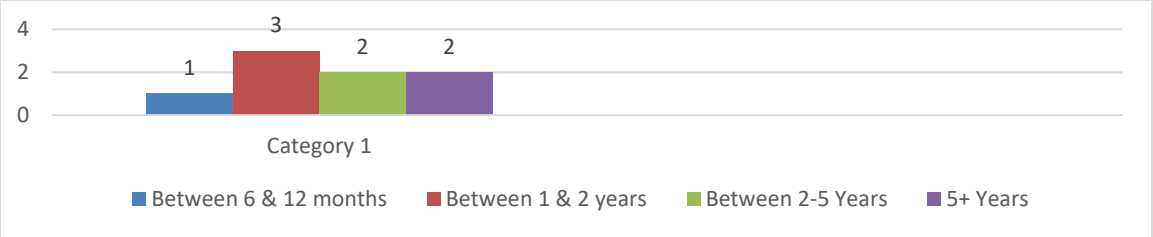


Figure 1.6. Question 6

From whom did you last receive information about how to make members of your household and your home safer from natural disasters?



Figure 1.7. Question 7

Whom would you most trust to provide you with information about how to make your household and home safer from natural disasters? (Check up to 3)

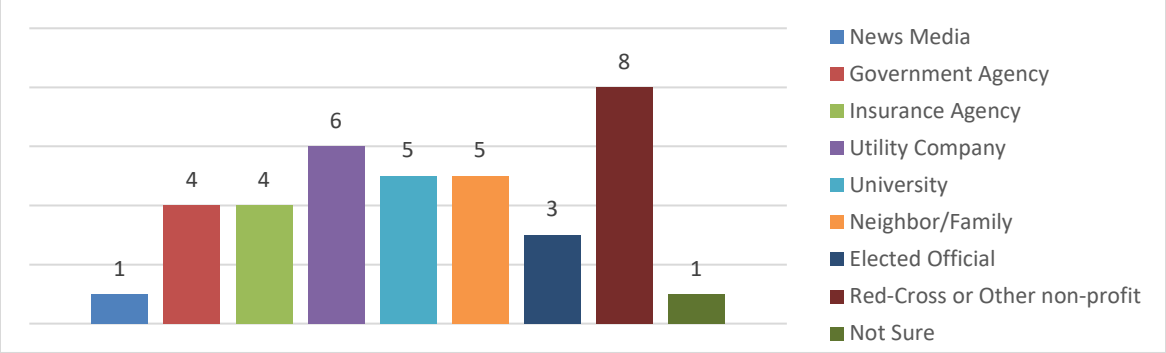


Figure 1.8. Question 8

What is the most effective way for you to receive information about how to make your household and home safer from natural disasters? (Please check up to three)

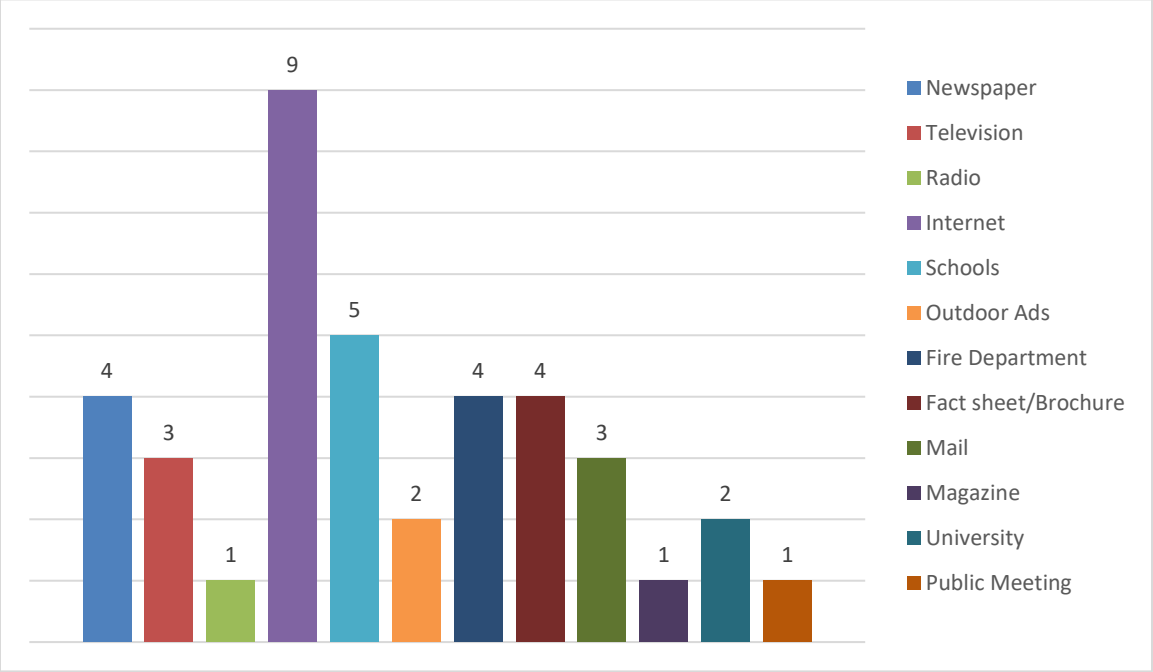


Figure 1.9. Question 9

Prior to this survey, were you aware of your county's Natural Hazard Mitigation Plan?

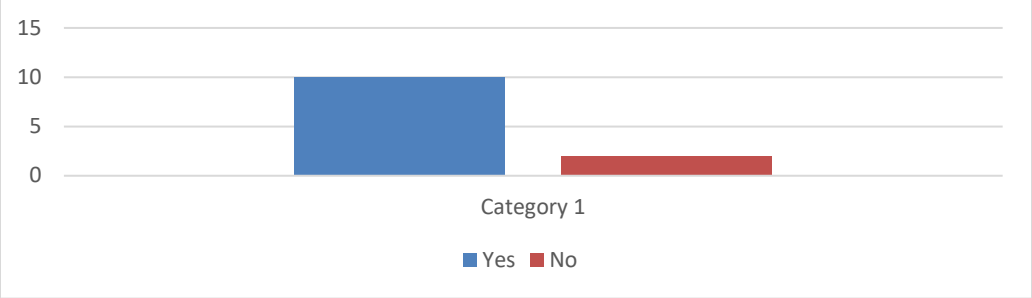


Figure 1.10. Question 10

Prior to this survey, were you aware that the Federal Emergency Management Agency (FEMA) requires your county to update the Hazard Mitigation Plan every five years in order for your county to be eligible for federal pre- and post-disaster hazard mitigation funds?

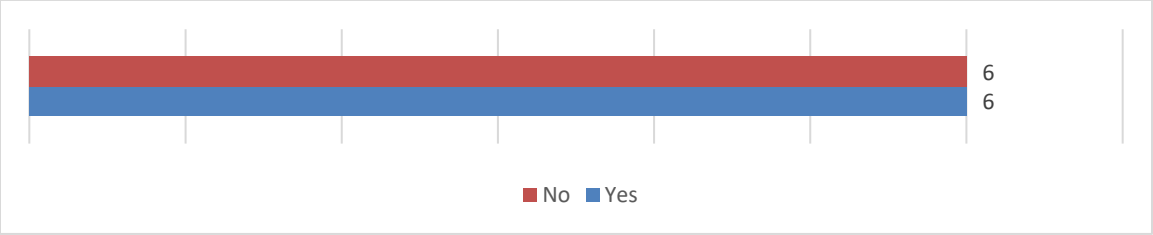


Figure 1.11. Question 11

What specific types of community assets are most important to you?

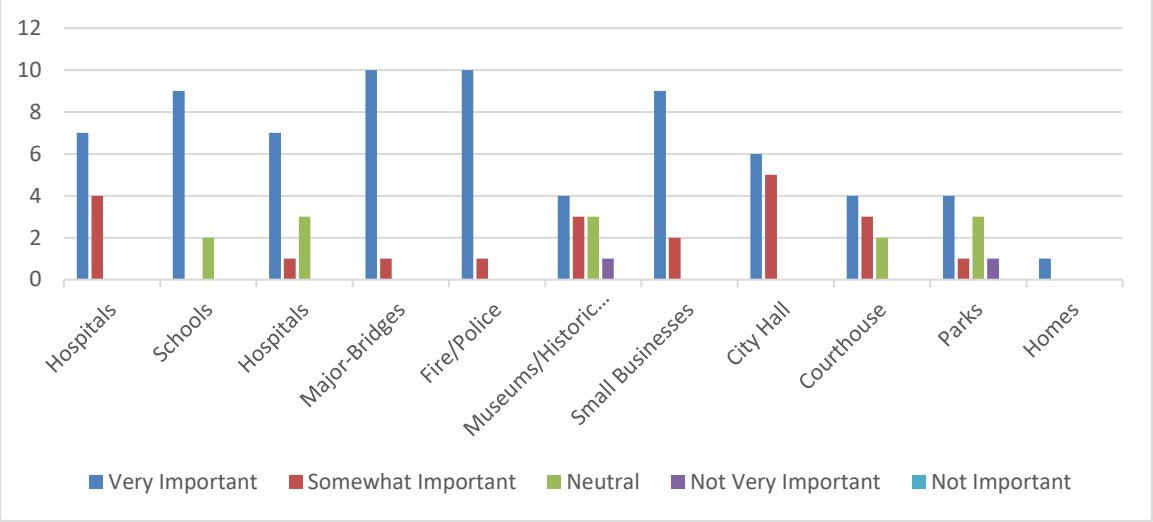


Figure 1.12. Question 12

A number of activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory. (Please check the box that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters)

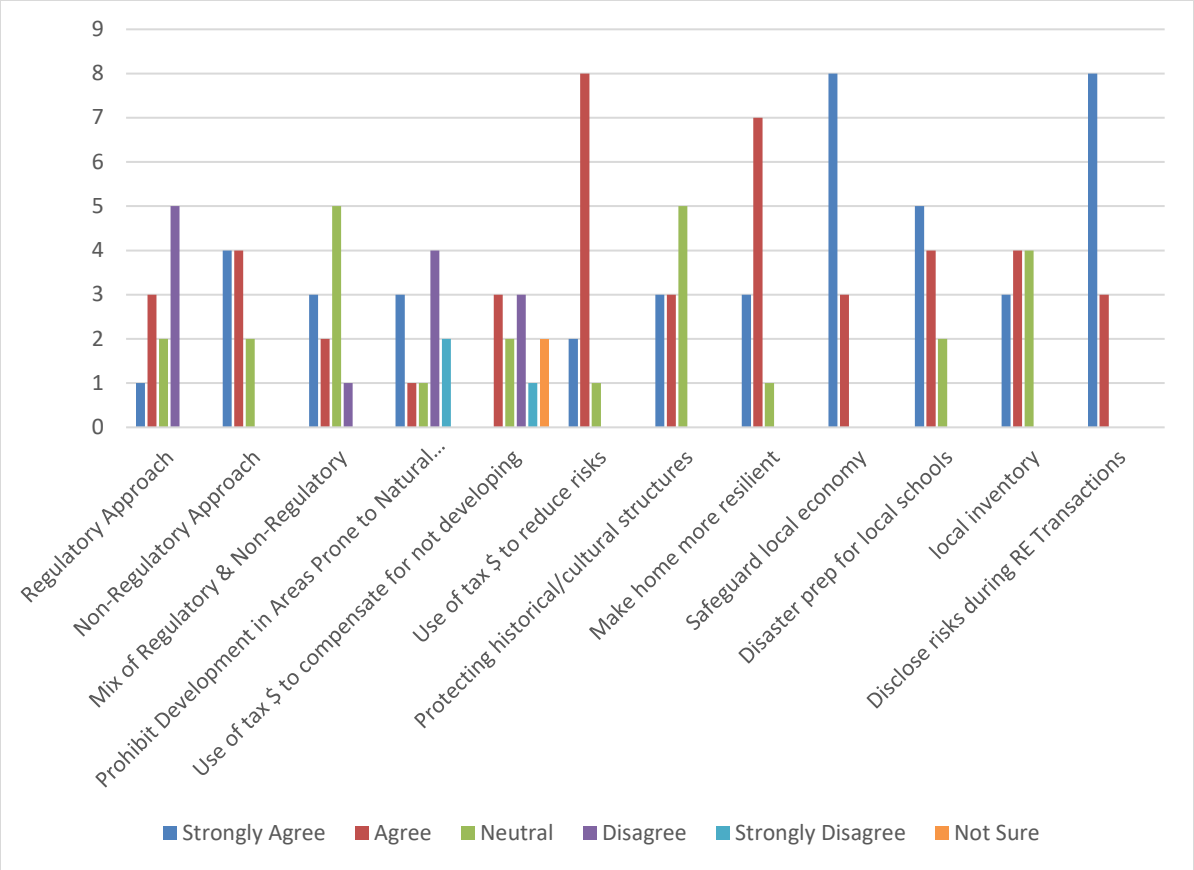


Figure 1.13. Question 14

Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for natural hazards in your county. (Please tell us how important each one is to you).

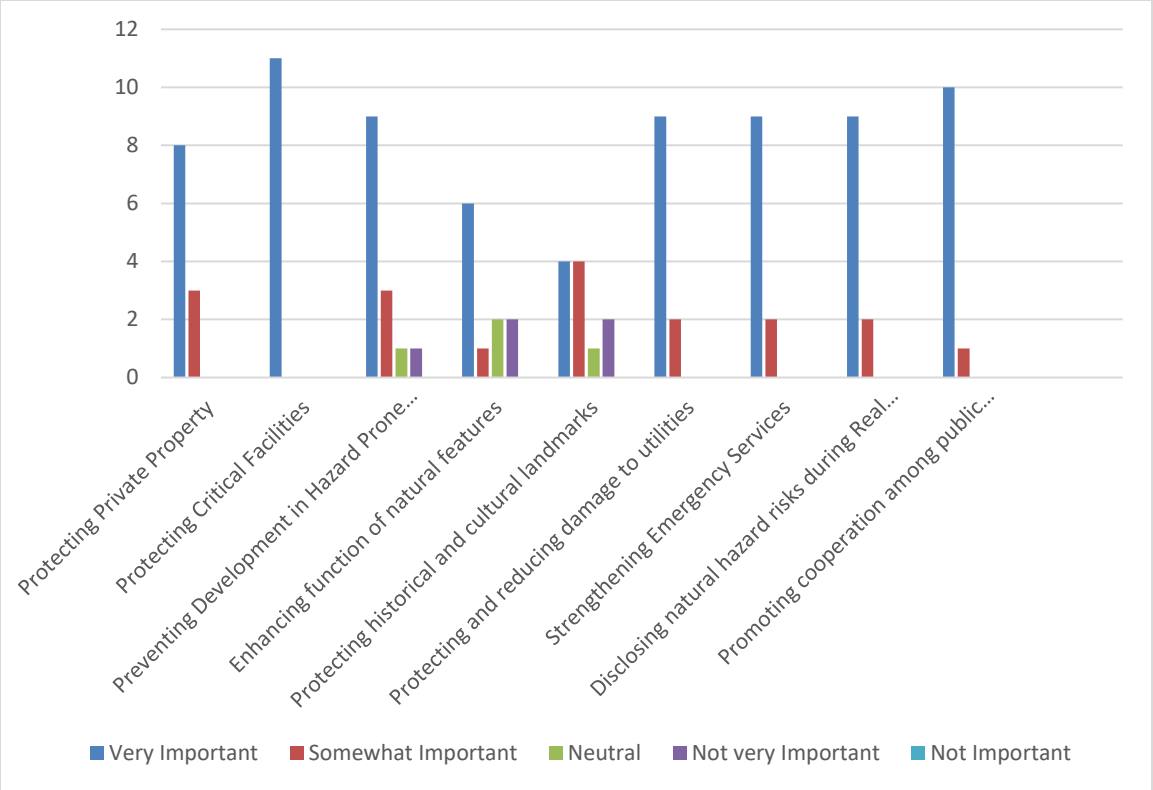
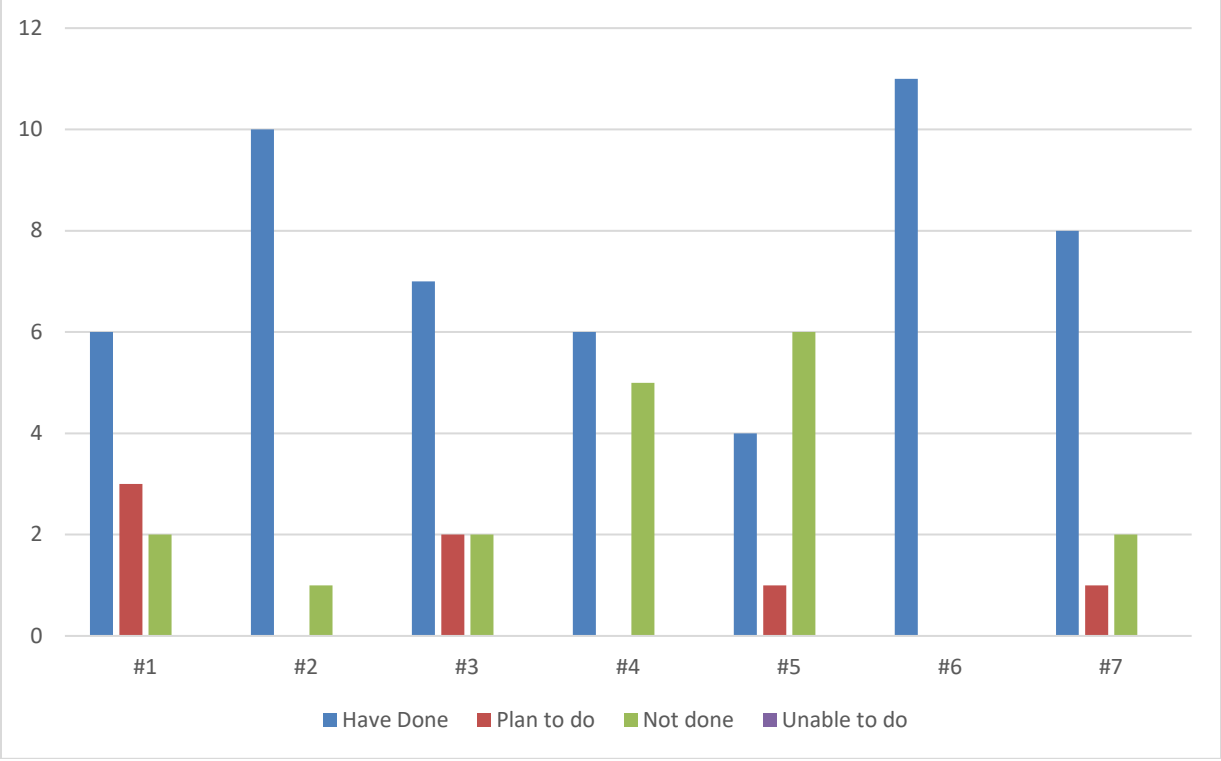

12
10
8
6
4
2
0
Protecting Private Property
Protecting Critical Facilities
Preventing Development in Hazard Prone...
Enhancing function of natural features
Protecting historical and cultural landmarks
Protecting and reducing damage to utilities
Strengthening Emergency Services
Disclosing natural hazard risks during Real...
Promoting cooperation among public...
Very Important
Somewhat Important
Neutral
Not very Important
Not Important

Figure 1.14. Question 15

Households can mitigate and prepare for natural hazards in order to prevent damage to property, injuries, and loss of life. The precautions you take and training you receive can make a big difference in your ability to recover from a natural disaster or emergency. Access to basic services, such as electricity, gas, water, telephones, and emergency care may be cut off temporarily, or you may have to evacuate at a moment's notice. The following questions focus on your household's preparedness for disaster events.

In the following, please check those activities that you have done in your household, plan to do in the near future, have not done, or are unable to do.

1. Attended meeting or received written information on natural disasters or emergency preparedness?
2. Talked with members in your household about what to do in case of a natural disaster or emergency?
3. Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?
4. Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, or other emergency supplies)?
5. In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?
6. Prepared your home by having smoke detectors on each level of the house?
7. Discussed or created a utility shutoff procedure in the event of a natural disaster?



The copies of these completed questionnaires can be found in Appendix C.

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 representative from Green Hills Regional Planning Commission held three "Kick-Off" meetings in Chariton County in May 2024. The purpose of these meetings was to introduce the attendees to the Hazard Mitigation Planning Process and determine additional stakeholders that should be included in the planning process. Several participants from participating jurisdictions and individual stakeholders attended the first round of meetings and came up with some strategies for more public involvement.

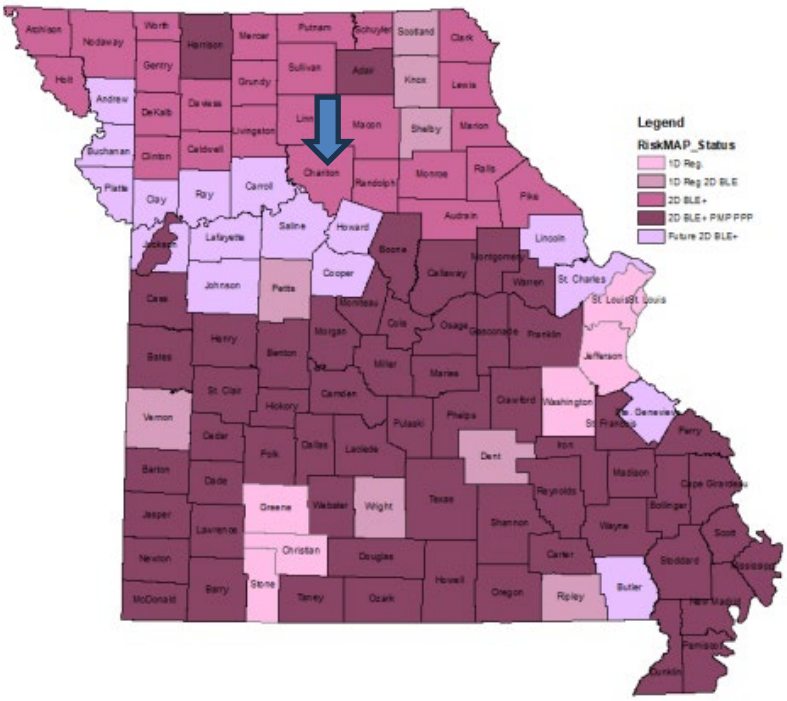
There were invitations sent out to various organizations and businesses within the community as well as notices on the jurisdictions social media. Invitations were sent to area churches, community organizations, food pantries, senior citizens centers, clinics, schools, local businesses, and local governments to solicit participation in the development of the Chariton County Hazard Mitigation Plan. A copy of the invitations can be found in the Appendix B of the plan.

The draft of the Chariton County Hazard Mitigation Plan was published on Green Hills Regional Planning Commission's website on December 12, 2024.

Coordination with FEMA Risk MAP Project

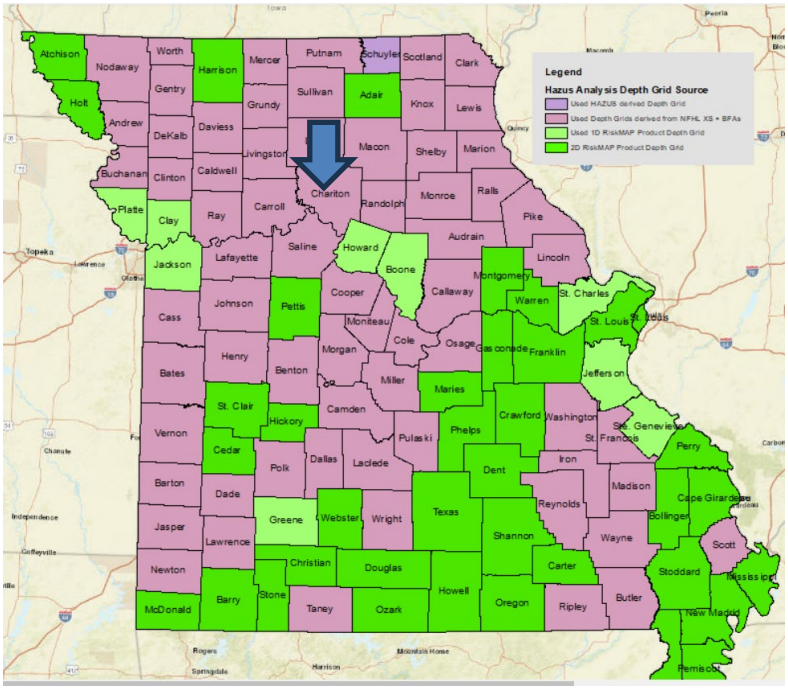
- The most current RISK Map was downloaded from FEMA's website and was available at the 2nd planning meeting.
- The following figure (Figure 1.15) was taken from the Missouri State Hazard Mitigation Plan, 2023.

Figure 1.15. RiskMAP Study Status Map



The following figure indicates which analysis was performed per county. According to the Missouri Hazard Mitigation Plan 2023, the analysis of Chariton County was conducted as follows. For counties with digital FIRMs, the regulatory special flood hazard area was utilized. Next, depth grids were generated using cross sections from the FIRM database and/or hydraulic models in combination with the terrain elevation data from which the DFIRM was derived.

Figure 1.16. RiskMAP. DFIRM, and HAZUS based Depth Grids used in HAZUS Analysis



Source: the Missouri Hazard Mitigation Plan 2023

Integration of Other Data, Reports, Studies, and Plans

- In order to complete the Chariton County Hazard Mitigation Plan the following sources were implemented: the 2023 Missouri State Hazard Mitigation Plan, Hazard Mitigation Plans from areas near the planning area, the University of Missouri Extension Reports, 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.
- Relevant data from the above-mentioned sources was included in the plan where applicable. These sources were used to identify risks, previous losses, vulnerabilities, and provide additional information in the "risk assessment" for potential hazards. (See chapter 3)

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

- To adequately assess the issues, resources available on the Internet, existing reports and plans, information provided by jurisdictions on the Data Questionnaires, and HAZUS Data was utilized to compile information about each identified hazard. Each of the hazards was revised to include the most recent location data, previous occurrences, probability of future occurrence, and magnitude/severity. Losses were estimated using a combination of resources, including HAZUS data and information available from local resources.
- During the 2nd meeting, the jurisdictions determined which hazards were present in the county that would be included in the HMP for Chariton County.

Step 5: Assess the Problem: Identify Assets and Estimate Losses
(Handbook Task 4)

- In cases where vulnerability estimates were unavailable, data from the 2023 Missouri State Hazard Mitigation Plan was utilized as the best and most recent data available SEMA was also able to share some preliminary data from the 2023 State Plan update.
- The following information was used to determine the assets and estimate losses in Chariton County: census, GIS data, HAZUS, and the Data Collection Questionnaire.
- Losses were estimated using the Missouri State Hazard Mitigation Plan and available HAZUS data for Chariton County.
- At the 2nd meeting, the initial draft of the risk assessment was available. A presentation of the problem statements identified for each hazard to assist with the evaluation of the goals and the upcoming review of actions.

Step 6: Set Goals
(Handbook Task 6)

At the 2nd planning meeting the MPC reviewed the goals of the previously approved plan, they made the determination to update the goals to better address the specific hazards to the region and make implementation and planning more efficient. The goals can be found in Section 4 of the Chariton County Hazard Mitigation Plan. They were listed as follows:

- Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning.
- Goal 2: Minimize property damage due to flooding, levee failure, and dam failure.
- Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire.
- Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather.
- Goal 5: Minimize injuries and property damage due to seismic and/or geological events.

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

- The 3rd Planning Meeting was when the MPC reviewed the mitigation strategy from the previously approved plan. It was also at this meeting that the risk assessment was updated. Each jurisdiction was aware that they must have at least one action plan for each hazard included in the plan.
- The jurisdictions determined which actions would be retained, modified, or deleted from the previous plan. The individual jurisdictions provided information on any progress made on the actions from the previous plan, and if they were still feasible.
- MPC members were encouraged to continue forward only those actions that substantively addressed long-terms risks identified in the risk assessment.
- The FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013)* was made available to the planning committee. It was suggested that this would be a valuable resource in guiding the planning activities to mitigate

hazards in the planning area.

- Participants were encouraged to focus on long-term mitigation solutions and consideration was given to the potential cost of each project in relation to the anticipated future cost savings.
- The Chariton County Hazard Mitigation Planning Committee utilized the STAPLEE method for evaluating the priority and effectiveness of each action.

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)

Each jurisdiction is aware that they must adopt the plan prior to submission to SEMA. Each jurisdiction will document the adoption of the plan. This documentation can be found in Appendix E.

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

At the 3rd planning meeting, where actions were scored and decided upon, the MPC along with the GHRPC Planner agreed to meet at least annually to determine if actions were ongoing or completed. It was determined that the Hazard Mitigation Committee would utilize the existing emergency committee meetings to discuss any needed updates, changes, or progress on the plan's actions. It was determined that at these meetings, any amendments that were needed in the plan would be discussed and undertaken if necessary. There is more detailed information about the strategy for plan maintenance in Chapter 5 of the Chariton County Hazard Mitigation Plan.

2 PLANNING AREA PROFILE AND CAPABILITIES

2 PLANNING AREA PROFILE AND CAPABILITIES 2.1

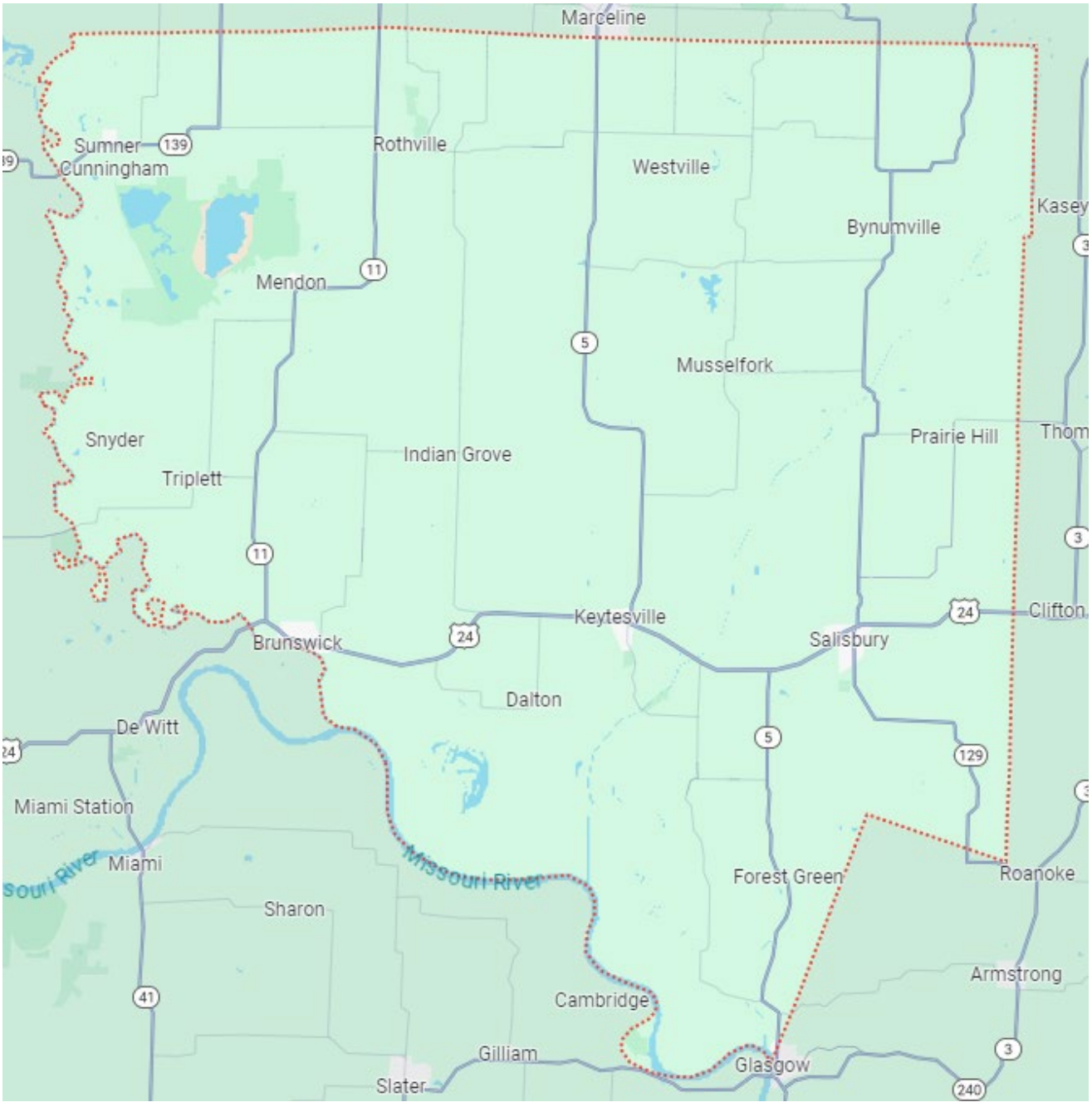
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2.1 CHARITON COUNTY PLANNING AREA PROFILE

Figure 2.1. Maps of Chariton County





Chariton County is located in the North central portion of Missouri (see map, left). Its county seat is Keytesville. The county was organized November 16, 1820, from part of Howard County and is named for the Chariton River.

Chariton County was settled primarily from the states of the upper south, especially Kentucky and Tennessee. The settlers of Chariton County brought slaves and slaveholding traditions with them. They cultivated crops like hemp and tobacco, like the crops they grew in the south. Several counties in the area were settled by southerners, both to the north and the south of the Missouri River, and the area became known as "Little Dixie". It was heavily pro-Confederate during the American Civil War.

According to the U.S. Census Bureau, the county has a total area of 767 square miles, of which 751 square miles is land and 16 square miles is water. Chariton County is bordered by Linn County to the north, Macon County to the northeast, Randolf County to the east, Howard County to the southeast, Saline County to the southwest, Carroll County to the west, and Livingston County to the northwest.

The population of Chariton County, from the 2020 Decennial Census, is 7,408 people with a population estimate of 7,386 people for 2022. The population in 2010 was 7,831. The population of Chariton County has been steadily declining. The population change from April 2020 to July 2022 (estimates based) is -.297%. The population of Missouri has increased 3.15% and the United States population has increased 7.95% in the same time frame.

The median household income in 2022 dollars was $61,910 in Chariton County. The 2010 American Community Survey 5-Year Estimates for Chariton County put the median household income at $34,008. This is a change of +92.8%. The following table (table 2.1) compares this information to the state of Missouri and the United States median household income.

Table 2.1. Median Household Income Comparisons.

	2010 Median Household Income	2022 Median Household Income	%Change in Median Household Income
Chariton County	$32,285	$61,910	+92.8%
Missouri	$44,301	$64,811	+46.3%
United States	$50,046	$74,755	+49.4%

Source: The American Community Survey 2010 & 2022; 2020 Decennial Census

Table 2.2. Median Value of House Comparisons

	2010 Median Household Value	2022 Median Household Value	%Change in Median Household Value
Chariton County	$71,500	$121,000	+69.23%
Missouri	$151,600	$171,800	+11.76%
United States	$174,600	$244,900	+28.71%

Source: The American Community Survey 2010 & 2022

Geography, Geology and Topography

According to the U.S. Census Bureau, the county has a total area of 767 square miles, of which 751 square miles is land and 16 square miles is water. Chariton County is bordered by Linn County to the north, Macon County to the northeast, Randolf County to the east, Howard County to the southeast, Saline County to the southwest, Carroll County to the west, and Livingston County to the

northwest.

Chariton County is comprised of people living in incorporated and unincorporated areas. The city of Salisbury is the largest with a population of 1,566, City of Brunswick with a population of 788, the City of Keytesville with a population of 443, The City of Mendon with a population of 164, City of Sumner with a population of 79, Village of Dalton with a population of 7, the Village of Rothville with a population of 66 according to the 2020 Decennial Census Bureau.

Chariton County is almost entirely rural, with most of the land used for agricultural purposes. The Chariton River Watershed covers a large portion of Chariton County. (See Table 2.3)

Table 2.3. Watershed Map Chariton County, "Chariton Watershed"

Chariton County is labeled with an arrow.

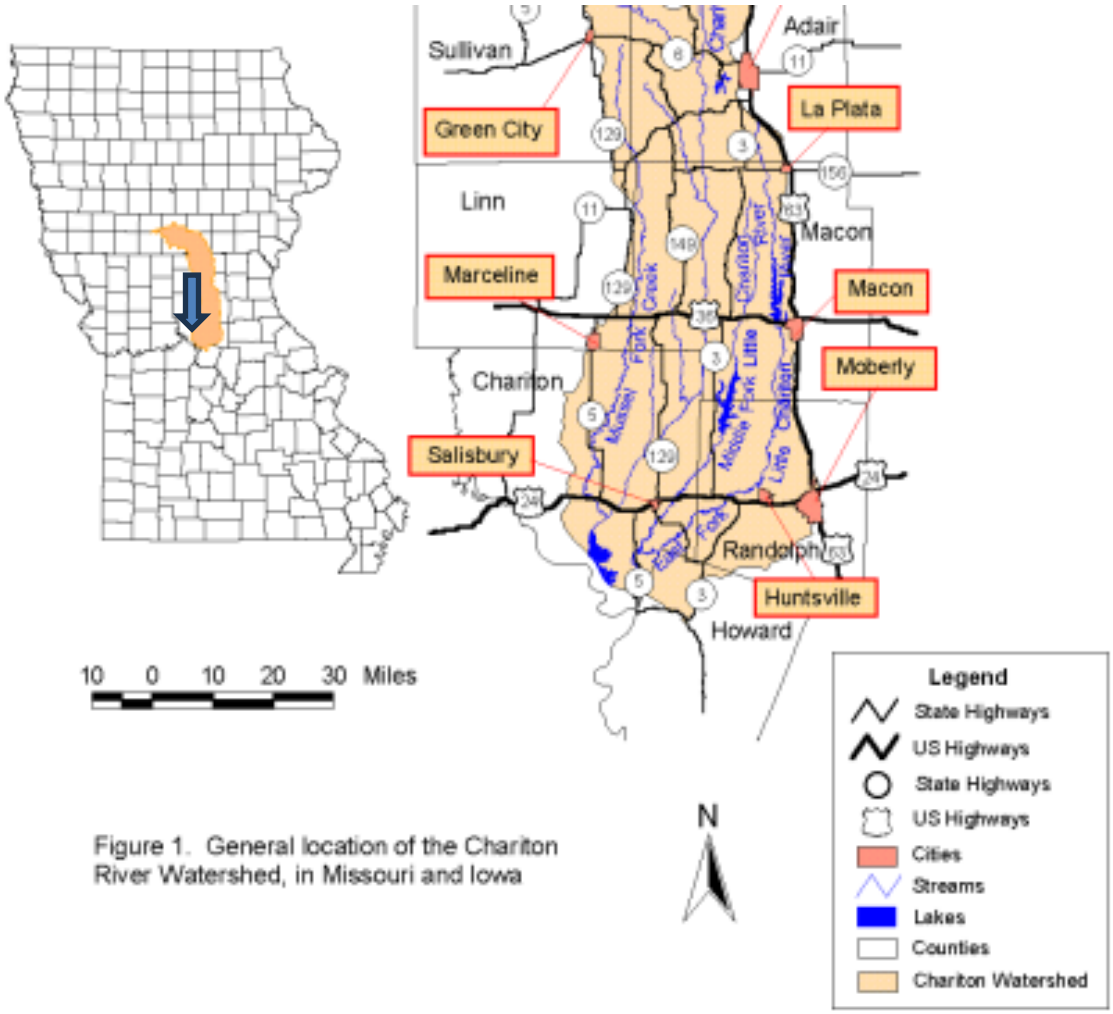


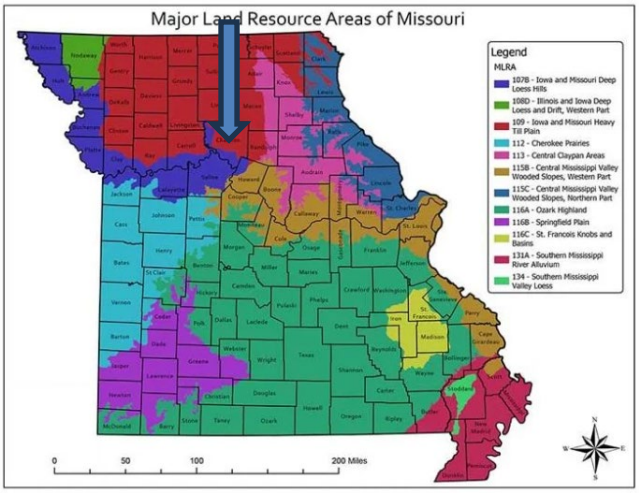
Figure 1. General location of the Chariton River Watershed, in Missouri and Iowa

Source: mdc.mo.gov

Figure 2.2 Major Land Resources in Chariton County

The following map provides information about the major land resources Missouri

The predominant type of soil in Chariton County is Classified as Iowa and Missouri Heavy till Plain. Much of the soil in Chariton County is very productive and deep soil high in organic matter. The high clay content that can be found in this soil is a limiting factor. This soil is good for growing corn and soybeans; however, the clay pan could inhibit yields in some crops.



Climate

Chariton County, Missouri has an annual average of 41 inches of precipitation. There are, on average, 14 inches of snow annually in Chariton County. Typically, there are 197 sunny days per year and an annual high temperature of 87 degrees Fahrenheit and an annual low temperature of 18 degrees Fahrenheit.

Population/Demographics

Table 2.4 provides the populations for each city, village, and the unincorporated county for 2010 and 2022, as well as the most recent ACS data from 2022. The unincorporated area population can be estimated by subtracting the populations of the incorporated areas from the overall county population. The Cities of Glasgow and Marceline straddle the county line, and the unincorporated county population data will not be completely accurate since portions of some of the incorporated areas overlap into adjacent counties.

Table 2.4. Chariton County Population 2010-2020 by Jurisdiction

Jurisdiction	2010 Population	2020 Population	2022 Annual Population Estimate or ACS Population	# Change (2010-2020)	% Change (2010-2020)
Unincorporated Chariton County	7831	7408	7386	-423	-5.40%
City of Brunswick	858	801	788	-57	-6.64%
City of Keytesville	471	440	443	-31	-6.58%
City of Mendon	171	163	164	-8	-4.68%
City of Salisbury	1,618	1,563	1,566	-55	-3.4%
City of Sumner	102	78	79	-24	-23.53%
City of Triplett	32	33	33	1	-3.12%
Village of Dalton	27	7	55	-20	-74.07%
Village of Rothville	99	66	70	-33	-33.33%

Source: U.S. Bureau of the Census, Decennial Census, annual population estimates/ 5-Year American Community Survey 2022
*ACS Population provided for cities with populations of 5,000 or more

Table 2.5. Total Population by Age Groups, Total

Report Area	Age 0-4	Age 5-19	Age 20-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65+
Chariton County	432	1,396	362	698	748	800	1,129	1,852
City of Brunswick	85	186	22	94	54	102	112	201
City of Keytesville	14	45	21	46	40	66	60	92
City of Mendon	5	50	7	58	24	13	13	33
City of Salisbury	93	292	165	171	115	168	194	297
City of Sumner	5	24	10	7	10	10	18	17
Village of Dalton	0	0	0	0	0	13	0	38
Village of Rothville	5	29	0	0	10	3	10	13
Missouri	367,132	1,185,941	400,642	814,351	763,084	744,131	832,417	1,033,836
US	19,423,121	63,575,618	21,574,425	45,351,942	42,441,883	41,631,458	42,829,413	52,888,621

Source: U.S. Bureau of the Census, Decennial Census, annual population estimates/5-year American Community Survey 2022

Table 2.6. Total Population by Age Groups, Percent

Report Area	Age 0-4	Age 5-19	Age 20-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65+
Chariton County	5.83%	18.84%	4.89%	9.42%	10.1%	10.8%	15.24%	25%
City of Brunswick	10.61%	23.22%	2.74%	11.74%	6.74%	12.73%	13.98%	25.09%
City of Keytesville	3.18%	10.23%	4.77%	10.45%	9.09%	15%	13.63%	20.9%
City of Mendon	3.07%	30.67%	4.29%	13.18%	14.7%	7.98%	7.98%	20.25%
City of Salisbury	5.95%	18.68%	10.56%	10.94%	7.36%	10.75%	12.41%	19%
City of Sumner	6.41%	30.77%	12.82%	8.97%	12.82%	12.82%	23.08%	21.79%
Village of Dalton	0%	0%	0%	0%	0%	23.64%	0%	69.09%
Village of Rothville	7.58%	43.94%	0%	0%	15.15%	4.55%	15.15%	19.7%
Missouri	5.98%	19.31%	6.52%	13.26%	12.42%	12.12%	13.55%	16.83%
US	5.89%	19.28%	6.54%	13.76%	12.87%	12.63%	12.99%	16.04%

Source: U.S. Bureau of the Census, Decennial Census, annual population estimates/5-year American Community Survey 2022

Table 2.7. Total Population in Households

Report Area	Number of Households	Average Household Size
Chariton County	2,591	2.77
City of Brunswick	328	2.47
City of Keytesville	163	2.29
City of Mendon	79	2.57
City of Salisbury	540	2.64
City of Sumner	37	2.62
Village of Dalton	9	6.11
Village of Rothville	22	3.18
Missouri	2,786,621	2.46
United States	140,498,736	2.60

Source: U.S. Bureau of the Census, Decennial Census, annual population estimates/5-year American Community Survey 2022

Based on the latest American Community Survey 5-year estimates, (Table 2.6), the population of

Chariton County under the age of 4 is currently 5.83% which is comparable to the State of Missouri average at 5.98% and the National average of 5.89%. The portion of the population above the age of 65 is above the state and national average, but by a significantly larger margin. Chariton County currently has a population of which 25% of the people are above the age of 65. The state of Missouri has an elderly population which comprises 16.83% of the population, and the nation has an elderly population of 16.04%.

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. The SoVI score for Chariton County, Missouri is 1.71. As the following Table, the Social Vulnerability to Environmental Hazards in Chariton County is established as "Medium-High".

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

Figure 2.3 Social Vulnerability to Environmental Hazards in Missouri by County

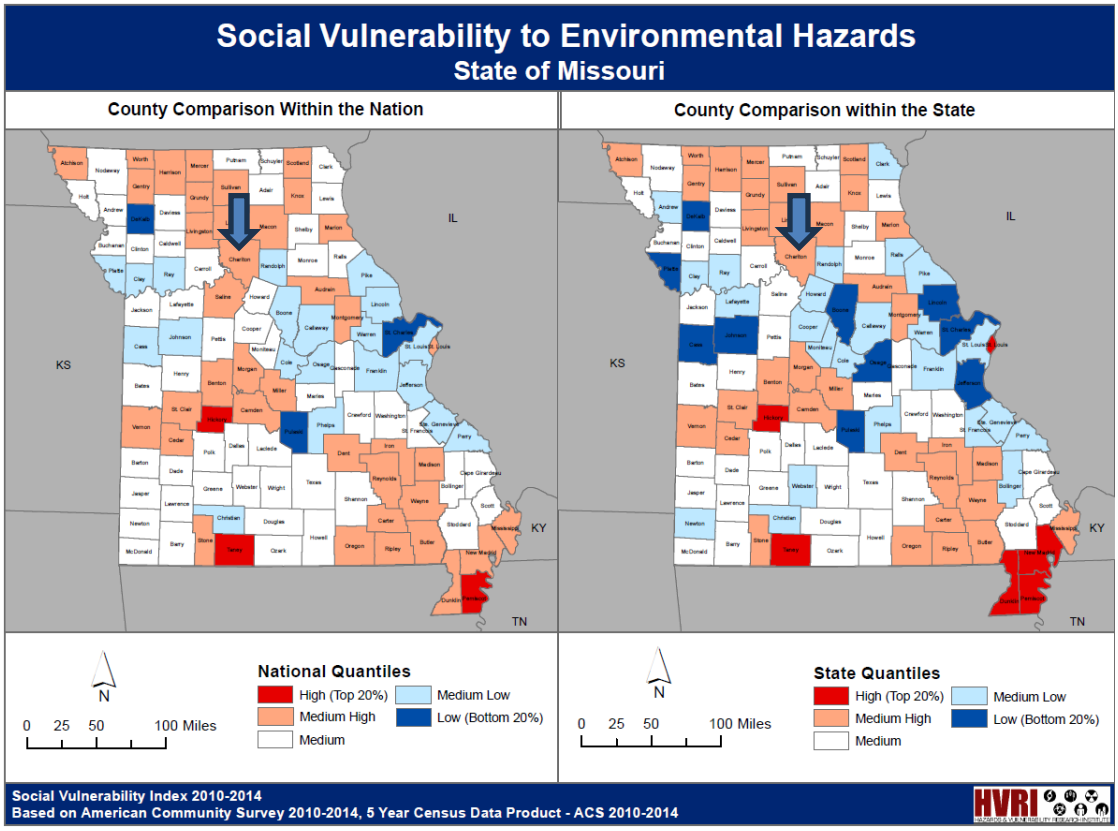


Table 2.8. Unemployment, Poverty, Education, and Language Percentage Demographics, Chariton County, Missouri

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
Chariton County	3,343	4.3%	9%	44%	21.5%	2.8%
City of Brunswick	313	6.1%	20.1%	49.4%	19.9%	1.4%
City of Keytesville	177	6.8%	15.4%	48.4%	14.5%	0%
City of Mendon	99	0%	1.5%	39%	31.9%	1.0%
City of Salisbury	621	5.8%	15.9%	40.0%	20.4%	2.2%
City of Sumner	34	0%	12%	51.6%	9.7%	0%
City of Triplett	6	0%	0%	25%	12.5%	0%
Village of Dalton	14	0%	42.9%	32.7%	0%	0%
Village of Rothville	22	27.3%	0%	44.4%	19.4%	3.1%
Missouri	4,949,628	2.6%	12.7%	91.0%	30.7%	6.4%
United States	267,057,693	3.5%	12.8%	88.9%	33.7%	21.7%

Source: U.S. Census, 2022 American Community Survey, 5-year Estimates.

History

Chariton County is a county located in the north-central portion of the United States in the state of Missouri. The county seat is Keytesville. The county was organized November 16, 1820, from part of Howard County and is named for the Chariton River. Chariton County was primarily settled by migrants from the upper southern states, especially Kentucky and Tennessee. They brought slaves and slaveholding traditions with them, and quickly started cultivating crops similar to those in Middle Tennessee and Kentucky, hemp and tobacco. Chariton was one of several counties settled mostly by southerners to the north and south of the Missouri River. Given their culture and traditions, this area became known as Little Dixie and Chariton County was at its heart. It was heavily pro-Confederate during the American Civil War. According to the US Census Bureau, the county has a total area of 767 square miles.

Schools in the Brunswick area date back to 1840, when a small one-room log "subscription" or private school was constructed. Following the Civil War, attention turned more toward public education, with the first public school opening in the town *circa* 1868. A large three-story brick school was constructed in 1871 and served the community well into the early 20th century, being replaced by a new school in 1930–31. The present junior high / high school building used by Brunswick R-II school district was constructed in 1956–57. The most recent addition to the facilities is a new grade school constructed in 1991–1992. In 1949 Missouri reorganized public education, with the state board of education consolidating or reorganizing many small rural schools into larger districts, this gave birth to the aforementioned Brunswick R-II district. The district, in student count, is the second largest in Chariton County, trailing Salisbury schools. Enrollment in all grades from 2006 to 2010 averaged 250 students. The school colors are red and black. Their mascot is the Wildcat. Brunswick R-II participates in sports and other activities as a Class 1A school under guidelines from the Missouri State High School Activities Association.

Today incorporated cities Brunswick, Keytesville, Mendon, Salisbury, Sumner, along with the Village of Dalton and the Village of Rothville make up the jurisdictions within Chariton County. In addition, several small unincorporated villages are located within the county. The location of these cities and villages are shown on the Chariton County base map.

Historical Landmarks

There are currently 6 locations listed as historic sites in Chariton County.

- Hill Homestead/House of Seven Hills
  100 W North St. Keytesville, MO
- First Presbyterian Church
  Corner of Hill and East Streets
  Keytesville, MO
- Chariton County Jail and Sheriff's Residence
  305 S. Cherry Keytesville, MO
- Chariton County Courthouse
  (destroyed by fire in August 1973)
  State St. Keytesville, MO
- Thomas, Fabrishous and Sarah A., House
  302 E 2nd St. Salisbury, MO
- Locust Hill or McGruder Estate
  East of Brunswick on State Road Y

Occupations

The following table lists the occupation statistics for Chariton County and the jurisdictions for Chariton County as well as the state of Missouri and the United States. The following statistics were listed as percentages rather than totals so comparisons can be drawn regarding the information.

Table 2.9. Occupation Statistics, Chariton County, Missouri

Jurisdiction	Management, Business, Science, and Arts Occupations	Service Occupations	Sales and Office Occupations	Natural Resources, Construction, and Maintenance Occupations	Production, Transportation, and Material Moving Occupations
Chariton County	34.57%	14.94%	15.97%	17.44%	17.07%
Brunswick	38.78%	14.29%	14.29%	14.29%	18.37%
Keytesville	16.36%	12.12%	24.24%	22.42%	24.85%
Mendon	36.36%	09.01%	12.12%	23.23%	19.19%
Salisbury	31.79%	18.63%	15.90%	14.02%	19.66%
Sumner	5.88%	23.53%	29.41%	20.59%	20.59%
Triplett	33.33%	16.67%	0%	0%	50.00%
Village of Dalton	0%	100%	0%	0%	0%
Village of Rothville	25.00%	0%	43.75%	18.75%	12.5%
Missouri	40.52%	15.72%	20.31%	8.78%	14.68%
United States	42.5%	16.15%	19.83%	8.47%	13.04%

Source: U.S. Census, 2022 American Community Survey, 5-year Estimates. (S2406)

Agriculture

Agriculture makes up a large part of the economy in Chariton County. The following information was obtained from the 2022 Census of Agriculture. Within Chariton County there are a total of 954 farms comprised of 372,047 acres as of the latest agricultural census in 2022. The average acreage making up a farm in the planning area is 390 acres. The average net income from a farm in the County is $69,716. The total number of people holding a job in the field of agriculture in the planning area is 1,638. The top type of livestock raised in Chariton County is hogs and pigs. The second most plentiful livestock product is cattle and calves and most of the farms that raise cattle raise them to provide beef rather than milk. The most abundant crop in the state are grains (oilseeds, dry beans, dry peas). 92% of the farms in Chariton County are family farms.

The following table includes information for Chariton County with surrounding Missouri counties for comparison. (See Table 2.10.)

Table 2.10. Agriculture information for Chariton and Surrounding Counties

	Chariton	Carroll	Howard	Linn	Livingston
Total # of Farms	954	960	584	957	785
Acres Farmed	265,889	311,649	206,874	326,008	286,858
Average Income Per Farm	$69,716	$99,440	$48,321	$41,438	$69,067

Source: 2022 Census of Agriculture – County Data; USDA, National Agricultural Statistics Service

FEMA Hazard Mitigation Assistance (HMA) Grants in Planning Area

The following information was obtained from FEMA's website. There was a grant awarded to the Salisbury R-IV school for the construction of a saferoom in 2015.

Table 2.11. FEMA HMA Grants in Chariton County from 1993-2023

Disaster Declaration	Project Type	Sub-Grantee	Date Approved	Project Total
1822	Safe Room	Salisbury R-IV	6-16-2015	$2,482,888
Total				$2,482,888

Source: Federal Emergency Management Agency, 8/27/2024

FEMA Public Assistance (PA) Grants in Planning Area

Table 2.12. FEMA PA Grants in Chariton County from 1993-2023

Disaster Declaration	Project Type	Project Size	Applicant	Project Total
1403	Severe Ice Storm	Small	Chariton County	$4,000
1403	Severe Ice Storm	Small	Chariton County	$-3,500
1403	Severe Ice Storm	Small	Chariton County	$29,550.78
1403	Severe Ice Storm	Small	Chariton County	$6,205
1403	Severe Ice Storm	Small	Chariton County	$1,000
1403	Severe Ice Storm	Small	Chariton County	$11,527
1403	Severe Ice Storm	Small	Chariton County	$719
1403	Severe Ice Storm	Small	Chariton County	$4,160.37
1403	Severe Ice Storm	Small	Chariton County	$1,000
1403	Severe Ice Storm	Small	Chariton County	$2,050.68
1403	Severe Ice Storm	Small	Chariton County	$3,100
1403	Severe Ice Storm	Small	Chariton County	$3,100
1403	Severe Ice Storm	Small	Chariton County	$1,000
1403	Severe Ice Storm	Small	Chariton County	$2,808
1403	Severe Ice Storm	Small	Chariton County	$4,101.9
1403	Severe Ice Storm	Small	Chariton County	$-3,100
1403	Severe Ice Storm	Small	Chariton County	$-1,000
1403	Severe Ice Storm	Small	Chariton County	$8,783.15
1403	Severe Ice Storm	Small	Chariton County	$6,000
1403	Severe Ice Storm	Small	Chariton County	$9,605.7
1403	Severe Ice Storm	Small	Chariton County	$1,000
1403	Severe Ice Storm	Small	Chariton County	$1,880.04
1412	Severe Storm(s)	Small	Chariton County	$1,521
1412	Severe Storm(s)	Small	Chariton County	$-5,488.5
1412	Severe Storm(s)	Small	Chariton County	$5,488.5
1412	Severe Storm(s)	Small	Chariton County	$-1,521
1412	Severe Storm(s)	Small	Chariton County	$18,735.2
1412	Severe Storm(s)	Small	Chariton County	$1,562
1412	Severe Storm(s)	Small	Chariton County	$6,117.78
1412	Severe Storm(s)	Small	Chariton County	$19,205.16
1412	Severe Storm(s)	Small	Chariton County	$8,572.5
1412	Severe Storm(s)	Small	Chariton County	$13,795.18
1412	Severe Storm(s)	Small	Chariton County	$5,485
1412	Severe Storm(s)	Small	Chariton County	$10,261.83
1412	Severe Storm(s)	Small	Chariton County	$-18,735.2
1412	Severe Storm(s)	Small	Chariton County	$5,482.48
1412	Severe Storm(s)	Small	Chariton County	$7,154.48

1412	Severe Storm(s)	Small	Chariton County	$7,684.4
1412	Severe Storm(s)	Small	Chariton County	$1,238.08
1412	Severe Storm(s)	Small	Chariton County	$18,735.2
1412	Severe Storm(s)	Small	Chariton County	$7,105.63
1412	Severe Storm(s)	Small	Chariton County	$1,153.6
1412	Severe Storm(s)	Small	Chariton County	$1,333.25
1412	Severe Storm(s)	Small	Chariton County	$3,300
1412	Severe Storm(s)	Small	Chariton County	$2,073
1412	Severe Storm(s)	Small	Chariton County	$1,980.12
1412	Severe Storm(s)	Small	Chariton County	$13,576.5
1412	Severe Storm(s)	Small	Chariton County	$2,130.5
1412	Severe Storm(s)	Small	Chariton County	$2,985.26
1708	Severe Storm(s)	Small	Chariton County	$1,437.24
1708	Severe Storm(s)	Small	Chariton County	$1,373.6
1708	Severe Storm(s)	Small	Chariton County	$2,880.08
1708	Severe Storm(s)	Small	Chariton County	$1,692.1
1708	Severe Storm(s)	Small	Chariton County	$16,598.14
1708	Severe Storm(s)	Small	Chariton County	$10,339.84
1708	Severe Storm(s)	Small	Chariton County	$20,862.44
1708	Severe Storm(s)	Small	Chariton County	$17,600
1708	Severe Storm(s)	Small	Chariton County	$13,576.96
1708	Severe Storm(s)	Small	Chariton County	$5,645
1708	Severe Storm(s)	Small	Chariton County	$1,785
1708	Severe Storm(s)	Small	Chariton County	$10,392.31
1773	Severe Storm(s)	Small	Chariton County	$3,680
1773	Severe Storm(s)	Small	Chariton County	$17,030
1773	Severe Storm(s)	Small	Chariton County	$2,400
1773	Severe Storm(s)	Small	Chariton County	$2,159.72
1773	Severe Storm(s)	Small	Chariton County	$42,840.14
1773	Severe Storm(s)	Small	Chariton County	$28,496.47
1773	Severe Storm(s)	Small	Chariton County	$9,337.11
1773	Severe Storm(s)	Small	Chariton County	$38,745.55
1773	Severe Storm(s)	Small	Chariton County	$3,264.11
1773	Severe Storm(s)	Small	Chariton County	$22,407.84
1773	Severe Storm(s)	Small	Chariton County	$23,248.45
1773	Severe Storm(s)	Small	Chariton County	$25,213.47
1773	Severe Storm(s)	Small	Chariton County	$18,155.71
1773	Severe Storm(s)	Small	Chariton County	$48,478.8
1773	Severe Storm(s)	Small	Chariton County	$60,867.91
1773	Severe Storm(s)	Small	Chariton County	$55,671.95
1773	Severe Storm(s)	Small	Chariton County	$44,809.32
1773	Severe Storm(s)	Small	Chariton County	$41,699.72
1773	Severe Storm(s)	Small	Chariton County	$37,332.63
1773	Severe Storm(s)	Small	Chariton County	$47,209.82
1773	Severe Storm(s)	Small	Chariton County	$10,624.64
1773	Severe Storm(s)	Small	Chariton County	$49,526.25
1773	Severe Storm(s)	Small	Chariton County	$28,818.62
1773	Severe Storm(s)	Small	Chariton County	$28,958.99
1773	Severe Storm(s)	Small	Chariton County	$25,693.93
1773	Severe Storm(s)	Small	Chariton County	$15,005
1809	Severe Storm(s)	Small	Chariton County	$5,163.25
1809	Severe Storm(s)	Small	Chariton County	$5,668.6
1809	Severe Storm(s)	Small	Chariton County	$6,010.15
1809	Severe Storm(s)	Small	Chariton County	$14,982.85
1809	Severe Storm(s)	Small	Chariton County	$2,515.58
1809	Severe Storm(s)	Small	Chariton County	$4,234
1809	Severe Storm(s)	Small	Chariton County	$13,587.32
1809	Severe Storm(s)	Small	Chariton County	$12,033.3
1809	Severe Storm(s)	Small	Chariton County	$5,690.5
1809	Severe Storm(s)	Small	Chariton County	$3,166.88

1809	Severe Storm(s)	Small	Chariton County	$8,911.1
1809	Severe Storm(s)	Small	Chariton County	$31,360.47
1809	Severe Storm(s)	Small	Chariton County	$2,319.36
1809	Severe Storm(s)	Small	Chariton County	$8,077.26
1809	Severe Storm(s)	Small	Chariton County	$1,991.51
1809	Severe Storm(s)	Small	Chariton County	$1,667.6
1809	Severe Storm(s)	Small	Chariton County	$12,428
1809	Severe Storm(s)	Small	Chariton County	$12,903.95
1934	Severe Storm(s)	Small	Chariton County	$16,903.12
1934	Severe Storm(s)	Small	Chariton County	$9,299.54
1934	Severe Storm(s)	Small	Chariton County	$10,274
1934	Severe Storm(s)	Small	Chariton County	$21,929.57
1934	Severe Storm(s)	Small	Chariton County	$15,010
1934	Severe Storm(s)	Small	Chariton County	$28,981.01
1934	Severe Storm(s)	Small	Chariton County	$55,192.2
1934	Severe Storm(s)	Small	Chariton County	$1,784.64
1934	Severe Storm(s)	Small	Chariton County	$17,106.28
1934	Severe Storm(s)	Small	Chariton County	$25,256.9
1934	Severe Storm(s)	Small	Chariton County	$18,691.08
1934	Severe Storm(s)	Small	Chariton County	$12,568.51
1934	Severe Storm(s)	Small	Chariton County	$22,128
1934	Severe Storm(s)	Small	Chariton County	$38,434.89
1934	Severe Storm(s)	Small	Chariton County	$24,342.28
1934	Severe Storm(s)	Small	Chariton County	$23,387.35
1934	Severe Storm(s)	Small	Chariton County	$27,081.78
1934	Severe Storm(s)	Small	Chariton County	$29,453.57
1934	Severe Storm(s)	Small	Chariton County	$15,402.81
1934	Severe Storm(s)	Small	Chariton County	$29,295.82
1934	Severe Storm(s)	Small	Chariton County	$13,614.79
1934	Severe Storm(s)	Small	Chariton County	$24,791.29
1934	Severe Storm(s)	Small	Chariton County	$13,719.46
1934	Severe Storm(s)	Small	Chariton County	$41,771.57
1934	Severe Storm(s)	Small	Chariton County	$42,265.36
1934	Severe Storm(s)	Small	Chariton County	$8,732.88
1961	Severe Storm(s)	Small	Chariton County	$6,045.55
1961	Severe Storm(s)	Small	Chariton County	$5,327.65
1961	Severe Storm(s)	Small	Chariton County	$8,964.01
1961	Severe Storm(s)	Small	Chariton County	$2,570
1961	Severe Storm(s)	Small	Chariton County	$2,380
1961	Severe Storm(s)	Small	Chariton County	$1,598
1961	Severe Storm(s)	Small	Chariton County	$2,426.8
1961	Severe Storm(s)	Small	Chariton County	$4,365.75
1961	Severe Storm(s)	Small	Chariton County	$8,523.17
1961	Severe Storm(s)	Small	Chariton County	$1,209.1
1961	Severe Storm(s)	Small	Chariton County	$1,330
1961	Severe Storm(s)	Small	Chariton County	$1,875.77
1961	Severe Storm(s)	Small	Chariton County	$2,913.08
1961	Severe Storm(s)	Small	Chariton County	$284.73
1961	Severe Storm(s)	Small	Chariton County	$12,043.76
1961	Severe Storm(s)	Small	Chariton County	$5,501.75
1961	Severe Storm(s)	Small	Chariton County	$6,064.75
1961	Severe Storm(s)	Small	Chariton County	$3,862.53
1961	Severe Storm(s)	Small	Chariton County	$3,764
1961	Severe Storm(s)	Small	Chariton County	$149.1
1961	Severe Storm(s)	Small	Chariton County	$7,021.91
1961	Severe Storm(s)	Small	Chariton County	$1,480
1961	Severe Storm(s)	Small	Chariton County	$3,614.4
1961	Severe Storm(s)	Small	Chariton County	$14,700
1961	Severe Storm(s)	Small	Chariton County	$6,030.94
1961	Severe Storm(s)	Small	Chariton County	$279.37

1961	Severe Storm(s)	Small	Chariton County	$3,207.45
4130	Severe Storm(s)	Small	Chariton County	$9,213.02
4130	Severe Storm(s)	Small	Chariton County	$1,680.49
4130	Severe Storm(s)	Small	Chariton County	$7,010
4130	Severe Storm(s)	Small	Chariton County	$6,995.8
4130	Severe Storm(s)	Small	Chariton County	$17,857.45
4130	Severe Storm(s)	Small	Chariton County	$48,107.72
4130	Severe Storm(s)	Small	Chariton County	$15,771.12
4130	Severe Storm(s)	Small	Chariton County	$4,519.03
4130	Severe Storm(s)	Small	Chariton County	$26,339.47
4238	Severe Storm(s)	Small	Chariton County	$1,034
4238	Severe Storm(s)	Small	Chariton County	$23,774.43
4238	Severe Storm(s)	Small	Chariton County	$4,569.25
4238	Severe Storm(s)	Small	Chariton County	$18,625
4238	Severe Storm(s)	Small	Chariton County	$7,300.09
4238	Severe Storm(s)	Small	Chariton County	$16,721.17
4238	Severe Storm(s)	Small	Chariton County	$25,925.75
4238	Severe Storm(s)	Small	Chariton County	$15,152.14
4238	Severe Storm(s)	Small	Chariton County	$21,743.97
4238	Severe Storm(s)	Small	Chariton County	$37,247.4
4238	Severe Storm(s)	Small	Chariton County	$22,348.2
4238	Severe Storm(s)	Small	Chariton County	$-42,701.6
4238	Severe Storm(s)	Small	Chariton County	$19,364.08
4238	Severe Storm(s)	Small	Chariton County	$42,701.63
4238	Severe Storm(s)	Small	Chariton County	$38,606.46
4238	Severe Storm(s)	Small	Chariton County	$-5,100
4238	Severe Storm(s)	Small	Chariton County	$19,309.12
4238	Severe Storm(s)	Small	Chariton County	$50,349.43
4238	Severe Storm(s)	Small	Chariton County	$35,680.53
4238	Severe Storm(s)	Small	Chariton County	$59,421.45
4238	Severe Storm(s)	Small	Chariton County	$64,680.51
4238	Severe Storm(s)	Large	Chariton County	$-75,970.3
4238	Severe Storm(s)	Large	Chariton County	$125,479.5
4435	Flood	Small	Chariton County	$-11,870.1
4435	Flood	Small	Chariton County	$11,870.07
4435	Flood	Small	Chariton County	$11,870.07
4435	Flood	Small	Chariton County	$25,082.04
4451	Severe Storm(s)	Small	Chariton County	$15,351.01
4451	Severe Storm(s)	Small	Chariton County	$3,365
4451	Severe Storm(s)	Small	Chariton County	$12,299.36
4451	Severe Storm(s)	Small	Chariton County	$10,634.86
4451	Severe Storm	Small	Chariton County	$42,705.46
4451	Severe Storm	Small	Chariton County	$15,472.76
4451	Severe Storm	Small	Chariton County	$20,275.35
4451	Severe Storm	Small	Chariton County	$1,382.52
4451	Severe Storm	Small	Chariton County	$32,025.00
4451	Severe Storm	Small	Chariton County	$22,418.87
4451	Severe Storm	Small	Chariton County	$81,953.55
4451	Severe Storm	Small	Chariton County	$112,320.97
4451	Severe Storm	Small	Chariton County	$23,504.11
4451	Severe Storm	Small	Chariton County	$20,000
4451	Severe Storm	Small	Chariton County	$33,279.89
4451	Severe Storm	Small	Chariton County	$28,246.55
4451	Severe Storm	Small	Chariton County	$58,351.44
4451	Severe Storm	Small	Chariton County	$46,464.32
4451	Severe Storm	Small	Chariton County	$32,899.49
4451	Severe Storm	Small	Chariton County	$1,000.00
4451	Severe Storm	Small	Chariton County	$95,751.55
4451	Severe Storm	Small	Chariton County	$15,277.25

4451	Severe Storm	Small	Chariton County	$2,374.89
4451	Severe Storm	Small	Chariton County	$37,230.00
4451	Severe Storm	Small	Chariton County	$47,144.38
4451	Severe Storm	Small	Chariton County	$25,079.98
4451	Severe Storm	Large	Chariton County	$241,261.18
4451	Severe Storm	Small	Chariton County	$70,609.71
4451	Severe Storm	Small	Chariton County	$38,711.57
4451	Severe Storm	Small	Chariton County	$16,696.31
4451	Severe Storm	Small	Chariton County	$81,513.96
4451	Severe Storm	Small	Chariton County	$3,377.89
4451	Severe Storm	Small	Chariton County	$5,259.80
4451	Severe Storm	Small	Chariton County	$45,920.90
4451	Severe Storm	Small	Chariton County	$1,652.69
4451	Severe Storm	Small	Chariton County	$4,356.00
4451	Severe Storm	Large	Chariton County	$364,472.63
4451	Severe Storm	Small	Chariton County	$21,995.30
4451	Severe Storm	Small	Chariton County	$2,625.37
4451	Severe Storm	Small	Chariton County	$2,595.40
4451	Severe Storm	Large	Chariton County	$57,822.34
4451	Severe Storm	Large	Chariton County	$133,030.63
4451	Severe Storm	Small	Chariton County	$86,935.94
4451	Severe Storm	Small	Chariton County	$2,843.30
4451	Severe Storm	Small	Chariton County	$12,453.47
4451	Severe Storm	Large	Chariton County	$148,418.91
4451	Severe Storm	Small	Chariton County	$23,623.04
4451	Severe Storm	Small	Chariton County	$2,463.00
4612	Severe Storm	Small	Chariton County	$9,974.70
4612	Severe Storm	Small	Chariton County	$42,779.91
4612	Severe Storm	Small	Chariton County	$55,943.07
4612	Severe Storm	Small	Chariton County	$498.74
4612	Severe Storm	Small	Chariton County	$8,654.98
4612	Severe Storm	Small	Chariton County	$47,577.76
4612	Severe Storm	Small	Chariton County	$914.04
4612	Severe Storm	Small	Chariton County	$54,181.34
4612	Severe Storm	Small	Chariton County	$33,654.87
4612	Severe Storm	Small	Chariton County	$70,525.19
4612	Severe Storm	Small	Chariton County	$7,794.14
4612	Severe Storm	Small	Chariton County	$3,959.01
4612	Severe Storm	Small	Chariton County	$112,423.88
Total				**$5,287,578.99**

Source: Federal Emergency Management Agency, 8/12/2024

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 Chariton County is profiled first, followed by the participating cities and school district.

2.2.1 Unincorporated Chariton County

Chariton County's jurisdiction includes all unincorporated areas within the county boundaries. It is classified as a 3rd class county, which means that it has an assessed valuation of less than 600 million dollars. The county seat is located in Keytesville.

Chariton County has 6 cities (Brunswick, Keytesville, Mendon, Salisbury, Sumner, and Triplett), 15 townships (Bee Branch, Bowling Green, Brunswick, Chariton, Clark, Cockrell, Cunningham, Keytesville, Mendon, Musslefork, Salisbury, Salt Creek, Triplett, Wayland, and Yellow Creek), 2 villages (Dalton and Rothville), and 18 unincorporated communities (Bynumville, Cunningham, Forest Green, Guthridge, Hamden, Indian Grove, Lagonda, Lewis Mill, Louisville, Mike, Musselfork, Newcomer, Prairie Hill, Rockford, Shannondale, Snyder, Westville, and Wien).

The county government provides services such as law enforcement, judicial services, land records, tax collection, property assessment, administration of elections, construction and maintenance of roads, bridges, and zoning.

The county has the following positions, which comprise the county's government:

- Presiding Commissioner
- Associate Commissioners (two)
- County Assessor
- Associate Circuit Judge
- Circuit Clerk
- Collector
- Coroner
- County Clerk
- Emergency Management Director
- Presiding Circuit Judge
- Prosecuting Attorney
- Public Administrator
- Recorder
- Road and Bridge Department
- Sheriff
- General Services
- Health Department
- Health Services

The County also has a road and bridge department that maintains county-level infrastructure, which predominately consists of grading gravel roads and replacing washed-out culverts.

Mitigation Initiatives/Capabilities

Chariton County has implemented zoning and building 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 prepared emergency plans and procedures for natural disaster.

The county has a County Emergency Plan, County Mitigation Plan, and Mutual Aid Agreements.

Chariton County's mitigation initiatives include:

- Continued participation in the NFIP
- Flood Mitigation
- Early Warning Sirens
- Maintaining Transportation Infrastructure
- Debris Removal
- Safe Rooms and Storm Shelters

Chariton County has had limited mitigation activities since the last plan update due to limited capabilities. Chariton County expanding its mitigation capabilities is unlikely due to limited capabilities, both financially and in terms of staff availability.

Table 2.13. Unincorporated Chariton 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	Yes – last updated in 2014
County Emergency Operations Plan	No
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	No
County Mitigation Plan	GHRPC 2020 (Approved and Adopted)
Debris Management Plan	No
Economic Development Plan	Yes – Enhanced Enterprise Zone – 10/5/2009
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 – not enforced
Building Code	No
Floodplain Ordinance	Yes - 2014
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	No
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	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	No
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	Yes
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	Yes – Full time in the Assessor's Office
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Director	Yes – Part time
NFIP Floodplain Administrator	Yes – part time as Commissioner's Responsibility
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes – part time coordinator. Meet quarterly
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	Yes – full time county road and bridge department
Economic Development Department	Yes – volunteer board
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes
Salvation Army	No

Veterans Groups	No
Local Environmental Organization	No
Homeowner Associations	Yes – Lake Nehai
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.)	No
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	Yes
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, 9/2024

2.2.2 City of Brunswick

The original city of Brunswick was laid out in 1836 by James Keyte. Keyte, an English immigrant and Methodist minister named the city after Brunswick in England. The original town was located approximately 550 yards south of its current location, but due to changes in the Missouri and Grand Rivers, the original site of the town is now underwater. Mr. Keyte established the first store in the town, and its first industry, a sawmill. Early growth was slow for the community, population was estimated at around 125 citizens by 1840. In the early 1840's a large influx of new residents increased the size of the town and offered more businesses. There was a hotel, wagon maker, brick factory, and a pork packing facility. Dr. Edwin Price, brother of Confederate General Sterling Price, was an early settler of the town. Leading up to the Civil War surrounding counties had no railroad to ship or receive goods and crops but Brunswick had steamboat access, making it a regional trading center. In 1849 Brunswick recorded 534 arrivals and departures by steamboat. The first school was established in June 1840, it was a one room log schoolhouse that had approximately 35 students. The Brunswicker was the town's first newspaper which began publication in October 1847 and continues today making it one of Missouri's oldest newspapers. Brunswick's first bank was a branch of the Merchants Bank of St. Louis, Missouri.

After the Civil War and the loss of their slaves, farmers shifted to other less labor-intensive crops. However, in 1890 Chariton County still led the state of Missouri in tobacco production, with 14 million pounds harvested. After a lengthy delay, due to the Civil War, the railroad finally reached Brunswick in 1867.

Dr. W. W. Bowen established the Brunswick Institute of Pharmacy in 1910. The school would train more than 5,000 pharmacists and druggists before closing in 1937. In 1914 farmers organized the Missouri Farmers Association (MFA), a cooperative, based in Brunswick. Brunswick saw growth the mid-20th century, with the construction of an alfalfa-dying plant constructed in 1939, the Chariton Electric Company in 1958, the opening of the Tuloma Fertilizer blending plan in 1965, and a glove factory in 1970. The US Coast Guard built a small base near Brunswick in 1965 to service increased river traffic. However, the Coast Guard base was short-lived and closed in 1973.

Brunswick became the center of an area of pecan groves. Then State Representative Creason secured a state resolution to name Brunswick the Pecan Capital of Missouri in 1972. The first Brunswick Pecan Festival was held in 1980 and has become an annual tradition held each October. The world's largest 10th-century pecan, which is a concrete replica, is located along Highway 24 in downtown Brunswick. It measures 7 by 12 feet and weighs 12,000 pounds. In was constructed in 1982 by George James in honor of the Starking Hardy Giant pecan, which was discovered on his property in 1947.

The City of Brunswick has a defined historic downtown district along Highway 24. The downtown district is comprised of several brick buildings constructed in the late 1800's to the early 1900's.

Mitigation Iniatives/Capabilities

The City of Brunswick's mitigation initiatives include:

- Participation in the NFIP
- Property Acquisition and Structure Demolition
- Early Warning Siren
- Maintaining Transportation Infrastructure
- Generator for City Hall/Municipal Utility Office
- Flood Mitigation

The City of Brunswick is governed by an elected Mayor and 4 Aldermen. There is also a non-elected City Clerk.

Since the last hazard mitigation plan update mitigation activities have been limited due to limited capabilities. The city of Brunswick expanding its mitigation capabilities is unlikely due to limited capabilities, both financially and in terms of staff availability.

Table 2.14. City of Brunswick Mitigation Capabilities

Capability	Status, *Including Date of Document or Policy*
Planning Capabilities	
Comprehensive Plan	Yes
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
Economic Development Plan	Yes
Transportation Plan	Yes
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	Yes
Subdivision Ordinance	No
Tree Trimming Ordinance	Yes
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
Wetlands and Riparian Areas Conservation Plan	No
Debris Management Plan	Yes
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	Yes
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	n/a
ISO Fire Rating	n/a
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	Yes

Capability	Status, *Including Date of Document or Policy*
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	Yes
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Coordinator	Yes
NFIP Floodplain Administrator	Yes
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
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
Environmental Organization	Yes
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	No
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	Yes

Source: Data Collection Questionnaire, 9/12/2023

2.2.3 City of Keytesville

The town is named for Englishman James Keyte, the town founder. Keyte, was a Methodist preacher, purchased a large parcel of land in 1830 and, two years later, donated fifty acres of it to Chariton County for the purpose of establishing the county seat. Prior to that time, the county business had been conducted from "Old Chariton," a small village near the Chariton and Missouri Rivers. However, mosquitoes and repeated river flooding made it necessary to find a new location.

The first courthouse was constructed in Keytesville between 1833 and 1834. As a two-story, four room brick building, it survived until September 20, 1864, when it was burned down by the Confederate soldiers during the American Civil War. James Keyte constructed the first home in Keytesville, and the first business as well. Both were log structures, with the second doubling as a post office. Keyte is also responsible for the town's first industry of any sort, when he constructed a sawmill near his home on Mussel Fork Creek. Isaac Redding added Keytesville's first hotel in August 1842. Keytesville was incorporated on February 3, 1868, by the state of Missouri, and incorporated as a Missouri 4th class city in March 1883.

One of Keytesville's native sons, Sterling Price, was a key figure in Missouri during the Civil War. On September 20, 1864, a Confederate force of 250 men — under Major John Thrailkill arrived at the edge of town. This was part of General Price's larger 1864 campaign through the Show Me state, as his forces advanced from eastern Missouri to the Kansas City area along the Missouri river. At the time, Thrailkill's force arrived Keytesville was defended by a small Union detachment of thirty-five men from the Missouri militia, commanded by Lieutenant Anthony Pleyer. Early on the morning of September 20, under a flag of truce, Major Thrailkill demanded the surrender of the Union troops, promising fair treatment. Seeing the situation as hopeless, Pleyer complied. Rather than being taken prisoner, the Union garrison was paroled. Confederate forces then briefly occupied the town, liberating supplies from various merchants, setting the courthouse ablaze and killing two citizens—Chariton County sheriff Robert Carmon and William Young, a Union scout and alleged spy.

In February 1866, a contract was awarded for construction of a two-story brick courthouse with a cupola. It was built and served the county until 1973. By the mid-1890s, Keytesville had an estimated population of around 1,100 citizens. Two newspapers, the *Chariton Courier* and *Keytesville Signal*, served the community. Business and industry at that time consisted of Keytesville Roller Mill, a large water-powered grist mill on Muscle Fork Creek, two banks, a building and loan association, two hotels, a distillery, general supply stores, restaurants, and sundry other businesses. Because of its location 1.5 mi (2.4 km) north of the Wabash Railroad line, the merchants of Keytesville needed a reliable and convenient way to attract potential customers. This led, in 1889, to the construction of a streetcar line, something one would only expect in much larger cities. Hugo Bartz and J. J. Moore, two prominent citizens of the time, secured land and financing for the project, which when completed consisted of two miles of track, and a large barn for horses and rolling stock. Two horse-drawn passenger coaches and a large flatcar for freight delivered new arrivals at the Wabash depot to the town.

The town does have a business district, a public library, and chamber of commerce. Included are a swimming pool, insurance sales, bank, convenience store, law offices,

chiropractor, restaurant, auto repair, agricultural services and medical clinic. The town has various service clubs and organizations. A new Chariton County Courthouse was constructed in Keytesville in the summer of 1974 and occupied the following July. This was made necessary due to a fire that destroyed the previous Chariton County Courthouse on August 27, 1973.

Mitigation Capabilities/Activities

The City of Keytesville is governed by an elected Mayor and 4 elected Aldermen, they also employ a full-time city clerk. The Floodplain Administrator duties are the responsibility of the Mayor.

Since the last hazard mitigation plan update mitigation activities have been limited due to limited capabilities. The city of Keytesville expanding its mitigation capabilities is unlikely due to limited capabilities, both financially and in terms of staff availability. The City of Keytesville currently has ordinances for identifying dangerous and uninhabitable buildings.

There are currently no land use and development ordinances or regulations for the City of Keytesville. The probability of the city passing such ordinances is unlikely due to their unpopularity with many of the citizens. The entirety of the building ordinances or codes pertain to delipidated structures or eliminating slum and blight conditions within city limits. They also have ordinances that address dangerous buildings in order to pursue condemnation and demolition for the health and safety of members of the community. They City has no planning and zoning and no building codes pertaining to new construction.

Table 2.15. City of Keytesville 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
Economic Development Plan	no
Transportation Plan	Yes
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	Yes
Floodplain Ordinance	Yes
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	No
Drainage Ordinance	No

Capability	Status, *Including Date of Document or Policy*
Seismic Construction Ordinance	No
Capability	
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
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	Yes
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	No
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	Yes
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
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

Capability	Status, *Including Date of Document or Policy*
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	No
Authority to levy taxes for a specific purpose	No
Fees for water, sewer, gas, or electric services	Yes
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
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, 9/28/2023

2.2.4 The City of Mendon

Mendon was laid out in 1871 by Christopher Shupe. However, the area had previously had homes and businesses in operation several years prior to the town plat being filed. Among the earliest was a general store built around 1865 by Mr. Bostich and Mr. Eastman.

With the coming of the Chicago, Santa Fe, and California Railroad in the 1880's the citizens of Mendon were faced with a monumental choice. The rail line was projected to pass the city by, over a mile away. When the railroad tracs were laid in 1887 and 1888, a new Mendon was created at the current site, and the former location was mostly abandoned.

By 1899 the community contained over twenty stores, a school, a bank, and two hotels. A newspaper, *The Mendon Citizen*, was first published in 1886. The estimated population in the late 1890's was 350 residents.

Although the Santa Fe railroad still passes through regularly, little remains of Mendon's business community. Currently, the education for the town and the surrounding rural areas is provided by Northwestern High School. The school's athletic and academic teams compete in Missouri Class 1, the smallest of all classifications.

Mendon's proximity to the Swan Lake National Wildlife Refuge has proven a source of income for the community, with business catering to waterfowl hunters who come to the region for duck hunting.

Mitigation Abilities/Capabilities

Since the last update of the plan the City of Mendon has had little in the way of mitigation initiatives due to limited capabilities. The City of Mendon expanding its mitigation capabilities is unlikely due to limited capabilities, both financially and in terms of staff availability. The city of Mendon has no building codes, land use plans, or development ordinances.

The City of Mendon is currently governed by a Mayor and 4 Aldermen and a non-elected City Clerk.

Table 2.16. City of Mendon 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	Yes
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Fire wise 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	Yes
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
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	No
Capability	**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	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	No

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	No
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.	Yes, Lions
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	No
Authority to levy taxes for a specific purpose	No
Fees for water, sewer, gas, or electric services	Yes
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
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire,

2.2.5 City of Salisbury

The City of Salisbury is located on land that was originally owned by Prior Bibo, a veteran of the War of 1812. In the late 1820's a tract of 320 acres was awarded to Bibo by the U.S. Government for his service in the war. Following two intermediate owners, the land was sold for $400 to Judge Lucius Salisbury in 1856. He had the surveyors lay out the town plat in 1857, the town was founded on April 1, 1867. The city has had a post office since 1863, when Judge Salisbury opened it in his home. He also ran the stagecoach stop from his business which was known as "Shop-A-While."

By the 1870 Census, Salisbury's population was 626. Just two years later the town was struck by a large tornado. Major fires damaged much of the business district in 1877 and again in 1882. On April 4, 1882, Salisbury was organized and chartered as a fourth-class city under Missouri laws.

Early businesses included two hotels, a flour mill, three tobacco factories, three manufacturers of agricultural equipment, and some forty other assorted merchants in the latter 19th century. Residents could visit the Salisbury Opera House, where the town's location on the Wabash railway brought notable performers of the time to the city to perform. A published history of Salisbury, circa 1896, listed among the community's businesses and amenities two newspapers, six physicians, a soda-pop factory, a cigar factory, and a city-owned power plant for electricity.

The first school in Salisbury opened in April 1867, with 108 students. A fire in 1888 destroyed the first school building, it was later replaced by a much larger, two-story brick building. Salisbury Academy, which opened in 1888, provided for higher education and the North Missouri Institute, another college-preparatory school, opened in 1891.

The City of Salisbury's mitigation initiatives include:

- Outdoor warning siren at Salisbury RV Park & Campground
- Emergency Generator for City Hall

The city of Salisbury does currently have ordinances on various nuisances, such as dangerous or dilapidated buildings, prohibited materials, general nuisances, and lawn maintenance ordinances. They currently contract with GHRPC to provide code enforcement services.

The City of Salisbury have some building regulations, these include fire limits where wooden buildings are prohibited within the fire limits that the City has set forth. They also have a "Earthquake and Seismic Design Requirements" that comply with the requirements of Sections 319.200 through 319.207, RSMo., and any amendments thereto, relating to earthquakes and seismic construction requirements. The City of Salisbury also has Zoning Regulations which are overseen by a board of 7-15 members. This Commission oversees the enforcement of the Planning and Zoning Regulations..

The City of Salisbury has done little involving mitigation activities due to limited capabilities. Since the last hazard mitigation plan update mitigation activities have been limited due to limited capabilities. The city of Salisbury expanding its mitigation capabilities is unlikely due to limited capabilities, both financially and in terms of staff availability.

Table 2.17. City of Salisbury 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	Yes
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Fire wise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	Yes
Building Code	Yes
Floodplain Ordinance	Yes
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	No
Drainage Ordinance	No
Seismic Construction Ordinance	Yes
Capability	
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Capability	**Status Including Date of Document or Policy**
Iowa Wetlands and Riparian Areas Conservation Plan	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
National Flood Insurance Program (NFIP) Participant	Yes
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	Yes
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	Yes

Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	Yes
Emergency Management Coordinator	Yes
NFIP Floodplain Administrator	Yes
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
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	
Capability	**Status Including Date of Document or Policy**
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 The City of Sumner

The area along the Chariton River in the northwest corner of present-day Chariton County was first explored by two sons of Daniel Boone and Thomas Stanley prior to Missouri statehood in 1821. Stanley established a trading post sometime later near what would eventually become Sumner. Other than the trading post not much existed in the area for several years, partly due to marshlands and flooding on the Grand River.

The area around Sumner was originally known as Crossland, and about one mile away was the much larger village of Cunningham. However the coming of the Chicago, Burlington and Quincy Railroad to the community combined with the Wabash railroad's decision to move their depot from Cunningham to Sumner giving it an upper hand in growth. Sumner was laid out by Joel H. Wilkerson in June,1882. That fall the first home was constructed in the new village by J.M. Vanes, soon followed by the Commercial Hotel. A newspaper, the *Sumner*

Star, was established in 1890 and operated for several years.

Once teaming with wildlife such as prairie chicken, turkey, duck, and deer in the 1800s, the population of such was drastically reduced by over hunting and draining of the native wetlands, notably Hog Lake in 1911. In 1937 concerned over wetland preservation in the wake of the Dust Bowl, the U.S. Congress established the Swan Lake National Wildlife Refuge just to the south of Sumner. Roads, buildings and man-made wetlands were soon created and by 1941 eight hundred geese wintered in the area.

Located on a migratory flyway, Swan Lake and the Sumner area began to attract ever larger numbers of geese in the mid and late 20th century, reaching 100,000 or more by the 1980s and 1990s. This also led to a yearly influx of hunters, benefiting the few Sumner businesses and Chariton County as a whole. With these numbers in mind Sumner was proclaimed the "Wild Goose Capital of the World". Sumner also began to hold a yearly Goose Festival in 1955 and it continues each October, with a variety of activities held including live music, a queen contest, food and a parade. Sumner residents commissioned a sculptor in 1976 to create a large statue to honor the community's status and reputation for waterfowl hunting. What resulted was the "World's Largest Goose". Named "Maxie", the fiberglass and metal structure stands over forty feet tall with a wingspan of sixty-five feet and a total weight of over 5,000 pounds.

The City of Sumner is currently governed by a Mayor and 4 Aldermen as well as a non-elected City Clerk.

Since the last hazard mitigation plan update mitigation activities have been limited due to limited capabilities. The city of Sumner expanding its mitigation capabilities is unlikely due to limited capabilities, both financially and in terms of staff availability.

Table 2.18. City of Sumner 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	Yes
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Fire wise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	Yes

Building Code	Yes
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
Capability	**Status Including Date of Document or Policy**
Iowa Wetlands and Riparian Areas Conservation Plan	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
National Flood Insurance Program (NFIP) Participant	Yes
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	Yes
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	Yes
Building Inspector	No
Mapping Specialist (GIS)	No

Engineer	No
Development Planner	No
Public Works Official	Yes
Emergency Management Coordinator	Yes
NFIP Floodplain Administrator	Yes
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
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	
Capability	**Status Including Date of Document or Policy**
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

2.2.7 Summary of Jurisdictional Capabilities

Table 2.19. Mitigation Capabilities Summary Table

CAPABILITIES	Unincorporated Chariton County	City of Brunswick	City of Keytesville	City of Mendon	City of Salisbury	City of Sumner
Planning Capabilities						
Comprehensive Plan	No	Yes	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	No	No	No	No	No
County Emergency Plan	Yes	Yes	Yes	Yes	Yes	Yes
Local Recovery Plan	No	No	No	No	No	No
County Recovery Plan	No	No	No	No	No	No
Local Mitigation Plan	No	No	No	No	No	no
County Mitigation Plan	Yes	Yes	Yes	Yes	Yes	Yes
Debris Management Plan	No	No	No	No	No	no
Economic Development Plan	No	Yes	No	No	No	No
Transportation Plan	Yes	Yes	Yes	Yes	Yes	Yes
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	No	No	No	No	Yes	No
Building Code	No	No	Yes	No	Yes	No
Floodplain Ordinance	Yes	Yes	Yes	No	Yes	No
Subdivision Ordinance	No	No	No	No	No	No
Tree Trimming Ordinance	No	Yes	No	No	No	No
Nuisance Ordinance	No	Yes	Yes	No	Yes	No
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

CAPABILITIES	Unincorporated Chariton County	City of Brunswick	City of Keytesville	City of Mendon	City of Salisbury	City of Sumner
Landscape Ordinance	No	No	No	No	No	No
Seismic Construction Ordinance	No	No	No	No	No	No
Program						
Zoning/Land Use Restrictions	**No**	Yes	No	No	Yes	No
Codes Building Site/Design	No	No	No	No	Yes	No
National Flood Insurance Program (NFIP) Participant	Yes	Yes	Yes	No	Yes	Yes
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
ISO Fire Rating	No	No	Yes	No	Yes	no
Economic Development Program	no	No	No	No	No	no
Land Use Program	Yes	No	No	No	No	No
Public Education/Awareness	Yes	Yes	No	No	Yes	No
Property Acquisition	No	No	No	No	No	No
Planning/Zoning Boards	No	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	No	Yes	No
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	Yes	No	No	No	No	No
Vulnerable Population Inventory	No	No	No	No	No	No
Land Use Map	Yes	No	No	No	No	No
Staff/Department						

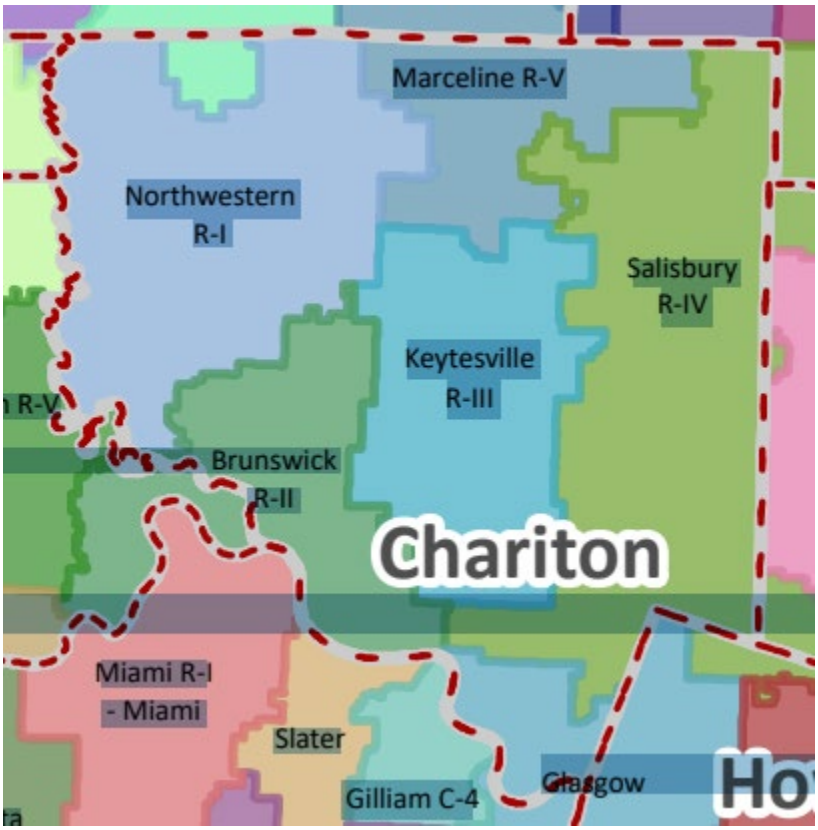
CAPABILITIES	Unincorporated Chariton County	City of Brunswick	City of Keytesville	City of Mendon	City of Salisbury	City of Sumner
Building Code Official	**No**	**No**	**No**	**No**	**Yes**	**No**
Building Inspector	No	Yes	No	No	No	No
Mapping Specialist (GIS)	Yes	No	No	No	No	No
Engineer	No	No	No	No	Yes	No
Development Planner	No	No	No	No	No	No
Public Works Official	No	No	No	No	Yes	No
Emergency Management Coordinator	Yes	Yes	No	No	Yes	No
NFIP Floodplain Administrator	Yes	Yes	Yes	No	Yes	Yes
Emergency Response Team	No	No	No	No	No	No
Hazardous Materials Expert	No	No	No	No	No	No
Local Emergency Planning Committee	Yes	No	No	No	No	No
County Emergency Management Commission	No	No	No	No	No	No
Sanitation Department	No	No	No	No	No	no
Transportation Department	Yes	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	**Yes**	**No**	**No**	**No**	**No**	**No**
Salvation Army	No	No	No	No	No	No
Veterans Groups	Yes	Yes	No	No	No	No
Environmental Organization	No	Yes	No	No	No	No
Homeowner Associations	Yes	No	No	No	No	No
Neighborhood Associations	No	No	No	No	No	No
Chamber of Commerce	No	Yes	Yes	No	Yes	No
Community Organizations (Lions, Kiwanis, etc.)	Yes	Yes	Yes	Yes	Yes	No
Financial Resources						
Apply for Community Development Block Grants	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Fund projects through Capital Improvements funding	No	No	No	No	Yes	No

CAPABILITIES	Unincorporated Chariton County	City of Brunswick	City of Keytesville	City of Mendon	City of Salisbury	City of Sumner
Authority to levy taxes for specific purposes	Yes	Yes	No	No	Yes	No
Fees for water, sewer, gas, or electric services	No	Yes	Yes	Yes	Yes	No
Impact fees for new development	Yes	No	No	No	No	No
Incur debt through general obligation bonds	Yes	Yes	No	No	Yes	No
Incur debt through special tax bonds	Yes	Yes	No	No	Yes	No
Incur debt through private activities	No	No	No	No	No	No
Withhold spending in hazard prone areas	Yes	Yes	No	No	No	No

Source: Data Collection Questionnaire

2.2.8 School District Profiles and Mitigation Capabilities

Figure 2.4 Map of Chariton County School Districts



Source: dese.mo.gov/school-data

The previous map illustrates the various school districts within Chariton County. The school districts Northwestern R-I, Brunswick R-II, Keytesville R-III, and Salisbury R-IV have school buildings located within the county. The school districts that were not listed have students that reside in Chariton County, but the location of the school buildings is outside Chariton County. Currently, the only participating School District in this plan update is Brunswick R-II.

Table 2.20. Brunswick R-II Buildings and Enrollment Data, 10/23/2024

District Name	Building Name	Building Enrollment
Brunswick R-II	Brunswick R-II School	280

Source: https://dese.mo.gov/school-data, 10/23/2024

Brunswick R-II School is located at 1008 County Road, Brunswick, MO 65236. Table 2.20 provides building and enrollment information.

Brunswick R-II conducts regular hazard drills for fire and earthquake readiness as well as regular bus and lockdown drills.

Brunswick is governed by a Board of Education consisting of the Board President and six elected board members. The district currently serves 280 students and 50 teachers and staff. The district departments include:

- Central Office

- Elementary
- Jr. High
- High School
- Special Education
- Maintenance/Custodial
- Food Service

The Brunswick R-II has done little to expand mitigation capabilities since the last plan update due to limited capabilities and has little planned in the way of expanding mitigation capabilities due to limited budget and resources.

Table 2.21. Summary of Mitigation Capabilities-Brunswick R-II

Capability	Brunswick R-II
Planning Elements	
Master Plan/ Date	Y/ July 2022
Capital Improvement Plan/Date	Y/December 2019
School Emergency Plan / Date	Y/July 2022
Weapons Policy/Date	Y/July 2023
Personnel Resources	
Full-Time Building Official (Principal)	Yes/Superintendent
Emergency Manager	Y/Superintendent
Grant Writer	Y/Superintendent
Public Information Officer	Y/Superintendent
Financial Resources	
Capital Improvements Project Funding	Y
Local Funds	Y
General Obligation Bonds	Y
Special Tax Bonds	N
Private Activities/Donations	Y
State and Federal Funds/Grants	Y
Other	
Public Education Programs	N
Privately or Self- Insured?	Privately
Fire Evacuation Training	Y
Tornado Sheltering Exercises	Y
Public Address/Emergency Alert System	Y
NOAA Weather Radios	Y
Lock-Down Security Training	Y
Mitigation Programs	N
Tornado Shelter/Saferoom	N
Campus Police	N

Source: Data Collection Questionnaire, 7/25/2023

3 RISK ASSESSMENT

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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.

A Multi-Jurisdictional Local Hazard Mitigation Plan was adopted in 2020. This risk assessment is an update to the risk assessment previously prepared.

The risk assessment for Chariton County and participating jurisdictions followed the methodology described in the 2023 FEMA *Local Mitigation Planning Policy Guide,* which outlines the following risk assessment requirements:

1. Description of all natural hazards that can affect the jurisdictions.
2. Inclusion of information on location for each identified hazard.
3. Provision of the extent of the hazards that can affect the planning area.
4. Inclusion of information on previous hazard events for each hazard that affects the planning area.

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.

Natural hazards can be complex, occurring with a wide range of intensities. Some events are instantaneous and offer no window of warning, such as earthquakes. Some offer a short warning in which to alert the public to take actions, such as tornadoes or severe thunderstorms. Others occur less frequently and are typically more expensive, with some warning time to allow the public time to prepare for, such as flooding. The Chariton County Hazard Mitigation Planning Committee has determined that natural hazards will be the sole focus of the plan. To that purpose, man-made phenomena such as war, chemical contamination, and other man-made hazards will be excluded from the plan.

Happenings such as those listed below, which occur in a populated area, are referred to as hazardous events. It is not until significant property damage and loss of life result from a natural hazard that the phenomena are classified as a natural disaster.

3.1.1 Review of Existing Mitigation Plans

The Hazard Mitigation Planning Committee (HMPC) reviewed data and discussed the impacts of each hazard of prime concern that are included and profiled in the most recent State of Missouri Hazard Mitigation Plan (2023) and the 2020 Chariton County Multi-Jurisdictional Local Hazard Mitigation Plan. The natural hazards of prime concern for Missouri and Chariton County were:

- Flooding (Riverine & Flash)
- Levee Failure
- Dam Failure
- Earthquake
- Drought
- Extreme Temperatures
- Severe Thunderstorms
- Severe Winter Weather
- Tornadoes and
- Wildfires

3.1.2 Review Disaster Declaration History

When the HMPC was identifying hazards that affected Chariton County the committee considered previous events that triggered federal and/or state disaster declarations. Federal and/or 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. Missouri State of Emergencies are Executive Orders (E.O.) signed by the Governor. For disasters, a State of Emergency could lead to a Federal Disaster Declaration. Since the last plan update, no non-federally declared events resulted in a significant event impacting the planning area.

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.

Table 3.1 lists federal disaster declarations received by Chariton County. Each of the disaster events affected multiple counties; estimated damages reflect total losses to all counties. Severe storms, tornadoes, and flooding were the most common disasters.

Table 3.1. FEMA Disaster Declarations that included Chariton County, Missouri, 1973-Present

Disaster Number	Description	Declaration Date	Individual Assistance (IA) Public Assistance (PA)
Major Disaster Declarations			
372	Severe Storm	4/19/1973	N/A
407	Flood	11/1/1973	N/A
995	Flood	6/10/1993-10/25/1993	N/A
1054	Severe Storm	5/13/1995-6/23/1995	N/A
1253	Severe Storm	10/4/1998-10/11/1998	N/A
1403	Severe Ice Storm	1/29/2002-2/13/2002	IA & PA
1412	Severe Storm	4/24/2002-6/10/2002	PA - $35,299,777.93
1463	Severe Storm	5/4/2003-5/30/2003	IA - $8,779,157.72 PA - $19,562,866.28
1524	Severe Storm	5/18/2004-5/31/2004	IA
1708	Severe Storm	5/5/2007-5/18/2007	IA & PA
1773	Severe Storm	6/1/2008-8/13/2008	IA & PA
1809	Severe Storm	9/11/2008-924/2008	IA - $6,869,983.55 $PA - $8,529,243.13
1934	Severe Storm	6/12/2010-7/31/2012	IA & PA
1961	Severe Storm	1/31/2011-2/5/2011	IA & PA
4130	Severe Storm	5/29/2013-6/10/2013	PA - $9,033,804.83
4238	Severe Storm	5/15/2015-7/27/2015	IA & PA
4435	Flood	3/11/2019-4/16/2019	IA & PA
4451	Severe Storm	4/29/2019-7/5/2019	IA - $7,477,718.54 PA - $37,348,088.35
4490	Biological	1/20/2020-5/11/2023	IA - $65,840,939.01 PA - $627,842,441.86
4612	Severe Storm	6/24/2021-7/1/2021	IA & PA
Emergency Declarations			

3017	Drought	9/24/1976	PA
3232	Hurricane Katrina Evacuation	8/29/2005-10/1/2005	PA - $1,816,226.90
3281	Severe Ice Storm	12/8/2007-12/15/2007	IA & PA
3303	Severe Ice Storm	1/26/2009-1/28/2009	IA & PA
3317	Severe Storm	1/31/2011-2/5/2011	IA & PA
3325	Flood	6/1/2011-8/1/2011	IA & PA
3482	Biological	1/20/2020-5/11/2023	IA

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

3.1.3 Research Additional Sources

- Missouri Hazard Mitigation Plans (2013, 2018, and 2023)
- Previously approved Chariton County Hazard Mitigation Plan Approved July 14, 2020
- 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);
- Chariton County and local Comprehensive Plans to the extent available
- Chariton County Emergency Management
- Chariton County Flood Insurance Rate Map, FEMA
- Chariton County 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; any such articles or publications will be cited in the plan where applicable.

Note that 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.

Note that 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.

3.1.5 Hazards Excluded and Why

Landslides and land subsidence/sinkholes, according to the USGS website, are not likely to occur in Chariton County due to the type of soil and substructure in Northern Missouri. There are no known instances of sinkholes in Chariton County at this time, so the likelihood of sinkholes occurring in the planning area is less than 1%, and therefore this hazard was excluded from the plan.
Fires: Urban/Structural were not included in the Chariton County plan. The rural nature of the County led to the decision to exclude this type of hazard.
Coastal Storms – Hurricanes and Tsunamis were excluded, for obvious reasons.

3.1.4 Hazards Identified

After review of the hazards in the 2023 Missouri State Hazard Mitigation Plan as well as the disaster declaration history, the HMPC agreed on ten natural hazards that significantly affect the planning area. These hazards are listed below in Table 3.2 with an "X" indicating the affected jurisdictions. Each of these hazards is profiled in further detail in the next section. The Lower Chariton Levee District participated in the development of the Hazard Mitigation Plan for Chariton County, but did not adopt the plan, and is not considered a participating jurisdiction. However, the information obtained from this jurisdiction is included in the plan for informational purposes.

Table 3.2. Hazards Identified for Each Jurisdiction

Jurisdiction	Dam Failure	Drought	Earthquake	Extreme Temperatures	Flooding (River and Flash)	Levee Failure	Severe Winter Weather	Thunderstorm/Lightning/Hail/ High Wind	Tornado	Wildfire
Unincorporated Chariton County	x	x	x	x	x	x	x	x	x	X
Cities & Villages										
City of Brunswick		X	X	X	X		X	X	X	X
City of Keytesville		X	X	X	X		X	X	X	X
City of Mendon		X	X	X	X		X	X	X	X
City of Salisbury		X	X	X	X		X	X	X	X
City of Sumner		X	X	X	X		X	X	X	X
School Districts										
Brunswick RII					X		X	X	X	

3.1.5 Multi-Jurisdictional Risk Assessment

Each hazard has a profile in which the risks are assessed on a planning area wide basis. Some hazards, like flooding, vary in risk across the planning area. Discussions of these variations are included in each profile as they apply.

The planning area is fairly uniform in terms of climate, topography, and building construction characteristics. Cities and towns have greater population and structure density and therefore have greater vulnerability to weather-related hazards. There is little variation in development trends across the planning area, as the Chariton County area as a whole and each of its communities has lost population over the last five years. The county is overwhelmingly rural; with the primary vulnerable assets being crops and livestock. These matters are discussed in greater detail in the vulnerability sections of each hazard.

The structure of this multi-jurisdictional plan has been developed to update the previous plan. Each hazard has a profile in which the risks are assessed on an area wide basis of the planning area. Some hazards vary in risk across the planning area. The discussions of the variations have been included in each profile. The hazards that vary across the planning area in terms of risk include dam failure, flash flood, river flood, and grass or wildland fire. The differences in risks within each jurisdiction have been detailed in each hazard profile under a separate heading. The unincorporated areas of the County have experienced limited damage from winter storms, tornadoes, thunderstorms, extreme temperatures, drought, dam failure, and wildfire.

3.2 ASSETS AT RISK

This section assesses the planning area population, structures, critical facilities, and infrastructure, and other important assets that may be at risk from hazards. All structures within the planning area are visible on high resolution imagery and have been analyzed and classified. This offers the ability to display those structures by their type and purpose, which makes identifying critical infrastructure much easier. This was done on the last hazard mitigation plan for Chariton County. There have no significant changes in the planning area since the last plan.

3.2.1 Total Exposure of Population and Structures

This section assesses the planning area population, structures, critical facilities and infrastructure, and other important assets that may be at risk from hazards. If there have been any changes in the planning area since the previously approved plan was adopted, these changes are summarized, and any new risks assessed.

Unincorporated County and Incorporated Cities

In the following three tables, population data is based on 2022 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. Note that public school district assets and special districts assets are included in the total exposure tables assets by community and county, and are not categorized by specific district. There is no specific data available for the Lower Chariton Levee District.

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. **Table 3.5** provides the building count total for the county and each city in the planning area broken out by building usage type. Finally, **Table 3.6** 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	2020 Annual Population Estimate	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
Unincorporated Chariton County	7,417	11,032	$343,665	$164,294	$507,958
Brunswick	856	563	$66,173	$37,852	$104,024
Dalton	55	43	$3,644	$2,016	$5,661
Keytesville	384	302	$36,848	$22,985	$59,833
Mendon	203	145	$15,301	$8,409	$23,710
Rothville	70	52	$6,158	$3,651	$9,809
Salisbury	1,430	901	$115,441	$63,060	$178,501
Sumner	97	107	$11,163	$6,114	$17,276
Triplett	12	88	$5,025	$2,437	$7,462
Total	**10,524**	**13,265**	**$607,118**	**$313,166**	**$920,284**

Source: U.S. Bureau of the Census, Annual population estimates/ 5-Year American Community Survey 2022; 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 the 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	Agriculture	Commercial	Industrial	Residential	Government	Total
Unincorporated Chariton County	$27,077	$11,964	$8,138	$280,243	$0	$343,665
Brunswick	$170	$11,388	$0	$51,662	$633	$66,173
Dalton	$44	$432	$0	$3,168	$0	$3,644
Keytesville	$35	$8,649	$0	$27,659	$506	$36,848
Mendon	$69	$1,586	$0	$13,647	$0	$15,301
Rothville	$9	$1,153	$0	$4,996	$0	$6,158
Salisbury	$94	$16,721	$0	$90,653	$1,012	$115,441
Sumner	$53	$865	$0	$9,991	$253	$27,077
Triplett	$151	$0	$0	$4,874	$0	$5,025
Grand Total	**$27,702**	**$52,758**	**$8,138**	**$486,895**	**$2,404**	**$619,332**

Source: Missouri GIS Database, SEMA Mitigation Management Section

Table 3.5. Building Values/Exposure by Usage Type (by 1000's)

Jurisdiction	Residential	Commercial	Industrial	Government	Agriculture	Total
Unincorporated Chariton County	$280,243	$11,964	$8,138	$0	$27,077	$343,665
Brunswick	$170	$51,662	$0	$633	$170	$66,173
Dalton	$3,168	$432	$0	$0	$44	$3,644
Glasgow*	$2,437	$721	$0	$0	$0	$3,158
Howard*	$0	$0	$0	$0	$9	$9
Keytesville	$27,659	$8,649	$0	$0	$35	$36,848
Marceline*	$244	$288	$0	$506	$0	$532
Mendon	$13,647	$1,586	$0	$0	$69	$15,301
Rothville	$6,158	$1,153	$0	$0	$9	$6,158
Salisbury	$90,653	$16,721	$0	$1,012	$94	$115,441
Sumner	$9,991	$865	$0	$253	$53	$11,163
Triplett	$4,874	$0	$0	$0	$151	$5,025
Total	**$489,573**	**$53,768**	**$8,138**	**$2,404**	**$27,712**	**$607,118**

Source: Missouri GIS Database, SEMA Mitigation Management Section; * Cities are not in the County but some buildings that are associated with these jurisdictions are located within the county boundaries. Schools were excluded from this table; they are to be found in table 3.7.

Table 3.6. Building Counts by Usage Type

Jurisdiction	Agriculture Counts	Commercial Counts	Education Counts	Government Counts	Industrial Counts	Residential Counts	Total
Unincorporated Chariton Co.	8,609	83	1	5	33	2,300	11,032
Brunswick	54	79	7	-	-	424	563
Dalton	14	3	-	-	-	26	43
Glasgow*	-	5	-	-	-	20	25
Howard*	3	-	-	-	-	-	3
Keytesville	11	60	-	4	-	227	302
Marceline*	-	2	-	-	-	2	4
Mendon	22	11	-	-	-	112	145
Rothville	3	8	-	-	-	41	52
Salisbury	30	116	3	8	-	744	901
Sumner	17	6	-	2	-	82	107
Triplett	48	-	-	-	-	40	88
Grand Total	**8,811**	**373**	**11**	**19**	**33**	**4,018**	**13,265**

Source: Missouri GIS Database, SEMA Mitigation Management Section; * Cities are not in the County but some buildings that are associated with these jurisdictions are located within the county boundaries.

The number of enrolled students at the participating public-school districts is provided in **Table 3.7** 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 3.7. Population and Building Exposure by Jurisdiction-Public School Districts

Public School District	Enrolment	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
Brunswick R-II	264	2	$23,380,647	unknown	$23,380,647

Source: http://mcds.dese.mo.gov/quickfacts/Pages/District-and-School-Information.aspx., select the file for the most recent year called "2024 Building Enrollment PK-12", filter the spreadsheet by selecting only the public school districts in the planning area. The Building Exposure, Contents Exposure, and Total Exposure amounts come from the completed Data Collection Questionnaires from Public School Districts. In general, the school districts obtain this information from their insurance coverage amounts.

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 3.8 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: interviews with County Emergency Management Director, interviews with City Government Employees, and HAZUS.

Table 3.8. 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
Keytesville	-	-	1	-	-	-	1	1	1	2	-	1	-	-	-	1	-	-	-	-	-	-	-	8
Brunswick	-	-	2	1	1	1	1	1	1	2	-	1	-	1	1	-	-	1	1	1	-	-	1	17
Dalton	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Mendon	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	3
Rothville	-	-	-	-	-	-	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	3
Salisbury	-	-	1	-	-	-	1	1	1	1	-	-	-	-	-	1	1	1	-	2	-	-	1	11
Sumner	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	3
Triplett	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Chariton County	-	-	2	18	-	-	3	1	-	-	-	-	-	1	2	-	1	2	-	1	-	-	4	34
Totals	**0**	**0**	**6**	**20**	**1**	**1**	**8**	**6**	**3**	**6**	**1**	**2**	**0**	**2**	**3**	**2**	**2**	**7**	**1**	**4**	**0**	**0**	**6**	**79**

Source: Missouri 2023 State Hazard Mitigation Plan and Hazard Mitigation Viewer; Data Collection Questionnaires; Hazus, etc.

Bridges:

The term “scour critical” refers to one of the database elements in the National Bridge Inventory. This element is quantified using a “scour index”, which is a number indicating the vulnerability of a bridge to scour during a flood. Bridges with a scour index between 1 and 3 are considered “scour critical”, or a bridge with a foundation determined to be unstable for the observed or evaluated scour condition.

The following Figure 3.1 shows the bridges located within Chariton County. They are identified by the following characteristics. Green circles indicate bridges within the county in “good” condition; yellow circles indicate bridges within the county in “fair” condition; and red circles indicate bridges within the county in “poor” condition. This data was obtained from the National Bridge Inventory and the map was generated using Esri ArcGIS Pro.

There are currently 10 structurally deficient, or scour critical bridges, in Chariton County. There are none located within city boundaries, all are in unincorporated areas of Chariton County as seen in Figure 3.2.

Table 3.9. Chariton County Bridges

# of Bridges	Good Condition	Fair Condition	Poor condition	Scour Critical
288	153	101	34	10

Source: National Bridge Inventory FHWA

Figure 3.1. Chariton County Bridges

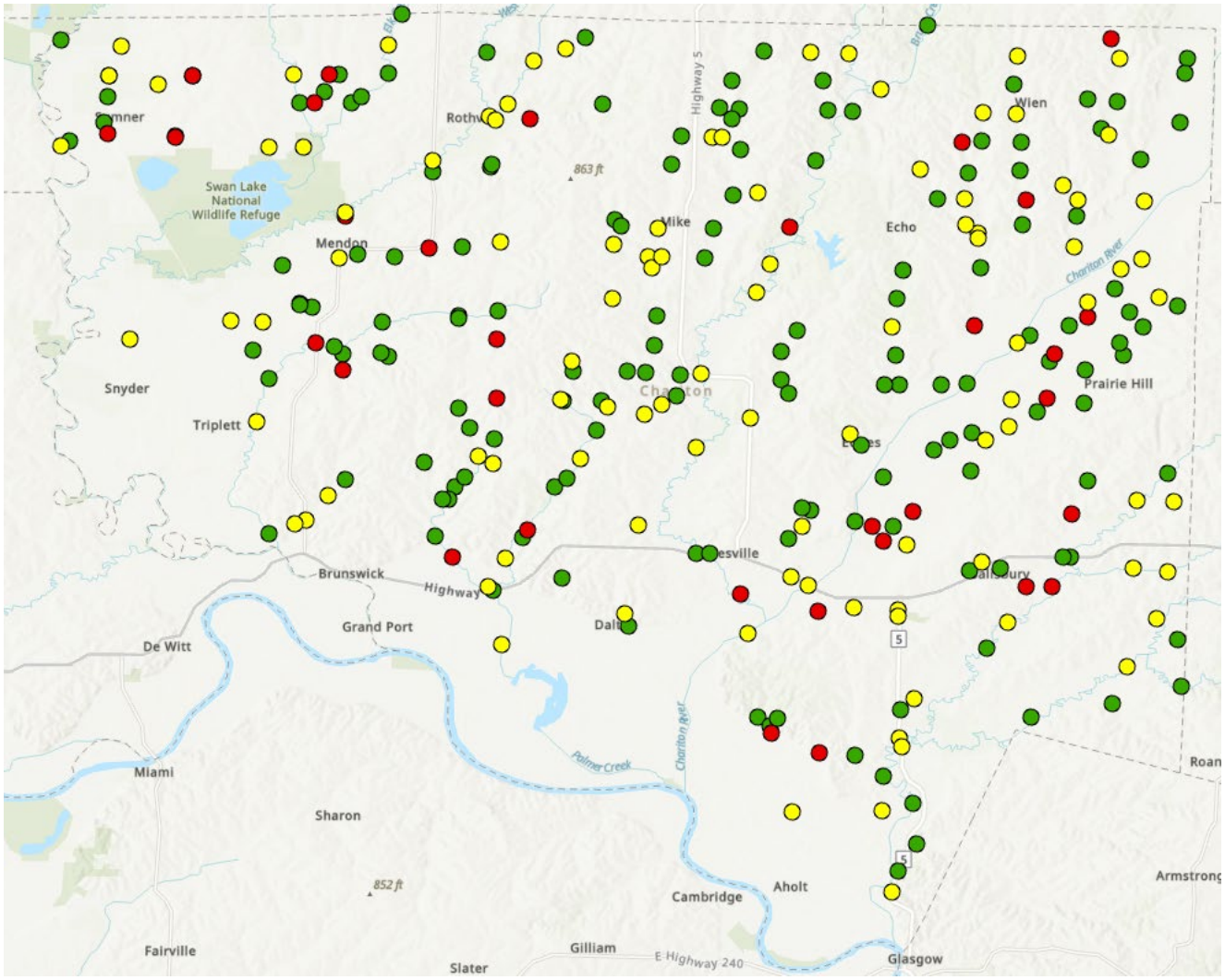
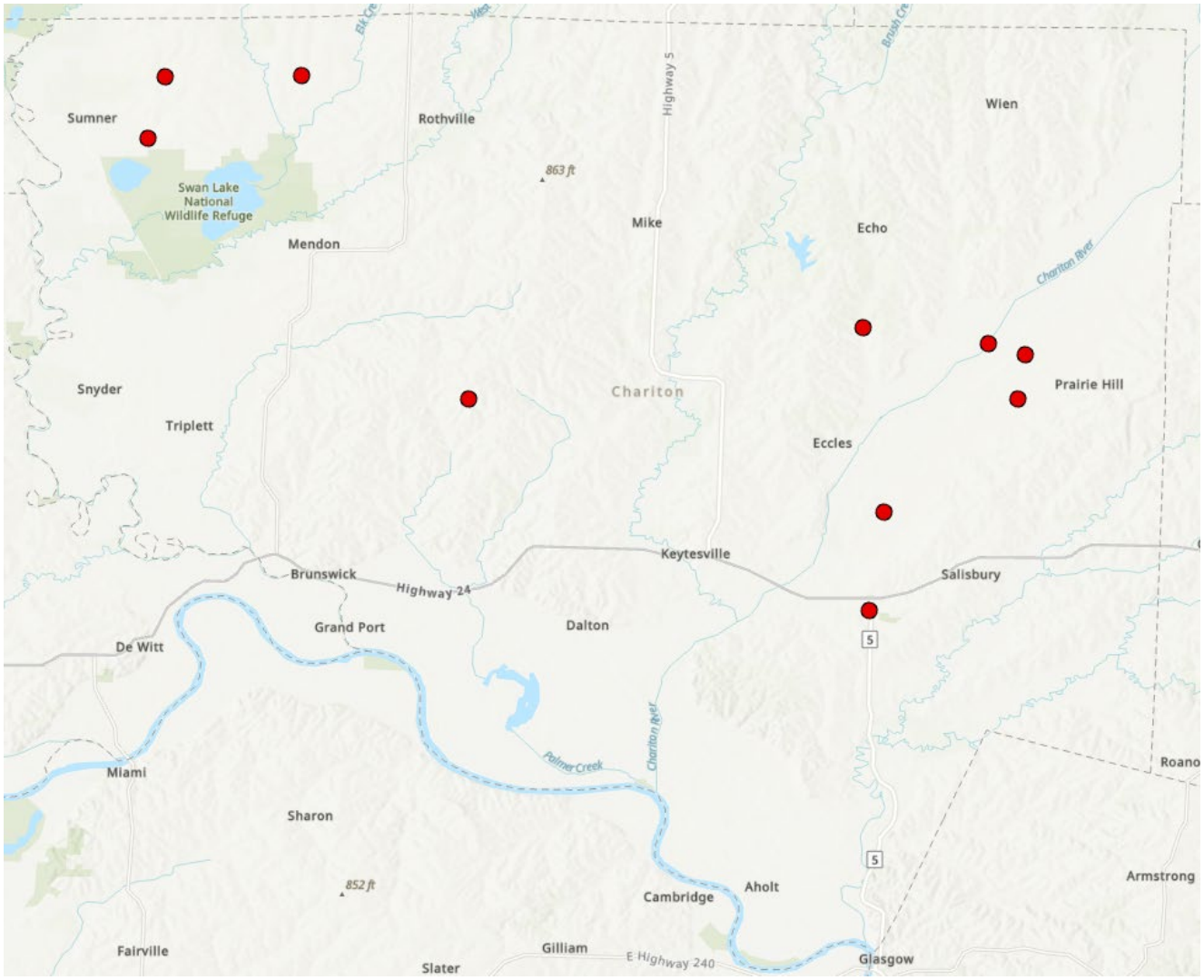


Figure 3.2. Chariton County Structurally Deficient Bridges or Scour Critical Bridges



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.

Table 3.10. Threatened and Endangered Species in Chariton County

Common Name	Scientific Name	Status
Mammals		
Gray Bat	Myotis Grisescens	Endangered
Indiana Bat	Myotis Sodalis	Endangered
Northern Long-Eared Bat	Myotis Septentrionalis	Threatened
Tricolored Bat	Perimyotis Subflavus	Proposed Endangered
Fish & Insects		
Pallid Sturgeon	Scaphirhynchus Albus	Endangered
Topeka Shiner	Notropis Topeka (=tristis)	Endangered
Monarch Butterfly	Danaus Plexippus	Candidate
Plants		
Eastern Prairie Fringed Orchid	Plantanthera Leucophaea	Threatened
Mead's Milkweed	Asclepias Meadii	Threatened
Red Knot	Calidris Canutus Rufa	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/ and select 'Get Started" > Step '1 Find Location', choose select by state or county and enter the county name, selecting the appropriate community > follow remaining on-screen instructions.

Natural Resources: This Missouri Department of Conservation (MDC) provides a database of lands the MDC owns, leases, or manages for public use. The following table provides the names and locations of parks and conservation areas in the planning area.

Table 3.11. Parks in Chariton County

Park / Conservation Area	Address	Location
Lewis Mill Access	Route KK to Lewis Mill Lane	Near Glasgow, Missouri
Dalton Bottoms Access	Route J south, Namrash Road	South Chariton County
Pine Ridge Lake	Emerald Lane	Salisbury, Missouri
Sterling Price Community Lake	Sterling Ave. to S Lake Lane W	Salisbury, Missouri
Maxwell Taylor Park Pond	Vandiver Ave.	Keytesville, Missouri
Brunswick Access	HWY 24 & Polk St.	Brunswick, Missouri
Helen K. Wiese	Access by boat via Grand River	Chariton County
Yellow Creek Conservation Area	Rte RA west Hog Ridge Ave.	Sumner
Marceline City Lake	Marceline Lake Avenue	Marceline, Missouri
Nannie B. Floyd Memorial Conservation Area	Slater Ave.	NE of Rothville, Missouri
Sumner Access	139 W @ Grand River Bridge	Sumner, Missouri

Source: http://mdc7.mdc.mo.gov/applications/moatlas/AreaList.aspx?txtUserID=guest&txtAreaNm=s
The best source for park information is usually county and community websites.

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 3.12. Chariton County Properties on the National Register of Historic Places

Property	Address	City	Date Listed
Hill Homestead/House of Seven Hills	100 West North St.	Keytesville	7/28/1969
First Presbyterian Church	Corner of Hill and East Streets	Keytesville	11/22/1977
Chariton County Jail and Sheriff's Residence	305 S. Cherry	Keytesville	11/18/1971
Thomas Fabrishous and Sara A., House	302 E. 2nd St.	Salisbury	6/24/1999
Locust Hill/ McGruder Estate	E. of Brunswick on SR Y	Brunswick	1/9/1980

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

Economic Resources: The following table identifies major non-government employers in Chariton County.

Table 3.13. Major Non-Government Employers in Chariton County

Employer Name	Main Locations	Product or Service	Employees
Brunswick Nursing Home	Brunswick	Long Term Care	20
Agri Services	Brunswick	River Terminal	12
Rickett's Farm Service	Salisbury	Agriculture Services	22
Nutrien Ag Solutions	Keytesville	Agriculture Services	22
Ray-Carroll	Brunswick	Agriculture Services	16
Enbridge/Platte Pipeline	Salisbury	Oil Pipeline	20
Evergy	Keytesville	Electric Provider	13
Two Rivers Cattle	Triplett	Feedlot	12
Scheiderer Excavating	Salisbury	Heavy Equipment Operation	10+
Pipestone		Hog Confinement	10+
Abeln Farms		Agriculture	10+

Source: Data Collection Questionnaires; local Economic Development Commissions

Agriculture: The following information was obtained from the 2022 Census of Agriculture for Chariton County.

Chariton County is a region with a strong agricultural presence, including livestock production such as cattle, poultry, and hogs. According to the latest US Census data of 2020 a total of 372,047 acres are currently classified as farmland. There are currently 954 farms in Chariton County with an average size of 390 acres. Individuals employed or earning a living in the agriculture industry is currently 1,638. It is notable that 92% of the farms in Chariton County are family farms and only 1% sell directly to consumers.

Table 3.14. Agriculture-Related Jobs in Chariton County

Farm Workers Sex		Farm Workers Age		
Male	Female	<35	35-64	65+
1,088	550	142	788	708

Source: USDA Census of Agriculture 2022

Table 3.15. Top Crops in Acres in Chariton County

Soybeans for Beans	Corn for Grain	Forage (hay, haylage)	Wheat for Grain	Corn for Silage or Greenchop
126,637	61,221	36,722	3,158	976

Source: USDA Census of Agriculture 2022

Table 3.16. Sales of Livestock, Poultry, & Products Produced in Chariton County by ($1,000)

Cattle & Calves	Hogs & Pigs	Sheep, goats, wool, mohair, milk	Poultry and Eggs
$22,796	$23,601	$320	$94

Source: USDA Census of Agriculture 2022

Figure 3.3 **2022 Census of Agriculture for Chariton County (pg. 1)**

2022 CENSUS OF AGRICULTURE *County Profile*





Chariton County Missouri

Total and Per Farm Overview, 2022 and change since 2017

	2022	% change since 2017
Number of farms	954	-3
Land in farms (acres)	372,047	-4
Average size of farm (acres)	390	-1
Total	($)	
Market value of products sold	202,303,000	+24
Government payments	5,678,000	+11
Farm-related income	8,596,000	-13
Total farm production expenses	150,068,000	+20
Net cash farm income	66,509,000	+25
Per farm average	($)	
Market value of products sold	212,057	+28
Government payments [a]	12,211	+27
Farm-related income [a]	18,290	0
Total farm production expenses	157,304	+24
Net cash farm income	69,716	+29

1 Percent of state agriculture sales

Share of Sales by Type (%)

Crops	77
Livestock, poultry, and products	23

Land in Farms by Use (acres)

Cropland	265,889
Pastureland	50,133
Woodland	27,924
Other	28,101

Acres irrigated: 4,886
1% of land in farms

Land Use Practices (% of farms)

No till	23
Reduced till	17
Intensive till	21
Cover crop	9

Farms by Value of Sales

	Number	Percent of Total [b]
Less than $2,500	306	32
$2,500 to $4,999	42	4
$5,000 to $9,999	83	9
$10,000 to $24,999	89	9
$25,000 to $49,999	112	12
$50,000 to $99,999	84	9
$100,000 or more	238	25

Farms by Size

	Number	Percent of Total [b]
1 to 9 acres	21	2
10 to 49 acres	178	19
50 to 179 acres	353	37
180 to 499 acres	213	22
500 to 999 acres	87	9
1,000+ acres	102	11

USDA United States Department of Agriculture
National Agricultural Statistics Service
www.nass.usda.gov/AgCensus

Figure 3.4. 2022 Census of Agriculture for Chariton County (pg. 2)

Chariton County
Missouri, 2022
Page 2

2022 CENSUS OF AGRICULTURE *County Profile*

Market Value of Agricultural Products Sold

	Sales ($1,000)	Rank in State [c]	Counties Producing Item	Rank in U.S. [c]	Counties Producing Item
Total	**202,303**	**22**	**114**	**808**	**3,078**
Crops	**155,453**	**15**	**114**	**531**	**3,074**
Grains, oilseeds, dry beans, dry peas	152,077	13	109	399	2,917
Tobacco	-	-	2	-	267
Cotton and cottonseed	-	-	7	-	647
Vegetables, melons, potatoes, sweet potatoes	(D)	86	112	(D)	2,831
Fruits, tree nuts, berries	(D)	(D)	112	(D)	2,711
Nursery, greenhouse, floriculture, sod	-	-	104	-	2,660
Cultivated Christmas trees, short rotation woody crops	-	-	36	-	1,274
Other crops and hay	3,051	28	114	1,066	3,035
Livestock, poultry, and products	**46,850**	**44**	**114**	**1,139**	**3,076**
Poultry and eggs	94	69	113	1,377	3,027
Cattle and calves	22,796	39	114	763	3,047
Milk from cows	-	-	84	-	1,770
Hogs and pigs	23,601	19	111	292	2,814
Sheep, goats, wool, mohair, milk	320	25	111	617	2,967
Horses, ponies, mules, burros, donkeys	(D)	86	113	(D)	2,907
Aquaculture	-	-	36	-	1,190
Other animals and animal products	(D)	82	106	(D)	2,909

Producers [d]	**1,638**
Sex	
Male	1,088
Female	550
Age	
<35	142
35 – 64	788
65 and older	708
Race	
American Indian/Alaska Native	17
Asian	3
Black or African American	5
Native Hawaiian/Pacific Islander	1
White	1,597
More than one race	15
Other characteristics	
Hispanic, Latino, Spanish origin	2
With military service	189
New and beginning farmers	399

Percent of farms that:

Have internet access	73
Farm organically	-
Sell directly to consumers	1
Hire farm labor	20
Are family farms	92

Top Crops in Acres [e]

Soybeans for beans	126,637
Corn for grain	61,221
Forage (hay/haylage), all	36,722
Wheat for grain, all	3,158
Corn for silage/greenchop	976

Livestock Inventory (Dec 31, 2022)

Broilers and other meat-type chickens	66
Cattle and calves	38,898
Goats	589
Hogs and pigs	46,582
Horses and ponies	409
Layers	653
Pullets	84
Sheep and lambs	1,035
Turkeys	36

[a] Average per farm receiving. [b] May not add to 100% due to rounding. [c] Among counties whose rank can be displayed. [d] Data collected for a maximum of four producers per farm. [e] Crop commodity names may be shortened; see full names at www.nass.usda.gov/go/cropnames.pdf. [f] Position below the line does not indicate rank. (D) Withheld to avoid disclosing data for individual operations. (NA) Not available. (Z) Less than half of the unit shown. (-) Represents zero.

USDA is an equal opportunity provider, employer, and lender.

3.3 LAND USE AND DEVELOPMENT

3.3.1 Development Since Previous Plan Update

The population data listed in **Table 3.17** below shows a significant and steady loss of population in most of the communities during the period between 2010 and the ACS 2022 Five-Year Estimate. The City of Mendon and the Village of Dalton, according to the ACS 2022 show a significant increase in population during the same time. However, these are estimates obtained from the Census, anecdotal accounts do not support these estimates.

Table 3.17. Chariton County Population Change, 2010-2022

Jurisdiction	Total Population 2010	Total Population 2022	2010-2022 # Change	2010-2022 % Change
Chariton County	7,871	7,417	-454	-5.77%
City of Brunswick	1,182	856	-326	-27.6%
City of Keytesville	510	384	-126	-24.7%
City of Mendon	142	203	61	42.9%
City of Rothville	81	70	-11	-13.6%
City of Salisbury	1,684	1,430	-254	-15.1%
City of Triplett	31	12	-19	-61.3%
Village of Dalton	13	55	42	323.1%

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. The following table (**Table 3.18**) provides the change in numbers of housing units in the planning area from 2010 to 2022. The American Community Survey 2022 5-year Estimates was used as the most recent data available. This information was compared to the 2010 decennial census to show the change in both number (#) and percent (%).

Table 3.18. Change in Housing Units, 2010-2022 in Chariton County

Jurisdiction	Housing Units 2010	Housing Units 2022	2010-2022 # Change	2000-2022 % Change
Chariton County	4,226	3,819	-407	-9.6%
City of Brunswick	634	453	-181	-28.5%
City of Keytesville	330	253	-77	-23.3%
City of Mendon	89	108	19	21.3%
City of Rothville	51	28	-23	-45.1%
City of Salisbury	834	765	-69	-8.3%
City of Triplett	22	14	-8	-36.4%
Village of Dalton	42	15	-27	-64.3%

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

There has been little in the way of development in Chariton County and the participating jurisdictions since the last update of the plan.

3.3.2 Future Land Use and Development

The population of Chariton County and participating jurisdictions has been declining steadily for at least the last ten years. Due to a lack of population, there has been little in the way of new developments. No new development is expected to occur in known hazard areas, and no new facilities or infrastructure is planned for construction within the next five years.

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.

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, use maps 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 should 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.
- **Probability of Future Occurrence:** The frequency of recorded past events is used to estimate the likelihood of future occurrences. Probability can 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 and the Impacts of Climate Change:**

  This section presents potential changes to each hazard that are expected to occur due to variations in environment and climate. Predictions about the changes are contingent upon available research; therefore, some hazards have limited or unknown information. It is difficult to predict the scope, severity, and pace of changing future conditions and the impacts posed by more intense storms, frequent heavy participation, heat waves, drought, and extreme flooding; none-the-less, according to the FEMA Climate Change Adaptation Policy Statement, they can significantly change the probabilities and magnitudes of hazards faced by communities.

  In addition to the probability of future occurrences, changing future conditions and the impact of climate change must be 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 due 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 2023 State Hazard Mitigation Plan Update. With the 2023 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 2023 State Plan Update.

The vulnerability assessments in the Chariton 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:**

  This section will provide a summary of each jurisdiction's vulnerability to the identified hazards. This overall summary of vulnerabilities will identify structures, systems, populations, and/or other community assets as defined by the community that are susceptible to damage and loss for hazard events.

- **Potential Losses to Existing Development:**

  This section will include the potential impacts of the hazard for each participating jurisdiction. This will include types and numbers of buildings, critical facilities, etc. Impact means the consequences and effect the hazard could pose to the jurisdiction and its assets. The assets are determined by the community and include, for example, people, structures, facilities, systems, capabilities, and/or activities that have value to the community. For example, impacts could be described by referencing historical disaster impacts and/or an estimate of potential future losses.

- **Previous and Future Development:**

  This section will include information on how changes in development have impacted the community's vulnerability to this hazard. In this section, there will be a description of how any changes that occurred in known hazard prone areas since the previous plan have increased or decreased.

- **Hazard Summary by Jurisdiction:**

  For hazard risks that vary by jurisdiction, this section will include an overview of the variation and the factual basis for that variation.

Problem Statements

In each problem statement, the hazard analysis will conclude with a summary of the problems created by the hazard in the planning area, and possible ways to resolve those problems. This will include jurisdiction-specific information in those cases where the risk varies across the planning area. The focus of the problem statements sub-section is to synthesize the "problems" revealed through the risk assessment and then through the process of updating the mitigation strategy, develop mitigation actions that are aimed at "solving" the identified problems. Problem statements should be as specific as possible. Problems that are specific to jurisdictions or to specific assets or areas of the planning area that are problematic should be addressed. The goal of this is to prompt the development of specific mitigation actions that could be undertaken to potentially solve or lessen the effects of hazards.

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 3.4.3** and Section **3.4.2** 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 is most likely to occur in Special Flood Hazard Areas (SFHAs). 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.

Riverine flooding is most likely to occur in SFHAs. The following maps are from the most recent information from FEMA's National Flood Layer of Chariton County. The Key in **Figure 3.5** is the flood map key for all jurisdiction's flood maps.

Figure 3.5. Flood Map Key

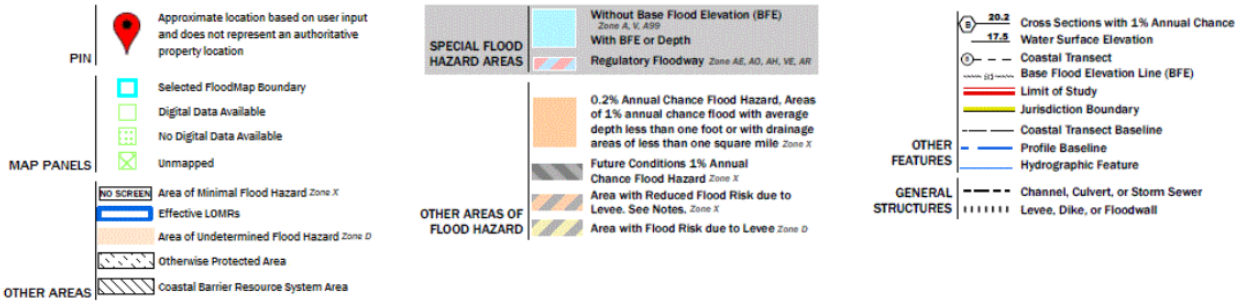


Figure 3.6. City of Brunswick (west)



Figure 3.7. City of Brunswick (east)



Figure 3.8. City of Keytesville (west)



Figure 3.9. City of Keytesville (east)



Figure 3.10. City of Mendon



Figure 3.11. City of Salisbury (northwest)

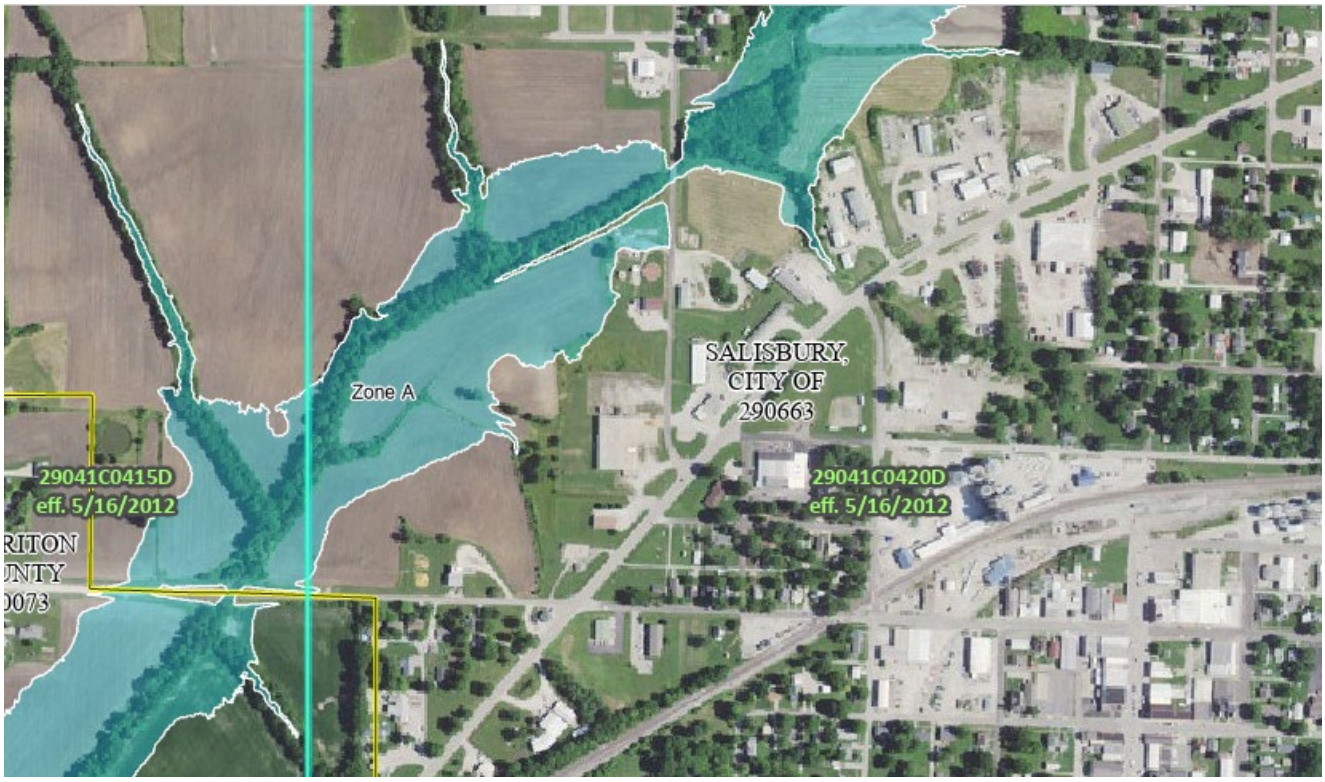


Figure 3.12. City of Salisbury (northeast)



Figure 3.13. City of Salisbury (southwest)



Figure 3.14. City of Salisbury (southeast)



Figure 3.15. City of Sumner



Figure 3.16. City of Triplett (north)



Figure 3.17. City of Triplett



Figure 3.18. Village of Dalton



Figure 3.19. Village of Rothville

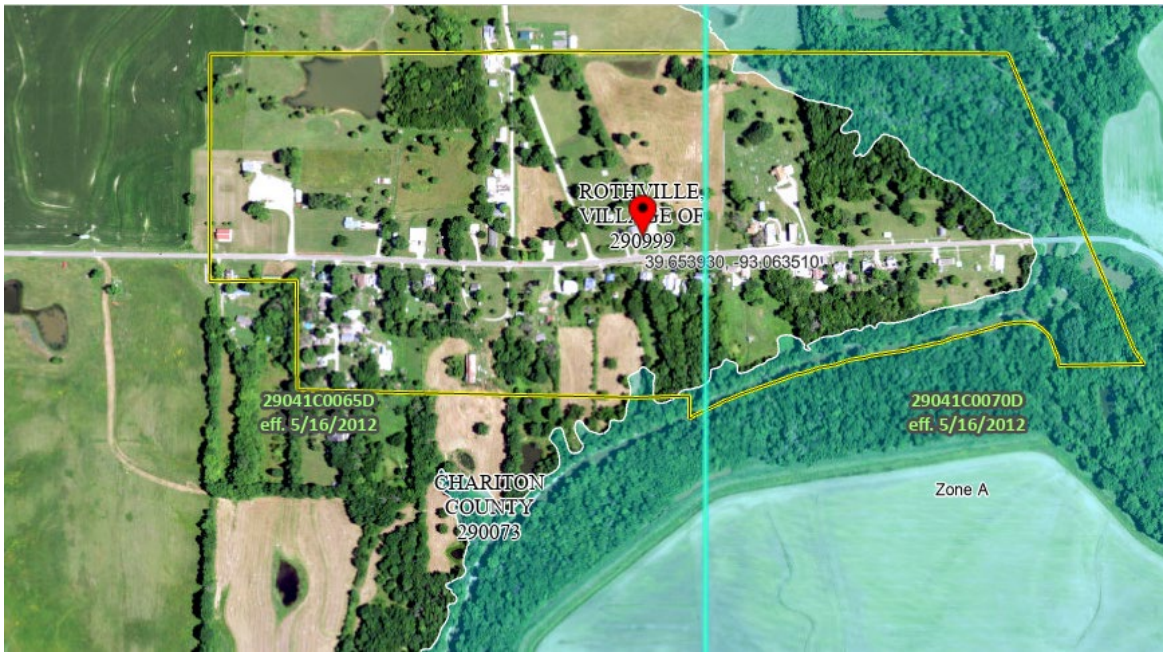


Table 3.19. Chariton County NCEI Flood Events by Location, 1999-2024

Location	# of Events
Unincorporated Chariton County	91
-Unincorporated County (unspecified)- 81 flood events	
-Unincorporated County (Cunningham)- 2 flood events	
-Unincorporated County (Prairie Hills)- 8 flood events	
City of Brunswick	8
-City of Brunswick (unspecified) 4 flood events	
-City of Brunswick ARPT 4 flood events	
Village of Dalton	1
-Village of Dalton (unspecified) 1 flood event	
City of Rothville	2
-City of Rothville (unspecified) 2 flood events	
City of Salisbury	1
-City of Salisbury (unspecified) 1 flood event	
City of Sumner	8
-City of Sumner (unspecified) 8 flood events	
Total Flood Events	**111**

Source: National Centers for Environmental Information, 4/2024

Table 3.20. Chariton County NCEI Flash Flood Events by Location, 1999-2024

Location	# of Events
City of Rothville	2
Salisbury	2
Mendon	1
Sumner	2
Keytesville	1
Unincorporated Chariton County	0
-Musselfork	1
-Cunningham	1
Total Flash Flood Events	**10**

Source: National Centers for Environmental Information, 3/25/2024

Strength/Magnitude/Extent

Missouri has a long and active history of flooding over the past century, according to the 2023 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.

When roads and bridges are inundated by water, damage can occur as the water scours materials around bridge abutments and gravel roads. Floodwaters have been known to cause erosion undermining roadbeds. In some instances, steep slopes that are saturated with water may cause mud or rockslides onto roadways. These types of damage 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.

National Flood Insurance Program (NFIP) Participation

The following table illustrates the participants in the NFIP. Participation in the NFIP has the goal of reducing the impact of flooding on private and public structures. The NFIP does so by providing affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. The jurisdictions that participate in the NFIP in Chariton County are listed below, the floodplain ordinance that each jurisdiction has currently can be found in Appendix E, if they were provided for the plan. The City of Sumner and the City of Brunswick did not provide a copy of their floodplain ordinance for inclusion in the plan.

- Chariton County:
- City of Brunswick: (floodplain ordinance not included)
- City of Keytesville:
- City of Salisbury:
- City of Sumner: (floodplain ordinance not included)

Table 3.21. NFIP Participation in Chariton County

Community ID #	Community Name	NFIP Participant (Y/N/Sanctioned)	Current Effective Map Date	Regular-Emergency Program Entry Date
290074	City of Brunswick	Y	5/16/2012	2/2/1983
290073	Chariton County	Y	5/16/2012	12/3/1987
290464	Village of Dalton	Y	5/16/2012	10/10/2003
290723	City of Keytesville	Y	5/16/2012	7/4/1988
290663	City of Salisbury	Y	5/16/2012(M)	3/1/2016
290076	City of Sumner	Y	5/16/2012	12/27/1993
290999	City of Rothville	N	5/16/2012	5/16/2013
295274	City of Triplett	N	5/16/2012	5/16/2013

Source: NFIP Community Status Book, 3/21/2024; PIVOT (information from STATE) Community Status Book | FEMA.gov;
M= No elevation determined – all Zone A, C, and X: NSFHA = No Special Flood Hazard Area; E=Emergency Program

Table 3.22. NFIP Policy and Claim Statistics as of 3/2024

Community Name	Policies in Force	Insurance in Force	Closed Losses	Total Payments
City of Brunswick	13	$1,512,000.00	36	$325,142.33
City of Keytesville	0	$0	0	$0
City of Mendon	0	$0	0	$0
City of Rothville	0	$0	0	$0
City of Salisbury	0	$0	0	$0
City of Sumner	0	$0	1	$25,000.00
City of Triplett	0	$0	0	$0
Village of Dalton	0	$0	0	$0
Chariton County	12	$2,034,000.00	25	$806,180.16

Source: NFIP Community Status Book, 3/21/2024; PIVOT (information from STATE), Community Status Book | FEMA.gov *Closed Losses are those flood insurance claims that resulted in payment. Loss statistics are for the period from 3/2023 to 3/2024

According to the information obtained from SEMA, there was one closed loss in the City of Sumner and 25 closed losses in the unincorporated parts of Chariton County. The City of Brunswick has had the most closed losses with a total of 36. Additionally, Brunswick also has had the most insurance paid on flooding with a total of $325,142.33. The total insurance in force within Chariton County is $2,034,000.00.

The jurisdictions that participate in the NFIP have adopted Floodplain Ordinances that establish regulations for construction, development, and substantial improvements within floodplain areas. These regulations mandate the acquisition of floodplain development permits and elevation certificates to ensure that all projects comply with these standards. Records and documentation for all floodplain development is kept in adherence to FEMA regulations and the designated floodplain administrator of each jurisdiction maintains these records.

Substantial improvements/ substantial damage provisions are implemented after an event through the Floodplain Ordinance of participating jurisdictions. Each jurisdiction that participates in the NFIP has addressed the specific requirements of FEMA regarding substantial damage/substantial improvement provisions and development in SFHA. The Floodplain Ordinances that were made available for inclusion in this plan can be found in Appendix E.

Currently, the City of Triplett and the City of Rothville are not participants in the NFIP, these jurisdictions did not participate in the Hazard Mitigation Plan Update, so no further action will be taken to ensure compliance.

Repetitive Loss/Severe Repetitive Loss Properties

Repetitive Loss Properties are those properties with at least two flood insurance payments of $1,000 or more in a 10-year period. According to the Flood Insurance Administration, jurisdictions included in the planning area have a combined total of 3 repetitive loss properties. As of 3/18,2024, 0 properties have been mitigated, leaving 4 un-mitigated repetitive loss properties.

Table 3.23. Chariton County Repetitive Loss Properties

Jurisdiction	# of Properties	Type of Property	# Mitigated	Building Payments	Content Payments	Total Payments	Average Payment	# of Losses
Chariton County	2	Residential	0	$53,732.98	$2,991.45	$46,991.66	$11,747.91	4
Brunswick	1	Residential	0	-	$6,741.32	$6,741.32	$2,247.11	3

Source: Flood Insurance Administration as of 3/18,2024

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 no Severe Repetitive Loss (SRL) properties in Chariton County. This information was received on 3/18/2024.

Previous Occurrences

Flood events, as reported in the NOAA (National Oceanic and Atmospheric Administration) storm events database were reviewed. There were 121 flood events in the planning area between 2003 and 2023. Of these 10 were reported as flash flood events and 111 were reported as riverine events.

In addition, Chariton County has been included in 17 Presidential disaster declarations that included flooding between 1973 and 2023. Historical accounts of flooding events are recorded below. Sources include the NOAA database, FEMA, local news, and planning committee member accounts.

Table 3.24. NCEI Chariton County Flash Flood Events Summary, 2003 to 2023

Year	# of Events	# of Deaths	# of Injuries	Property Damage	Crop Damages
2003	1	0	0	0	0
2005	2	0	0	0	0
2007	2	0	0	0	0
2008	1	0	0	0	0
2009	1	0	0	0	0
2015	1	0	0	0	0
2015	1	0	0	0	0
2017	1	0	0	0	0

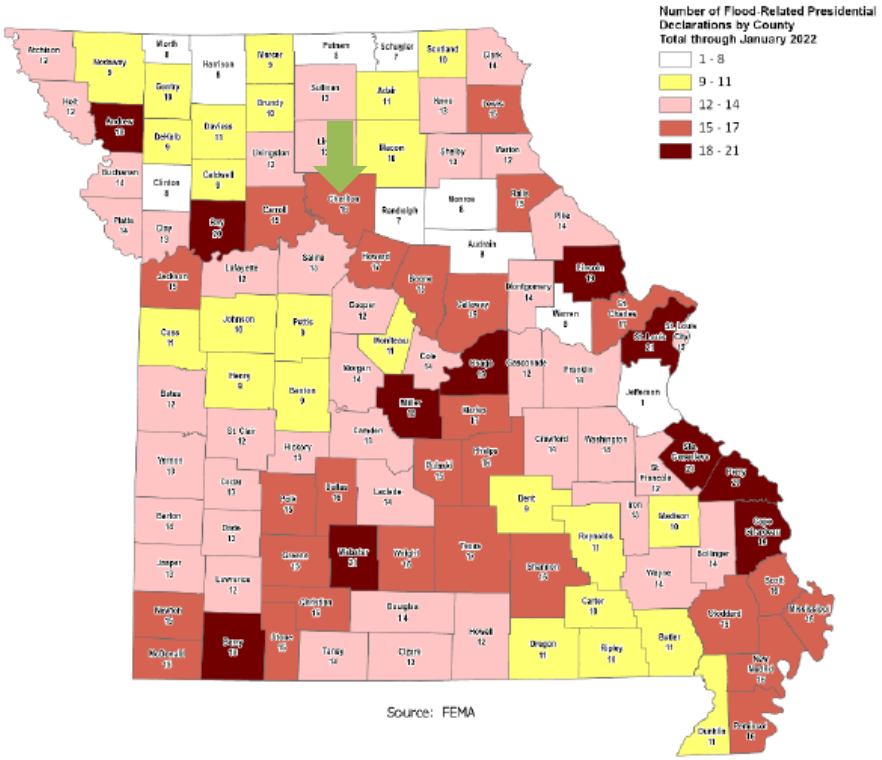
Source: Storm Events Database-Search Results; National Centers for Environmental Information (noaa.gov)

Table 3.25. NCEI Chariton County Riverine Flood Events Summary, 2003-2023

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2004	10	0	0	0	0
2005	3	0	0	0	0
2006	1	0	0	0	0
2007	5	0	0	0	$100,000
2008	16	0	0	0	$250,000
2017	1	0	0	0	0
2019	4	0	0	0	0
2020	2	0	0	0	0

Source: Storm Events Database-Search Results; National Centers for Environmental Information (noaa.gov)

Figure 3.20. Number of Flood-Related Presidential Declarations for Chariton County



Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.26. Flooding Disaster Declarations in Chariton County (1973-2024)

Disaster Number	Declaration Date	Incident Subcategory	Information
372	4/19/1973	Severe Storms	Heavy Rains, Tornadoes, & Flooding
407	11/1/1973	Flood	Severe Storms & Flooding
995	7/9/1993	Flood	Severe Storms & Flooding
1054	6/2/1995	Severe Storm	Severe Storms, Tornadoes, Hail, & Flooding
1253	10/14/1998	Severe Storm	Severe Storms, Flooding, & Tornadoes
1412	5/6/2002	Severe Storm	Severe Storms, Tornadoes, & Flooding

1463	5/6/2003	Severe Storm	Severe Storms, Tornadoes, & Flooding
1524	6/11/2004	Severe Storm	Severe Storms, Tornadoes, & Flooding
1708	6/11/2007	Severe Storm	Severe Storms & Flooding
1773	6/25/2008	Severe Storm	Severe Storms & Flooding
1809	11/13/2008	Severe Storm	Severe Storms, Flooding, & A Tornado
1934	8/17/2010	Severe Storm	Severe Storms, Flooding, & Tornadoes
3325	6/30/2011	Flood	Flooding
4130	7/18/2013	Severe Storm	Severe Storms, Straight-Line Winds, Flooding, & Tornadoes
4238	8/7/2015	Severe Storm	Severe Storms, Tornadoes, Straight-Line Winds, & Flooding
4435	5/20/2019	Flood	Severe Storms, Straight-Line Winds, & Flooding
4451	7/9/2019	Severe Storm	Severe Storms, Tornadoes, & Flooding
4612	9/1/2021	Severe Storm	Severe Storms, Straight-Line Winds, Tornadoes, & Flooding

Source: FEMA.gov/data-visualization/disaster-declarations-states-and-counties

Table 3.27. Crop Insurance Claims Paid in Chariton County due to Flood: 2013-2024

Crop Year	Crop Name	Cause of Loss	Insurance Paid ($)
2013	Corn	Flood	$695,039.80
	Soybeans		$12,370.00
	Wheat		$10,518.50
2014	Corn	Flood	$151,649.78
	Soybeans		$830,026.28
2015	Corn	Flood	$28,502.22
	Soybeans		$186,898.00
	Wheat		$26,553.00
2016	Corn	Flood	$9,089.06
	Soybeans		$3,817.00
2017	Corn	Flood	$189,754.05
	Soybeans		$822,880.21
2018	Corn	Flood	$108,603.38
	Soybeans		$68,164.00
2019	Corn	Flood	$6,558,083.54
	Soybeans		$2,496,932.71
	Wheat		$22,868.87
2020	Corn	Flood	$441,536.43
	Soybeans		$93,104.63
2021	Corn	Flood	$1,237,304.50
	Soybeans		$1,142,049.00
	Wheat		$10,969.00
2022	Soybeans	Flood	$9,520.00
2023	Soybeans	Flood	$15,239.00
2024	Corn	Flood	$274,014.75
	Soybeans		$32,155.00
Total			**$15,477,642.71**

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

It is worth noting that Chariton County had the second highest amount of Crop Insurance Losses in the state of Missouri between 2017 and 2021 out of all counties in the state. This data was obtained

from the Missouri State Hazard Mitigation Plan 2023.

Table 3.28. NCEI Chariton County Flash Flood Events Summary, 2003-2024

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2003	1	0	0	0	0
2005	2	0	0	0	0
2007	2	0	0	0	$100,000
2008	1	0	0	0	$250,000
2009	1	0	0	0	0
2015	1	0	0	0	0
2017	1	0	0	0	0

Source: NCEI, data accessed 3/2024

Table 3.29. NCEI Chariton County Riverine Flood Events Summary, 2003-2024

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2004	10	0	0	0	0
2005	3	0	0	0	0
2006	1	0	0	0	0
2007	5	0	0	0	0
2008	16	0	0	0	0
2017	1	0	0	0	0
2019	4	0	0	0	0
2020	2	0	0	0	0

Source: NCEI, 3/2024

3/5/2004
The Grand River near Chillicothe crested at 26.67 ft., or 2.67 feet above flood stage. The Grand River near Sumner crested at 32.86 feet, or 6.86 feet above flood stage. The Grand River near Brunswick crested at 19.60 feet, or 0.60 feet above flood stage.

5/20/2004
The Platte River near Agency crested at 22.57 feet, or 2.57 feet above flood stage. The Platte River near Sharps Station crested at 27.77 feet, or 1.77 feet above flood stage. The Little Platte River near Smithville crested at 28.18 feet, or 1.18 feet above flood stage. The Little Blue River near Lake City crested at 22.24 feet, or 4.24 feet above flood stage. Big Creek near Blairstown crested at 24.17 feet, or 4.17 feet above flood stage. The South Grand River near Urich crested at a record 30.20 feet, or 6.20 feet above flood stage. The Blackwater River near Valley City crested at an estimated 26.80 feet, or 4.80 feet above flood stage. Blackwater River near Blue Lick crested at 25.18 feet, or 1.18 feet above flood stage. The Petite Saline Creek near Boonville crested at 19.75 feet, or 3.75 feet above flood stage. Moniteau Creek near Fayette crested at an estimated 17.00 feet, or 1 foot above flood stage. Grand River near Sumner crested at 26.78 feet, or 0.78 of a foot above flood stage.

5/25/2004
The 102 River in Maryville crested at 19.0 feet, or 1-foot above flood stage. The 102 River in Rosendale crested at 19.38 feet, or 1.38 feet above flood stage. The Platte River near Agency crested at 22.85 feet, or 2.85 feet above flood stage. The Grand River at Chillicothe crested at 24.51 feet, or 0.51 of a foot above flood stage. The Grand River near Sumner crested at 31.21 feet, or 5.21 feet above flood stage. The Missouri River at Napolean crested at 18.49 feet, or 1.49 feet. The Petite Saline Creek near Boonville crested at 18.92 feet, or 2.92 feet above flood stage.

5/26/2004

The Missouri River near Miami crested at 19.65 feet, or 1.65 feet above flood stage. The Missouri River at Waverly crested at 20.98 feet, or 0.98 of a foot above flood stage. The Grand River near Brunswick crested at an estimated 19.00 feet, or 1 foot above flood stage. The Platte River near Sharps Station crested at 26.41 feet, or 0.41 of a foot above flood stage. The Platte River at Platte City crested at 20.30 feet, or 0.30 of a foot above flood stage.

5/30/2004
The Grand River near Brunswick crested at 21.60 feet, or 2.60 feet above flood stage. The Grand River near Sumner crested at 33.92 feet, or 7.92 feet above flood stage. The Grand River in Chillicothe crested at 30.53 feet, or 6.53 feet above flood stage. The Grand River in Gallatin crested at 29.82 feet, or 3.82 feet above flood stage. The Platte River near Agency crested at 24.96 feet, or 4.96 feet above flood stage. The Missouri River at Saint Joseph crested at 20.40 feet, or 3.40 feet above flood stage. The Grand River near Pattonsburg crested at 28.05 feet, 3.05 feet above flood stage. The 102 River in Rosendale crested at 19.60 feet, or 1.60 feet above flood stage.

8/30/2004
The Chariton River near Prairie Hill crested at 19.55 feet, or 4.55 feet above flood stage.

2/15/2005
The Grand River near Brunswick crested at 19.45 feet, or 0.45 feet above flood stage.

4/12/2005
The Chariton River near Prairie Hill crested at 17.59 feet, or 2.59 feet above flood stage.

6/13/2005
The Grand River near Brunswick crested at 20.30 feet, or 1.30 feet above flood stage.

5/2/2006
The Grand River near Brunswick crested at 20.30 feet, or 1.30 feet above flood stage.

2/25/2007
A storm system brought locally heavy rain, which fell on already saturated soil from previous snow and ice melt. This resulted in flooding in portions of central Missouri, February 24th through February 26th. It included the lower Grand, Chariton, Platte, and Blackwater Rivers, and Moniteau and Petite Saline Creeks.

4/26/2007
Thunderstorms with very heavy rains caused minor to moderate river flooding over portions of northern and central Missouri, April 25th through April 27th.

5/7/2007
A slow-moving cold front and upper-level storm system, combined to bring severe thunderstorms and heavy rains to the region, late on May 5th through May 6th, 2007. Several rounds of heavy rain were observed across northwest Missouri, from near St. Joseph, north to Tarkio, and east to Bethany. Rainfall amounts of from 5 to 9 inches were observed in this area. The heavy rains caused many rivers to flood, with levels not observed since the great flood of 1993. In fact, the Tarkio River near Fairfax had its highest crest ever.

3/2/2008-3/7/2008
Heavy rains were observed over portions of Missouri, around the 1st and 2nd of March, as a strong upper-level storm system moved across the region. This resulted in minor to moderate flooding of area creeks and rivers.

3/18/2008
A powerful storm system, that originated over Arizona and New Mexico, allowed a substantial amount of Gulf of Mexico moisture, to surge north into the center of the United States. Meanwhile, a frontal boundary had stalled across southern Missouri, allowing this moisture to be lifted into central Missouri, in the form of heavy showers and thunderstorms, March 16 and 17, 2008. Many locations received in excess of one inch of rainfall, with a stripe of 2 to 3 inches of accumulated rainfall, across central Missouri. This led to expansive flooding of area streams and rivers, with numerous state and county roads closed due to high water.

4/9/2008
The Grand River near Sumner crested at 34.48 feet, or 10.48 feet above flood stage.

4/10/2008
The Chariton River near Prairie Hill crested at 16.44 feet, or 1.44 feet above flood stage.

4/11/2008
The Grand River near Brunswick crested at 19.51 feet, or 0.51 feet above flood stage.

4/18/2008-4/22/2008
Rain caused several rivers to flood between the 18th and 22nd of April.

5/24/2008
A thunderstorm produced one report of hail in Atchison County Missouri, May 24, 2008. Also, there were several thunderstorms with very heavy rains in the Grand River basin, and this caused the Grand River to go in flood near Sumner.

7/25/2008-7/31/2008
An unusual late July weather pattern set the stage for extreme rainfall amounts and major flooding across north central and northeast Missouri, on July 24th and 25th. Hot and humid air continued to feed north across the eastern Plains into western Missouri. Meanwhile, a series of upper air disturbances had brought rainfall to the Mississippi Valley region and northeast Missouri, keeping temperatures much cooler. This reinforced a strong stationary front, that was draped from northeast into central Missouri on the 24th. During the overnight hours, a stream of strong winds developed several thousand feet above the ground, known as a nocturnal low-level jet. Typically, these rivers of fast-moving air lead to nighttime thunderstorm complexes in May and June, but diminish as we head into the summer months. However, the weather pattern resembled one more typical of late Spring. These winds transported very warm and moist air into the stationary front, leading to explosive thunderstorm development along the Iowa border. Thunderstorms then tracked southeast along the front, while continuing to regenerate further northwest. The result was extreme rainfall amounts, widespread flash flooding, and record river flooding. Rainfall amounts of 6 to locally more than 12 inches fell, with Unionville to Kirksville the hardest hit. Extreme rainfall amounts continued along the Highway 63 corridor, as far south as Moberly. The Chariton River near Novinger crested at 28.44 feet, or its third highest crest ever. The Chariton River near Prairie Hill crested at its highest level ever, at 23.27 feet.

12/27/2008-12/31/2008
An abnormally warm and humid air mass spread across Kansas and Missouri on December 26, 2008. Thanks in part to a large and powerful storm system which developed across the Great Basin. Temperatures in the afternoon of the 26th soared to record levels in the upper 60s. By the evening hours of the 26th, the powerful upper-level storm system was beginning to bear down on the Central Plains. A potent cold front was swinging through Nebraska and Iowa, with the development of thunderstorm activity, across much of eastern Kansas and west central Missouri. This thunderstorm activity, while strong to severe, caused little in the way of damage. However, it did produce flash

flooding in areas from Warrensburg, Missouri to Moberly, Missouri. After midnight, a large line of thunderstorms began to develop further to the west, along the cold front stretching from central Kansas into northwestern Missouri. Additional thunderstorms developed in areas near Emporia, Kansas by 3 am on the 27th. These thunderstorms would go on to produce widespread wind damage, as they lifted northeast into the Kansas City Metropolitan area, and areas to the south and east. Heavy rains of one to two inches were common across the area, and combined with the frozen ground, led to rapid runoff and flash flooding. Several rivers also went above flood stage.

4/5/2017
State Route E was closed due to flooding by nearby creeks.

4/1/2019
Ongoing flooding along the Missouri River continued through the month of April and into May. Several roads were closed near the banks of the Missouri River. This flooding began in mid-March and due to upstream releases and continued periods of heavy rain the flooding continued into May. Monetary damages are unknown despite the entry indicating 0 dollars of damages.

5/1/2019
Heavy spring rains caused ongoing flooding along the Missouri River to Continue throughout the month. Some locations along the Missouri River experienced major flooding at times during the month. Damage estimates from roads washed out and crop damage are unknown at this time.

5/21/2019
Route E was closed in both directions near Rothville. A line of generally sub-severe thunderstorms moved through the region during the early morning hours on May 21. These storms didn't produce any severe winds or hail, but as they moved east wake low winds produced damage consisting of several tree limbs down as well as power lines and power poles. The storms then went on to produce torrential rains which caused areas of flooding.

6/1/2019
Heavy spring rains caused ongoing flooding along the Missouri River to Continue throughout the month. Some locations along the Missouri River experienced major flooding at times during the month. Damage estimates from roads washed out and crop damage are unknown at this time. Heavy late winter and spring precipitation, mixed with a loaded snowpack caused the Missouri River to flood in March. Consistent heavy rains continued the Missouri River flooding into and through June. Some locations along the Missouri River were in major flood for several weeks as heavy rains continued. While the flooding continued through June, there was some gradual and steady improvement across the Missouri River flood plain by the end of the month.

6/9/2020
State Highway NN was closed due to flooding. State Route O was closed just west of Highway 129 due to flooding.

Probability of Future Occurrence

The probability calculations for both flash and riverine flooding are below. The calculations for probability used the following formula. (Where x=number of reported floods, y=number of years, and z=probability) This was multiplied by 100 to provide the percent chance of the hazard occurring.

$$\frac{x}{y} = z(100) = \%\ chance$$

Flash Flood Probability:

$$\frac{9}{21} = .4286(100) = 42.86$$

The probability of a flash flood event is 42.86% in any given year in Chariton County.

Riverine Flood Probability:

$$\frac{42}{21} = 2(100) = 200$$

The probability of riverine flooding occurring in the planning area indicated that there will be, on average, 2 riverine flood events per year.

Flooding Probability (both flash & riverine):

$$\frac{51}{21} = 2.43(100) = 243$$

The probability of any type of flood occurring in the planning area indicates that there will be, on average, 2.4 flood events per year.

Changing Future Conditions Considerations and the Impact of Climate Change

According to the 2023 Missouri State Hazard Mitigation Plan, "frequency of floods in Missouri is likely to increase," and, "over the last half century, average annual precipitation in most of the Midwest has increased by 5 to 10 percent." Missouri has experienced above average precipitation since 1990. It is likely that the frequency and intensity of rainfall events will increase. As the number of these heavy rain events increase, more flooding and pooling water is to be expected.

Additionally, Chariton County is bordered to the south by the Missouri River, and the Chariton River flows through the county before spilling into the Missouri River. The 2023 Missouri State Hazard Mitigation Plan predicts that flooding will occasionally threaten river navigation and specifically riverfront communities due to greater river flows.

The expected increases in rainfall frequency and intensity are also 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.

These changes in the climate patterns could potentially lead to the development of compounding events that could interact and cause extreme conditions. Other environmental impacts of flooding could include erosion, surface and groundwater contamination, and reduced water quality.

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.

Scour critical bridges were discussed in Section 3.2.2 Critical and Essential Facilities and Infrastructure, maps of the bridge conditions can be found in Figures 3.1 & 3.2 of Section 3.2.2.

Potential Losses to Existing Development

The 2023 Missouri Hazard Mitigation Plan used HAZUS data to analyze the county's vulnerability to flooding. A summary of the information is in the following tables. This information is based on an estimate of damage that could potentially occur during a 1-percent annual chance flood event.

Table 3.30. HAZUS Estimates of Potential Losses for Chariton County

Data From State Plan	Chariton County
Countywide Building Exposure	$1,141,320,794
Structural Damage	$20,926,006
Loss Ratio	1.83%
Contents Loss	$11,988,807
Inventory Loss	$175,072
Total Direct Loss	$33,089,885
Total Income Loss	$66,868
Total Direct & Income Loss	$33,156,753
#HAZUS Building Risk	57
# Substantially Damaged	0
# Displaced People	737
# Shelter Needs	128

Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.31. HAZUS Estimates of potential Loss by Building Type for Chariton County

Residential		Agriculture		Commercial		Education	Government	Industrial	
#	$	#	$	#	$	-	-	#	$
201	$44,663,170	650	$811,096,373	30	$22,541,400	0	0	1	$749,583

Source: *2023 Missouri State Hazard Mitigation Plan*

According to the 2023 Missouri State Hazard Mitigation Plan, the total population affected by flood would be 543 with a "Total Loss – HAZUS Layer" of $879,050,527.

Impact of Previous and Future Development

Any future development in floodplains would increase risk in those areas. For the 6 communities participating in the National Flood Insurance Program, enforcement of the floodplain management regulations will ensure mitigation of future construction in those areas. However, even if structures

are mitigated, evacuation may be necessary due to risking waters. In addition, floods that exceed mitigated levels may still cause damages. There is no future development planned in floodplains in Chariton County at this time.

Hazard Summary by Jurisdiction

Vulnerability to flooding varies by jurisdiction as each community has a different layout, as described above, the City of Brunswick and Chariton County have a history of repetitive loss and would be more vulnerable to future losses. The floodplain maps in the Geographic Location section depict the flood area in each jurisdiction.

Chariton County

Chariton County has a substantial amount of flood areas. While there are areas of the county that are especially vulnerable to flood events, the majority of the vulnerable areas are farmland. Chariton County experiences substantial crop losses each year. In fact, the Missouri State Hazard Mitigation Plan of 2023, ranks Chariton County as 2nd out of all counties in Missouri in amount of crop losses between 2017 and 2023.

City of Brunswick

The city of Brunswick is located along the Grand River in Chariton County on Highway 24. Between the city and the river is a railway that impedes drainage of rainwater due to insufficient culverts. Additionally, the city is situated on a hill. Any rainwater that falls on the hill will run down to East Broadway St., where City Hall is located, and gather along the rail line. Solutions to the drainage problem are a high priority for the residents of Brunswick.

Additionally, the previous flooding in the area has damaged buildings in the lower areas of the town. There are unoccupied buildings that the city would like to see demolished.

City of Keytesville

The city of Keytesville, the County seat, is located adjacent to a floodplain, but the city does not fall within the floodplain. There is no increased risk to the City of Keytesville due to this hazard than other areas of the county that are not in a floodplain.

City of Mendon

The City Limits of Mendon do not fall within a floodplain. While there is some agricultural ground near the city that does fall within a floodplain, the City and its residents are not at undue risk of flooding.

City of Salisbury

The City of Salisbury only has a small amount of land that is located within a floodplain. Until May of 2024 this parcel of land was the property of the City and was located in the Industrial Park. Currently the City does have ordinances to address any new construction in the floodplain. This ordinance will be enforced now that the city is not the owner.

City of Sumner

The City of Sumner is surrounded on three sides by a floodplain. If floodwaters were to be high enough, the City of Sumner could potentially be difficult to reach with emergency vehicles, as

highway 139 on either side of town is located in a floodplain.

Brunswick R-II

The Brunswick R-II school district has a large ditch that runs adjacent to the school campus from Lewis Clark Rd. along State Road Y. This ditch runs the length of the property from the north to the south. During heavy rain events and flooding this ditch is inundated with water, which lacks a sufficient outlet downstream. The water tends to back up and does not drain sufficiently due to the tubes under the railroad lacking the capacity for large amounts of water.

Problem Statement

Local governments should make a strong effort to improve emergency warning systems to ensure future deaths 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 projects list, and actively seek funding to successfully complete the projects.

3.4.2 Levee Failure

Hazard Profile

Hazard Description

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.

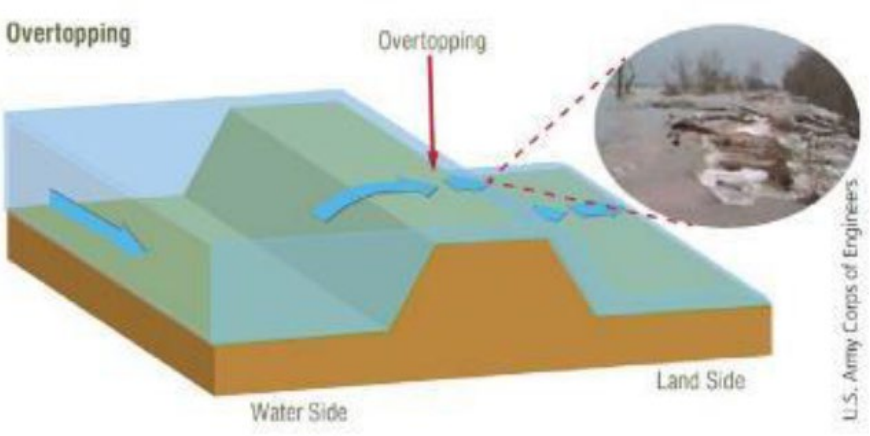
Levees can be small agricultural levees that protect farmland from high-frequency flooding. Levees can also be larger, designed to protect people and property in larger urban areas from less frequent flooding events such as the 100-year and 500-year flood levels. For purposes of this discussion, levee 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).

The 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.

Figure 3.21. Overtopping: When a Flood Is Too Big

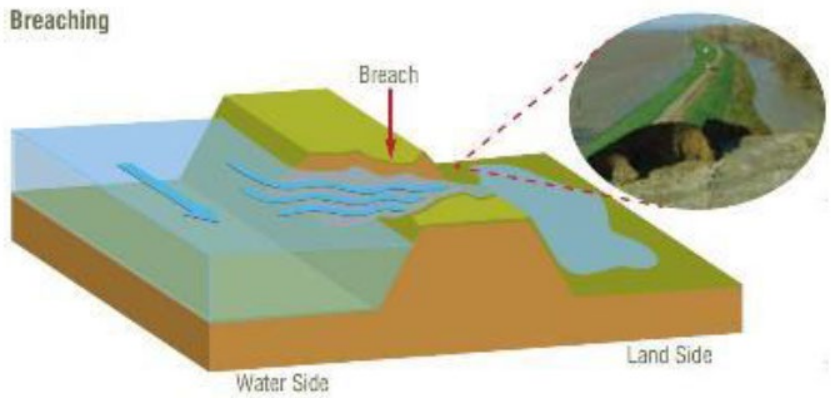


Source: 2023 Missouri State Hazard Mitigation Plan

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.

Figure 3.22. Breaching: When a Levee Gives Way



Source: 2023 Missouri State Hazard Mitigation Plan

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

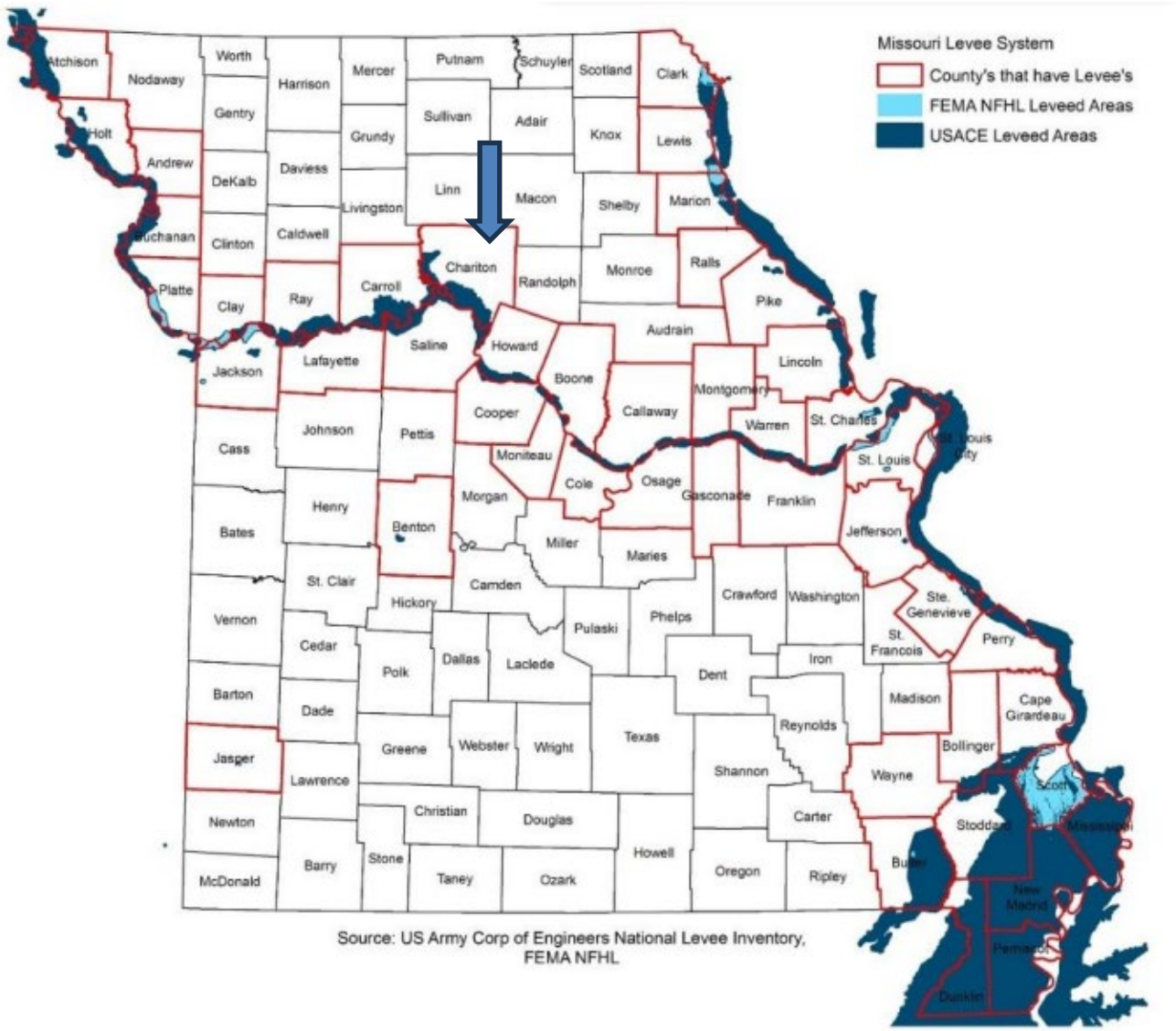
Missouri is a state with many levees. Currently, there is no single comprehensive inventory of levee systems in the state. Levees have been constructed across the state by public entities and private entities with varying levels of protection, inspection oversight, and maintenance. The lack of a comprehensive 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.

For purposes of the levee failure profile and risk assessment, those levees indicated on the Preliminary DFIRM as providing protection from at least the 1-percent annual chance flood will be discussed and further analyzed. It is noted that increased discharges are being taken into account in revision of the flood maps as part of the RiskMap efforts.

Figure 3.23. Missouri Counties Impacted by Levees



Source: 2023 Missouri State Hazard Mitigation Plan

The Levee Safety Action Classification (LSAC) is based on a combination of the flood hazard frequency, the anticipated levee performance, and the potential consequences. The Low Risk classification given to the below levee systems is mainly being driven by the estimated population and structures at risk that are low in comparison to other levees across the nation in the USACE levee safety program. Descriptions of each levee are provided when data is available.

Big Bend Levee District:

This is a levee system that reduces the occurrence of flooding for approximately 1,792 acres of Grand River Floodplain in Carroll County. The levee system includes 6.65 miles of earthen levee and 6 gravity drains. The area behind the levee is predominantly agricultural. The leveed area daytime population is zero. The levee faced record flooding in 1993 when the levee overtopped. This levee overtopped in 2019 and subsequently breached due to overtopping.

- The USACE calculates the likelihood of a flood overtopping this levee in any given year at approximately 20%, or a 1 chance in 5.

East Fork Little Chariton River Levee 1:

This levee is located in Randolf County, which lies to the east of Chariton County. It was included due to its proximity to Chariton County. There is no historical data available on the National Levee Database for this levee. The information available about what is behind this levee indicates that there is not expected to be much loss in the event the levee fails. There are no structures, financial risk, or critical structures behind this levee. There are no people living behind the levee, which would place them in harm's way and 9.6 acres of farmland.

- Potential losses would be minimal were the levee to fail, but there is no calculation made by the USACE regarding the likelihood of that event.

Garden of Eden Witham Drainage:

This is a levee system that reduces the occurrence of flooding in Chariton County. This levee was not federally designed or constructed. This levee system has two segments that are owned, operated, and maintained by two local sponsors.

- The Witham Drainage District segment contains 2.6 miles of earthen levee along the Grand River and Yellow Creek. This overtopped in 2019 and the leveed area was inundated.
- The Garden of Eden Drainage District segment contains 9 miles of earthen levee along the Grand River. The area behind the levee is predominately agricultural. The segment 1 section of this levee overtopped in 2019 and subsequently breached due to the overtopping.
- The USACE calculates the likelihood of a flood overtopping this levee in any given year at approximately 5%, or a 1 chance in 20.

Garden of Eden Drainage District 2:

This is a levee system that reduces the occurrence of flooding to approximately 3.091 acres of Grand River floodplain in Chariton County. This levee system includes 6.4 miles of earthen levee along the Grand River. The levee was not federally designed or constructed. The levee is owned, operated, and maintained by the Garden of Eden Drainage District. The area behind the levee is predominantly agricultural.

- This levee overtopped in 2019 and subsequently breached because of the overtopping.
- The USACE calculates the likelihood of a flood overtopping this levee in any given year at approximately 2%, or a 1 chance in 50.

Garden of Eden Drainage District 3:

This is a levee system that reduces the occurrence of flooding to 3,500 acres of Grand River floodplain in Chariton County. The levee system includes 8.29 miles of earthen levee and 8 gravity drains for the Grand River. The levee is operated and maintained by the local sponsor, Garden of Eden Drainage District. The area behind the levee is predominately agricultural with some residences and associated farm structures.

- In 2019 this levee overtopped and subsequently breached due to the overtopping.
- The USACE calculates the likelihood of a flood overtopping this levee in any given year at approximately 10%, or a 1 chance in 10.

Lower Chariton River Levee District:

This levee system reduces the occurrence of flooding for approximately 20,533 acres of Missouri River Floodplain in Chariton County. The levee system includes drainage structures and 20.3 miles of earthen levee along the Missouri, Chariton, and Little Chariton Rivers. The US Army Corps of Engineers (USACE) completed construction on the levee project and turned over the operation and maintenance of the levees to the local sponsor, Lower Chariton River Levee District, in 1972. The area behind the levee is predominately agricultural with farm associated structures and residences.

- The levee faced record flooding during the 1993 flood when the levee overtopped and then breached.
- The USACE calculates the likelihood of a flood overtopping this levee in any given year at 1%, or 1 chance in 100.

MRLS 246-L:

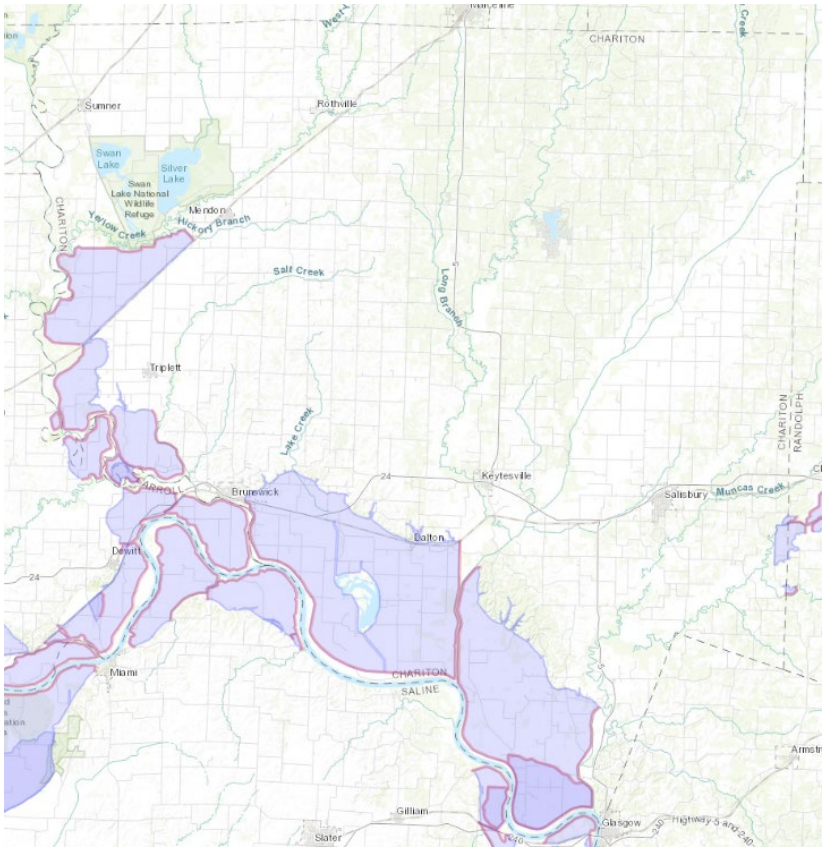
This levee system reduces the occurrence of flooding to approximately 26,817 acres of Missouri, Grand, and Chariton River floodplain in Chariton County. The levee system includes 39 drainage

structures, five relief wells, and 34.5 miles of earthen levee along the Missouri, Grand, and Chariton Rivers and along Palmer Creek. The US Army Corps of Engineers (USACE) completed construction on the levee project and turned the operation and maintenance of the levees over to the local sponsor, Brunswick-Dalton Drainage District, in 1981. The area behind the levee is predominantly agriculture with associated out-building and residencies.

- The USACE calculates the likelihood of a flood overtopping this levee in any given year at approximately 1%, or 1 chance in 100.

Figure 3.24. County Levees Shown on DFIRM as Providing Protection from the 1-Percent Annual Chance Flood

(PDF: FRM Chariton County)



Source: FEMA Flood Insurance Rate Map, 2022

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

According to the National Levee Database, the levees located within Chariton County have overtopped 13 times. On 3 occasions, the overtopping eroded the levee and led to a breach. The following table breaks down the previous overtopping and breaches within Chariton County levees.

Table 3.32. Levee Overtopping and Breaches in Chariton County (1993-2024)

Levee Name	Overtopping Occurrences	Years of Overtopping	Overtopping & Breach Occurrences	Years of Overtopping & Breach Occurrences
East Fork Levee District	No data available			
Garden of Eden Witham Drainage	4	1993, 2007, 2008, 2019	2	1993, 2007
Garden of Eden 2	1	1993, 2019	1	2019
Garden of Eden 3	4	1993, 2007, 2008, 2019	-	-
Lower Chariton	1	1993	-	-
MRLS 246-L	2	1993, 2019	-	-

Source: National Levee Database

Probability of Future Occurrence

Based on the table on Levee Overtopping and Breaching in Chariton County, the probability of an event occurring in the future could be calculated as follows:

Levee Overtopping Probability:

$$\frac{(number\ of\ occurrences)}{years} = \frac{13}{31} = 41.9\%\ Chance$$

Levee Overtopping & Breaching Probability

$$\frac{number\ of\ occurrences}{years} = \frac{3}{31} = 9.7\%\ Chance$$

Changing Future Conditions Considerations and the Impact of Climate Change

The impact changing future conditions will have on levee failure will most likely be related to changes in precipitation and the likelihood of a flood event. Climate change projections suggest that precipitation may increase and occur in more extreme events. This could increase the risk of flooding, putting stress on levees, and increasing the likelihood of levee failure in the planning area. Additionally, the aging levee infrastructure and lack of regular maintenance paired with the risk of more extreme weather may increase the 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 3.25** below defines the three ratings.

Figure 3.25. 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.

Potential Losses to Existing Development

The National Levee Database showed no levees in Chariton County that were rated unacceptable. The following table shows the current estimated likelihood of a flood overtopping the levee in any given year. This information was obtained from the National Levee Database and the US Army Corps of Engineers.

Table 3.33. Estimated Likelihood of Levee Failure by Overtopping in any Given Year in Chariton County

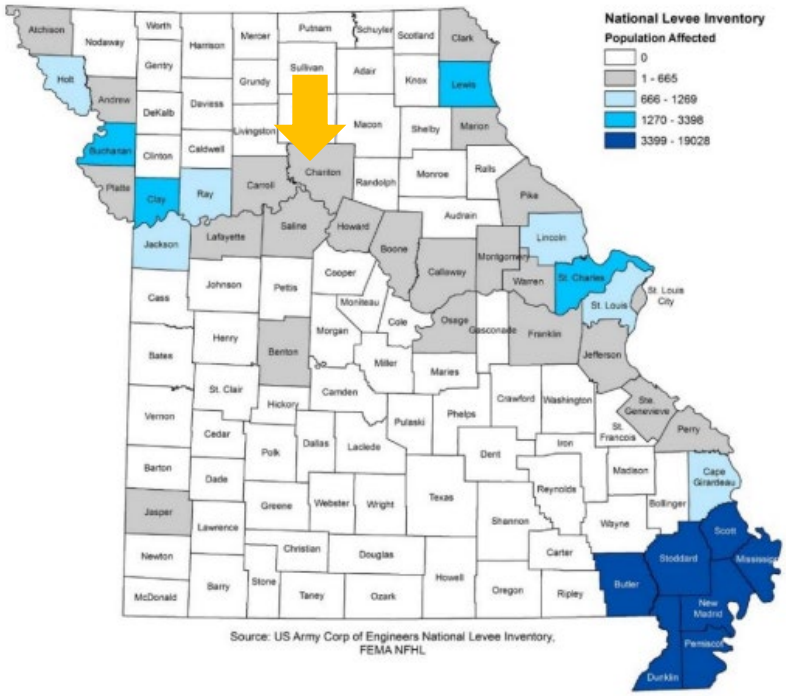
Name of Levee District	Structures & Populations at Risk	Likelihood of Failure	% Chance of Failure
Big Bend Levee District	There are no structures or people at risk. 1,069 acres of farmland are behind this levee.	1 in 5	20%

Garden of Eden Drainage District 2	There are 2 buildings behind this levee, and $20,000 in property value. There are 2,220 acres of farmland behind this levee.	1 in 50	2%
Garden of Eden Drainage District 3	There are 2 buildings, $200 thousand in property value, and 1,200 acres of farmland behind this levee.	1 in 5	20%
Garden of Eden Whitham Drainage	There are 91 buildings, 25 people, $20 million in property value, and 2,239 acres of farmland, and 1 critical structure behind this levee.	1 in 20	5%
Lower Chariton	There is little data on these levees, however there are no structures or people at risk. There is farmland behind these levees.	1 in 100	1%
MRLS-246-L	There are 74 buildings, 101 people, $40 million in property value, and 9,676 acres of farmland behind this levee.	1 in 100	1%

Source: National Levee Database; USACE

The previous table (**Table 3.33**) provides information from the National Levee Database that is maintained by the USACE. The structures and populations at risk of levee failure are provided in this table.

Figure 3.26. Population Exposure: Missouri Levees in USACE National Levee Inventory Providing 100-year or Greater Flood Protection



Source: 2023 Missouri State Hazard Mitigation Plan

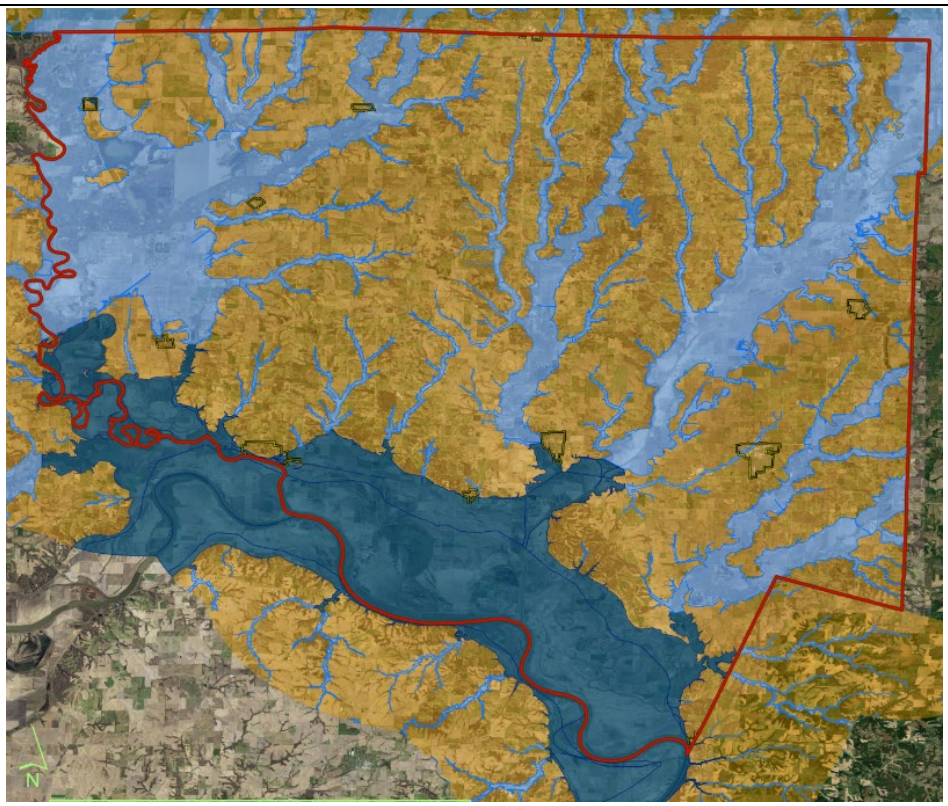
The 2023 Missouri State Hazard Mitigation Plan provided the following information for the assets at risk in Chariton County due to levee failure.

Table 3.34. Building Loss From Levee Failure in Chariton County

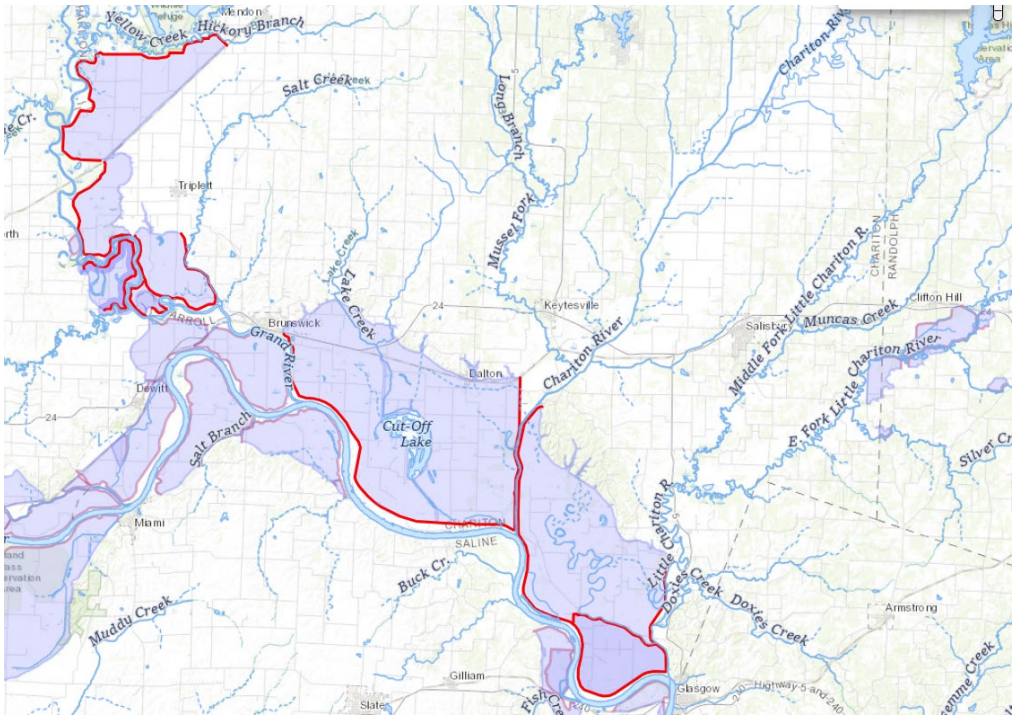
Type of Building	Estimated # of Structures	Estimated Value of Structures	Estimated Population at Risk
Agricultural	489	$610,194,040	-
Commercial	21	$15,778,980	-
Educational	1	$2,820,941	-
Residential	99	$21,998,278	267

Source: 2023 Missouri State Hazard Mitigation Plan

Figure 3.27. Chariton County Flood Hazard Areas



Source: ArcGIS Pro FEMA Flood Hazard Areas 2024; Pioneer Trails RPC



Impact of Previous and Future Development

Due to the declining population and lack of plans for future development in the County, there is no anticipated increase in risk to the planning area due to levee failure.

Hazard Summary by Jurisdiction

Chariton County

Chariton County has rural areas that could be affected by a levee failure. The majority of the damage would be to agricultural assets and crops. However, there are some residents of the unincorporated areas of Chariton County that could be affected as well.

City of Keytesville, Mendon, Salisbury, and Sumner

The participating jurisdictions are not at risk of levee failure. Due to the location of the levees and the at risk areas these cities do not contain assets at risk to levee failure.

City of Brunswick, Brunswick R-I School District

According to the National Levee Database, of the participating jurisdictions, only Chariton County unincorporated areas are at risk of levee failure. However, on the map showing the inundation area of the MRLS 246-L levee, there are a few buildings in Brunswick, and the Brunswick R-II school that are in the inundation zone. While not a large number of properties are at risk, it should be taken into consideration that the areas that could be affected are also affected by inadequate drainage under the railroad tracks south of Brunswick.

Problem Statement

The levees in Chariton County could present a risk to residents and agriculture in the path due to levee failure. Lack of flood warning systems in parts of Chariton County limits the ability to effectively evacuate residents and businesses before a potential levee failure, increasing the risk of loss of life and property damage.

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.

Table 3.35. MoDNR Dam Hazard Classification Definitions

Hazard Class	Definition
Class I	The area downstream from the dam that would be affected by inundation contains ten (10) or more permanent dwellings or any public building. Inspection of these dams must every two years.
Class II	The area downstream from the dam that would be affected by inundation contains one (1) to nine (9) permanent dwellings, or one (1) or more campgrounds with permanent water, sewer, and electrical services or one (1) or more industrial buildings. Inspection of these dams must occur once every three years.
Class III	The area downstream from the dam that would be affected by inundation does not contain any of the structures identified for Class 1 or Class 2 dams. Inspection of these dams must occur once every five years.

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

Table 3.36. NID Dam Hazard Classification Definitions

Hazard Class	Definition
High Hazard	Loss of at least one human life is likely if the dam fails.
Significant Hazard	Possible loss of human life and likely significant property or environmental destruction.
Low Hazard	Equal or exceed 25 feet in height and exceed 15 acre-feet storage; Equal or exceed 50-acre feet storage and exceed 6 feet in height; Do not meet the criteria for high or significant hazard.

Source: National Inventory of Dams

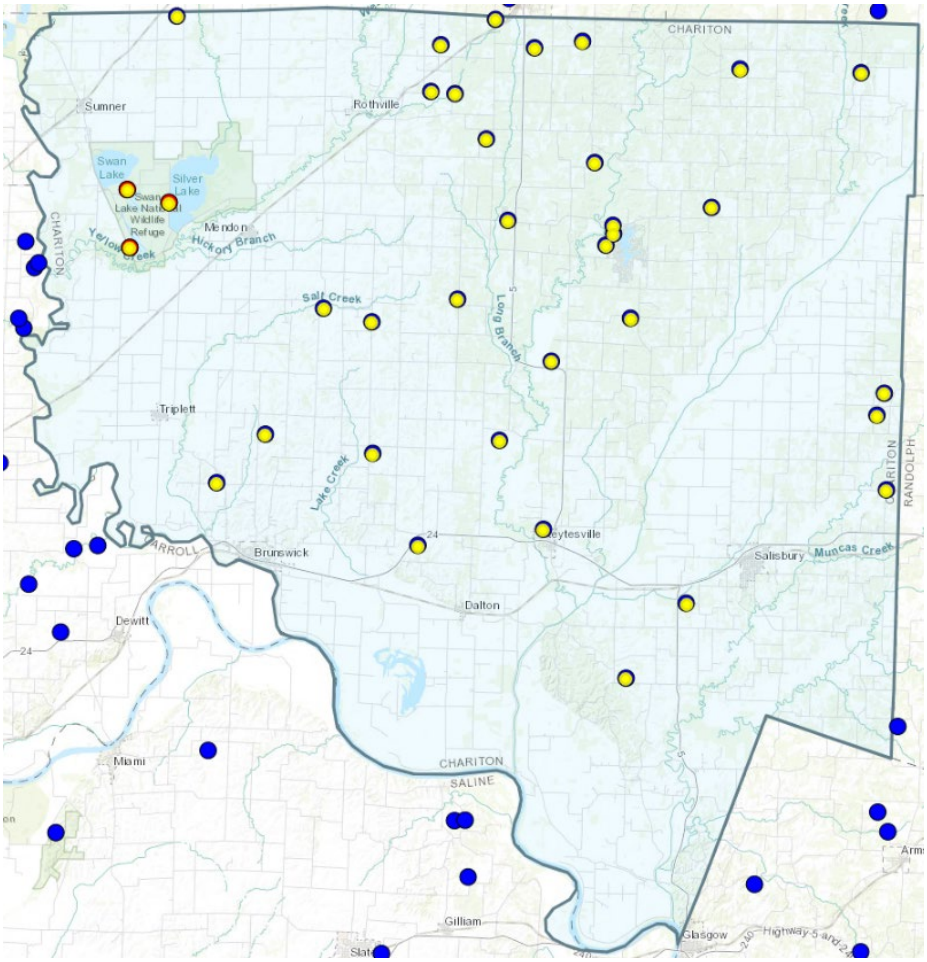
Geographic Location

Dams Located Within the Planning Area

The following tables provide the names, locations, and other pertinent information for all dams within the planning area. Figure 3.28 is a map showing the location of dams in the planning area. Table 3.37 lists the high hazard dams located Within Chariton County, Table 3.38 provides a list of all dams

in the planning area, Figure 3.28 shows the location of the dams by hazard potential in the planning area.

Figure 3.28. Dams Located in Chariton County



Source: Missouri Department of Natural Resources

Table 3.37. High Hazard Dams in Chariton County

Dam Name	Emergency Action Plan (EAP)AP	Dam Height (Ft)	Maximum Storage (Acre-Ft)	Last Inspection Date	River	Nearest Downstream City	Distance To Nearest City (Miles)	Dam Owner
Marceline New Reservoir Dam	Yes	49	3,100	3/8/2022	Slater Branch	Rothville	3	Local Government
Shepherd, Dan Dam	No	20	107	n/a	Trib Middle Fork Chariton River	Forest Green	n/a	Shepherd Farms Inc.

Source: National Inventory of Dams; High Hazard Potential Classification

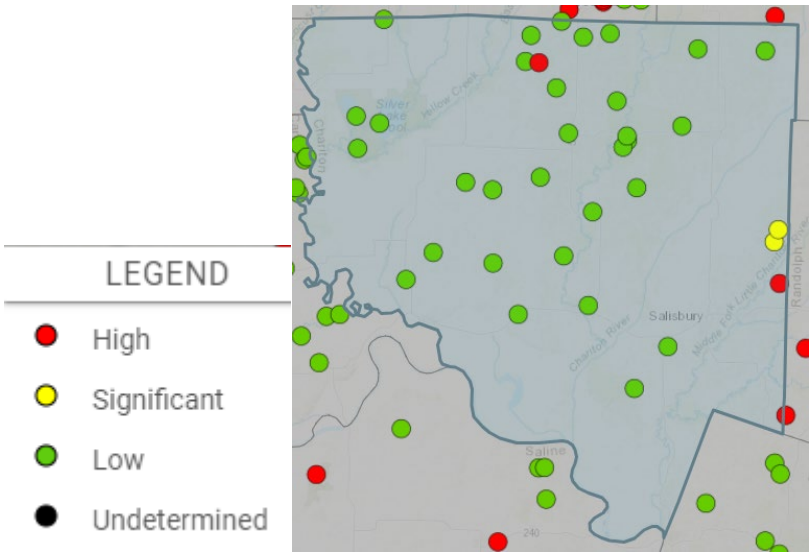
Table 3.38. All Dams in the Chariton County Planning Area

Dam Name	Emergency Action Plan (EAP)AP	Dam Height (Ft)	Maximum Storage (Acre-Ft)	Last Inspection Date	River	Nearest Downstream City	Distance To Nearest City (Miles)	Dam Owner
Regulated Dams								
Marceline New Reservoir Dam	Yes	49	3,100	3/8/2022	Slater Branch	Rothville	3	Local Government
Fawn Lake Dam	No	37	248	7/14/2022	Trib to Mussel Fork	Marceline	11	Private
Nehai Tonkayea Lake Dam	No	65	9,100	2/7/2023	Trib to Mussel Fork	Keytesville	13	Private
Papoose Lake Dam	No	40	164	8/22/2018	Trib to Mussel Fork	Marceline	11	Private
Federally Regulated Dams								
Swan Lake Dam	No	14	14,863	n/a	Tough Branch	No data	n/a	US Fish & Wildlife
Silver Lake Dam	No	12	19,575	n/a	Elk Creek	No data	n/a	US Fish & Wildlife
Swan Lake Levee #2 Dam	No	13	13,000	n/a	Elk Creek	No data	n/a	US Fish & Wildlife
Unregulated Dams								
Wetzel, CR Lake Dam	No	20	86	n/a	Trib Turkey Creek	Triplet	15	CR Wetzel
White Lake Dam	No	30	160	n/a	Trib Halls Branch	Rothville	6	DL White
East Yellow Creek B-69	No	21	102	n/a	Trib East Yellow	No data	n/a	Local Government
Shepherd, Dan Dam	No	20	107	n/a	Trib Middle Fork Chariton	Forest Green	Unk.	Shepherd Farms Inc.
Associated Electric Pi 2-61	No	0	75	n/a	Unknown	No data	Unk.	Public Utility
Associated Electric Pi 2-59	No	0	50	n/a	Unknown	No data	Unk.	Public Utility
LF Barnett Dam	No	37	30	n/a	Trib Long Branch	Mike	Unk.	LF Barnett
Moore Lake Dam	No	34	236	n/a	Trib Brush Creek	Brunswick	4	Bob Heisel Farms, Inc.
Asher Lake Dam	No	34	109	n/a	Trib Clarks Creek	Keytesville	21	Harley Asher
Johnson Dam	No	33	25.7	10/1/2005	Trib Cottonwood	Keytesville	No data	Charles Johnson
Pope Dam	No	31	28.6	9/30/2006	Trib Mussel Fork	Keytesville	No data	Clyde Pope
Keytesville Dam	No	31	26.5	9/30/2005	Trib Mussel Fork	Keytesville	No data	Keytesville
Noll Dam	No	30	93	n/a	West Bee Branch	Bynumille	No data	Joe Noll
Jones Dam	No	29	69	n/a	Mussel Fork	Keytesville	No data	Joe Jones
Minshall Dam	No	26.8	24	n/a	West Bee Branch	Bynumville	No data	Dan Minshall

Huessner Lake Dam	No	25	67	n/a	Trib Salt Creek	Triplett	No data	Edward Heussner
Pleasure Hills Estates Lake Dam	No	25	334	n/a	Trib Long Branch	Keytesville	15	Nelson Brassfield
Kussman's Lake Dam	No	25	80	n/a	Trib Locust Branch	Keytesville	16	Michael C Kussman
Reische Lake Dam	No	25	40	n/a	Trib Palmer Creek	Glasgow	No data	Lawrence Reische
Moser Lake Dam	No	25	67	n/a	Trib Clear Branch	Keytesville	No data	John Moser
Agee Lake Dam	No	25	134	n/a	Trib Lake Creek	Glasgow	28	Harry Agee
East Yellow Creek B-72	No	23.5	120	11/1/2001	Trib East Yellow	No data	No data	East Yellow Creek WS
Kottman Lake Dam	No	23	77	n/a	Trib Chariton River	Forest Green	No data	Marvin Kottman
Wright Lake Dam	No	21	97	n/a	Trib Mussel Fork	Keytesville	No data	Jack Wright
Sterling Price Lake Dam	No	21	393	n/a	Trib Puzzle Creek	Glasgow	22	Mo Dept of Conservation
158	No	20	64	n/a	Salt Creek Offstream	Mendon	No data	Randle Burstert
Mulnix Lake Dam	No	16	94	n/a	Trib Chariton River	Bynumville	5	Roland Mulnix
Mononame 275	No	15	80	n/a	Brush Creek	Brunswick	No data	Unknown

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. Contact the MoDNR Dam and Reservoir Safety Program at 800-361-4827 to request the inundation maps for your county to show geographic locations at risk, extent of failure and to perform GIS analysis of those assets at risk to dam failure.

Figure 3.29. Dams of Chariton County by Hazard Potential



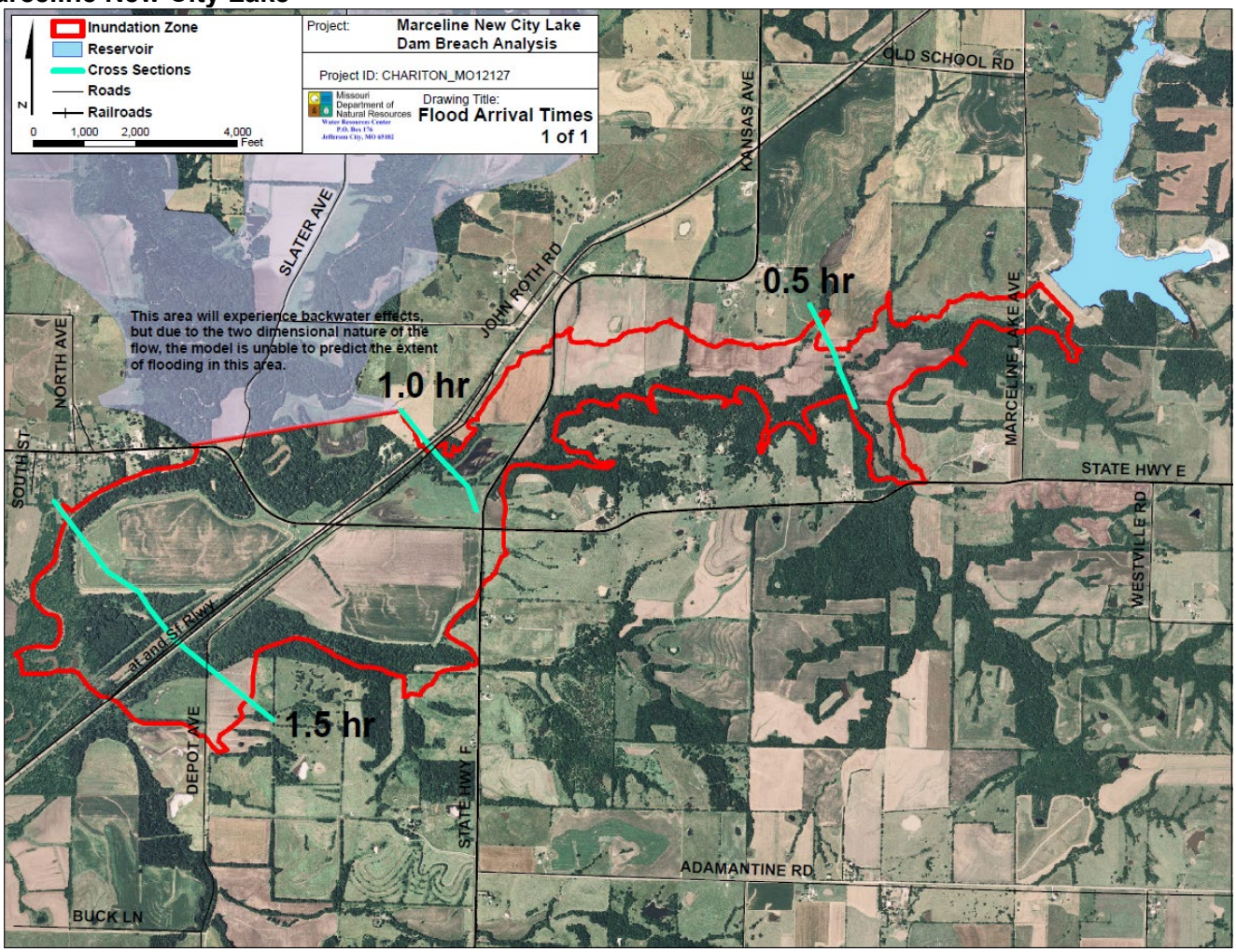
Source: National Inventory of Dams

The following figures 3.30 and 3.31 are inundation maps sourced from the Missouri Department of Natural Resources. These figures represent the known inundation areas of the upstream dams from Chariton County. Currently, Marceline New City Lake (Figure 3.31) and Thomas Hill Reservoir

Dam (Figure 3.32) are the only upstream dams that have available inundation maps for the planning area.

Figure 3.30. High Hazard Dam Locations in Chariton County and Areas Impacted in the Event of Breach – Marceline New City Lake Dam

Marceline New City Lake



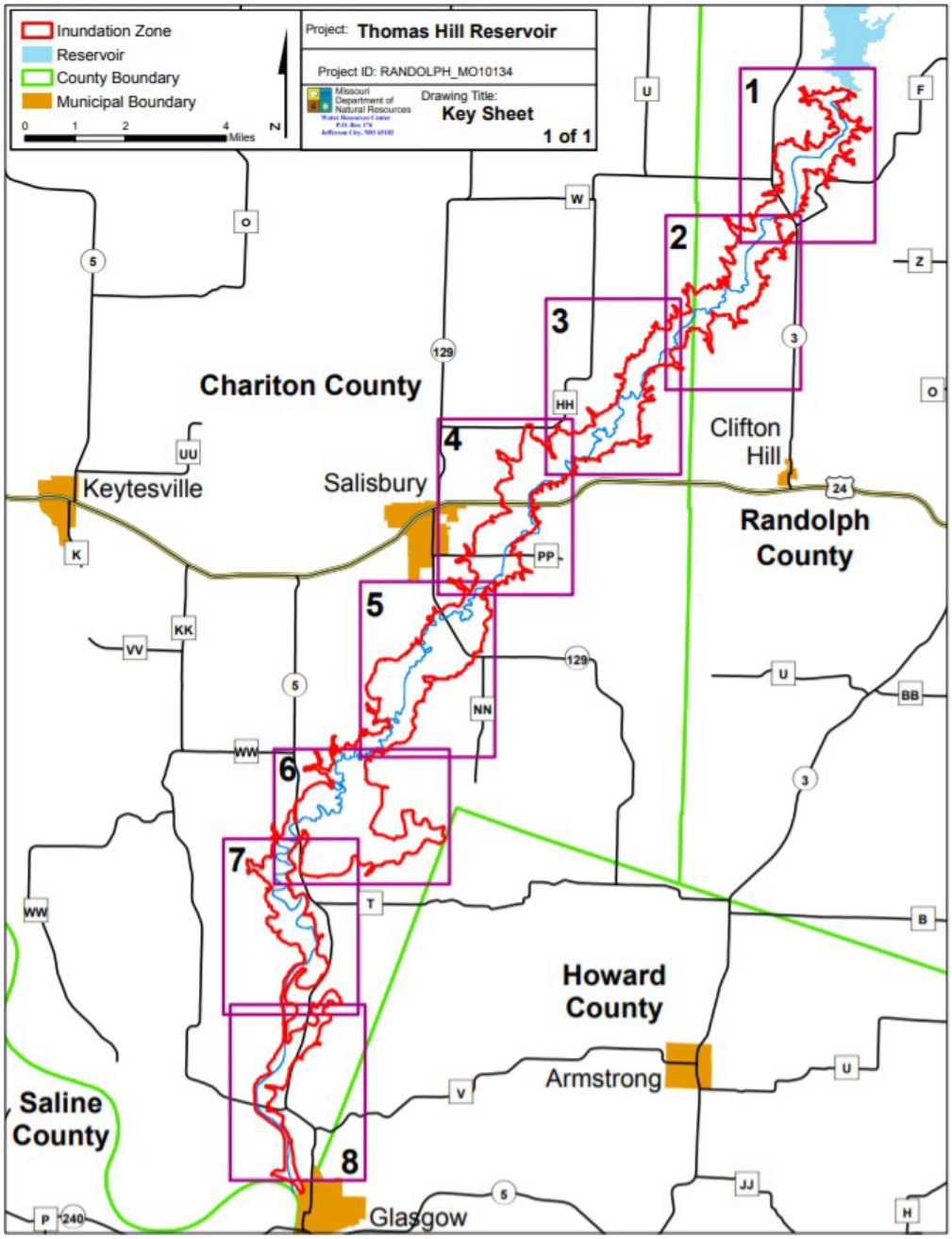
Source: U.S. Army Corps of Engineers, Missouri Department of Natural Resources

Based on the above information provided by the Missouri Department of Natural Resources if the Marceline New City Lake Dam were to breach parts of State Highways E and F could potentially be underwater. Also at risk are the railroad tracks located southeast of Rothville.

Upstream Dams Outside the Planning Area

According to the Missouri Department of Natural Resources, there is potential for overflow from the failure of the Thomas Hill Reservoir Dam to enter Chariton County.

Figure 3.31. Upstream Dams Outside Chariton County – Thomas Hill Reservoir Dam



Source: Missouri Department of Natural Resources

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.

The only High Hazard dam that is regulated by the State is the Marceline New Reservoir Dam.

According to the most recent inspection report from MDNR the dam was inspected on March 8, 2022. The inspection report found that the Marceline New Reservoir Dam did not have any observed defects that required correction at the time of inspection, and the embankment and appurtenant structures were found to be in good overall condition, with no indications of slope instability or excessive seepage.

There were some comments made about the woody vegetation and suggested that it be cleared from the upstream face, the principal spillway outlet channel, the emergency spillway, and the embankment drains. This required maintenance was included in the inspection checklist. The inspection checklist and available documentation regarding this dam can be found in Appendix E.

Previous Occurrences

The following information about the Nehai Tonkayea Lake Dam's previous events was obtained from the 2023 Missouri State Hazard Mitigation Plan. The narratives that were available were summarized following the date and type of event. The dam has not failed previously but has had 2 embankment slides and 1 inflow flood.

- ***NEHAI TONKAYEA LAKE DAM 11/14/1994 Embankment Slide No MO10627***

  On November 14, 1994, a site visit was made to the dam for the purpose of inspecting a slide that had occurred on the downstream face of the dam. The slide appeared to be a recurrence of a previous slide that was repaired in 1986. The slide was observed to have moved roughly 1 foot vertically and 8-10 inches horizontally. The extent of the slide was considerable and encompassed the area which had previously been repaired. No seepage was observed on the embankment. The possibility of lowering the lake level to stabilize the dam was discussed with representatives of the Nehai Property Owners Association (NPOA). The NPOA representatives decided to delay a decision until other factors were considered. The NPOA discussed hiring an engineer to provide a reasonable timetable for the repairs.

- ***NEHAI TONKAYEA LAKE DAM 2/27/1995 Inflow Flood - Hydrologic Event No MO10627***

  On February 27, 1995, a site visit was made to the dam to review the condition of the dam in light of a reported slide. On the right side of the dam a slide was observed. In addition to a scarp at the head of the slide, there were two other features associated with the slide. One was a slight bulging of the fill at the top of the slope of the dam, the other was an area of cracking and a change of slope located at about the mid-point of the slide mass. A line of steel fence posts was observed traversing through the slide initiating and ending in undisturbed dam fill. There was no significant misalignment of these posts.

- ***NEHAI TONKAYEA LAKE DAM 12/10/1995 Embankment Slide No MO10627***

  There was no narrative provided in the 2023 State of Missouri Hazard Mitigation Plan regarding the December 10, 1995, dam failure.

The 2023 Missouri State Hazard Mitigation Plan provided the information that there have been 3 dam failures within Chariton County within the last 20 years. The three failures were all attributed to the Nehai Tonkayea Lake Dam, which has suffered from embankment slide twice and an inflow flood once.

Probability of Future Occurrence

There are currently 4 regulated dams in Chariton County. They are state regulated and are inspected once every five years. There are no USACE-regulated dams in the planning area. According to the information from the 2023 Missouri State Hazard Mitigation Plan, there have been 3 dam incidents in the last 20 years but no failures. They all occurred at the Nehai Tonkayea Lake Dam. It should be noted that the previous incidents regarding this dam were relatively minor events and did not cause significant damage in the inundation area.

It should be considered that within Missouri historical dam failures and incidents include events from all hazard classes and all dams; regulated or not. Failures and incidents for regulated dams that have higher inspection frequencies should be less probable. The non-regulated dams do not have a regular inspection schedule nor requirement.

If we base the probability upon past events:

$$Probability\ of\ Dam\ Failure = \frac{0}{20}$$

With no previous occurrences of dam failure, the probability of such an event occurring is unlikely in the planning area.

However, if we consider the instances of dam incidents:

$$Probability\ of\ Dam\ Incident = \frac{3}{20} = 0.15$$

The probability of the planning area experiencing any type of dam incident, if based on past occurrences, would be 15% in any given year.

Missouri DNR lists four dams as being regulated in Chariton County. It appears that there are no communities located in high-risk areas in the event of dam failure or overtop.

Changing Future Conditions Considerations and the Impact of Climate Change

There have been studies conducted to investigate the impact of climate change on dam safety. Dam failure is already linked to flooding and the increased pressure that a flood places on dams. The impacts of changing future conditions on dam failure will most likely be related to changes in precipitation and the likelihood of flood. Projections indicate that changing future conditions could bring an increase in precipitation and more occurrences of extreme events. This may increase the risk of flooding and put additional stress on dams which could increase the likelihood of dam failure.

The safety of dams for the future climate may be based on an evaluation of changes in design floods and the freeboard available to accommodate an increase in flood levels. The results from the studies indicate that the design floods with the corresponding outflow floods and flood water levels will increase in the future, and this increase will affect the safety of the dams in the future. These studies conclude that the total hydrological failure probability of a dam will increase in the future climate and that the extent and depth of flood waters will increase by the future dam break scenario.

Vulnerability

Vulnerability Overview

According to the US Army Corps of Engineers (USACE) National Inventory of Dams (NID) there are a total of 35 dams located in the planning area. There are 2 high hazard dams, 2 significant hazard dams, and 31 low hazard dams in Chariton County.
There are currently some structures of both agricultural and residential varieties. The 2023 Missouri State Hazard Mitigation Plan contains the following information about the vulnerability of Chariton County to dam failure.

Table 3.39. Number and Types of Dams in Chariton County

Numbers and Types of Dams in Chariton County															
Count of NID Dams				Count of State Regulated Dams				Count of Federally Regulated Dams				Count of Un-Regulated Dams			
H	S	L	Total	1	2	3	Total	H	S	L	Total	H	S	L	Total
2	2	31	33	0	1	3	4	0	0	3	3	1	2	25	28

Source: 2023 Missouri State Hazard Mitigation Plan

Potential Losses to Existing Development:
(including types and numbers, of buildings, critical facilities, etc.)

Table 3.40. Estimated Number and Values of Structures & Population Vulnerable to Failure of State-Regulated Dams with Available Inundation Areas

Type of Structure	Value of Structures	Number of Structures	Population
Agriculture	$31,196,014	25	0
Residential	$666,615	3	8
Total	**$31,862,629**	**28**	**8**

Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.41. State Estimates of Potential Loss as a Result of Dam Failure, Both State Regulated and USACE Dams

Location	Potential Damage (in $)
Chariton County	$587,616,402

Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.42. Estimated Number and Values of Structures & Population Vulnerable to Failure of USACE Dams with Available Inundation Areas

Type of Structure	Value of Structures	Number of Structures	Population
Agriculture	$2,616,721,683	2,097	0
Commercial	$87,911,459	117	0
Education	$2,820,942	1	0
Government	$2,922,735	7	0
Industrial	$6,746,253	9	0
Residential	$189,096,307	851	2,145
Total	**$2,906,219,378**	**3,082**	**2,145**

Source: 2023 Missouri State Hazard Mitigation Plan

Impact of Previous and Future Development

While growth in the planning area would lead to an increased risk due to dam failure, Chariton County is largely rural with little evidence of growth within the inundation area of a dam.

Hazard Summary by Jurisdiction

The vast majority of Chariton County is not in danger of being inundated due to a breach in a dam. No further analysis of dam failure hazard will be conducted for this plan update. It will be helpful for residents near the high hazard dams to get familiarized with the dam's Emergency Action Plan (EAP) and work closely with County EOP & participate in dam emergency exercises. See Figure 3.31 and Figure 3.32 for known inundation zones due to dam failure in Chariton County.

The inundation zones are located almost exclusively in the unincorporated areas of Chariton County. The rural areas in the inundation zones are at greatest risk of dam failure and could be negatively affected by dam failure because dam failure could damage agricultural assets and could potentially close or damage roadways.

Problem Statement

Some entities in Chariton County that own and control dams do not properly inspect and maintain them to ensure the safety of people and property that lie within the inundation area of a dam breach. Jurisdictions and residents should be informed of the proper way to inspect a dam and look for initial problems.

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.

Missouri holds the record for the most devastating earthquake in the history of post-settlement North America. The New Madrid 1811-1812 earthquake series included five earthquakes of magnitude 8.0 (Modified Mercalli Intensity Scale) or higher occurring in the period December 16, 1811, through February 7, 1812. These earthquakes affected an estimated 600,000 square kilometers. Movement was felt as far away as Quebec, and damage was reported in Charleston, South Carolina, and Washington D.C.

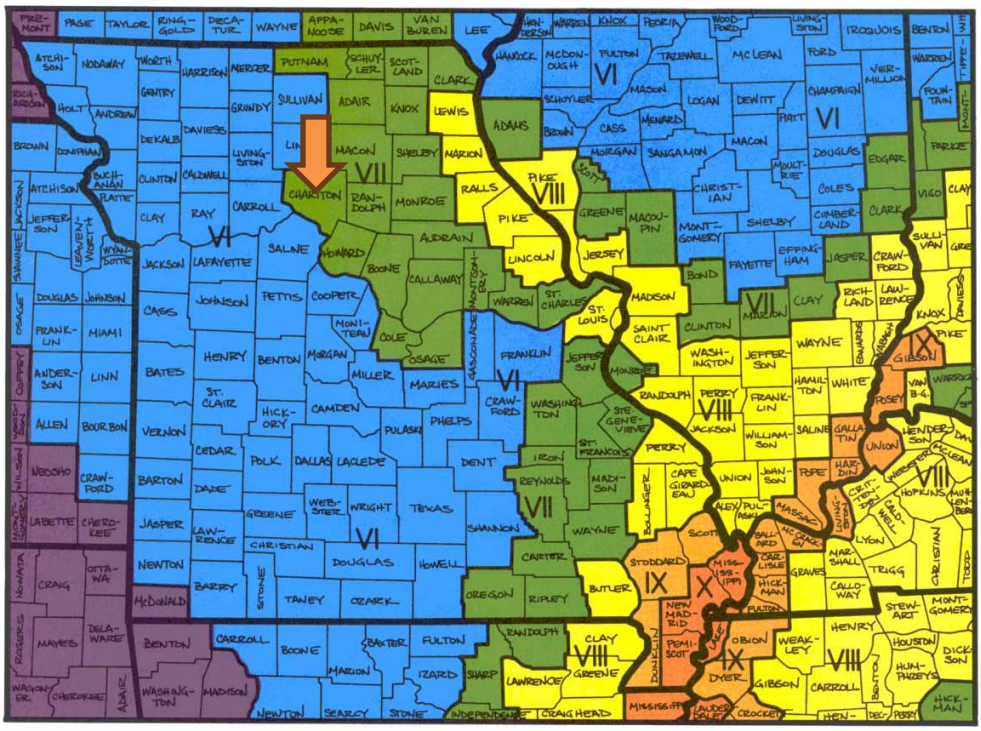
Geographic Location

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, 1812, three earthquakes struck the central US with magnitudes estimated to be 7.5-8.0. These earthquakes caused violent ground cracking and volcano-like eruptions of sediment over an area of more than 10,500 km^2, 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 km^2. This is the largest felt area of any historical earthquake. Of all the historical earthquakes that have occurred in the US, an 1811-style event would do the most damage if it occurred today.

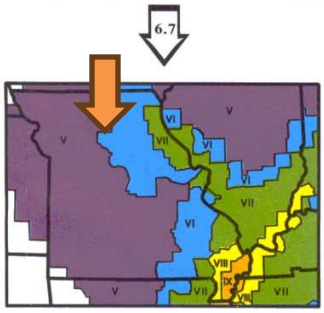
If an 1811 earthquake occurred in Chariton County the earthquake intensity would not vary across the county. The damages resulting from an earthquake would depend upon the quality of the construction of the buildings. There would be slight to moderate damage in well-built ordinary structures and considerable damage in poorly built or badly designed structures. Some chimneys would be broken.

The following map (Figure 3.32) 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 secondary maps in Figure show the same regional intensities for 6.7 and 8.6 earthquake, respectively.

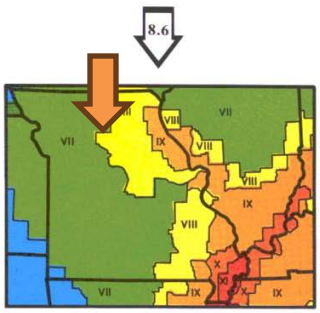
Figure 3.32. Impact Zones for Earthquake Along the New Madrid Fault



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 3.33. Projected Earthquake Intensities

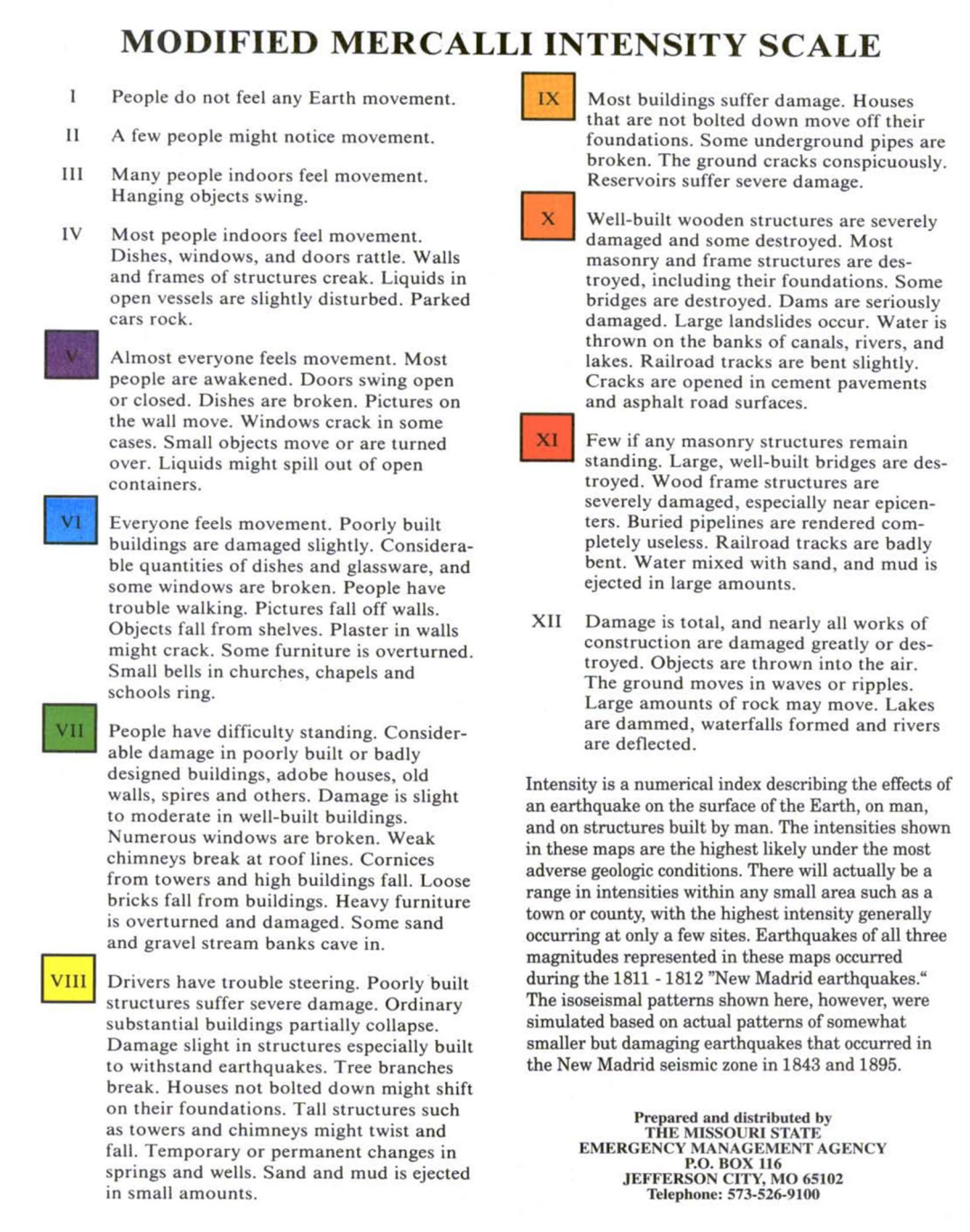
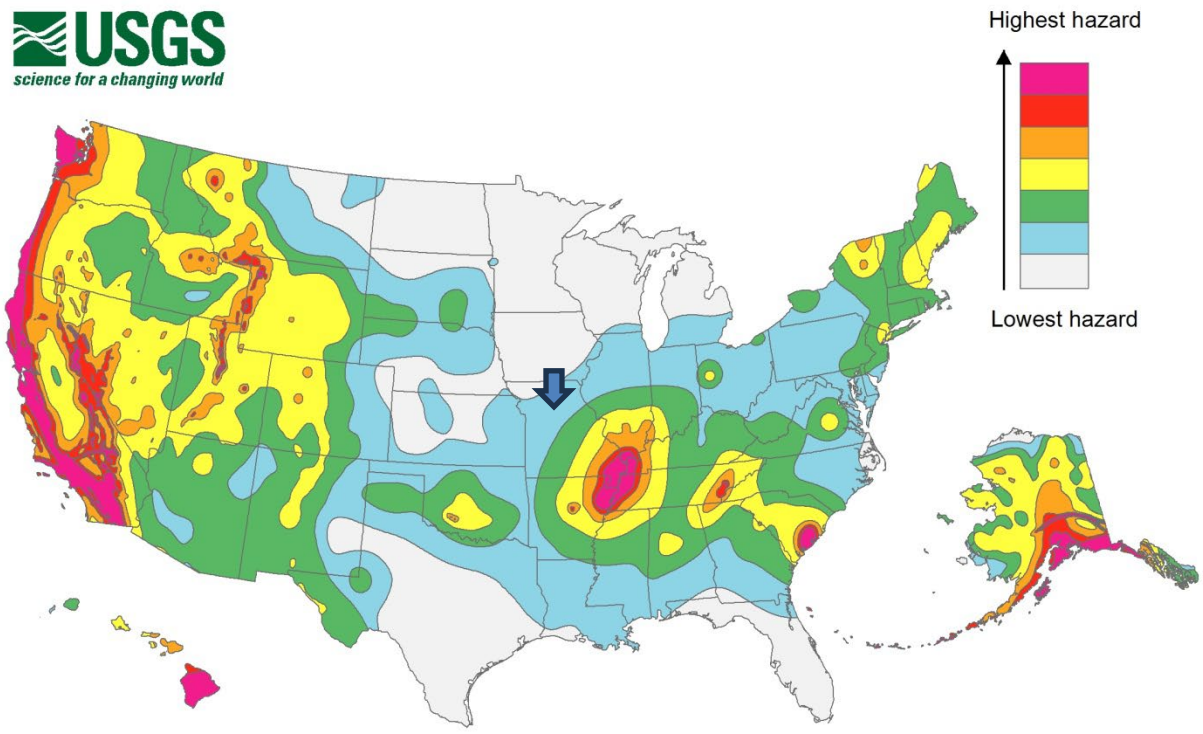


Figure 3.34. United States Seismic Hazard Map



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 0 earthquakes in Chariton County since 1931. This information was found at homefacts.com and was also listed in the previous Hazard Mitigation Plan for Chariton County.

Probability of Future Occurrence

According to homefacts.com there is a very low risk level for Chariton County experiencing an earthquake. The probability of this hazard occurring is 0.18% within the next 50 years.

2% Probability of Exceedance

The State Hazard Mitigation Plan ran a scenario, based on an event with a 2% probability of exceedance in 50 years, to determine the worst-case scenario. This scenario was equivalent to the 2,000-year earthquake scenario in HAZUS-MH. This methodology is based on the probabilistic hazard shaking grids that were developed by the US Geological Survey (USGS) for the National Seismic Hazard Maps that are included with HAZUS-MH. The USGS maps provide estimates of peak ground acceleration and spectral acceleration at periods of 0.3 seconds and 0.1 seconds, respectively, which have a 2% probability of exceedance in the next 50 years. The most severe shaking is around the New Madrid Fault in Missouri. The following figure represents the potential for damage in areas with soil types that are potentially susceptible to liquefaction.

Figure 3.35. HAZUS-MH Earthquake 2% Probability of Exceedance in 50 years – Ground Shaking and Liquefaction Potential

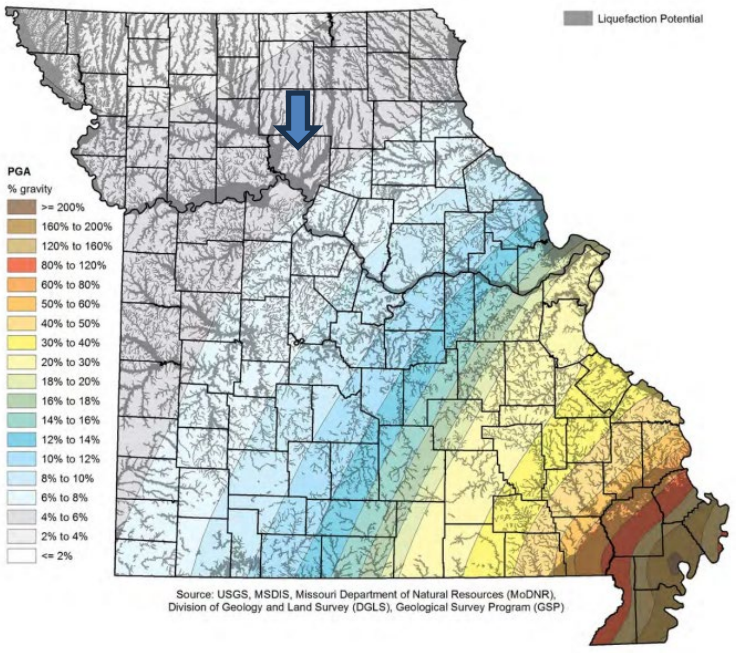


Table 3.43. HAZUS-MH Earthquake Loss Estimation 2% Probability of Exceedance in 50 Years Scenario Direct Economic Losses Results for Chariton County (in $ thousands)

Cost Structural Damage	Cost Non-structural Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Related Loss	Wages Losses	Rental Income Loss	Total Loss
$1,632	$3,358	$1,031	$30	0.53	$962	$198	$281	$364	$7,855

Source: 2023 Missouri State Hazard Mitigation Plan

Changing Future Conditions Considerations and the Impact of Climate Change

According to the Missouri Hazard Mitigation Plan 2023, scientists are beginning to believe that there may be a link between earthquakes and changing climate conditions. A change in the size of ice caps and sea-levels, this redistribution of weight over fault lines could potentially have an influence on earthquake occurrences. At this time, this is only conjecture, so recent earthquakes should not be linked with climate change. The Missouri HMP does state that early research indicated that more intense earthquakes and tsunamis may eventually be added to the adverse consequences that are caused by changing future conditions.

Vulnerability

Vulnerability Overview

The 2023 Missouri State Hazard Mitigation Plan provided an earthquake loss estimation for each county. The annualized loss scenario from the 2023 State Hazard Mitigation Plan is provided in the following table.

Table 3.44. HAZUS Earthquake Loss Estimation: Annualized Loss Scenario for Chariton County

Total Losses (in $ Thousands)	Loss Per Capita (in $ Thousands)	Annualized Loss Ratio (In $ per Million)
$7	$0.0009	$8

Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.45. Earthquake Coverage in Chariton County, Missouri

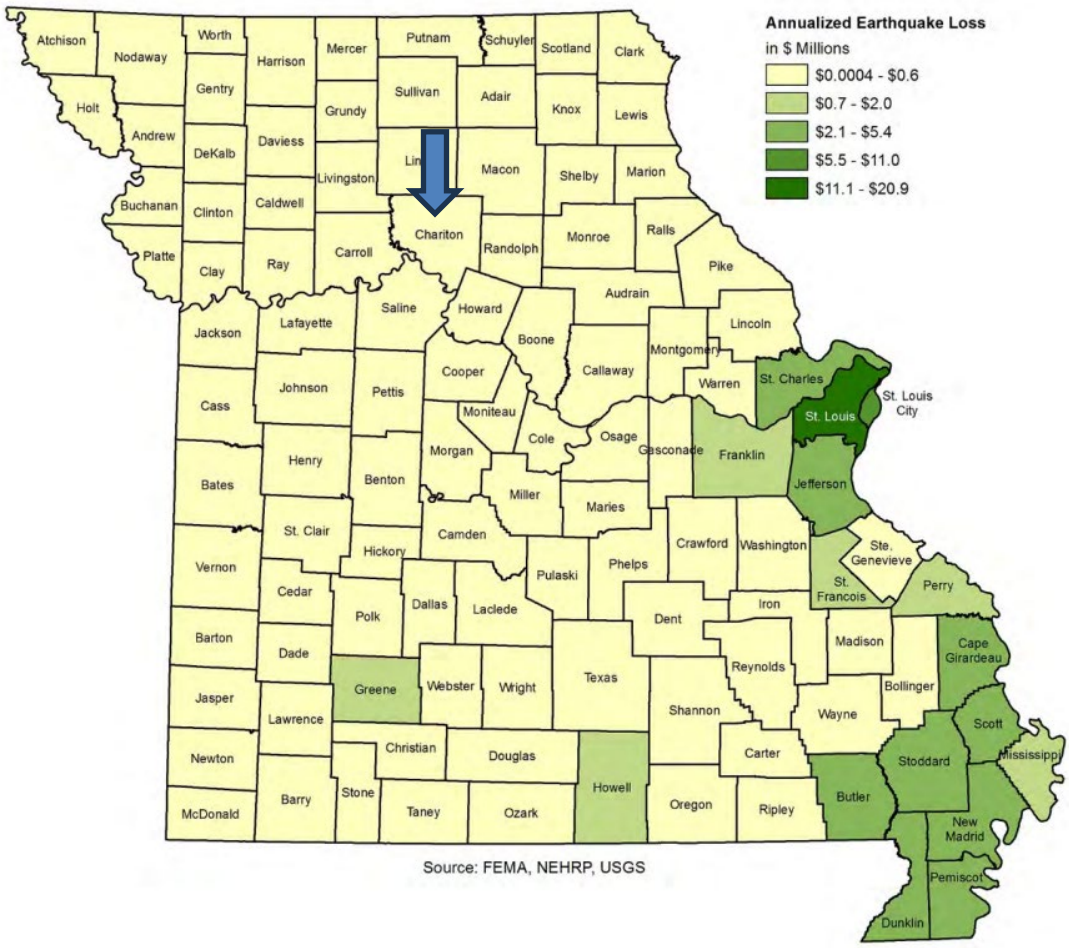
Earthquake Exposures	Homeowners, Farm, Mobile Home Exposures	% With Earthquake Endorsement	Average Premium, All Earthquake	Average Premium, $110k-$140k Coverage
176	2,113	8.3%	$89	$39

Source: Missouri Department of Commerce & Insurance “Overview of Residential Earthquake Insurance 2022”

Potential Losses to Existing Development

The 2023 Missouri State Hazard Mitigation Plan lists the estimated losses that would be suffered in Chariton County with an earthquake event. The following figure and table summarize this information.

Figure 3.36. HAZUS-MH Earthquake Loss Estimation: Annualized Loss Scenario – Direct Economic Losses to Buildings



Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.46. FEMA National Risk Index Loss Estimation: Annualized Loss Scenario for Chariton County

Annualized Frequency	Expected Annual Loss Buildings (in $ Thousands)	Expected Annual Loss- Fatalities	Expected Annual Loss- Population Equivalence	Expected Annual Loss- Total	Expected Annual Loss Rating
0.00047	$7	0.00005	$392	$7,474	Very Low

Source: 2023 Missouri State Hazard Mitigation Plan

Impact of Previous and Future Development

Any future development in Chariton County is not expected to increase the risk other than contributing to the overall exposure of what could become damaged in the event of an earthquake event.

Hazard Summary by Jurisdiction

The intensity of an earthquake is not likely to vary greatly throughout the planning area, and the risk will be the same throughout the county. However, damages could differ if there are structural variations in the planning area-built environment. The impact of an earthquake is likely to be higher on homes built before 1939 and on mobile homes. The following table lists the percentage of homes build prior to 1939 in the planning area as well as percentage of mobile homes.

Table 3.47. Percentage of Homes Built Prior to 1939 in Chariton County

Jurisdiction	% of Mobile Homes	% of Homes Built Prior to 1939
Chariton County	7.4%	18.1%
City of Brunswick	3.7%	23.8%
Dalton	22.2%	0%
City of Keytesville	15.3%	14.1%
City of Mendon	17.7%	31.6%
Rothville	0%	54.5%
Salisbury	2.2%	15.6%
Sumner	59.5%	10.8%
Triplett	20%	20%

Source: Census Bureau; 2022 Community Survey

Problem Statement

Although Chariton County is not located in an area that will likely see catastrophic damage from an earthquake, the county will be impacted by the loss of communications, transportation, the disruption of roads, rail and pipelines, water transportation, and the area will see a significant amount of refugees fleeing from Southern Missouri if a quake hits that area. Education is minimal for earthquakes due to the low likelihood of impact. There is one Emergency Management Director for the county that knows where all the generators and emergency buildings are. Not all citizens utilize social media and texting. An emergency plan for earthquakes should be made available to all residents and state what would happen in the event of an earthquake with details for communication and transportation. Owners of buildings and homes need to be aware of the plan in case damage is sustained to their property. Residents should be made aware of where the generators and emergency buildings are located. Utilization of social media and texting needs to be encouraged.

3.4.5 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.

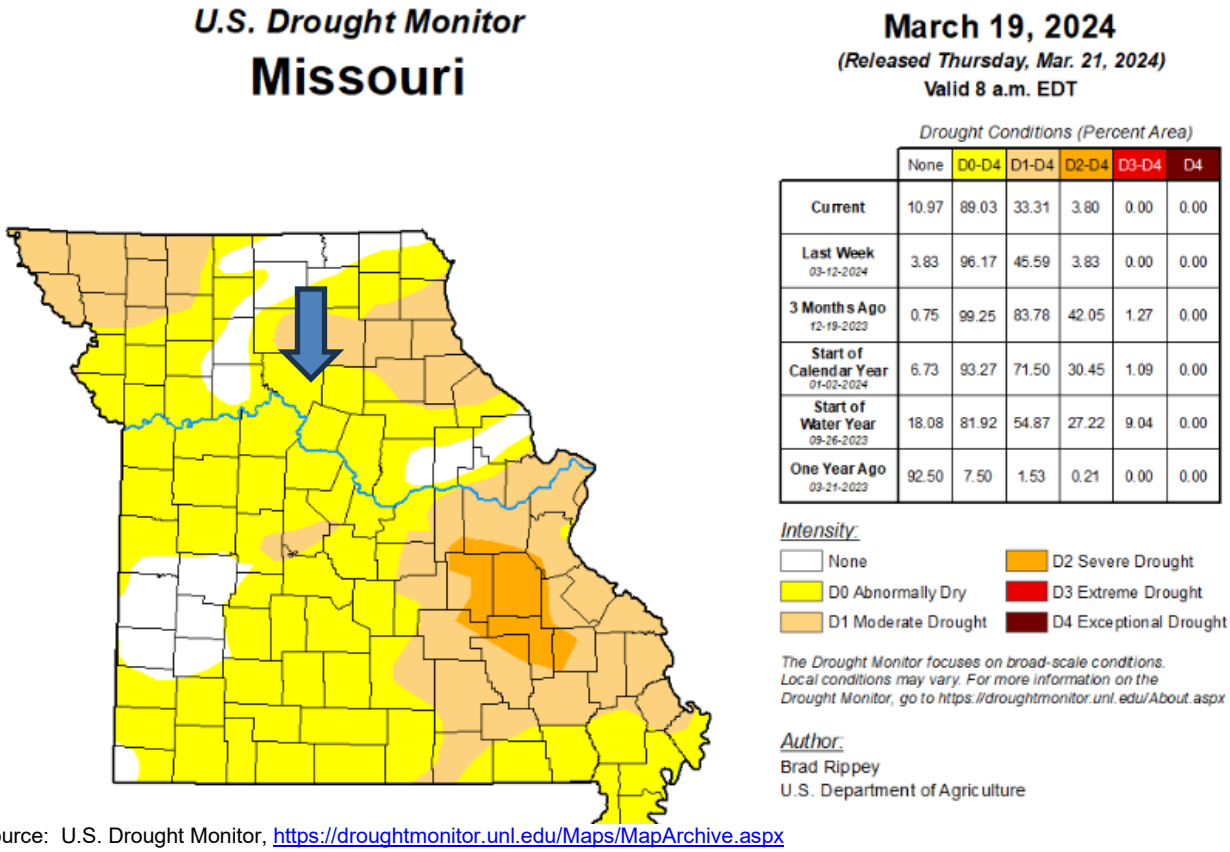
- Agricultural drought focuses on soil moisture deficiencies, differences between actual and potential evaporation, reduced ground water or reservoir levels, etc. Plant demand for water depends on prevailing weather conditions, biological characteristics of the specific plant, its stage of growth, and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

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

Geographic Location

Because of the broad scope of drought, all of Chariton County, with the exception of the school districts, is susceptible to this hazard. Agricultural land is extremely vulnerable to drought impacts. According to the most recent census of agriculture 71% of Chariton County is made up of cropland, making the impacts of drought one that is acutely felt by residents of Chariton County.

Figure 3.37. U.S. Drought Monitor Map of Missouri on March 19, 2024



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.

The National Drought Mitigation Center uses a scale to show the intensity of drought that goes from D0 to D4. The following figure shows the correlation of this scale to the Palmer Index. Reports from NCEI Storm Database use the D0-D4 scale in their narratives. The following figure describes this scale.

Figure 3.38. Drought Severity Classification

Category	Description	Possible Impacts	Palmer Drought Index
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less

Previous Occurrences

According to the Drought Impact Reporter Dashboard, in the last 12 months, Chariton County had 5 occurrences of drought that were publicized on the Drought Impact Reporter Dashboard. These occurrences of drought are listed in order of most recent and are provided in addition to the table of occurrences, to provide anecdotal evidence of recent conditions and impacts from drought.

- 7/25/2023: Missouri's Drought Assessment Committee met on July 25th as the drought continued. There were 8 fish kills that occurred across the state due to low water and reduced oxygen in the water. Record-breaking cattle sales took place. Conditions were determined to be favorable for aflatoxin in the corn crop, which could be fatal for livestock. The USACE warned of difficulty navigating the Mississippi River due to low water levels.
- 6/26/2023: A burn advisory was issued in Chariton County on June 26. The public was discouraged from having any type of bonfire, campfire, or controlled burn. The Rolla Police Department issued a similar burn advisory. ABC 17 News (Columbia, Mo.), June 27, 2023
- 6/13/2023: Gov. Mike Parson announced emergency access to water and hay for farmers amid drought conditions in the state. Farmers in need of hay and water may get water from 25 state parks and 36 Missouri Department of Conservation areas and access hay from 17 state parks. The Missouri Department of Transportation is offering special over width hauling permits at no charge to help farmers and ranchers move hay. FOX 2 Online (St. Louis, Mo.), June 13, 2023
- 6/7/2023: Missouri's Drought Assessment Committee met on June 7 and discussed a number of ways to help farmers, including bulk water purchases and expansion of livestock grazing areas. St. Louis Public Radio KWMU (St. Louis, Mo.), June 8, 2023
- 5/31/2023: Gov. Mike Parson signed an executive order to extend Missouri's drought alert until May 1, 2024. The drought alert began on May 31, 2023, in response to severe drought conditions. Many ranchers have had to sell livestock early and were looking for alternative feed. St. Joseph News-Press (Mo.), Nov 17, 2023, Gov. Mike Parson signed an executive order, directing the activation of the state's Drought Assessment Committee and that state and federal agencies participate as needed. The Executive Order will expire on Dec. 1, 2023.

KRCG-TV (New Bloomfield, Mo.), May 31, 2023

According to the NCEI database, Chariton County has experienced drought conditions on numerous occasions. The following information provides the date the individual drought conditions were declared or continued, and a narrative about the event.

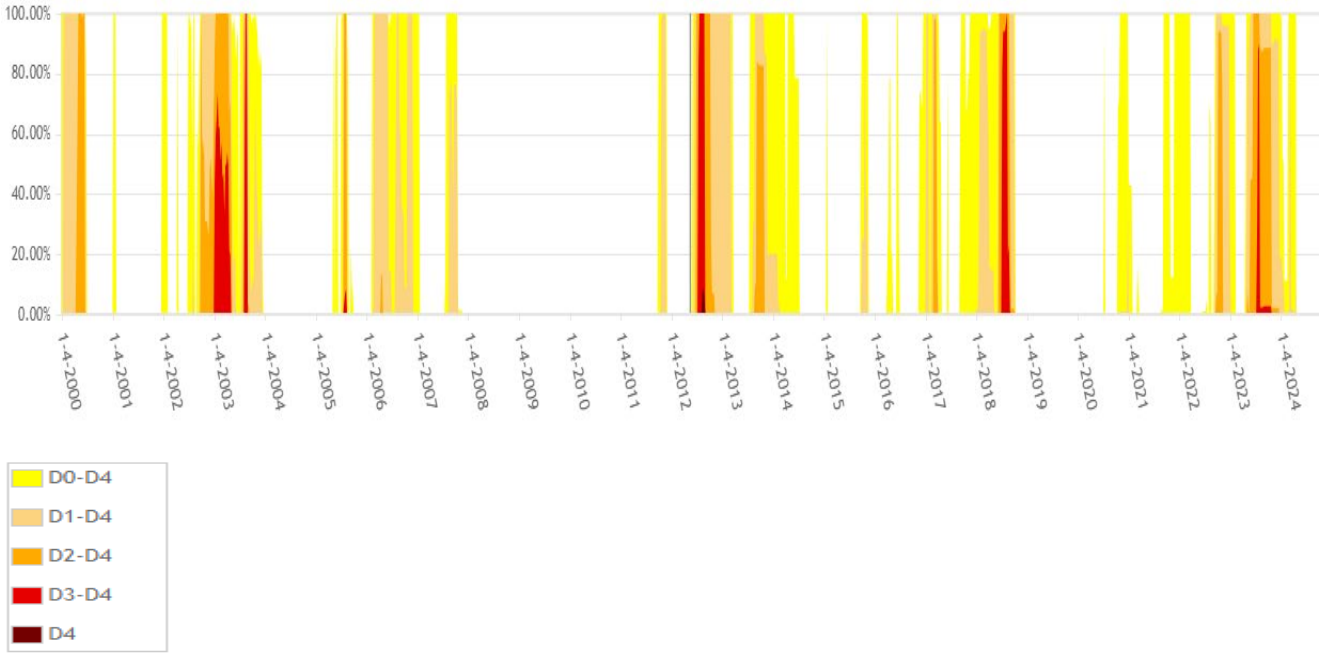
Table 3.48. Previous Occurrences of Drought in Chariton County 2003-2024

Begin Date – End Date	Episode Narrative
July 2012	Dry conditions, which started in the spring, intensified during the month of July. Drought conditions expanded across Missouri, with D2 conditions at the beginning of the month, increasing to D3 conditions by the end of the month. Most locations by the end of the month, had yearly rainfall deficits of 10 to 15 inches.
August 2012	Dry conditions, which started in the spring, intensified during the month of August. Drought D2 and D3 conditions at the beginning of the month, increased to D3 and D4 conditions by the end of the month. Most locations by the end month, continued yearly rainfall deficits in the 10-to-15-inch range.
September 2012	The remnants of Hurricane Isaac brought some much-needed relief to drought conditions across the area, on the 1st of September. This helped improve drought conditions from D4 and D3 to D3 and D2. Rainfall totals with the remnants of Isaac, ranged from around one inch near the Iowa border, to around 7 inches in the Kansas City Metropolitan area.
October 2012	The drought continued across west central and northwest Missouri through the month of October, with slight improvement noted, especially across north central and central portions of the state. Rainfall deficits for the year were in the 10-to-15-inch range.
September 2013	Severe drought D2 conditions persisted across most of northern Missouri during the month of September.
October 2013	Severe D2 drought conditions continued in the month of October across north central Missouri.
June 2018	Starting at the very end of May and going into June the US Drought Monitor at the University of Nebraska declared portions of Missouri in a D2 or worse drought. While impacts from this drought would be felt through the summer, it's unclear if any drought impacts were felt through the month of June.
July 2018	The anomalously dry period that plagued the region during the summer of 2018 continued into and through July. Most areas were about 2 inches short of normal precipitation for the month of July. Most of northern Missouri, north of the Missouri River, came up between 4 and 5 inches short of normal. This combined with the dry June has caused the drought across the region to worsen.

August 2018	Chariton County reached or maintained D3 drought status for the entire month. While rain did move into the area through the month, the ground was dry enough from the below-normal precipitation and above normal temperatures through the month to warrant D3 status maintenance. The direct impact to Chariton County is unclear, but statewide drought impacts are estimated around 2 billion dollars, per The University of Missouri Extension Center. The drought has also hurt pastures, with about three-quarters in poor or very poor conditions, according to the USDA report. Many pastures haven't been able to support grazing cattle, prompting farmers to feed cattle with hay that might normally be saved for winter. It also hurt the hay crop, which is down about one-third from normal. The 2018 drought is turning out small corn ears. Some farmers are not waiting until harvest, instead trying to get the most out of the crop by baling it or cutting it for silage for cattle. Farmers can now clean out sediment in ponds to increase water-holding capacity. Ponds in the conservation program are built for erosion control.
September 2018	The drought of 2018 continued for Chariton County, however an influx of some moisture brought some minor relief to the county. Conditions improved from D3 to D2 during the month of September, but the impacts and losses of several crops were already felt across the region. The amount of damages is unknown at this point, but numerous farmers were unable to get full return from their crops.
September 2022	Due to ongoing lack of rain across the area the severe (D2) drought has expanded into Chariton County. So far there have been little to no reports of impacts, but the drought continued into October.
October 2022	Significant precipitation deficits continued into October with severe to extreme drought persisting through the month. Chariton County began October with just a small sliver across the western portions of the county in D2 drought but would expand to cover almost all of the county by early to mid-October.
November 2022	Significant precipitation deficits yielded D2 drought conditions continuing into November before improving to D1 or better by November 15th.
May 2023	By mid to late May conditions had become much drier from the wet early start to early spring. By mid to late spring the area became deficit of normal rainfall by several inches, resulting in a declaration of severe (D2) drought. Impacts from this drought still appear to be minor, but drought conditions worsened as it went into June.
June 2023	After 2 months of relatively dry conditions portions of Missouri were brought into severe drought conditions. According to the Advanced Hydrologic Precipitation Service page there was a deficit of 2-5 inches across May and June which led to the declaration and maintenance of severe drought.
July 2023	After another relatively dry month across the area central and northern Missouri saw generally deteriorating drought conditions. By the middle to end of the month almost the entire area was covered in D3 extreme drought conditions.
August 2023	Severe (D2) to Extreme Drought (D3) persisted through the month of August in Chariton County.

Source: NCEI Storm Data Base

Figure 3.39. Percent of Chariton County in Drought 2000-2024



Source: US Drought Monitor; www.droughtmonitor.unl.edu

Probability of Future Occurrence

To determine the frequency of previous droughts in Chariton County the data was taken from droughtmonitor.unl.edu. A search was conducted on the frequency and drought classifications that Chariton County has had for the time frame of 1/1/2004 to 4/29/2024. This time frame encompasses 244 months in total, and this figure was used in the probability calculations. The following table provides a breakdown of the information that was gathered regarding Chariton County.

Table 3.49. Chariton County and Weeks Spent by Drought Classification 2004-2024

Chariton County	D0	D1	D2	D3	D4
Weeks at this Designation	420	250	97	34	6
Months at this Designation	105	62.5	24.25	8.5	1.5

Source: US Drought Monitor; Statistics by Threshold; Chariton County, Missouri 4/29/2024

Probability of Chariton County and the Occurrence of D0 Drought

$$\frac{105}{244} = 43.03\% \text{ Chance of D0}$$

Probability of Chariton County and the Occurrence of D1 Drought

$$\frac{62.5}{244} = 25.61\% \text{ Chance of D1}$$

Probability of Chariton County and the Occurrence of D2 Drought

$$\frac{24.25}{244} = 9.94\% \text{ Chance of D2}$$

Probability of Chariton County and the Occurrence of D3 Drought

$$\frac{8.5}{244} = 3.48\% \text{ Chance of D3}$$

Probability of Chariton County and the Occurrence of D4 Drought

$$\frac{1.5}{244} = 0.61\% \text{ Chance of D4}$$

The probability of having any type of drought in Chariton County is determined by combining all instances of drought and dividing by the number of months within the time frame in question, in order to provide a probability.

Probability of Drought Occurring in Chariton County

$$\frac{201.75}{244} = 82.7\%$$

The probability of Chariton County experiencing some type of drought is likely at 82.7% per year, however, the severity of the drought could vary greatly as seen from the previous data. Due to the likelihood of some type of drought, Chariton County should plan for the occurrence of drought, and take steps the lessen the severity of the occurrence with measures intended to conserve water usage.

Changing Future Conditions Considerations and the Impact of Climate Change

Although drought is not predictable, long-range outlooks and predicted impacts of climate change could indicate an increased chance of drought. With an increase in annual temperatures due to a changing climate, droughts are more likely to occur through higher evaporation rates. With a likelihood of wetter springs there is an increased chance of dryer summers. The dryness is likely to reduce the river flow and may lead to a shortage of agricultural water availability. This has a large effect on the farm-dependent community.

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

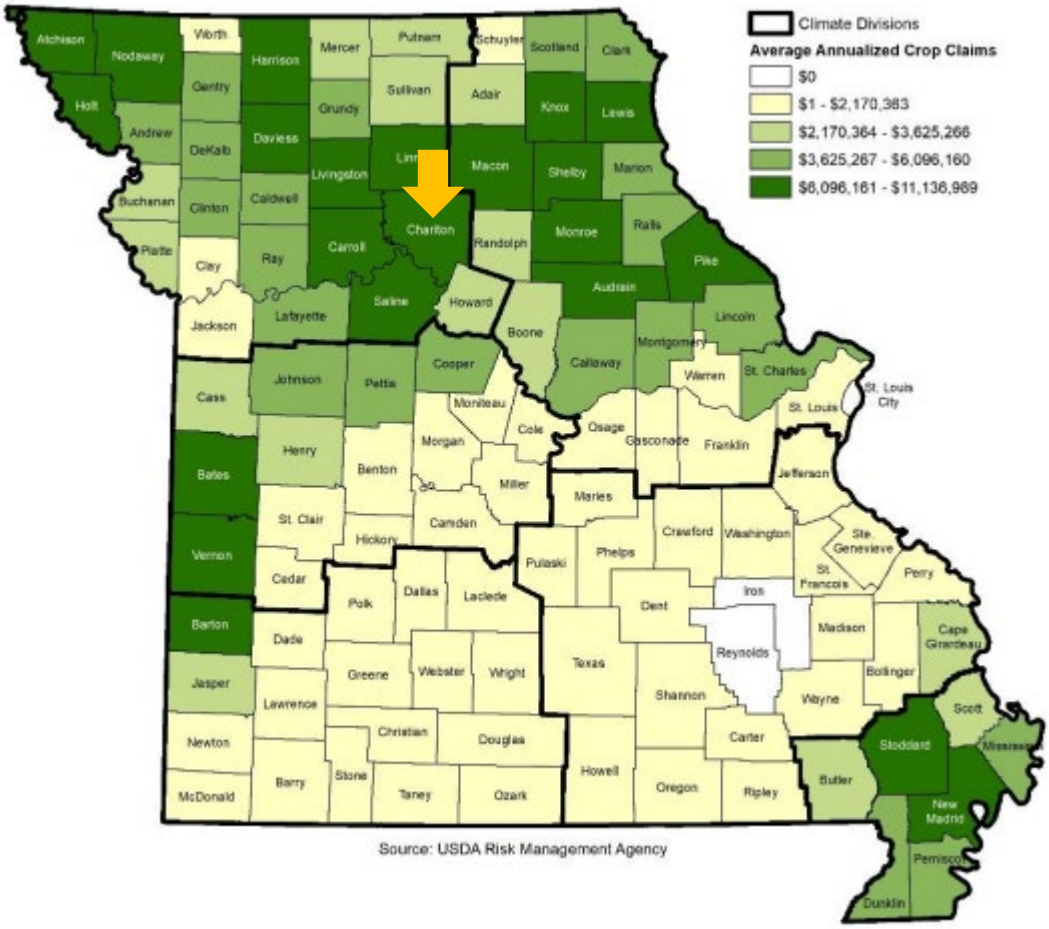
climate change. Two of the principal reasons for the projected water constraints are shifts in precipitation and potential evapotranspiration (PET). Climate models project decreases in precipitation in many regions of the US, including areas that may currently be described as experiencing water shortages of some degree. This study shows a moderate risk of water shortages in 2050 for Chariton County with the effects of climate change.

Vulnerability

Vulnerability Overview

The following table contains the data for crop loss claims due to drought that have been paid in Chariton County from 2013 to 2024. Chariton County is ranked 2nd highest in the state for crop loss due to drought.

Figure 3.40. Annualized Drought Crop Insurance Claims Paid 2013-2021



Source: 2023 Missouri State Hazard Mitigation Plan

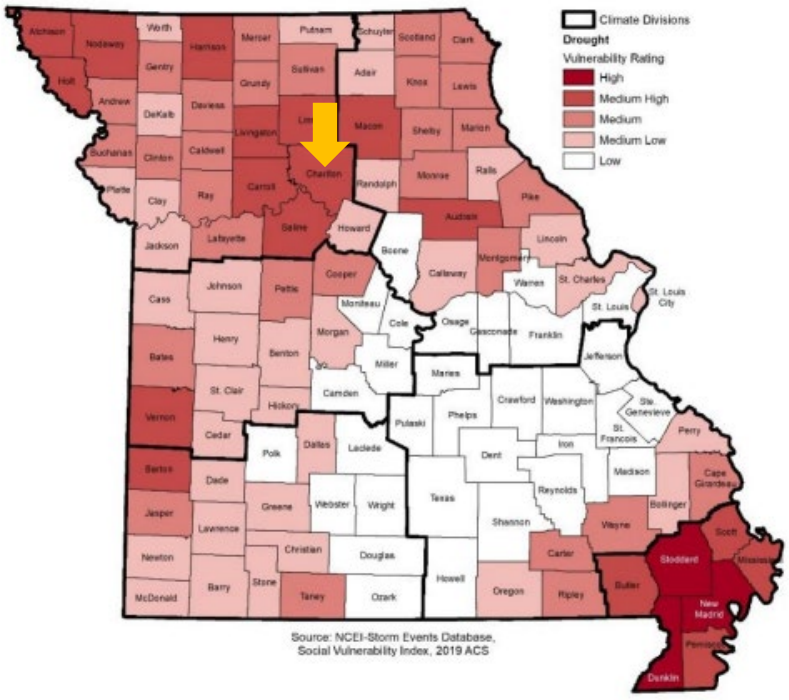
Table 3.50. Crop Loss Payments from 2013-2024 for Chariton County

Crop Year	Crop Name	Cause of Loss	Insurance Paid ($)
2013	Corn	Drought	$4,181,809.02
	Soybeans		$3,782,790
	Wheat		$4336
2014	Corn	Drought	$22,306
	Soybeans		$8,966

	Wheat		$13,302.50
2015	Soybeans	Drought	$185,040.82
2016	Soybeans	Drought	$4,933.20
	Wheat		$4,964.40
2017	Corn	Drought	$56,939
	Soybeans		$156,089
2018	Corn	Drought	$3,979,051.11
	Soybeans		$770,578.01
	Wheat		$32,119.11
2019	**-No Claims-**		
2020	Corn	Drought	$50,894
	Soybeans		$62,825
2021	Corn	Drought	$178,429
	Soybeans		$212,812
2022	Corn	Drought	$50,869.50
	Soybeans		$519,906.15
2023	Corn	Drought	$1,835,430.10
	Soybeans		$556,092.50
	Wheat		$24,556.10
2024	Corn	Drought	$45,906
	Soybeans		$30,927.00
Total			**$17,026,871.52**

Source: USDA.gov/data/cause.html

Figure 3.41. Drought Vulnerability in Missouri by County



Source: 2023 Missouri State Hazard Mitigation Plan

As per the previous Figure, Chariton County in Missouri has a Medium-High Drought Vulnerability Rating per the 2023 State Hazard Mitigation Plan. The method used to determine vulnerability to

drought across Missouri was a statistical analysis of data from several sources: USDA Risk Management Agency's insured crop losses as a result of drought (2021-2022), USDA crop exposure by county, the calculated Social Vulnerability Index for Missouri Counties from the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolins, and storm events data (1996-December 31, 2021) and probability of severe drought based on historic Palmer Drought Severity Index. The USDA crop exposure by county is from the 2017 Agricultural Census and assumes that the larger the exposure, the greater potential for loss and impact on the local economy.

From the statistical data collected, four factors were considered in determining overall vulnerability to drought as follows: social vulnerability, crop exposure ratio, annualized crop claims paid, and likelihood of occurrence. Based on natural breaks in the statistical data, a rating value of 1 through 5 was assigned to each factor. Once the ranges were determined and applied to all factors considered in the analysis, the ratings were combined to determine an overall vulnerability rating for drought. These rating values correspond to the following descriptive terms:

1. Low
2. Medium-low
3. Medium
4. Medium-High
5. High

The following table utilizes these factors in determining the vulnerability rating of Chariton County to drought, according to the 2023 Missouri Hazard Mitigation Plan.

Table 3.51. Vulnerability of Chariton County to Drought

SOVI Index Rating	USDA RMA Total Drought Crop Claims	Average Annualized Crop Claims	USDA Claims Rating	2017 Crop Exposure	Crop Exposure Rating	Likelihood of Severe Drought	Drought Occurrence	Total Rating	Total Rating (text) Drought
4	$83,897,254	$8,389,725	5	$98,313,000	4	0.42	2	15	Medium High

Source: 2023 Missouri State Hazard Mitigation Plan

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.

Although it is difficult to quantify many of the potential losses that may occur due to drought,

agriculture losses are direct economic costs that can be easily quantified by examining previous insurance claims in the county. Chariton County's crop exposure is high, with approximately 76% of the county's total land area in use for agriculture. Over the past 20 years Chariton County has experienced an average of $847,501.93 in crop losses annually due to drought conditions.

Impact of Previous and Future Development

Increases in acreage planted with crops would increase the exposure to drought-related agricultural losses. In addition, increases in population impose additional strains on water supply systems to meet the growing demand for treated water, and these strains could prove impactful during times of drought.

Hazard Summary by Jurisdiction

Drought has the potential to impact all of Chariton County, with the exception of the school district. But the ways in which the impacts will be experienced vary. As discussed in the previous occurrences and vulnerability sections, most of the damages seen historically as a result of drought in Chariton County affect agriculture. Therefore, the magnitude of the impacts of drought may be greater in rural parts of the county, which have large areas of crops and wildlife. In areas with greater building density, there is more exposure to potential shrinking and expanding soil problems around foundations as a result of drought. If drought conditions are severe and prolonged, water supplies could also be affected.

The residents at greatest risk for heat-related illness and deaths include children up to five years of age and people 65 years of age or older. The following table provides the most at-risk populations in the planning area by jurisdiction.

Table 3.52. Population in Chariton County Jurisdictions 5 years of age and Younger and 65+

Jurisdiction	Population Under 5 Years	Population Under 5 Years (%)	Population Over 65	Population Over 65 (%)
Missouri	360,175	5.9%	1,062,483	17.3%
Chariton County*	432	5.8%	1,852	25.0%
Brunswick	85	9.9%	201	23.5%
Keytesville	14	3.6%	92	24.0%
Mendon	5	2.5%	33	16.3%
Rothville	5	7.1%	13	18.6%
Salisbury	93	6.5%	297	20.8%
Sumner	5	5.2%	17	17.5%
Triplett	0	0%	5	41.7%
Village of Dalton	0	0%	42	76.4%

Source: 2023 ACS 5-year estimates

Problem Statement

- Chariton County and participating jurisdiction's have a high level of crop exposure. Possible solutions include encouraging farmers to purchase crop insurance and educating farmers on drought-resistant farming practices.
- Chariton County and participating jurisdiction's water supply could be impacted by severe or prolonged drought. Possible solutions include the development of agreements with neighboring communities for a secondary water source and review of local ordinance/regulation for inclusion of water-use restrictions during periods of drought.

3.4.6 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 the figure below 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

Location within the county is not a factor when facing an extreme temperature event. Rather, they are area wide events. The entire planning area is subject to extreme temperatures and the risk of this hazard does not vary across jurisdictions.

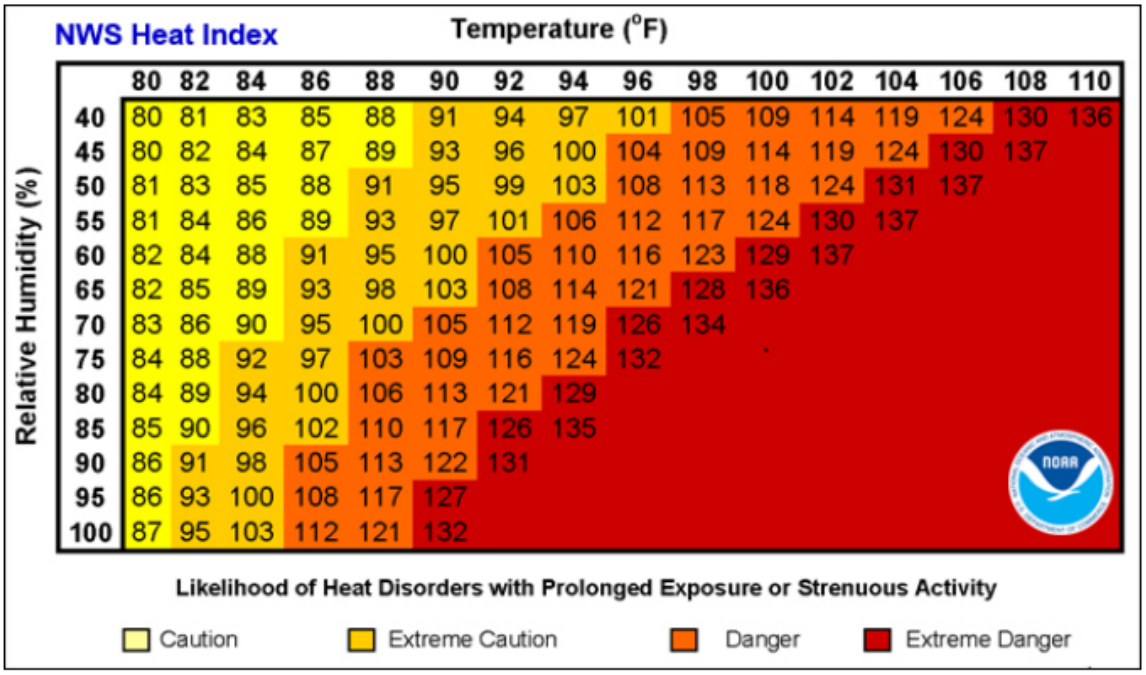
However, there are additional factors to consider when there is an extreme heat event. Specific climatic factors, such as temperature and humidity, along with wind and sun/shade determine the effects of this hazard. An individual's physical condition has a profound effect on their ability to deal with the effects of excessive heat. Illness or heavy exercise adds to the metabolic heat that the body must dissipate. Age is also a contributing factor. The accessibility of air-conditioned shelters is important to those falling into at-risk groups.

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. During the last 10 years Chariton County has had 9 events categorized as “Danger” and one event categorized as “Extreme Danger”. This information was obtained from the NCEI database from the event narratives. More detailed information can be found under previous occurrences in this chapter.

Figure 3.42. 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.

The National Weather Service issues the following wind chill 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. The planning area is vulnerable to all of these warnings if the temperature drops low enough.

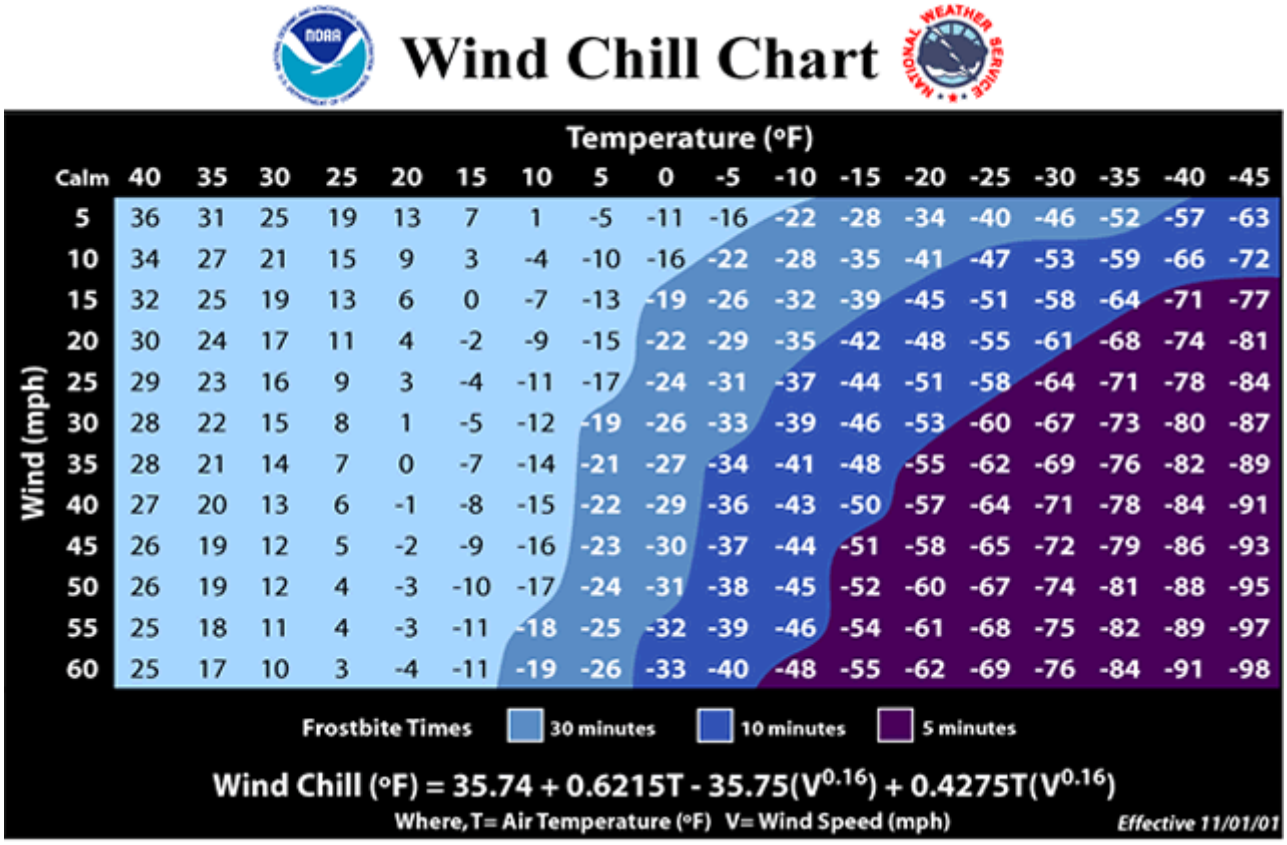
- Wind Chill Warning: NWS issues a wind chill warning when dangerously cold wind chill values are expected or occurring. If you are in an area with a wind chill warning, avoid going outside during the coldest parts of the day. If you do go outside, dress in layers, cover exposed skin, and make sure at least one other person knows your whereabouts. Update them when you arrive safely at your destination.
- Wind Chill Watch: NWS issues a wind chill watch when dangerously cold wind chill values are possible. As with a warning, adjust your plans to avoid being outside during the coldest parts of the day. Make sure your car has at least a half a tank of gas and update your winter survival kit.
- Wind Chill Advisory: NWS issues a wind chill advisory when seasonably cold wind chill values, but not extremely cold values are expected or occurring. Be sure you and your loved

ones dress appropriately and cover exposed skin when venturing outdoors.

- Hard Freeze Warning: NWS issues a hard freeze warning when temperatures are expected to drop below 28°F for an extended period of time, killing most types of commercial crops and residential plants.
- Freeze Warning: When temperatures are forecasted to go below 32°F for a long period of time, NWS issues a freeze warning. This temperature threshold kills some types of commercial crops and residential plants.
- Freeze Watch: NWS issues a freeze watch when there is a potential for significant, widespread freezing temperatures within the next 24-36 hours. A freeze watch is issued in the autumn until the end of the growing season and in the spring at the start of the growing season.
- Frost Advisory: A frost advisory means areas of frost are expected or occurring, posing a threat to sensitive vegetation.

During the last 10 years Chariton County has experienced 3 Frostbite times under 10 minutes for wind chill events and 1 day of Frostbite times under 5 minutes for wind chill events. More information can be found in the previous occurrences section of this chapter.

Figure 3.43. Wind Chill Chart



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

Previous Occurrences

According to the National Centers for Environmental Information (NCEI) Storm Events database, from 2003 through 2023, there have been 16 recorded events related to extreme heat and 8 events related to extreme cold. These events are summarized in the table below. The NCEI reports do not indicate any deaths directly resulting from these events, however conditions may have resulted in related deaths. Event narratives indicating significant impacts in Chariton County are summarized below.

Table 3.53. NCEI Chariton County Extreme Temperature Recorded Events Summary, 2003-2024

Event Type	Event Count	Injuries	Deaths
Extreme Heat-Related Events	16	0	0
Heat	14	0	0
Extreme Heat	2	0	0
Extreme Cold Related Events	9	0	0
Cold/Wind Chill	2	0	0
Extreme Cold/Wind Chill	6	0	0
Frost/Freeze	1	0	0
Total	**25**	**0**	**0**

Source: NCEI Storm Event Database; Search Results 4/2024

Extreme Heat-Related Event Narratives

- **7/18/1999:** Northwest Missouri suffered through two weeks of oppressive heat and humidity in late July as temperatures topped the 90 degree mark for 14 consecutive days. Dew points in the lower to middle 70s pushed afternoon heat indices above 100 degrees each day.
- **7/14/2000:** Three days of 90-degree temperatures, coupled with very high humidity that pushed heat indices above 105, claimed 3 lives in west-central Missouri. A 63 year old male in Triplett, a 97 year old female in Raytown, and a 37 year old male in Riverside died of heat related causes.
- **8/28/2000:** The heat that affected the Kansas City area for the latter third of August built northeastward beginning on the 28th. High temperatures in north central Missouri climbed into the 90s, with stifling humidity helping to push the heat index to 105 to 110 degrees. The extreme heat and humidity continued into September.
- **9/1/2000:** The extreme heat that gripped northern Missouri in late August continued into September. Temperatures on the first 3 days of the month flirted with the century mark. The high of 106 at Kansas City International Airport on September 2 was a record for that date. Heat indices were above 100 on all three days, and heat-related illnesses claimed the lives of two men in Kansas City, and another in Chillicothe.
- **7/6/2001:** Oppressive heat and humidity covered all of northwest Missouri between July 6th and July 8th. Afternoon highs in the 90's combined with dewpoints as high as 80 degrees...combined to produce heat indices as high as 115 degrees.
- **7/17/2001:** Excessive heat plagued northern and western Missouri from July 17th through July 24th.
- **8/1/2001:** Excessive heat and humidity covered northwest Missouri between August 1st and August 5th. Afternoon heat indices ranged from 105 to 113 degrees.
- **8/9/2001:** Excessive heat and humidity again plagued northwest Missouri on August 9th. Afternoon heat indices ranged from 105 to 110 degrees.
- **7/4/2003:** Oppressive conditions covered the area from July 4th through July 5th. The combination of heat and humidity drove afternoon heat indices into the 105 degree range.
- **7/21/2005:** Oppressive heat and humidity prevailed across the area from July 21st to July 25th. Afternoon heat indices reached from 105 to 110 degrees.
- **7/16/2006:** Oppressive heat and humidity combined to produce afternoon and early evening

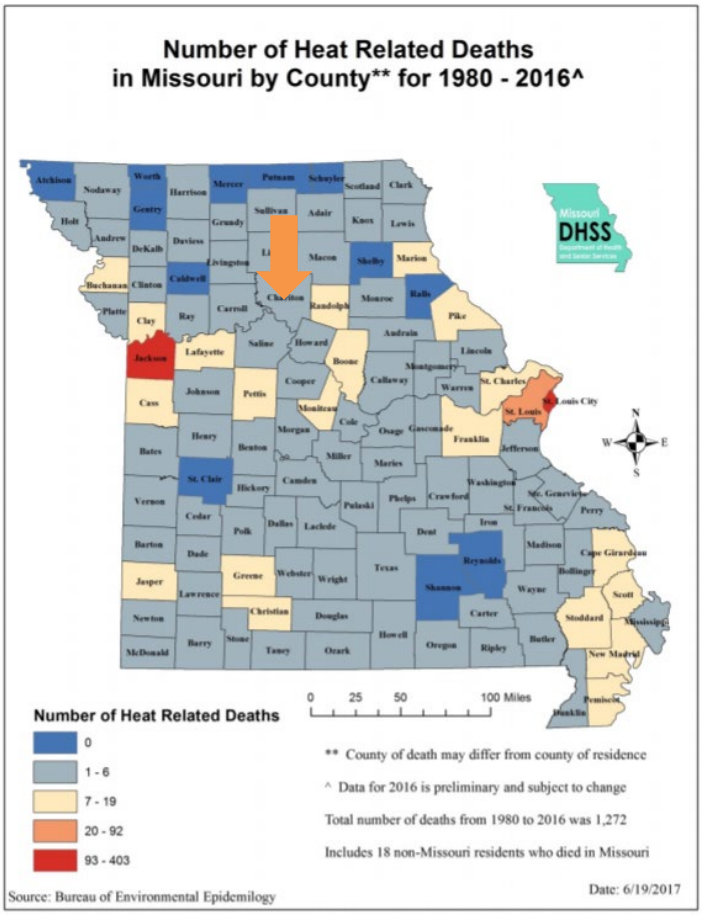
heat indices from 105 to 115 degrees, from July 16th through July 20th.

- **7/29/2006:** Oppressive heat and humidity combined to produce heat indices from 105 to 115 degrees, from July 29th through July 31st.
- **8/1/2006:** Oppressive heat and humidity continued from July...with heat indices from 105 to 115 degrees before ending on August 2nd.
- **8/6/2007:** An upper-level ridge of high pressure, persisted across the area from August 6th through August 17th. The combination of heat and humidity produced heat index readings in the 105 to 115 degree range.
- **7/18/2012:** An unusually strong upper level ridge of high pressure, dominated the central United States with very hot and dry conditions, from July 18th through 25th 2012. Temperatures topped out from 100 to 110 degrees.
- **8/19/2023:** Starting on August 19, 2023 well-above normal temperatures impacted the central part of the United States, kicking off a heatwave that has not been experienced in the region in recent history. Kansas City International Airport reached high temperatures not recorded in the area since August of 2012. In contrast to the 2012 heatwave, this stretch of hot weather was accompanied by extremely high dewpoints, with frequently reached the upper 70s to middle 80s across the entire area. The combination of the extreme heat and the excessively high dewpoints led to heat indices from August 19 through August 25 to rise to 120-130 degrees.

Extreme Cold-Wind Chill Event Narratives

- **1/10/1997:** Very cold arctic air settled over Northwest and West Central Missouri from the 10th through the 13th. Daytime temperatures through the period only reached the single digits which is almost 30 degrees below normal. Nightime low temperatures were in the single digits below zero. No record low temperatures were recorded but, winds gusting up to 30 MPH on the afternoon of the 10th produced wind chills as low as 30 to 50 below zero.
- **10/6/2000:** An unusually strong early season Arctic high pressure system built into the central Plains on October 6-10. Temperatures did not climb out of the 40s on October 6-8. Lows dropped below freezing for 5 consecutive days.
- **12/10/2000:** Arctic air gripped the region from around the 10th of December, through the end of the month. Except for a few hours on the 15th and 16th, temperatures remained below freezing through the entire period. Snow cover persisted from the 13th through the end of the month.
- **1/6/2014:** A polar plunge of arctic air slammed into Kansas, bringing wind chill values to around 30 degrees below zero for the morning of January 6.
- **2/14/2021- 2/16/2021:** On February 5, a cold air mass settled into the center part of the country, which caused temperatures to go below freezing. They would not return to the freezing/melting point until several weeks later. The worst of the cold snap occurred between February 14 through February 16. Aside from the cold air arrival, several inches of snow fell, which allowed the already historically cold airmass to hold together. Minimum temperatures on Monday the 15th and and Tuesday the 16th reached negative double digits, and daytime highs across the area failed to reach zero degrees.
- **12/23/2022:** An Arctic air mass entered the region on the morning of December 22nd, plunging temperatures to below zero. Strong winds combined with the cold temperatures yielded wind chills between -25 and -40 below zero from roughly 10 am on 12/22 to noon on 12/23. A Wind Chill Warning was in effect across the entire CWA.

Figure 3.44. Heat Related Deaths in Missouri 2000 - 2016



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

Table 3.54. Chariton County Crop Loss Due to Extreme Temperature 2013-2023

Year	Crop	Total Loss (in $)
Extreme Cold		
2013	Corn	$86,975
	Soybeans	$1,548
	Wheat	$37,466.73
2014	Corn	$3,606
	Wheat	$150,130.82
2015	Soybeans	$1,145
	Wheat	$39,272.34
2016	Corn	$488
	Soybeans	$16,983
	Wheat	$11,546.56
2017	Soybeans	$3,450
2018	Wheat	$11,443.80
2019	Corn	$58,230
	Soybeans	$2,695
	Wheat	$77,934.97
2020	Corn	$20,349.34
	Soybeans	$7,203.82
	Wheat	$48,349
2021	Corn	$65,047
	Soybeans	$37,318
2022	Corn	$1,510
	Grain Sorghum	$2,554
	Soybeans	$16,788
2023	**No Claims**	
2024	Wheat	$45,184
Total	**$747,218.38**	
Extreme Heat		
2013	Corn	$90,108
	Soybeans	$143,064
2014	**No Claims**	
2015	**No Claims**	
2016	Corn	$926
	Soybeans	$7,399.80
2017	Soybeans	$13,097
2018	Corn	$34,506.81
2019	**No Claims**	
2020	**No Claims**	
2021	**No Claims**	
2022	Corn	$14,280.50
2023	Soybeans	$747
2024	Corn	$16,915
Total	**$321,044.11**	

Source: USDA Cause of Loss Report 2013-2024

Extreme heat and cold can cause stress to crops and animals. According to USDA Risk Management Agency, losses to insurable crops during the 10-year time-period from 2013 to 2023 were $1,006,163.49. 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.

The National Institute on Aging estimates that more than 49 million Americans over the age of 65 and particularly vulnerable to hypothermia, with isolated elders being most at risk. For an older person, a body temperature of 95° or lower can cause many health problems, such as heart attack, kidney problems, liver damage or worse.

Also at risk are those without shelter, those who are stranded, and those 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.

Probability of Future Occurrence

NCEI, dating back to 2004 indicates 2 years with extreme heat events (2007 & 2012). In the same time period there were 14 heat events. Based on the historical data, the calculated probability of an event is as follows:

Probability of Extreme Heat Event:

$$Probability = \frac{\#\ of\ events}{Years} = \frac{2}{20} = 10\%$$

Chariton County has a 10% chance of experiencing an extreme heat event in any given year.

Probability of a Heat Event:

$$Probability = \frac{\#\ of\ events}{Years} = \frac{14}{20} = 70\%$$

Chariton County has a 70% chance of experiencing a heat event in any given year.

Probability of an Extreme Cold Event:

$$Probability = \frac{\#\ of\ events}{Years} = \frac{9}{20} = 45\%$$

Chariton County has a 45% chance of experiencing an extreme cold event in any given year.

Changing Future Conditions Considerations and the Impact of Climate Change

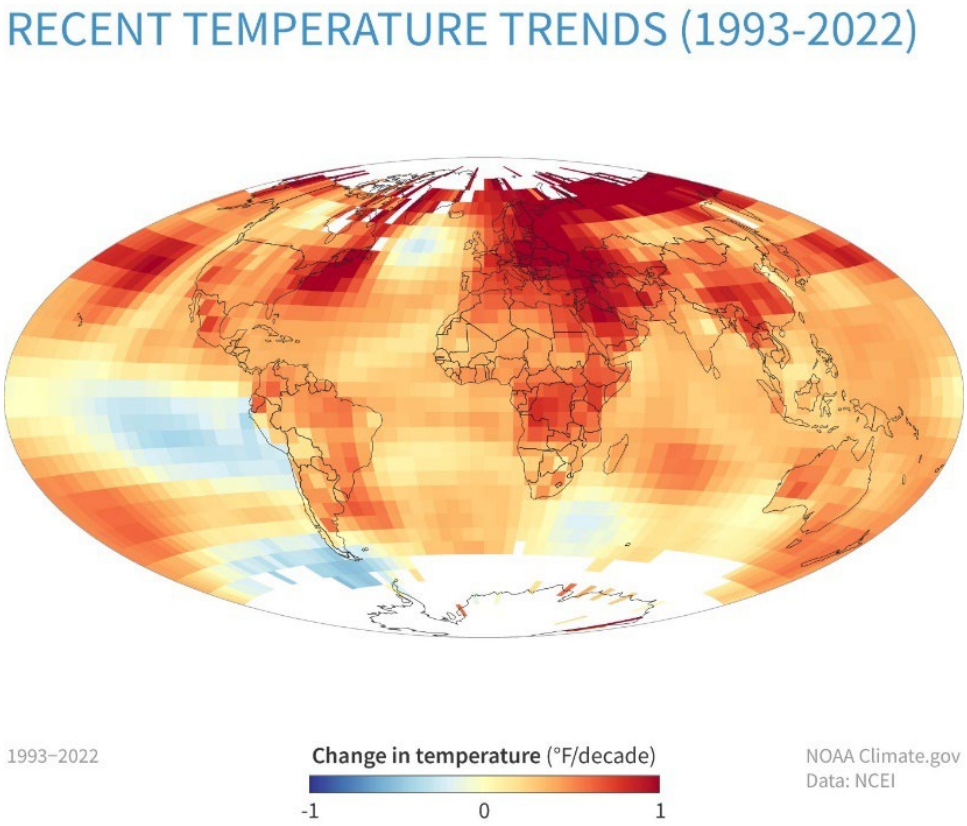
By the end of the century, the temperatures are projected to continue to increase. The best-case scenario, with lower greenhouse gas emissions, the temperatures are expected to exceed historic levels by the middle of the 21st century. If greenhouse gas emissions are not curbed, historically

unprecedented warming is projected by the end of the century. Due to the change in climate, it is projected that by the middle of the 21st century, record breaking heat is likely to occur on a regular basis. This will lead to a higher frequency of heat waves.

The impacts of extreme temperatures are experienced more acutely by the elderly and other vulnerable populations. High temperatures are often higher in urban areas, of which Chariton County has none. There is a higher demand for electricity as people try and keep cool. This increased demand adds a strain to electricity providers and could potentially lead to an increase in the number of power outages.

Additionally, air quality and water quality can be adversely affected by an increase in temperatures. Chariton County is mostly agricultural, and the strain placed on crops and livestock could increase along with the temperature.

Figure 3.45. Global Temperature Trends 1993-2022



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.

The following table lists typical symptoms and health impacts due to exposure to extreme heat.

Table 3.55. 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

The National Institute on Aging estimates that more than 49 million Americans over the age of 65 are particularly vulnerable to hypothermia, with isolated elders being most at risk. For an older person, a body temperature of 95° or lower can cause many health problems, such as heart attack, kidney problems, liver damage or worse. (See Table 3.57)

Also at risk are those without shelter, those who are stranded, and those 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.

Extreme heat and extreme cold events are common occurrences in Missouri. The method used to determine vulnerability to extreme temperatures across Missouri was statistical analysis of data from several sources: National Centers for Environmental Information (NCEI) storm events data (1996 to December 31, 2021), total population and percentage of population over 65 data from the U.S. Census (2019), and the calculated Social Vulnerability Index for Missouri counties from the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina.

From the statistical data collected, four factors were considered in determining overall vulnerability to extreme temperatures as follows: total population, percentage of population over 65, likelihood of occurrence, and social vulnerability. Based on natural breaks in the statistical data, a rating value of 1 through 5 was assigned to each factor. Once the individual ratings were determined for the above factors, a combined vulnerability rating was computed for extreme heat and extreme cold. These rating values correspond to the following descriptive terms:

1) Low
2) Medium-Low
3) Medium
4) Medium-High
5) High

Table 3.56. Likelihood of Occurrence and Overall Vulnerability Rating for Extreme Temperatures

Heat					Cold				
Total Events	Likelihood of Occurrence	Likelihood Rating	Total Vulnerability	Total Vulnerability Description	Total Events	Likelihood of Occurrence	Likelihood Rating	Total Vulnerability	Total Vulnerability Description
17	0.81	2	9	Low Medium	3	0.14	1	8	Low Medium

Source: 2023 Missouri State Hazard Mitigation Plan

Potential Losses to Existing Development

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

Extreme cold temperatures can lead to potential losses to existing development. These losses may include power outages, loss of income from closures and disruptions, and risks to real estate such as burst pipes.

In the years from 2013-2024 Chariton County suffered a total of $1,006,163.49 in crop losses due to extreme temperatures. This would average $47,912.55 in claims for crop loss each year in Chariton County.

Impact of Previous and Future Development

Population growth can result in increases in the age groups that are most vulnerable to extreme heat and extreme cold. Population growth also increases the strain on electricity infrastructure, as more electricity is needed to accommodate the growing population. Currently, none of the participating jurisdictions are experiencing growth that would lead to increased vulnerability.

Hazard Summary by Jurisdiction

There is no variation in vulnerability due to location or jurisdiction within the planning area. Rather, those at greatest risk for illness and deaths due to extreme temperatures include children five years of age and younger, 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 or cold, demographic data was obtained from the 2022 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 temperatures. The table below 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.

As the following table illustrates, three jurisdictions within the planning area exceed the state population under 5 years of age (percentage); those are the City of Brunswick, the City of Salisbury, and the City of Rothville. When comparing the population over 65 % with that of the State of Missouri, all jurisdictions exceed the state percentage with the exception of Mendon.

Table 3.57. Chariton County Population Under Age 5 and Over Age 65, 2022 Census Data

Jurisdiction	Population Under 5 Years	Population Under 5 Years (%)	Population Over 65	Population Over 65 (%)
Missouri	360,175	5.9%	1,062,483	17.3%
Chariton County*	432	5.8%	1,852	25.0%
Brunswick	85	9.9%	201	23.5%
Keytesville	14	3.6%	92	24.0%
Mendon	5	2.5%	33	16.3%
Salisbury	93	6.5%	297	20.8%
Sumner	5	5.2%	17	17.5%

Source: U.S. Census Bureau, 2022 ACS 5-year estimates, (*) includes entire population of each city or county

Problem Statement

Brunswick and Salisbury have the highest percentage of population that is under 5 years of age, among the participating jurisdictions. Chariton County and all participating jurisdictions, with the exception of Mendon, have a proportion of residents 65 years of age and older that is higher than the state of Missouri.

Chariton County and the participating jurisdictions have a growing population of residents over 65 years, who are at a greater risk for extreme-temperature related illnesses, injuries, and death. 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.

Extreme temperatures tend to be wide spread rather than concentrated in a specific jurisdiction, and the entire planning area is equally likely to experience either extreme heat or extreme cold.

3.4.7 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

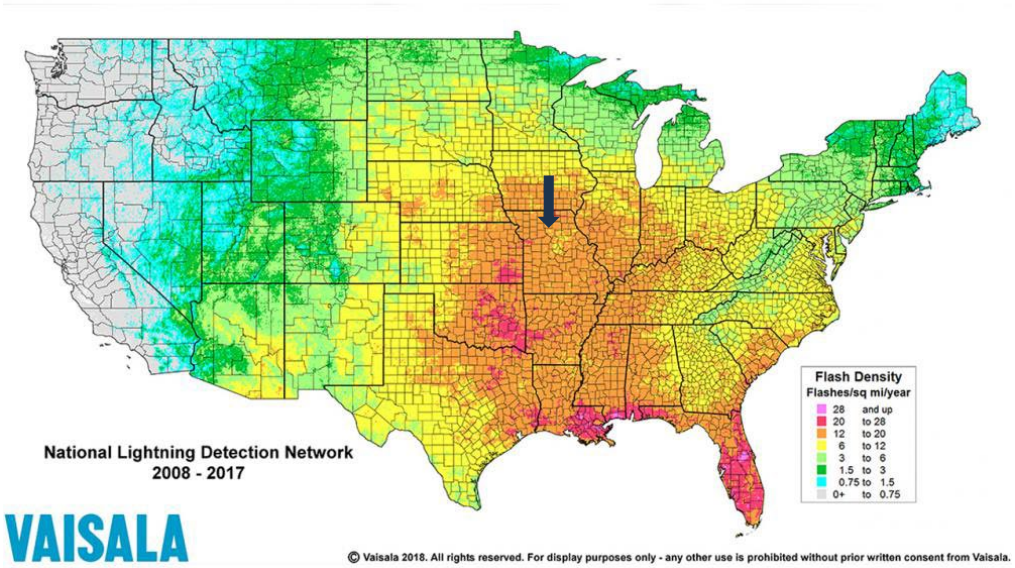
According to the National Oceanic and Atmospheric Administration (NOAA), hail is precipitation that is formed when thunderstorm updrafts carry raindrops upward into extremely cold atmosphere causing them to freeze. The raindrops form into small frozen droplets. They continue to grow as they come into 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. The majority of Chariton County is rural. According to the following table, the flash density of lightning in Chariton County is categorized as 12 to 20 flashes/square mile/year.

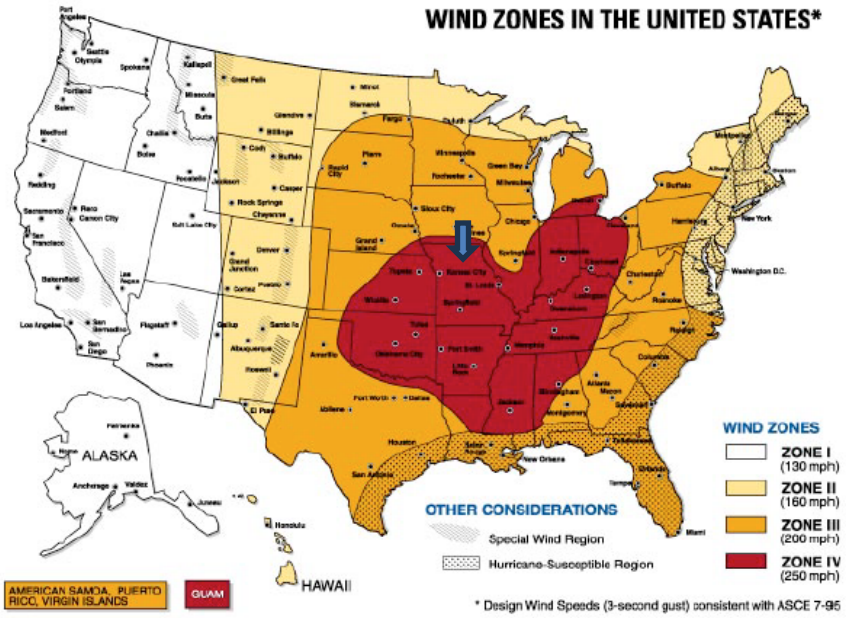
Figure 3.46. Location and Frequency of Lightning in Missouri



Source: National Weather Service, http://www.vaisala.com/en/products/thunderstormandlightningdetectionsystems/Pages/NLDN.aspx . Note: indicate location of planning area with a colored square or arrow.

Chariton County, indicated with a blue arrow in the following figure, is entirely within Zone 4. This information indicates that Chariton County could sustain wind speeds of up to 250 miles per hour.

Figure 3.47. 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

Strength/Magnitude/Extent

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

Table 3.58. 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

The following table includes NCEI reported events and damages for at least the past 20 years for all four included hazards when information is available.

Table 3.59. NCEI Reported Thunderstorm Events and Damages in Chariton County 2004-2024

Date	Event Type	Magnitude	Deaths/Injuries	Property Damage	Crop Damage
5/27/2004	Hail	1.25	0	0	0
6/12/2004	Thunderstorm Wind	52	0	$5,000	0
6/14/2004	Hail	1	0	0	0
8/17/2004	Hail	1	0	0	0
5/11/2005	Hail	1.5	0	0	0
8/18/2005	Thunderstorm Wind	61	0	0	0
8/19/2005	Thunderstorm Wind	61	0	0	0
5/3/2006	Hail	0.88	0	0	0
7/17/2006	Hail	2	0	0	0
8/2/2006	Thunderstorm Wind	52	0	0	0
11/29/2006	Hail	0.75	0	0	0
3/22/2007	Hail	0.75	0	0	0
4/3/2007	Thunderstorm Wind	52	0	0	0
4/3/2007	Hail	1	0	0	0
6/7/2007	Thunderstorm Wind	70	0	0	0
6/7/2007	Hail	1.75	0	0	0
8/12/2007	Thunderstorm Wind	56	0	0	0
3/31/2008	High Wind	52	0	$1,000	0
4/25/2008	Hail	0.88	0	0	0
5/2/2008	Thunderstorm Wind	52	0	$1,000	0
5/30/2008	Hail	1	0	0	0
5/7/2009	Hail	0.75	0	0	0
4/4/2010	Hail	1	0	0	0
5/12/2010	Hail	0.75	0	0	0
6/27/2010	Thunderstorm Wind	52	0	0	0
6/27/2010	Hail	0.75	0	0	0
7/18/2010	Thunderstorm Wind	52	0	$1000	0

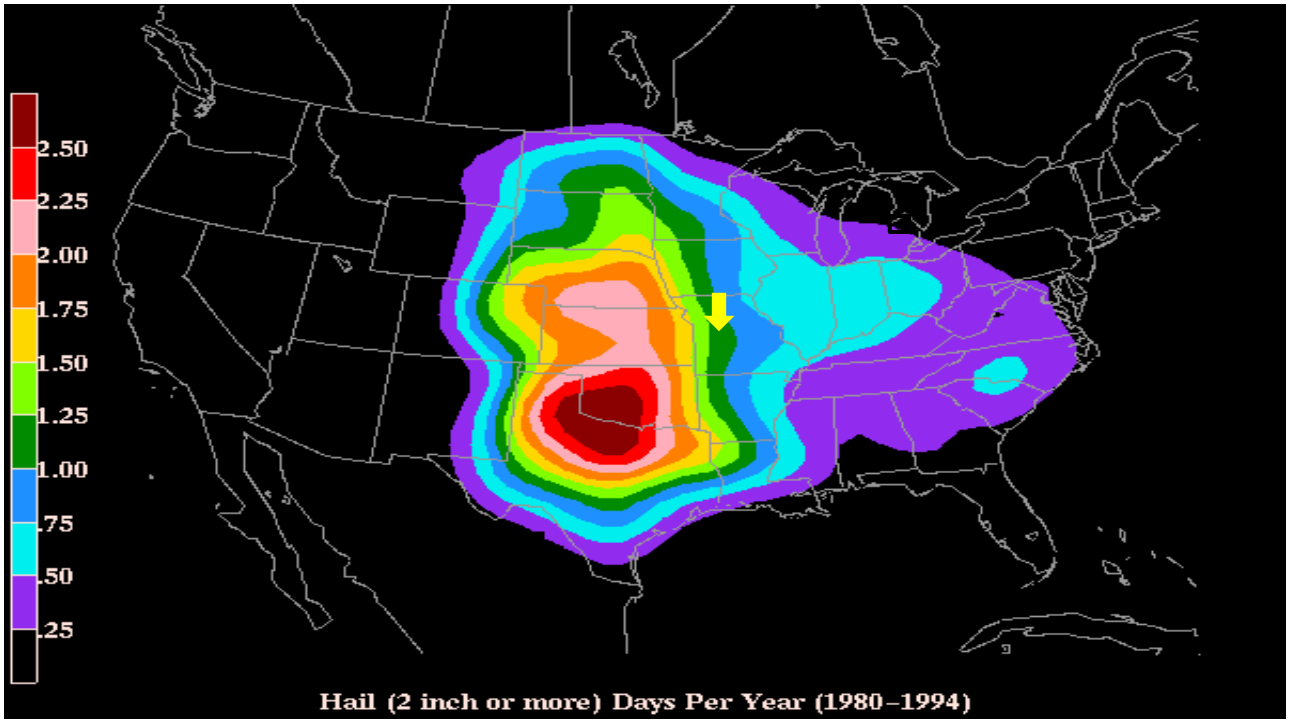
6/9/2011	Hail	2.5	0	0	0
5/6/2012	Hail	0.88	0	0	0
4/17/2013	Hail	0.88	0	0	0
5/19/2013	Thunderstorm Wind	52	0	0	0
4/3/2014	Hail	2.5	0	0	0
4/27/2014	Thunderstorm Wind	50	0	0	0
4/9/2015	Hail	1	0	0	0
6/7/2015	Thunderstorm Wind	56	0	0	0
6/25/2015	Hail	0.75	0	0	0
6/25/2015	Thunderstorm Wind	61	0	0	0
11/11/2015	Thunderstorm Wind	63	0	0	0
4/27/2016	Hail	1	0	0	0
7/7/2016	Thunderstorm Wind	61	0	0	0
2/28/2017	Hail	0.88	0	0	0
3/6/2017	Thunderstorm Wind	70	0	0	0
3/29/2017	Hail	1	0	0	0
5/26/2017	Hail	1	0	0	0
6/29/2017	Thunderstorm Wind	65	0	0	0
8/6/2018	Thunderstorm Wind	56	0	0	0
8/29/2019	Thunderstorm Wind	56	0	0	0
8/12/2021	Thunderstorm Wind	56	0	0	0
3/31/2023	Hail	1.75	0	0	0
4/4/2023	Hail	1	0	0	0
5/8/2023	Thunderstorm Wind	52	0	0	0
7/29/2023	Thunderstorm Wind	61	0	0	0
Total			**0**	**$8,000**	**0**

Source: The NCEI Storm Data Base; 7/2024.

“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.

Probability of Future Occurrence

Figure 3.48. Annual Hailstorm Probability (2" diameter or larger), U 1980- 1994



Source: NSSL, http://www.nssl.noaa.gov/users/brooks/public_html/bighail.gif Note:

The probability of Chariton County experiencing a thunderstorm event is calculated below. The calculations also differentiate between thunderstorm events that contain hail and high winds in the planning area.

Probability of Thunderstorm

$$Probability = \frac{\#\ of\ events}{Years} = \frac{52}{20} = 2.6$$

According to the above calculation, the planning area of Chariton County should experience an average of 2.6 thunderstorms annually.

Probability of Thunderstorm with High or Excessive Winds

$$Probability = \frac{\#\ of\ events}{Years} = \frac{24}{20} = 1.2$$

According to historical occurrences, the probability of Chariton County experiencing a thunderstorm accompanied by high or excessive winds should occur, on average, 1.2 times annually.

Probability of Thunderstorm with Hail

$$Probability = \frac{\#\ of\ events}{Years} = \frac{28}{20} = 1.4$$

According to the NCEI database for historical events, the likelihood of Chariton County experiencing a thunderstorm accompanied by hail should occur, on average, 1.4 times annually.

Changing Future Conditions Considerations and the Impact of Climate Change

As temperatures increase with climate change, the severity of storms is likely to increase, as warm air is the key component of thunderstorms. Due to higher levels of convection, there could be a higher frequency and severity of storm events.

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 the 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 damage occurs 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 damage 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. http://www.vaisala.com/en/products/thunderstormandlightningdetectionsystems/Pages/NLDN.aspx and http://www.lightningsafety.noaa.gov/

The tables below 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.

The economy in Chariton County is largely agricultural in nature. The following crop insurance claims paid due to the hazards associated with severe storms, specifically high winds and hail, have had a significant impact on the planning area, between 2013 and 2024.

Table 3.60. Crop Insurance Claims Paid in Chariton County from Thunderstorms, 2013-2024

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2013	No Claims		
2014	No Claims		
2015	No Claims		
2016	No Claims		
2017	No Claims		
2018	No Claims		
2019	No Claims		
2020	No Claims		
2021	No Claims		

2022	No Claims
2023	No Claims
2024	No Claims
Total	$0

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

Table 3.61. Crop Insurance Claims Paid in Chariton County from High Winds, 2013-2024

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2013	Corn	Hot Wind	$13,570
2014	No Claims		
2015	No Claims		
2016	Corn	Wind/Excess Winds	$22,148
2017	Corn	Wind/Excess Winds	$3,633
2018	Soybeans	Wind/Excess Winds	$1,524
2019	No Claims		
2020	No Claims		
2021	Corn	Wind/Excess Winds	$695.70
2022	Soybeans	Wind/Excess Winds	$11,913
2023	No Claims		
2024	Corn	Wind/Excess Winds	$86,467
Total			**$139,950.70**

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

Table 3.62. Crop Insurance Claims Paid in Chariton County from Lightning, 2013-2024

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2013	No Claims		
2014	No Claims		
2015	No Claims		
2016	No Claims		
2017	No Claims		
2018	No Claims		
2019	No Claims		
2020	No Claims		
2021	No Claims		
2022	No Claims		
2023	No Claims		
2024	No Claims		
Total	$0		

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

Table 3.63. Crop Insurance Claims Paid in Chariton County from Hail, 2013-2024

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2013	No Claims		
2014	No Claims		
2015	No Claims		
2016	Soybeans	Hail	$611
2017	Corn	Hail	$6,780.40
	Soybeans		$31,801.30
	Wheat		$1,491

2018	No Claims		
2019	Wheat	Hail	$13,674.92
2020	No Claims		
2021	No Claims		
2022	No Claims		
2023	Corn	Hail	$97,955.90
	Soybeans		$11,403
	Wheat		$3,225
2024	No Claims		
Total			**$166,972.52**

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

The method used to determine vulnerability to severe thunderstorms across Missouri was statistical analysis of data from several sources: National Centers for Environmental Information (NCEI) storm events data (1996 to December 31, 2021), HAZUS Building Exposure Value data, housing density and mobile home data from the U.S. Census (2019), and the calculated Social Vulnerability Index for Missouri Counties from the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina.

From the statistical data collected, six factors were considered in determining overall vulnerability to lightning as follows: housing density, building exposure, percentage of mobile homes, social vulnerability, likelihood of occurrence, and average annual property loss. Based on natural breaks in the statistical data, a rating value of 1 through 5 was assigned to each factor. Once the ranges were determined and applied to all factors considered in the analysis for wind, hail, and lightning, they were rated individually and factored together to determine an overall vulnerability rating for thunderstorms. This vulnerability rating was taken from the 2023 Missouri State Hazard Mitigation Plan.

These rating values correspond to the following descriptive terms:

1) Low
2) Medium-Low
3) Medium
4) Medium-High
5) High

Table 3.64. Housing Density, Building Exposure, SOVI, and Mobile Home Data for Chariton County

Total Building Exposure (HAZUS)	Building Exposure Rating	Housing Density	Housing Density Rating	SOVI Rating	SOVI Ranking Rating	Percent Mobile Homes	Percent Mobile Homes Rating
$961,579,000	1	5.52	1	Medium High	4	10.1	3

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Table 3.65. High Wind, Hail, and Lightning Events, Likelihood of Occurrence, and Associated Ratings for Chariton County

High Wind	Hail	Lightning

Total Number of Events	Likelihood of Occurrence	Likelihood of Occurrence Rating	Total Number of Events	Likelihood of Occurrence	Likelihood of Occurrence Rating	Total Number of Events	Likelihood of Occurrence	Likelihood of Occurrence Rating
53	2.04	1	71	2.73	1	0	0.00	1

Source: 2023 Missouri State Hazard Mitigation Plan

Potential Losses to Existing Development

According to historical loss data reported for thunderstorm wind, high wind, hail, and lightning by NCEI, from 2013-2024, 51 severe weather events impacted Chariton County and caused an estimated $8000 in property damage. Based on this estimate, Chariton County experiences an average annual property loss of approximately $666.67 in property damage.

The USDA reported crop losses as a result of hail and wind. According to the USDA there were a total of $220,026.22 in reported crop insurance claims from 2013 to 2022. Based on these figures, Chariton County can expect to experience an average annual crop loss of $20,002.38 due to severe thunderstorms, wind, and hail.

Previous and Future Development

Any additional development that occurs in Chariton County will result in increased exposure and thus increased vulnerability to severe thunderstorms and their associated wind, hail, and lightning. However, none of the participating jurisdictions have completed or plan to complete any new development that would increase vulnerability.

Hazard Summary by Jurisdiction

Thunderstorms, high winds, lightning, and hail events are area-wide and expected to occur uniformly across the planning area. However, the magnitude of impacts may vary by jurisdiction based on the physical vulnerability of structures.

The following table details the percentage of housing built before 1939 and the percentage of manufactured housing units in each jurisdiction, as both characteristics may indicate increased vulnerability to severe thunderstorms. Notably, Sumner has a high percentage, 59.5%, of mobile homes and the City of Rothville has 54.5% of homes built prior to 1939. This makes these jurisdictions potentially more vulnerable to a thunderstorm event.

Table 3.66. Housing Vulnerability Indicators by Chariton County Jurisdiction, 2022

Jurisdiction	% of Mobile Homes	% of Homes Built Prior to 1939
Chariton County	7.4%	18.1%
City of Brunswick	3.7%	23.8%
Dalton	22.2%	0%
City of Keytesville	15.3%	14.1%
City of Mendon	17.7%	31.6%
Rothville	0%	54.5%
Salisbury	2.2%	15.6%
Sumner	59.5%	10.8%
Triplett	20%	20%

Source: US Census Bureau, American Community Survey 2022

Chariton County

Chariton County residents are equally likely to experience a severe thunderstorm regardless of where they live in the County. However, if they reside in an older home, built prior to 1939, or a mobile home they are more vulnerable to damages from the effects of a severe thunderstorm.

City of Salisbury

The City of Salisbury lacks a sufficient storm warning system, and the sirens that they have are several years old and do not provide coverage for the entire town. The city has expressed interest in replacing the outdated sirens with a new system that would have adequate coverage. The proposed new sirens would be placed at the park, ballfield, complex outside of the City limits, but the city would use their resources to fund the project.

City of Mendon

The City of Mendon, out of participating jurisdictions, has the highest percentage of older homes (31.6%). The older homes could be at higher risk for damage from severe thunderstorms. Mendon also has a relatively high number of mobile homes (17.7%), which are at higher risk for damages from severe thunderstorms.

City of Sumner

The City of Sumner has a high percentage of homes in the jurisdiction that are mobile homes. This could present more than half of the citizens of Sumner with an increased risk of damage from severe thunderstorms, as mobile homes are more prone to storm damages.

City of Keytesville

The City of Keytesville's residents are equally likely to experience a severe thunderstorm regardless of where they live in the County. However, if they reside in an older home, built prior to 1939, or a mobile home they are more vulnerable to damages from the effects of a severe thunderstorm.

City of Brunswick

The City of Brunswick, out of participating jurisdictions, has the 2nd highest percentage of older homes. The older homes could be more vulnerable to damages from severe thunderstorms.

Brunswick R-II

Brunswick R-II recently replaced the roofs of the school, only to have them damaged extensively by a hailstorm. This led to the school district having to replace relatively new roofs. Due to the recent event, the school might consider a more hail resistant roof.

Problem Statement

Severe thunderstorms events are highly likely to continue occurring in Chariton County. Possible solutions for vulnerability to wind include a review of local ordinance and building codes that would address high winds and/or construction techniques to include structural bracing, straps and clips, or anchor bolts.

Possible solutions for vulnerability to lightning include installation of lightning rods and surge protection.

Possible solutions for vulnerability to hail include use of building materials less prone to damage.

Possible solutions for vulnerability to hail and high winds associated with thunderstorms would be to encourage farmers to purchase crop insurance.

3.4.8 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.

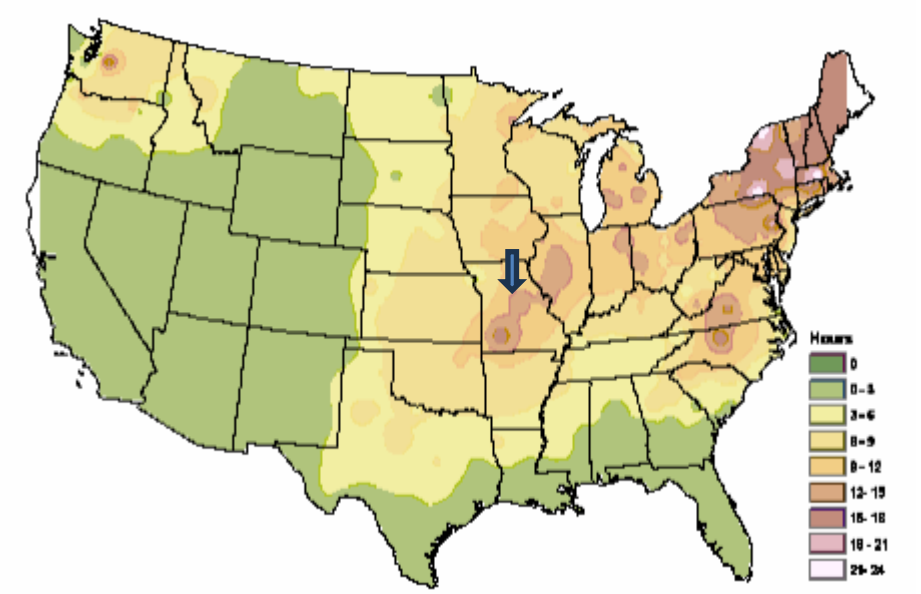
- **Blizzard**—Winds of 35 miles per hour or more with snow and blowing snow reducing visibility to less than ¼ mile for at least three hours.
- **Blowing Snow**—Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- **Snow Squalls**—Brief, 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.

According the following **Figure 3.49**, the average amount of hours of freezing rain Chariton County can expect annually is between 12 and 18 hours per year.

Figure 3.49. 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

The following table contains the winter weather events in Chariton County, Missouri for the last 20 years. The rows highlighted in blue are events that lasted for more than one day but can be attributed to one storm system. The narrative information follows the table and provides additional information about the winter weather events that Chariton County has experienced over the last 20 years.

Table 3.67. NCEI Chariton County Winter Weather Events Summary, 2004-2024

Type of Event	Inclusive Dates	# of Injuries	Property Damages	Crop Damages
Winter Storm	1/25/2004	0	0	0
Winter Storm	2/5/2004	0	0	0
Ice Storm	1/5/2005	0	0	0
Ice Storm	11/29/2006	0	0	0
Heavy Snow	11/30/2006	0	0	0
Heavy Snow	12/1/2006	0	0	0
Winter Storm	1/12/2007	0	0	0
Ice Storm	12/9/2007	0	0	0
Winter Storm	1/6/2010	0	0	0
Winter Weather	2/4/2010	0	0	0
Winter Storm	2/21/2010	0	0	0
Winter Weather	1/10/2011	0	0	0
Winter Storm	1/19/2011	0	0	0
Blizzard	2/1/2011	0	0	0
Winter Storm	2/24/2011	0	0	0
Winter Weather	2/13/2012	0	0	0
Winter Storm	2/21/2013	0	0	0
Winter Storm	2/25/2013	0	0	0
Winter Storm	3/23/2013	0	0	0
Winter Weather	5/2/2013	0	0	0
Winter Storm	12/21/2013	0	0	0
Cold/Wind Chill	1/6/2014	0	0	0
Heavy Snow	2/4/2014	0	0	0
Winter Storm	3/1/2014	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
Winter Storm	12/15/2019	0	0	0
Winter Storm	1/1/2021	0	0	0
Extreme Cold/ Wind Chill	2/14/2021	0	0	0
Extreme Cold/ Wind Chill	2/15/2021	0	0	0
Extreme Cold/ Wind Chill	2/16/2021	0	0	0
Heavy Snow	2/1/2022	0	0	0
Winter Storm	2/17/2022	0	0	0
Extreme Cold/ Wind Chill	12/22/2022	0	0	0

Source: NCEI, data accessed 7/11/2024

The following table includes the crop losses for Chariton County over the last 10 years due to freeze or cold winter.

Table 3.68. Crop Insurance Claims Paid in Chariton County as a Result of Cold Conditions and Snow 2013-2024

Year	Crop	Cause of Loss	Crop Loss ($)
2013	Wheat	Cold Winter	$21,451
2014	Wheat	Freeze	$6,615
		Cold Winter	$143,515.82
2015	Wheat	Freeze	$7,224
		Cold Winter	$19,262.34
2016	Wheat	Cold Winter	$2,749
2017	No Claims		
2018	Wheat	Freeze	$10,341
		Cold Winter	$18,882.27
2019	Wheat	Cold Winter	$58,953.71
2020	Wheat	Cold Winter	$32,651.50
2021	Wheat	Cold Winter	$15,723
2022	No Claims		
2023	Wheat	Cold Winter	$1,390
2024	Wheat	Freeze	$63,320
Total			**$402,078.64**

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

Probability of Future Occurrence

Over the last 20 years, Chariton County has experienced 35 winter weather events. Since one storm will generally include more than one type of event the probability of future occurrence was calculated as follows:

$$Probability = \frac{number\ of\ events}{number\ of\ years} = \frac{35}{20} = 1.75$$

This calculation lets us know that Chariton County, Missouri will experience on average, 1.75 winter weather events each year.

Changing Future Conditions Considerations and Impacts of Climate Change

With higher average temperatures occurring across the globe due to climate change, one might assume that winters would be milder. However, with the increase in the atmosphere's water-holding capacity, there is an increased likelihood of heavy snow events. Changes in the jet stream patterns can also result in allowing pools of very cold air to sink further south than usual. In summation, the changing climate could result in more severe storms, both in duration and amount of precipitation.

Vulnerability

Vulnerability Overview

From the 2023 Missouri Hazard Mitigation Plan, the method used to determine vulnerability to severe winter weather across Missouri was statistical analysis of data from several sources: National Centers for Environmental Information (NCEI) storm events data (1996 to December 31, 2021), HAZUS Building Exposure Value Data, housing density data from the US Census, and the calculated Social Vulnerability Index for Missouri Counties from the Hazard and Vulnerability Research Institute in the Department of Geography at the University of South Carolina.

From the statistical data collected, five factors were considered in determining overall vulnerability to severe winter weather as follows: housing density, building exposure, social vulnerability, likelihood of occurrence, and average 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

Once the individual ratings were determined for the above factors, a combined vulnerability rating was computed for severe winter weather events. The following table provides the calculated ranges applied to determine overall vulnerability of Missouri counties to severe winter weather.

Table 3.69. 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

Source: 2023 Missouri State Hazard Mitigation Plan

The figures that follow provide the mapped results for Chariton County.

Table 3.70. Housing Density, Building Exposure, and SOVI Data for Chariton County

	Total Building Exposure (HAZUS)	Building Exposure Rating	Housing Density	Housing Density Rating	SOVI Ranking	SOVI Rating
Chariton	$961,579,000	1	5.52	1	Medium High	4

Source: 2023 Missouri State Hazard Mitigation Plan

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 can 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 a 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 BCA Toolkit 6.0 Reference Guide, the economic impact as a result of loss of power is $174 per person per day of lost service.

The following information was taken from the 2023 Missouri State Hazard Mitigation Plan. It includes the factors considered for severe winter weather exposure for Chariton County.

Table 3.71. Additional Statistical Data Compiled for Vulnerability Analysis for Chariton County

Total # of Winter Weather Events	Likelihood of Occurrence	Likelihood of Occurrence Rating	Total Annualized Property Loss	Total Annualized Property Loss Rating	Overall Vulnerability Rating	Overall Vulnerability Rating Description
32	1.5238	2	$9,524	1	9	Low Medium

Source: 2023 Missouri Hazard Mitigation Plan

Table 3.72. Annualized Severe Winter Weather Damages in Chariton County

Annualized Blizzard Property Loss ($)	Annualized Heavy Snow Property Loss ($)	Annualized Ice Storm Property Loss ($)	Annualized Winter Storm Property Loss ($)	Annualized Winter Weather Property Loss ($)	Total Annualized Winter Weather Property Loss ($)
0	0	9,524	0	0	9,524

Source: 2023 Missouri Hazard Mitigation Plan

The following table was sourced from the 2023 Missouri State Hazard Mitigation Plan and provides the additional data obtained from the National Centers for Environmental Information to complete the overall vulnerability analysis and the total overall vulnerability rating for severe winter weather. The total number of winter weather events includes blizzard, heavy snow, ice storm, winter storm, and winter weather events.

Table 3.73. Additional Statistical Data for Severe Winter Weather Vulnerability in Chariton

County

Type of Data	Amount
Total # of Winter Weather Events	37
Likelihood of Occurrence	1.42
Likelihood of Occurrence Rating	1
Total Annualized Property Loss	$7,692
Total Annualized Property Loss Rating	1
Overall Vulnerability Rating	8
Overall Vulnerability Rating Description	Low

Source: 2023 Missouri State Hazard Mitigation Plan

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 freezing. Fallen tree limbs also pose a threat to various structures/infrastructures across the country.

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. At this time, there is little expected in the way of new development that would lead to an increased risk to the planning area.

Hazard Summary by Jurisdiction

Although crop loss as a result of severe winter weather 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

Chariton County is expected to experience at least one severe winter weather event annually. The county has a low-medium vulnerability rating. Jurisdictions should enhance their weather monitoring to be better prepared for sever 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, residents are educated on emergency supplies to have and the utilization of social media and texting increases.

3.4.9 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 large thunderstorms that can 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.

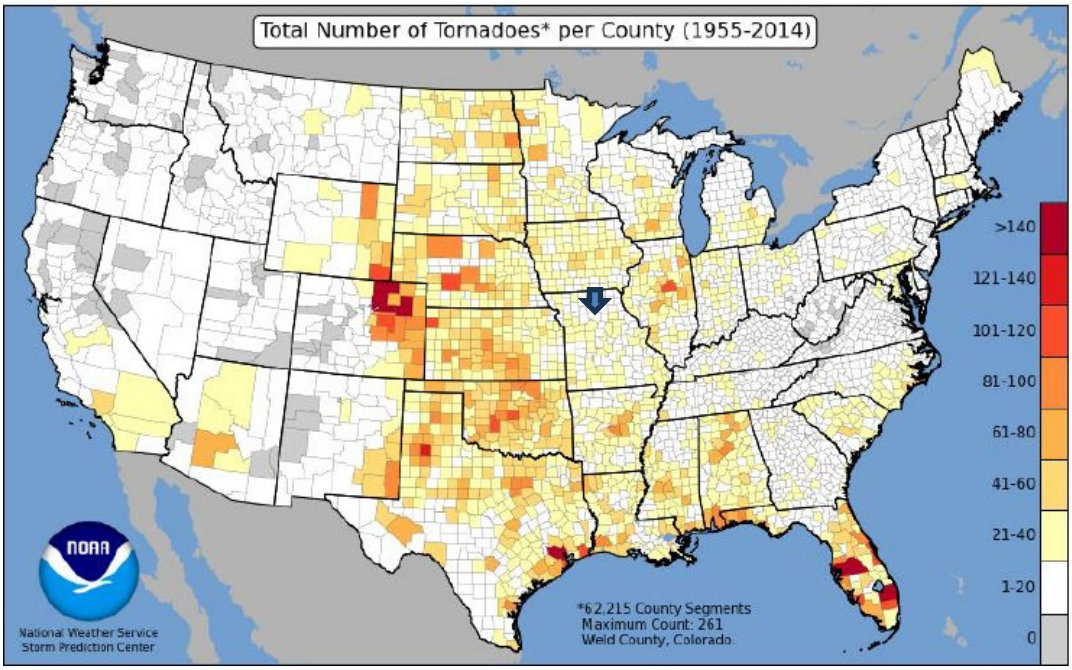
A typical tornado can be described as a funnel-shaped cloud that is "anchored" to a cloud, usually a cumulonimbus that is also in contact with the earth's surface. This contact on average lasts 30 minutes and covers an average distance of 15 miles. The width of the tornado (and its path of destruction) 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. The following map was obtained from the 2023 Missouri State Hazard Mitigation Plan and shows the total number of tornadoes per county. Chariton County (indicated with a blue arrow) shows the total number of tornadoes within the planning area as between 1-20.

Figure 3.50. Tornado Activity in the United States 1955-2014



Source: NOAA Tornado Activity in the United States

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 3.74**) 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 3.74. 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 Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

Source: 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 3.7575**. 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 3.75. 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 3.76. Recorded Tornadoes in Chariton County, 1993 – Present

Date	Beginning Location	Ending Location	Length (miles)	Width (yards)	F/EF Rating	Death	Injury	Property Damage	Crop Damages
4/8/1999	Triplett	Wien	26	200	F2	0	0	$600,000	$100,000
5/14/2015	Mendon	Mendon	.28	25	EF0	0	0	0	0
3/6/2017	Brunswick	Prairie Hill	19.81	100	EF1	0	0	0	0

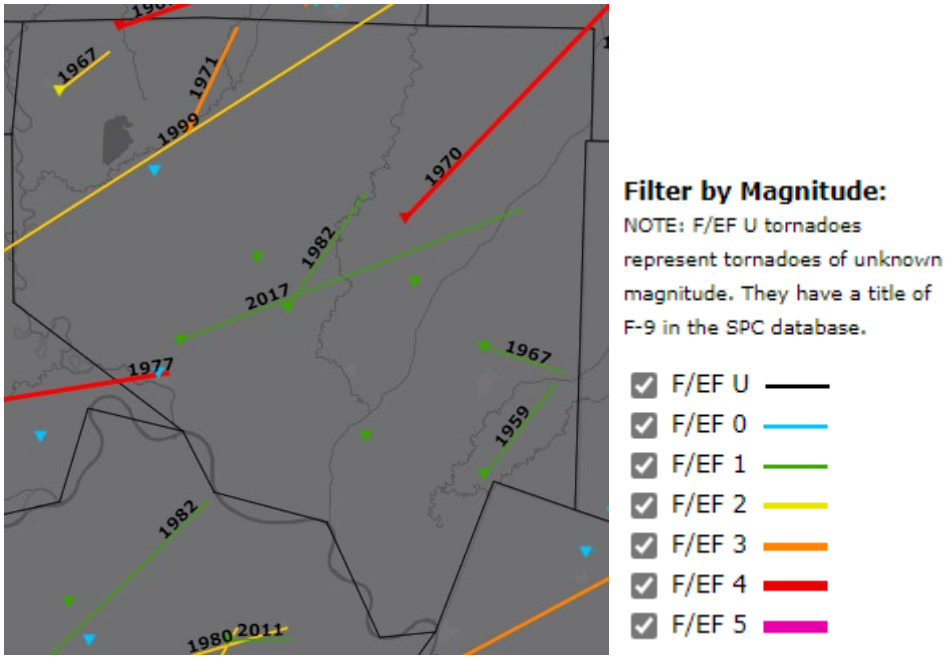
Total								$600,000	$100,000

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

There were only 3 events listed as a tornado in the NCEI storm database for Chariton County. The events listed as wind events were included in the plan under severe storms. The narratives obtained from the NCEI Storm Database are listed below.

- April 8, 1999:
  The Carroll County tornado continued northeast across Chariton County damaging or destroying several outbuildings near Mendon and 5 miles south of Marceline. In addition, a single-family home suffered minor damage, and a mobile home was damaged 5 miles south of Marceline.
- May 14, 2015:
  A very weak supercell, that barely showed up on radar produced a brief and weak tornado in Mendon. Some minor structure damage and power lines down were reported, but otherwise no injuries were reported.
- March 6, 2017:
  Several outbuildings and trees were damaged or destroyed as a tornado embedded within a QLCS did mainly damage to rural areas of Chariton County.

Figure 3.51. Chariton County Map of Historic Tornado Events 1950-2022



Source: Midwestern Regional Climate Center; Chariton County 1950-2022

Table 3.77. Crop Losses in Chariton County, 2013-2023

Year of Loss	Crop	Amount in Damage ($)
2013	No claims	$0
2014	No claims	$0
2015	No claims	$0
2016	No claims	$0
2017	No claims	$0
2018	No claims	$0
2019	No claims	$0
2020	No claims	$0
2021	No claims	$0
2022	No claims	$0
2023	No claims	$0
2024	No claims	$0
Total $0		

Source: USDA Risk Management

According to the Midwestern Regional Climate Center data, Chariton County has had a total of 15 tornadoes touch down in the county between the years of 1950 and 2022. There have been no recorded crop losses due to tornado events in the last 11 years.

However, it is worth noting that there have been some crop losses due to high winds/excessive winds claimed in the planning area. These crop losses have been mentioned in the thunderstorm high winds category and any crop losses due to high winds have been listed in Table 3.77.

Probability of Future Occurrence

The probability of Chariton County experiencing a tornado has been calculated by the number of tornado events, without regard for previous EF Ratings. The following table has been included for informational purposes and indicates how many previous tornadoes have been recorded and their EF Rating.

Table 3.78. Previous Tornado Events in Chariton County by EF Rating 1950-2022

EF Rating	EF0	EF1	EF2	EF3	EF4	EF5
Number of Events	2	7	2	1	3	0

Source: Midwestern Regional Climate Center; 1950-2022

Probability Calculation:

$$\frac{Number\ of\ Events}{Number\ of\ Years} = Probability\ of\ Tornado$$

$$\frac{15}{73} = 0.2055(100) = 20.55\%$$

Based on the calculation above, Chariton County has a 20.55% chance of experiencing a tornado event, regardless of magnitude, in any given year.

Changing Future Conditions Considerations and the Impacts of Climate Change

According to the 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 US. The research concluded that the number of days with large outbreaks has been increasing since the 1950's 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 more densely packed tornadoes. Because Chariton County experiences approximately one tornado every four years, and based on the research, the frequency of such events could increase in the future.

Vulnerability

Vulnerability Overview

The 2023 Missouri State Hazard Mitigation Plan provided the following vulnerability analysis of Chariton County to tornadoes.

The method used to determine vulnerability to tornadoes across Missouri was statistical analysis of data from several sources: HAZUS building exposure value data, population density and mobile home data from the U.S. Census (2019), the calculated Social Vulnerability Index for Missouri Counties from the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina, and storm events data (1950 to December 31, 2021) from the National Centers for Environmental Information (NCEI). It is important to realize that one limitation to the NCEI data is that many tornadoes that might have occurred in uninhabited areas, as well as some in inhabited areas, may not have been reported. The incompleteness of the data suggests that it is not appropriate for use in parametric modeling. In addition, NOAA data cannot show a realistic frequency distribution of different Fujita scale tornado events, except for recent years. Thus, a parametric model based on a combination of many physical aspects of the tornado to predict future expected losses was not used. The statistical model used for this analysis was probabilistic based purely on tornado frequency and historic losses. It is based on past experience and forecasts the expected results for the immediate or extended future.

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. Once the ranges were determined and applied to all factors considered in the analysis, the ratings were combed to determine an overall vulnerability rating for tornadoes. These rating values correspond to the following descriptive terms:

1) Low
2) Medium-Low
3) Medium
4) Medium-High
5) High

Table 3.79. Likelihood of Occurrence, Annual Property Loss, and Overall Vulnerability

Rating for Chariton County by Tornadoes

Total Number of Tornadoes	19
Likelihood of Occurrence	0.264
Likelihood of Occurrence Rating	2
Total Annualized Property Loss	$193,198
Total Annualized Property Loss Rating	1
Overall Vulnerability Rating	12
Overall Vulnerability Rating Description	Medium-Low

Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.80. Tornado Vulnerability Rating for Chariton County

Vulnerability	Data for Chariton County
Total Building Exposure	$961,579,000
Exposure Rating	1
Population Density	9.89
Population Density Rating	1
SOVI Index Ranking	Medium High
SOVI Rating	4
Percent of Mobile Homes	10.1%
Mobile Home Rating	3

Source: 2023 Missouri State Hazard Mitigation Plan

Chariton County is in a region of the U.S. with high frequency of dangerous and destructive tornadoes referred to as “Tornado Alley”, illustrated below.

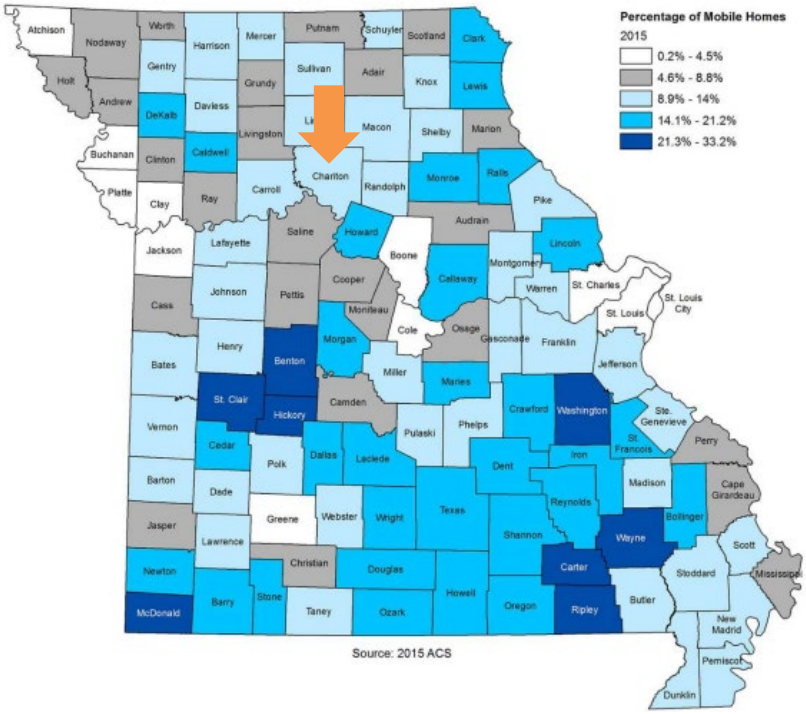
Figure 3.52. Tornado Alley in the U.S.



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

Another factor to consider when determining vulnerability to Tornadoes is the number of mobile homes in a county. Mobile homes are especially vulnerable to this hazard, as they are not built to provide adequate shelter from tornadoes, rather citizens that dwell in mobile homes must typically seek shelter elsewhere.

Figure 3.53. Percent of Mobile Homes Per County in Missouri



Source: 2023 Missouri Hazard Mitigation Plan

Potential Losses to Existing Development

While there are no losses reported in the USDA Risk Management database as being from tornadoes, there were damages reported in the NCEI Storm Events Database. The NCEI listed damages of $600,000 for property damage and $100,000 for crop damage since 2013. This is an average loss of $28,000 from 1999 to the present.

Previous and Future Development

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

Hazard Summary by Jurisdiction

A tornado event could occur anywhere in the planning area, but some jurisdictions would suffer heavier damages because of the age of the housing, the increased density of buildings and infrastructure, or the high concentration of mobile homes.

It is generally accepted that mobile homes are highly vulnerable to damage or devastation by tornadoes. The following table illustrates the number and percentage of mobile homes in each jurisdiction. Homes build prior to 1939 are also listed below. The older homes in the planning area might be more vulnerable to risk.

Table 3.81. Mobile Homes in Chariton County

Jurisdiction	Number of Mobile Homes	Percentage of Mobile Homes
Chariton County	192	7.4%
Brunswick	12	3.7%
Keytesville	25	15.3%
Mendon	14	17.7%
Rothville	0	0%
Salisbury	12	2.2%
Village of Dalton	2	22.2%

Source: US Census Bureau 2022 Community Survey 5-year estimate

Table 3.82. Homes Built Prior to 1939 in Chariton County

Jurisdiction	Number of Homes Built Prior to 1939	Percentage of Homes Built Prior to 1939
Chariton County	468	18.1%
Brunswick	78	23.8%
Keytesville	23	14.1%
Mendon	25	31.6%
Rothville	12	54.5%
Salisbury	84	15.6%
Village of Dalton	0	0%

Source: US Census Bureau 2022 Community Survey 5-year Estimate

Chariton County

Chariton County residents are equally likely to experience a tornado regardless of where they live in the County. However, if they reside in an older home, built prior to 1939, or a mobile home they are more vulnerable to damages from the effects of a tornado.

City of Salisbury

The City of Salisbury lacks a sufficient storm warning system, and the sirens that they have are several years old and do not provide coverage for the entire town. The city has expressed interest in replacing the outdated sirens with a new system that would have adequate coverage. The proposed new sirens would be placed at the park, ballfield, complex outside of the City limits, but the city would use their resources to fund the project.

City of Mendon

The City of Mendon, out of participating jurisdictions, has the highest percentage of older homes (31.6%). The older homes could be at higher risk for damage from severe thunderstorms. Mendon also has a relatively high number of mobile homes (17.7%), which are at higher risk for damages from tornadoes.

City of Sumner

The City of Sumner has a high percentage of homes in the jurisdiction that are mobile homes. This could present more than half of the citizens of Sumner with an increased risk of damage from tornadoes, as mobile homes are more prone to storm damages.

City of Keytesville

The City of Keytesville's residents are equally likely to experience a tornado regardless of where they live in the city. However, if they reside in an older home, built prior to 1939, or a mobile home they are more vulnerable to damages from the effects of a tornado.

City of Brunswick

The City of Brunswick, out of participating jurisdictions, has the 2nd highest percentage of older homes. The older homes could be more vulnerable to damages from tornadoes.

Brunswick R-II

Brunswick R-II could benefit the students and residents of Brunswick if they built or retrofitted an existing structure to function as a storm shelter.

Problem Statement

Chariton County has inadequate tornado shelters throughout the county, not everyone utilizes social media and/or texting, the rural areas do not have warning sirens, lack of awareness for available shelters and more education needs to occur. Possible solutions include promoting the use of NOAA weather radios and conducting public education and outreach activities to increase awareness of tornado risk.

3.4.10 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.

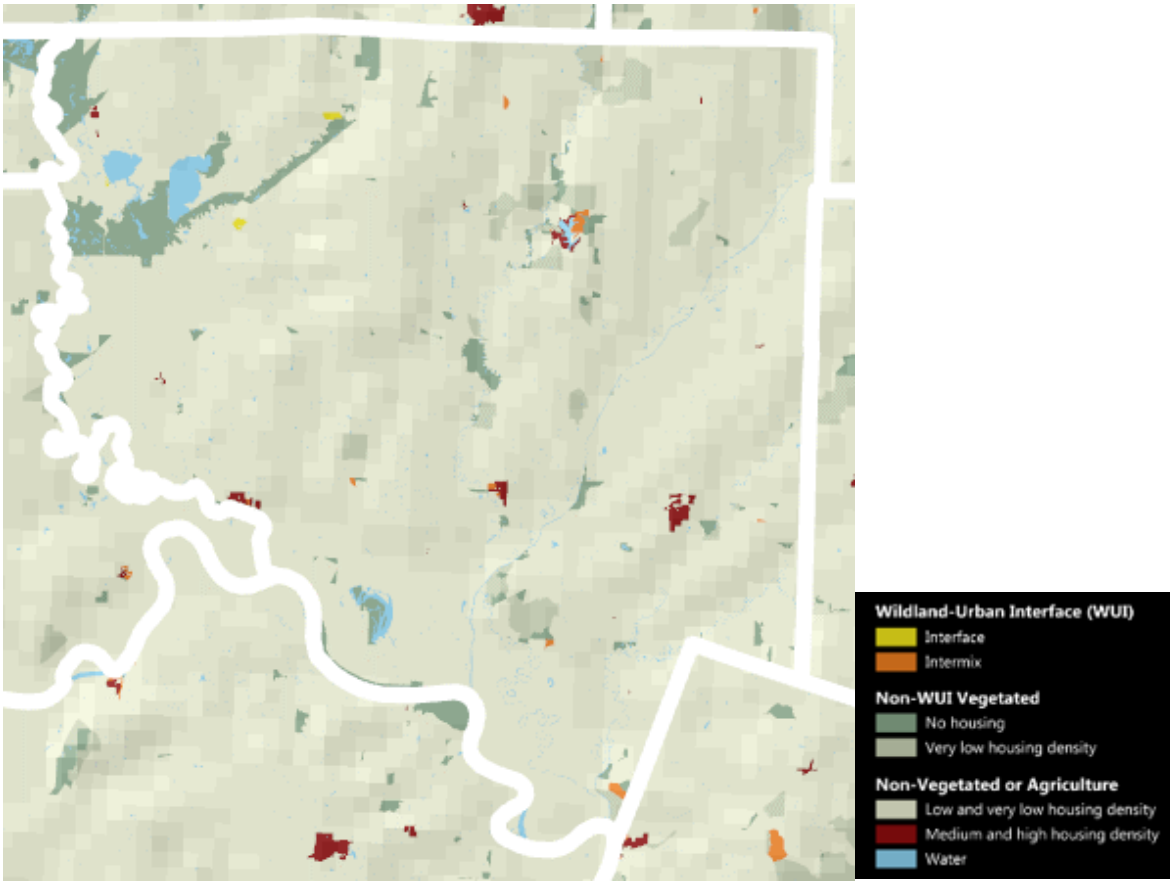
The Forestry Division of the Missouri Department of Conservation (MDC) is responsible for protecting privately owned and state-owned forests and grasslands from wildfires. To accomplish this task, eight forestry regions have been established in Missouri for fire suppression. The Forestry Division works 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 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 to 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

The term Wildland-Urban Interface (WUI) refers to the zone of transition between unoccupied land and human development. 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.

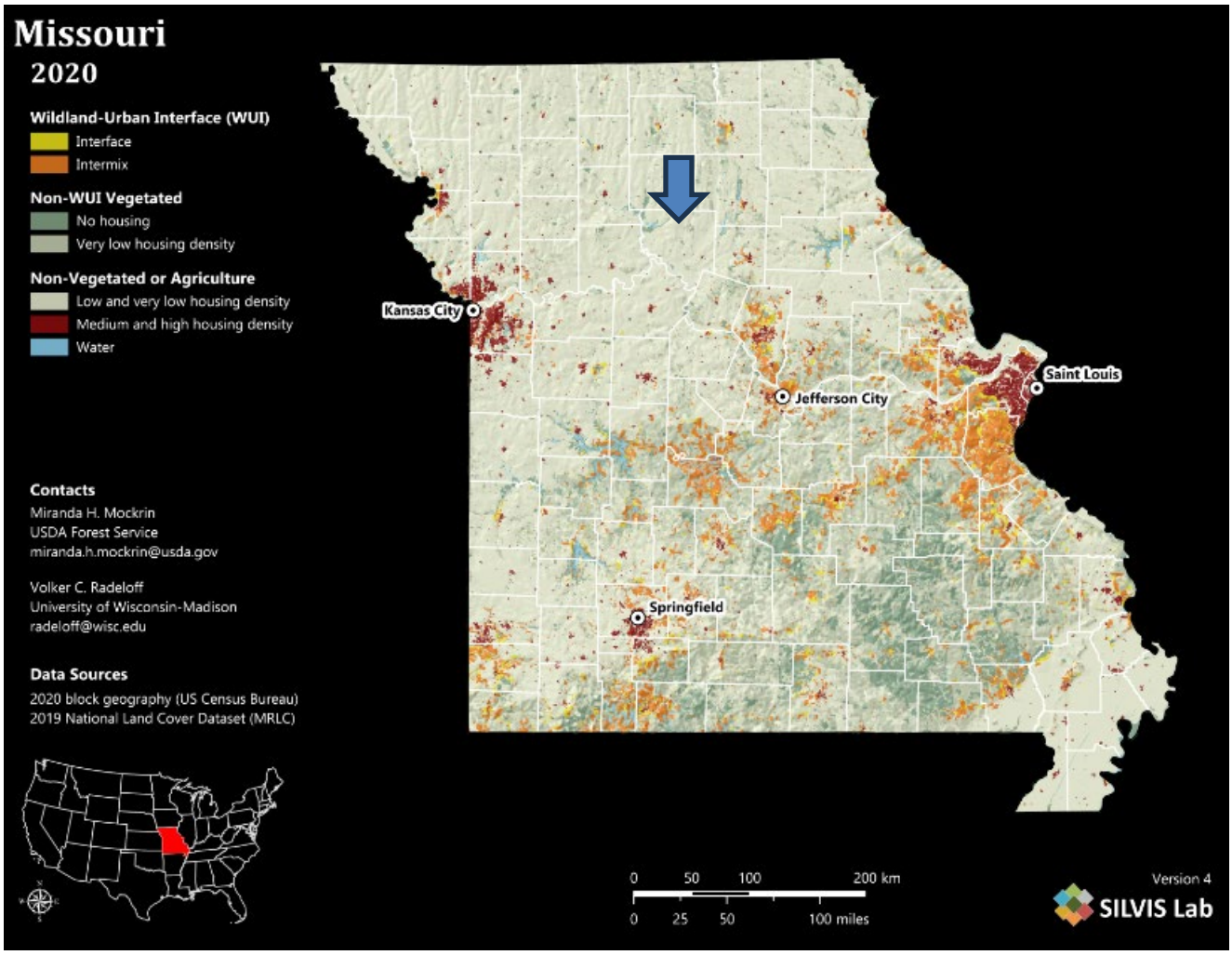
Figure 3.54. Map of Chariton County Wildland-Urban Interface (WUI) Areas



As the previous figure illustrates, Chariton County is largely rural with very little density in housing. The most at-risk areas to wildfire are those areas that have a high wildland-urban Interface. In the planning area there are relatively few areas of concern, however there are intermittent areas of medium and high housing density and small areas of interface and intermix.

The areas within Chariton County that would be most at risk would be the areas around the cities of Brunswick, Keytesville, and Salisbury. There are also some area of intermix and medium and high housing density around the Lake Nehai Tonayea area. State of Missouri Wildland-Urban Interface (WUI) Areas are shown in the following figure. The above figure 3.54 was taken from the map of the State of Missouri.

Figure 3.55. State of Missouri Wildland-Urban Interface WUI Areas



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

With 378 wildfires reported within Chariton County between 2004 and 2024, the likelihood of occurrence can be calculated to average 18 wildfire events per year. With the total acreage burned during this time period as 6263.944 acres, the annual average acreage burned can be calculated as 298.28 acres per year. The average acreage burned per event can be calculated at 16.57 acres.

According to the Missouri Department of Conservation Wildfire Reporting Database the most common cause of wildfire, where a cause was given, was debris. Debris was listed as a cause for 103 of the 378 events. Equipment was the second most common cause listed, and responsible for 44 wildfires in Chariton County. Of the fires listed on the Missouri Department of Conservation Wildfire Reporting Database during the same time-period 6 were reported to have involved structures.

The NFIRS provided some specific information about the fires reported in Chariton County and Missouri, that information is summarized in the table below.

Table 3.83. Incidents of Fire by General Property Use Type

General Property Use Type	Residential Fires	Non-Residential Fires	Vehicle Fires	Outside Fires	Other Fires
Missouri	27.8%	16.4%	11.0%	38.1%	6.8%
Chariton County	13.5%	10.4%	12.9%	57.1%	6.1%

Source: National Fire Incident Reporting System (NFIRS)

Probability of Future Occurrence

When calculating the probability of wildfires in Chariton County the following formula was used:

$$\frac{number\ of\ events}{number\ of\ years} = Probability\ in\ any\ given\ year$$

$$\frac{378}{21} = 18$$

Due to the above calculation, the planning area could expect to have around 18 wildfire events per year.

When calculating the probability of a wildfire in Chariton County affecting a structure, based on previous events the following result was achieved:

$$\frac{6}{21} = 0.2809(100) = 28.1\%$$

Based on the information from the Missouri Department of Conservation Wildfire Reporting Database, there is an approximate 28.1% chance of a wildfire involving a structure in Chariton County in any given year.

Changing Future Conditions Considerations and the Impacts of Climate Change

The predicted higher temperatures and changes in rainfall are not likely to substantially reduce forest cover in Chariton County, although the composition of trees in the forests may change. An increase in droughts would reduce forest productivity. Additionally, the changing future conditions are likely to increase the amount of damage from insects and diseases. But longer growing seasons and increased carbon dioxide concentrations could quite possibly offset the losses from these factors.

As the climate changes, the abundance of pines in Chariton County is likely to increase, while the population of hickory trees is likely to decrease. 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 increases the possibility of structural fires in both urban and rural areas.

Vulnerability

Vulnerability Overview

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. 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.

Potential Losses to Existing Development

Table 3.84. Estimated numbers and Values of Structures and Population Vulnerable to Wildfire in Chariton County

Type of Property	Number of Structures	Value of Structures	Population
Agriculture	31	$109,971	0
Commercial	15	$4,588,713	0
Residential	249	$45,928,230	672
Total	**295**	**$50,626,914**	**672**

Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.85. Statistical Data for Wildfire Hazard in Chariton County

Number of Wildfires 2004-2021	Likelihood of Occurrence (#/year)	Total Acres Burned	Average Annual Acreage Burned
299	16.6	5,502.54	305.7

Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.86. Wildfire Potential Loss Estimates in Chariton County

Total WUI Acreage	Total Structure Value Within WUI	Average Value/Acre within WUI	Average Annual Acreage Burned	Potential Loss
619.17	$50,626,914	$81,766	305.70	$24,995,524

Source: 2023 Missouri State Hazard Mitigation Plan

Probability of Wildfire in Chariton County

$$\frac{\mathbf{210}}{\mathbf{10}} = \mathbf{21}$$

Based on the above calculation, Chariton County can expect to experience approximately 2.1 wildfires annually, with an average loss of 20.38 acres per wildfire event.

Impact of Previous and Future Development

Future and previous development in the wildland-urban interface would increase vulnerability to the hazard. There are no proposed developments within the county that would increase the vulnerability.

Hazard Summary by Jurisdiction

The rural jurisdictions in the planning area are all surrounded by undeveloped agricultural land and face the possibility of a wildfire event. The school districts are located in a rural area and do not face danger of wildfire due to barriers in place around the schools. Future wildfires in Chariton 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 higher risk from wildfires due to proximity to wood and distance from fire services. Variations in both structural/urban and 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 readily available for the levels of burn bans, many residents lack education in fire safety, and not all residents utilize social media and texting. Education should occur on the dangers of not complying with burn bans, more education for fire safety, and utilization of social media and texting for early warning.

Due to Chariton County's high drought rating they may be more susceptible to fires than some of the neighboring counties. The plan could address this potential for high crop losses during drought and lessen the risk of wildfires during drought.

4 MITIGATION STRATEGY 4.1

4.1 Goals 4.1

4.2 Identification and Analysis of Mitigation Actions 4.2

4.3 Implementation of Mitigation Actions 4.5

4.4 Chariton County Mitigation Actions 4.9

4.5 City of Keytesville Mitigation Actions 4.16

4.6 City of Mendon Mitigation Actions 4.23

4.7 City of Salisbury Mitigation Actions 4.27

4.8 City of Brunswick Mitigation Actions 4.32

4.9 City of Sumner Mitigation Actions 4.40

4.10 Brunswick R-II Mitigation Actions 4.45

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 [updated] risk assessment. The mitigation strategy was developed through a collaborative group process. The process included review of [updated] 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 Mitigation Planning Policy Guide (2023)*

- **Goals** are broad, long-term policy and vision statements that explain what is to be achieved by implementing the mitigation strategy.
- A **mitigation action** is a measure, project, plan or activity proposed to reduce current and future vulnerabilities described in the risk assessment.

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 Chariton County's existing hazard mitigation plan approved by FEMA on January 14, 2020. Therefore, the goals from the 2020 Chariton 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 during their second meeting to review and update the plan goals. To ensure that the goals developed for this update were comprehensive and supported State goals, the 2023 State Hazard Mitigation Plan goals were reviewed. The MPC also reviewed the goals from current surrounding county plans. The MPC Planning Committee determined that the goals from the previous plan would be modified to

the following:

- Goal 1: Eliminate loss of life, minimize injuries and reduce property damage caused by tornadoes, severe thunderstorms including high winds, hail, and lightning.
- Goal 2: Minimize property damage due to flooding, levee failure, and dam failure; including high hazard potential dams (HHPD).
- Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire.
- Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather.
- Goal 5: Minimize injuries and property damage due to seismic and/or geological events.

The goals were changed to more accurately reflect the hazards faced by jurisdictions and provide a targeted approach to address said hazards.

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 first MPC meeting the key members of the Mitigation Planning Committee were identified and outreach strategies were discussed for reaching more members of the community, specifically underserved populations, which in the case of Chariton County are either over the age of 65, low income, or disabled. A full mailing list of individuals and organizations that were invited can be found in Appendix B. Public questionnaires were distributed to attendees.

Outreach strategies discussed during the “Kick-Off” meetings were:

- Attendees of the “kick-off” meeting would encourage participation by inviting other members of the community to participate. Methods would include inviting co-workers, community members, announcing the plan at meetings and at church, and posting meeting flyers on websites, Facebook pages, and in public places.

During the second mitigation planning meeting for Chariton County the members participated in identifying the risks faced by their jurisdictions. The hazards that were identified were then discussed in regards to how they affected the jurisdictions and potential actions were discussed.

The MPC included problem statements in the plan update at the end of each hazard profile when possible. The problem statements were intended to summarize any specific risk to the planning area for each hazard. This was followed by discussion about possible mitigation actions that could be implemented in the planning area.

The focus of Meeting #3 was an update of the mitigation strategy. For a comprehensive range of mitigation actions to be considered, the MPC reviewed the following information during Meeting #3:

- A list of actions proposed in the previous mitigation plan, the current 2023 State Plan, and actions utilized 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 potential ability to provide matching funds

for mitigation grants.

- Public input during meetings, responses to data collection questionnaires, and other efforts to involve the public in the plan development process. Attendees at the meetings did take copies of the public questionnaire and in the case of jurisdictions with a website or facebook page, a link to the questionnaire was posted to reach a broader audience.

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)* and several hardcopies were made available at the public meetings, attendees were encouraged to take the resource with them. 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. Participants were encouraged to develop action plans that would mitigate hazards in the participating jurisdictions.

The MPC reviewed the actions from the previously approved plan for progress made since the plan had been adopted, using worksheets included in Appendix C of this plan. Prior to Meeting #3, 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 was 1 completed action, 23 continuing actions (either ongoing or modified), and 10 deleted actions. The following table provides a breakdown of the actions considered and the MPC's determination of whether the actions have been completed, are ongoing, or will be deleted.

Completed/Retained Ongoing Removed

Table 4.1. Status & Actions from Chariton County 2020 Hazard Mitigation Plan

Status	Action from Previous Plan
Ongoing	Chariton County 2020.1 – NFIP Participation
Removed	Chariton County 2020.2 – Implement flood mitigation activities to eliminate effects on Chariton County and residents
Ongoing	Chariton County 2020.3 – Installation or upgrade of warning sirens in areas of the County needing a siren or the siren upgraded
Ongoing	Chariton County 2020.4 – Maintain Transportation Infrastructure by making necessary improvements to roads, culverts, low water crossings, road elevations, bank stabilizations, bridges and the general transportation infrastructure throughout the city
Completed/Retained	Chariton County 2020.5 – Debris Removal, project will provide resources to remove the debris in the ditches after flood or severe thunderstorm events

Removed	Chariton County 2020.6 – Response to Pandemic, project will provide necessary resources for the response to pandemic outbreaks
Ongoing	Chariton County 2020.7 – Safe Rooms and Storm Shelters, project will build safe rooms and establish local ordinances requiring community storm shelters within sizable mobile home parks and subdivisions
Ongoing	Keytesville 2020.1 – Update Warning Siren
Ongoing	Keytesville 2020.2 – Build a Safe Room
Ongoing	Keytesville 2020.3 – Maintain Transportation Infrastructure by making necessary improvements to roads, culverts, low water crossings, road elevations, bank stabilizations, bridges and the general transportation infrastructure throughout the city
Ongoing	Keytesville 2020.4 – Levee around water well field
Removed	Keytesville 2020.5 – Secondary Access Point for School
Ongoing	Keytesville 2020.6 – NFIP Participation
Ongoing	Mendon 2020.1 – Maintain Transportation Infrastructure by making necessary improvements to roads, culverts, low water crossings, road elevations, bank stabilizations, bridges and the general transportation infrastructure throughout the city
Ongoing	Mendon 2020.2 – NOAA Radios, project will promote the use and NOAA radios in businesses, private homes, and large gatherings
Ongoing	Salisbury 2020.1 – Installation Warning Siren, installation of a warning siren at the Salisbury RV Park and Campgrounds
Ongoing	Salisbury 2020.2 – Generator for City Hall/Municipal Utility Office
Ongoing	Salisbury 2020.3 – NFIP Participation
Removed	Keytesville R-III 2020.1 – Safe Room
Removed	Keytesville R-III 2020.2 – Lack of Intercom System Throughout School
Ongoing	Brunswick R-II 2020.1 – Build a Safe Room
Removed	Salisbury R-IV 2020.1 – Educational Information on Natural Hazards
Removed	Rothville 2020.1 – Installation Warning Siren
Removed	Dalton 2020.1 – Installation Warning Siren
Removed	Dalton 2020.2 – Replace Deteriorated Bridge
Removed	Dalton 2020.3 – NFIP Participation
Ongoing	Sumner 2020.1 – Flood Mitigation, project would install levees or flood prevention measures around community to stop the waters from entering the community
Ongoing	Sumner 2020.2 – Installation Warning Siren
Ongoing	Brunswick 2020.1 – NFIP Participation
Ongoing	Brunswick 2020.2 – Property Acquisition and Structure Demolition
Ongoing	Brunswick 2020.3 – Early Warning Siren
Ongoing	Brunswick 2020.4 – Maintain Transportation Infrastructure by making necessary improvements to roads, culverts, low water crossings, road elevations, bank stabilizations, bridges and the general transportation infrastructure throughout the city
Ongoing	Brunswick 2020.5 – Generator for City Hall/Municipal Utility Office
Ongoing	Brunswick 2020.6 – Implement flood mitigation activities to eliminate effects on community and residents

Table 4.2 provides a summary of the action statuses for each jurisdiction:

Table 4.2. Action Status Summary

Jurisdiction	Completed Actions	Continuing Actions (ongoing or modify)	Deleted Actions
Chariton County	0	4	2
City of Brunswick	0	6	0
City of Keytesville	0	5	1
City of Mendon	0	2	0
City of Salisbury	0	3	0
City of Sumner	0	2	0
Brunswick R-II	0	1	0

Table 4.3 provides a summary of the completed and deleted actions from the previous plan.

Table 4.3. Summary of Completed and Deleted Actions from the Previous Plan

Completed Actions	Completion Details (date, amount, funding source)
n/a	
Deleted Actions	**Reason for Deletion**
Chariton County 2020.2	Deleted due to lack of specific detail and resources
Chariton County 2020.6	Deleted due to lack of political support, deemed unnecessary
Keytesville 2020.5	Deleted – City officials unsure of proposed action's intent
Keytesville R-III 2020.1	Jurisdiction did not participate
Keytesville R-III 2020.2	Jurisdiction did not participate
Salisbury R-IV 2020.1	Jurisdiction did not participate
Rothville 2020.1	Jurisdiction did not participate
Dalton 2020.1	Jurisdiction did not participate
Dalton 2020.2	Jurisdiction did not participate
Dalton 2020.3	Jurisdiction did not participate

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

From the previous table there were 3 actions that were deleted from the plan. The reasoning behind the deletion is referenced in Table 4.3. There were no completed actions from the previous plan.

The failure to complete actions from the previous plan were due to financial impediments, these actions were retained by the MPC and if funding becomes available the actions will be pursued if and when possible.

During the 3rd meeting of the MPC it was noted that mitigation is a cost-saver when compared to losses sustained repeatedly over time, however, the financial resources of the jurisdictions that participated did have to prioritize actions based on what they could afford to pursue under current financial circumstances. Some actions included in the plan offer little hope of affording but would be beneficial if funding became available. Specifically, the barriers that were mentioned in every jurisdiction for actions that were not completed was lack of available funding.

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 discussed the proposed actions, and then utilized the STAPLEE worksheets, when possible, to determine the benefit of actions and to help prioritize which actions would be most beneficial.

"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 2023 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. 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 in 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

The status and action summary table (Table 4.1) presents a summary of the actions from the previous plan. The actions highlighted in orange have been removed from the plan. If the jurisdiction is a participant in the plan update the reason for deletion can be found in Table 4.3. If the jurisdiction did not participate in the plan update all actions were removed for that jurisdiction.

The action worksheets on the following pages describe how each action will be implemented and administered by the local jurisdictions, how the jurisdiction prioritized the specific actions, and other details to enable their implementation if possible.

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.

4.4 Chariton County Mitigation Actions

Action Worksheet	
Name of Jurisdiction:	Chariton County
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Levee Failure, Dam Failure
Problem being Mitigated:	Continue to participate in the NFIP
Action or Project	
Applicable Goal Statement:	Goal 2: Minimize property damage due to flooding, levee failure, and dam failure
Action/Project Number:	Chariton County 2025.1
Name of Action or Project:	NFIP Participation
Mitigation Category:	Natural Systems Protection, Structure and Infrastructure Projects, Natural Systems Protection, Education and Outreach
Action or Project Description:	Continue Chariton County's participation and good standing in National Flood Insurance Program and mitigate future damages by developing a substantial damage/improvement plan for implementation following a disaster.
Estimated Cost:	< $100
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
Supporting Organization/Department:	County EMD
Action/Project Priority:	High Priority
Timeline for Completion:	1 year
Potential Fund Sources:	County General Operating Budget
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain Ordinance
Progress Report	
Action Status:	Continuing – In Progress
Report of Progress:	The county is currently in compliance with the NFIP, and will continue to undertake actions that will satisfy current and future requirements. The substantial damage/improvement plan will be developed to mitigate future damages and losses due to hazards.

Action Worksheet	
Name of Jurisdiction:	Chariton County
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure, Severe Thunderstorms
Problem being Mitigated:	Drainage Ditch Debris Removal
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure.
Action/Project Number:	Chariton County 2025.2
Name of Action or Project:	Debris Removal
Mitigation Category:	Structure and Infrastructure Projects, Natural Systems Protection
Action or Project Description:	Project will study areas of repeated debris blockages that lead to flooding in order to prioritize areas that would benefit from culvert/low water crossing improvements.
Estimated Cost:	$200,000
Benefits:	This project would protect infrastructure and property from the damages caused by debris.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Supporting Organization/Department:	County Road and Bridge
Action/Project Priority:	High Priority
Timeline for Completion:	1 year
Potential Fund Sources:	Hazard Mitigation grant funds; FMA, HMGP, FEMA PA grant which would include the option to incorporate mitigation measures alongside debris removal to reduce future damage from similar events.
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain Ordinance
Progress Report	
Action Status:	Not completed, Retained
Report of Progress:	Ongoing

Action Worksheet	
Name of Jurisdiction:	Chariton County
Risk / Vulnerability	
Hazard(s) Addressed:	Tornadoes, Severe Thunderstorm
Problem being Mitigated:	Early Warning Siren
Action or Project	
Applicable Goal Statement:	Goal 1 – Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes and severe thunderstorms.
Action/Project Number:	Chariton County 2025.3
Name of Action or Project:	Installation and Upgrade Warning Sirens
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Installation or upgrade to warning sirens in the areas of the County that need a warning siren or where the existing warning siren is inadequate.
Estimated Cost:	$100,000
Benefits:	With adequate time for warning of storms and other hazards, residents are able to seek shelter to help minimize the loss of life and injury.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Supporting Organization/Department:	County EMD
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	Grant Funds, HMGP, NGWSGP
Local Planning Mechanisms to be Used in Implementation, if any:	County Emergency Services
Progress Report	
Action Status:	Ongoing, not started
Report of Progress:	This project remains a high priority, due to lack of funding, no progress has been made.

Action Worksheet	
Name of Jurisdiction:	Chariton 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 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather.
Action/Project Number:	Chariton County 2025.4
Name of Action or Project:	Improve Transportation Infrastructure
Mitigation Category:	Structure and Infrastructure Projects, Natural Systems Protection
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 county. Projects will be given priority if they reduce risk to hazards.
Estimated Cost:	$750,000
Benefits:	The project protects citizens from harm due to damaged transportation infrastructure, reduces road closures in inclement weather, and saves the county money on repetitive repairs.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Supporting Organization/Department:	County Road and Bridge
Action/Project Priority:	High
Timeline for Completion:	1-5 Years, Ongoing
Potential Fund Sources:	County Road and Bridge Funds, Additional grant funding HMGP, CDBG
Local Planning Mechanisms to be Used in Implementation, if any:	County Transportation Plan
Progress Report	
Action Status:	Ongoing
Report of Progress:	Improvements have not been completed due to lack of funds, improvements will continue to be made as funding is available

Action Worksheet	
Name of Jurisdiction:	Chariton County
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Thunderstorms, Extreme Temperatures, Severe Winter Weather, Earthquake
Problem being Mitigated:	Lack of shelter
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire.
Action/Project Number:	Chariton County 2025.5
Name of Action or Project:	Safe Rooms and Storm Shelters
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Build safe rooms and provide shelter to the residents of the county in the event of hazardous conditions.
Estimated Cost:	$1,000,000
Benefits:	This project would protect citizens from harm due to tornadoes or severe thunderstorms, this shelter could also be utilized as a cooling center in the event of extreme heat events, a warming center in the event of extreme cold temperatures. A safe room/storm shelter could also serve as a "staging area" in the event of a widespread disaster providing a location to distribute emergency supplies and provide charging stations to residents without power.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Supporting Organization/Department:	County EMD
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5+ years
Potential Fund Sources:	Grant funds: FEMA HMGP, HUD, FHA
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	Ongoing
Report of Progress:	This project has not been undertaken due to funding; the county would need to provide a 25% match of the total cost. Due to the high cost of this mitigation measure, it was classified as low priority.

Action Worksheet	
Name of Jurisdiction:	Chariton County
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire.
Action/Project Number:	Chariton County 2025.6
Name of Action or Project:	Educate on best practices during drought
Mitigation Category:	Education and Outreach, Natural Systems Protection
Action or Project Description:	Provide education to the citizens of Chariton County to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	< $100
Benefits:	Citizens of Chariton County would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	County Government
Supporting Organization/Department:	n/a
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	County Funds
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

Action Worksheet	
Name of Jurisdiction:	Chariton County
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather
Problem being Mitigated:	Education on mitigation measures for various hazards in Chariton County
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	Chariton County 2025.7
Name of Action or Project:	Provide educational materials on various methods the citizens of Chariton County could take to mitigate damage and injuries caused by natural hazards in the region
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of Chariton County to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the county's social media page and included in utility bills with the cooperation of the jurisdictions and utility companies within the county.
Estimated Cost:	< $500
Benefits:	Citizens of Chariton County would have the best information about eliminating or reducing damages and/or injury due to natural hazards
Plan for Implementation	
Responsible Organization/Department:	County Government
Supporting Organization/Department:	City governments within Chariton County, Local utility companies
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	County Funds
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

4.5 City of Keytesville Mitigation Actions

Action Worksheet	
Name of Jurisdiction:	City of Keytesville
Risk / Vulnerability	
Hazard(s) Addressed:	Tornadoes, Severe Thunderstorm
Problem being Mitigated:	Early Warning Siren
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning.
Action/Project Number:	Keytesville 2025.1
Name of Action or Project:	Update Warning Siren
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Installation of emergency siren
Estimated Cost:	$75,000
Benefits:	With adequate warning time residents are able to seek shelter to help minimize loss of life and injury.
Plan for Implementation	
Responsible Organization/Department:	City of Keytesville
Supporting Organization/Department:	Keytesville Emergency Services
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	Grant Funds, HMGP, NGWSGP
Local Planning Mechanisms to be Used in Implementation, if any:	County Emergency Services
Progress Report	
Action Status:	Ongoing
Report of Progress:	Due to lack of funding, the City of Keytesville has not begun this project, it is still considered a priority if funding becomes available.

Action Worksheet	
Name of Jurisdiction:	City of Keytesville
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Thunderstorms, Earthquake, Extreme Temperatures
Problem being Mitigated:	Lack of safe shelter for residents
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire.
Action/Project Number:	Keytesville 2025.2
Name of Action or Project:	Safe Room
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Build a safe room
Estimated Cost:	$1,000,000
Benefits:	This project would protect citizens from harm due to tornadoes or severe thunderstorms, this shelter could also be utilized as a cooling center in the event of extreme heat events, a warming center in the event of extreme cold temperatures. A safe room/storm shelter could also serve as a "staging area" in the event of a widespread disaster providing a location to distribute emergency supplies and provide charging stations to residents without power.
Plan for Implementation	
Responsible Organization/Department:	City of Keytesville
Supporting Organization/Department:	Emergency Services in Keytesville
Action/Project Priority:	High Priority
Timeline for Completion:	5+ years
Potential Fund Sources:	FEMA HMGP, HUD, FHA
Local Planning Mechanisms to be Used in Implementation, if any:	County Emergency Services
Progress Report	
Action Status:	Ongoing
Report of Progress:	While this project is considered a priority, lack of funding impedes progress at this time.

Action Worksheet	
Name of Jurisdiction:	City of Keytesville
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure, Severe Thunderstorms, Winter Weather
Problem being Mitigated:	Drainage Ditch Debris Removal
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure.
Action/Project Number:	Keytesville 2025.3
Name of Action or Project:	Debris Removal
Mitigation Category:	Structure and Infrastructure Projects, Planning and Regulation
Action or Project Description:	Project will study areas of repeated debris blockages that lead to flooding in order to prioritize areas that would benefit from culvert/low water crossing improvements.
Estimated Cost:	$200,000
Benefits:	The project would protect infrastructure and property from the damages caused by debris
Plan for Implementation	
Responsible Organization/Department:	City of Keytesville
Supporting Organization/Department:	City of Keytesville staff
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	Hazard Mitigation Grant Funds: FMA, HMGP, FEMA PA (if applicable)
Local Planning Mechanisms to be Used in Implementation, if any:	Transportation Advisory Committee; flood plain ordinance
Progress Report	
Action Status:	New
Report of Progress:	New Project

Action Worksheet	
Name of Jurisdiction:	City of Keytesville
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorms, Levee Failure
Problem being Mitigated:	Protection to existing pipeline from natural hazard
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 2: Minimize property damage due to flooding. Levee failure, and dam failure.
Action/Project Number:	Keytesville 2025.4
Name of Action or Project:	Protection of water well field
Mitigation Category:	Structure and Infrastructure Projects, Natural Systems Protection
Action or Project Description:	The water supply to the City of Keytesville has a pipeline that is occasionally under water. Seek funding to explore alternatives or protections that might be undertaken to protect the city's water supply during hazardous events
Estimated Cost:	$25.000
Benefits:	By conducting a study to determine possible mitigation measures of the city of Keytesville's water supply being contaminated or disrupted due to a hazard and protect resident's drinking water system.
Plan for Implementation	
Responsible Organization/Department:	They City of Keytesville
Supporting Organization/Department:	Water Supply District
Action/Project Priority:	High
Timeline for Completion:	1-5 years
Potential Fund Sources:	USDA or EPA Drinking Water Grants
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance
Progress Report	
Action Status:	Ongoing
Report of Progress:	Not started, due to the expense of conducting a study and the infrequency of disruptions to the city water supply.

Action Worksheet	
Name of Jurisdiction:	City of Keytesville
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure
Problem being Mitigated:	Continue to participate in the NFIP
Action or Project	
Applicable Goal Statement:	Goal 2: Minimize property damage due to flooding, levee failure, and dam failure.
Action/Project Number:	Keytesville 2025.5
Name of Action or Project:	NFIP Participation
Mitigation Category:	Natural Systems Protection, Structure and Infrastructure Projects, Planning and Regulation, and Education and Outreach
Action or Project Description:	Continue City of Keytesville's participation and good standing in the National Flood Insurance Program. Develop policies in Keytesville to comply with NFIP standards by: • Adopting NFIP minimum floodplain management criteria via local regulation • Adopting the latest effective Flood Insurance Rate Map (FIRM) • Implement and enforce local floodplain management regulations to regulate and permit development in SFHA's, if applicable • Develop ordinance to address the requirements of the NFIP Develop procedure to implement the substantial improvement/substantial damage provisions of floodplain management after an event
Estimated Cost:	< $100
Benefits:	Protection of life and reduction of damages due to accessibility to NFIP insurance, and prevention of future damages by compliance with NFIP regulations.
Plan for Implementation	
Responsible Organization/Department:	City of Keytesville
Supporting Organization/Department:	n/a
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:	Continuing – In progress
Report of Progress:	The City will continue to maintain compliance with the NFIP.

Action Worksheet	
Name of Jurisdiction:	City of Keytesville
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire
Action/Project Number:	Keytesville 2025.6
Name of Action or Project:	Educate citizens on best practices during Drought.
Mitigation Category:	Education and Outreach, Natural Systems Protection
Action or Project Description:	Provide education to the citizens of Keytesville to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	< $100
Benefits:	Citizens of Keytesville would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	County Government
Supporting Organization/Department:	n/a
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

Action Worksheet

Name of Jurisdiction:	City of Keytesville
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather
Problem being Mitigated:	Education on mitigation measures for various hazards in Keytesville
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	Keytesville 2025.7
Name of Action or Project:	Provide educational materials on various methods the citizens of Keytesville could take to mitigate damage and injuries caused by natural hazards in the region
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of Keytesville to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the county's social media page and included in the city's utility bills (see Chariton County action 2025.7).
Estimated Cost:	< $200
Benefits:	Citizens of Keytesville would have the best information about eliminating or reducing damages and/or injury due to natural hazards
Plan for Implementation	
Responsible Organization/Department:	City Government
Supporting Organization/Department:	Chariton County, Local utility companies
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

4.6 City of Mendon Mitigation Actions

Action Worksheet	
Name of Jurisdiction:	City of Mendon
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorms, Winter Weather, Levee Failure, Dam Failure
Problem being Mitigated:	Protecting lives and minimize property damage caused by flooding, thunderstorms, and winter weather
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes and severe thunderstorms. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather.
Action/Project Number:	City of Mendon 2025.1
Name of Action or Project:	Improve Transportation Infrastructure
Mitigation Category:	Structure and Infrastructure Projects
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 in the City.
Estimated Cost:	$350,000
Benefits:	This project protects citizens from harm due to damaged transportation infrastructure, reduces road closures in inclement weather, and saves the city money on repetitive repairs.
Plan for Implementation	
Responsible Organization/Department:	City of Mendon
Supporting Organization/Department:	n/a
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	MoDOT, HMGP, HMA
Local Planning Mechanisms to be Used in Implementation, if any:	Transportation Advisory Committee, Reg. Transportation Plan
Progress Report	
Action Status:	Ongoing, Not Started
Report of Progress:	Limited funding in the City has prevented this action from being completed, the city will implement this action if funds become available

Action Worksheet	
Name of Jurisdiction:	City of Mendon
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Earthquakes, Severe Thunderstorms, Severe Winter Weather, Tornado, Wildfire
Problem being Mitigated:	Provide citizens with advanced warning of hazardous weather conditions
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	City of Mendon 2025.2
Name of Action or Project:	NOAA Radios
Mitigation Category:	Outreach and Education
Action or Project Description:	Project will obtain NOAA radios for individuals in the community, priority will be given to individuals that are unable to purchase for themselves.
Estimated Cost:	$20,000
Benefits:	The project provides early warning and the prevention of harm to individuals
Plan for Implementation	
Responsible Organization/Department:	City of Mendon
Supporting Organization/Department:	n/a
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	FEMA NGWS Grant Program, HMGP Grant Funding
Local Planning Mechanisms to be Used in Implementation, if any:	County EMD
Progress Report	
Action Status:	Ongoing
Report of Progress:	This project has not been completed due to lack of funding.

Action Worksheet	
Name of Jurisdiction:	City of Mendon
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire
Action/Project Number:	City of Mendon 2025.3
Name of Action or Project:	Educate citizens on best practices during drought.
Mitigation Category:	Education and Outreach, Natural Systems Protection
Action or Project Description:	Provide education to citizens of Mendon to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential of wildfires. The information will be made available through both social media and inserts in city bills.
Estimated Cost:	< $100
Benefits:	Citizens of Mendon would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	City of Mendon
Supporting Organization/Department:	n/a
Action/Project Priority:	Medium Priority
Timeline for Completion:	1 year
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	County emergency services
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

Action Worksheet	
Name of Jurisdiction:	City of Mendon
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather
Problem being Mitigated:	Education on mitigation measures for various hazards in Mendon
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	Mendon 2025.4
Name of Action or Project:	Provide educational materials on various methods the citizens of Mendon could take to mitigate damage and injuries caused by natural hazards in the region
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of Mendon to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the county's social media page and included in the city's utility bills (see Chariton County action 2025.7).
Estimated Cost:	< $200
Benefits:	Citizens of Mendon would have the best information about eliminating or reducing damages and/or injury due to natural hazards
Plan for Implementation	
Responsible Organization/Department:	City Government
Supporting Organization/Department:	Chariton County, Local utility companies, City of Mendon
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

4.7 City of Salisbury Mitigation Actions

Action Worksheet	
Name of Jurisdiction:	City of Salisbury
Risk / Vulnerability	
Hazard(s) Addressed:	Severe Thunderstorms, Tornado
Problem being Mitigated:	Early Warning Siren – lack of advance notice for all citizens of Salisbury in the event of hazardous conditions
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning.
Action/Project Number:	City of Salisbury 2025.1
Name of Action or Project:	Installation of Warning Siren
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Installation of a warning siren
Estimated Cost:	$75,000
Benefits:	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life and prevent injuries
Plan for Implementation	
Responsible Organization/Department:	City of Salisbury
Supporting Organization/Department:	Emergency Services
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	Grant Funds: HMGP, NGWSGP
Local Planning Mechanisms to be Used in Implementation, if any:	County emergency services
Progress Report	
Action Status:	Ongoing
Report of Progress:	This project has not been completed due to lack of funding.

Action Worksheet	
Name of Jurisdiction:	City of Salisbury
Risk / Vulnerability	
Hazard(s) Addressed:	Extreme Temperature, Severe Thunderstorm, Severe Winter Weather, Tornado
Problem being Mitigated:	Generator for City Hall/Municipal Utility Office
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather.
Action/Project Number:	City of Salisbury 2025.2
Name of Action or Project:	Generator for City Hall/Municipal Utility Office
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Obtain a generator for City Hall/Municipal Utility Office as funds become available.
Estimated Cost:	$100,000
Benefits:	Generator will allow for continued use of City Hall/Municipal Utility facility for service to citizens in the event of an outage, this would be beneficial during any hazard that could impact the power supply.
Plan for Implementation	
Responsible Organization/Department:	City of Salisbury
Supporting Organization/Department:	n/a
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	HMGP Grant, CDBG
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	Ongoing
Report of Progress:	This project has not been completed due to lack of funding.

Action Worksheet	
Name of Jurisdiction:	City of Salisbury
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure
Problem being Mitigated:	Continued participation in the NFIP
Action or Project	
Applicable Goal Statement:	Goal 2: Minimize property damage due to flooding, levee failure, and dam failure.
Action/Project Number:	City of Salisbury 2025.3
Name of Action or Project:	NFIP Participation
Mitigation Category:	Natural Systems Protection, Structure and Infrastructure Projects, and Education and Outreach
Action or Project Description:	Continue City of Salisbury's participation and good standing in National Flood Insurance Program by implementing the following: • Adopting NFIP minimum floodplain management criteria via local regulation (current floodplain ordinance) • Adopting the latest effective FIRM • Implement and enforce local floodplain management regulations to regulate and permit development in SFHA's, if applicable • Develop ordinance to address the requirements of the NFIP (See Appendix E) • Develop procedure to implement the substantial improvement/substantial damage provisions of floodplain management after an event.
Estimated Cost:	< $100
Benefits:	Protection of life and reduction of damages due to accessibility to citizens in times of need; will ensure citizens will have continued access to NFIP Insurance
Plan for Implementation	
Responsible Organization/Department:	City of Salisbury
Supporting Organization/Department:	n/a
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:	Continuing – In Progress
Report of Progress:	New Project

Action Worksheet	
Name of Jurisdiction:	City of Salisbury
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperature, and wildfire
Action/Project Number:	City of Salisbury 2025.4
Name of Action or Project:	Educate citizens on best practices during drought.
Mitigation Category:	Education and Outreach, Natural Systems Protection
Action or Project Description:	Provide education to citizens of Salisbury to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential of wildfires. The education materials will be made available on social media and as inserts in city bills.
Estimated Cost:	<$100
Benefits:	Citizens of Salisbury would have the best information about best practices of water usage during periods of drought reducing the risk of wildfires and water shortages
Plan for Implementation	
Responsible Organization/Department:	City of Salisbury
Supporting Organization/Department:	n/a
Action/Project Priority:	Medium Priority
Timeline for Completion:	1 year
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

Action Worksheet	
Name of Jurisdiction:	City of Salisbury
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather
Problem being Mitigated:	Education on mitigation measures for various hazards in Salisbury
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	Salisbury 2025.5
Name of Action or Project:	Provide educational materials on various methods the citizens of Salisbury could take to mitigate damage and injuries caused by natural hazards in the region
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of Salisbury to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the county's social media page and included in the city's utility bills (see Chariton County action 2025.7).
Estimated Cost:	< $200
Benefits:	Citizens of Salisbury would have the best information about eliminating or reducing damages and/or injury due to natural hazards
Plan for Implementation	
Responsible Organization/Department:	City Government
Supporting Organization/Department:	Chariton County, Local utility companies
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

4.8 City of Brunswick Mitigation Actions

Action Worksheet	
Name of Jurisdiction:	City of Brunswick
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure
Problem being Mitigated:	Continue to participate in the NFIP
Action or Project	
Applicable Goal Statement:	Goal 2: Minimize property damage due to flooding, levee failure, and dam failure
Action/Project Number:	Brunswick 2025.1
Name of Action or Project:	NFIP Participation
Mitigation Category:	Natural Systems Protection, Structure and Infrastructure Projects, Education and Outreach, Planning and Regulation
Action or Project Description:	Continue City of Brunswick's participation and good standing in National Flood Insurance Program by implementing the following: • Adopting NFIP minimum floodplain management criteria via local regulation (current floodplain ordinance) • Adopting the latest effective FIRM • Implement and enforce local floodplain management regulations to regulate and permit development in SFHA's, if applicable • Develop ordinance to address the requirements of the NFIP (See Appendix E) Develop procedure to implement the substantial improvement/substantial damage provisions of floodplain management after an event.
Estimated Cost:	<$100
Benefits:	Protection of life and reduction of damages due to accessibility to citizens in times of need; maintain access to NFIP for residents
Plan for Implementation	
Responsible Organization/Department:	City of Brunswick
Supporting Organization/Department:	n/a
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:	Continued – In progress

Report of Progress:	Ongoing
Action Worksheet	
Name of Jurisdiction:	City of Brunswick
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure
Problem being Mitigated:	Property flooding
Action or Project	
Applicable Goal Statement:	Goal 2: Minimize property damage due to flooding, levee failure, and dam failure
Action/Project Number:	Brunswick 2025.2
Name of Action or Project:	Property Acquisition and Structure Demolition
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Purchase property and demolish properties damaged due to flooding
Estimated Cost:	$500,000
Benefits:	By removing structures that were damaged, some after flooding, will prevent further damage to life and property by eliminating the risk of collapse or structural failure in future events, and allow for the construction of more resilient buildings in their place
Plan for Implementation	
Responsible Organization/Department:	City of Brunswick
Supporting Organization/Department:	n/a
Action/Project Priority:	High Priority
Timeline for Completion:	1 year
Potential Fund Sources:	CDBG demolition grant
Local Planning Mechanisms to be Used in Implementation, if any:	City of Brunswick Floodplain Ordinance
Progress Report	
Action Status:	Continued
Report of Progress:	This project was not completed due to lack of funding

Action Worksheet	
Name of Jurisdiction:	City of Brunswick
Risk / Vulnerability	
Hazard(s) Addressed:	Severe Thunderstorms, Tornado
Problem being Mitigated:	Early Warning Siren
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning.
Action/Project Number:	Brunswick 2025.3
Name of Action or Project:	Early Warning Siren
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Installation or upgrade of warning siren
Estimated Cost:	$75,000
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 of Brunswick
Supporting Organization/Department:	n/a
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	HMGP, NGWSGP
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Plan
Progress Report	
Action Status:	Ongoing
Report of Progress:	Due to lack of funding this project has not been completed.

Action Worksheet	
Name of Jurisdiction:	City of Brunswick
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorms, Winter Weather
Problem being Mitigated:	Damage to transportation infrastructure
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather.
Action/Project Number:	City of Brunswick 2025.4
Name of Action or Project:	Improve 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:	$650,000
Benefits:	The project protects citizens from harm due to damaged transportation infrastructure
Plan for Implementation	
Responsible Organization/Department:	City of Brunswick
Supporting Organization/Department:	n/a
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	Appropriations, CDBG Grant funds, HMGP Grant Funds, FMA
Local Planning Mechanisms to be Used in Implementation, if any:	Local transportation plan, transportation advisory committee
Progress Report	
Action Status:	Ongoing
Report of Progress:	The City of Brunswick is currently in the process of replacing the streets in the city that were damaged due to flooding, there will be more improvements as the budget or funding allows.

Action Worksheet	
Name of Jurisdiction:	City of Brunswick
Risk / Vulnerability	
Hazard(s) Addressed:	Extreme Temperature, Severe Thunderstorm, Severe Winter Weather, Tornado, Earthquake
Problem being Mitigated:	Generator for City Hall/ Municipal Utility Office
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	Brunswick 2025.5
Name of Action or Project:	Generator for City Hall/Municipal Utility Office as funds become available
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Obtain a generator for City Hall/Municipal Utility Office as funds become available
Estimated Cost:	$100,000
Benefits:	Generator will allow for continued use of City Hall/Municipal Utility facility for service to citizens in the event of an outage, this would be beneficial during any hazard that would impact power service.
Plan for Implementation	
Responsible Organization/Department:	City of Brunswick
Supporting Organization/Department:	n/a
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	HMGP, CDBG
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	Ongoing
Report of Progress:	This project has not been completed due to lack of funding

Action Worksheet	
Name of Jurisdiction:	City of Brunswick
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure
Problem being Mitigated:	Flooding throughout the community, specifically along the railroad tracks
Action or Project	
Applicable Goal Statement:	Goal 2: Minimize property damage due to flooding, levee failure, and dam failure
Action/Project Number:	Brunswick 2025.6
Name of Action or Project:	Flood Mitigation
Mitigation Category:	Structure and Infrastructure Projects, Natural Systems Protection
Action or Project Description:	Implement flood mitigation activities to eliminate effects on community and residents. Obtain a grant to eliminate flood waters that accumulate along railroad track due to inadequate drainage under track.
Estimated Cost:	$750,000
Benefits:	Mitigation actions will eliminate the harm to structures and lives in the community
Plan for Implementation	
Responsible Organization/Department:	City of Brunswick
Supporting Organization/Department:	n/a
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	HMGP, FMA, Flood Mitigation Swift Current
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance
Progress Report	
Action Status:	Ongoing
Report of Progress:	Due to lack of cooperation from railroad and lack of funding this project has not been completed.

Action Worksheet	
Name of Jurisdiction:	City of Brunswick
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather
Problem being Mitigated:	Education on mitigation measures for various hazards in Brunswick
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	Brunswick 2025.7
Name of Action or Project:	Provide educational materials on various methods the citizens of Keytesville could take to mitigate damage and injuries caused by natural hazards in the region
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of Brunswick to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the county's social media page and included in the city's utility bills (see Chariton County action 2025.7).
Estimated Cost:	< $200
Benefits:	Citizens of Brunswick would have the best information about eliminating or reducing damages and/or injury due to natural hazards
Plan for Implementation	
Responsible Organization/Department:	City Government
Supporting Organization/Department:	Chariton County, Local utility companies
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

Action Worksheet	
Name of Jurisdiction:	City of Brunswick
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperature, and wildfire
Action/Project Number:	City of Brunswick 2025.8
Name of Action or Project:	Educate citizens on best practices during drought.
Mitigation Category:	Education and Outreach, Natural Systems Protection
Action or Project Description:	Provide education to citizens of Brunswick to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential of wildfires. The education materials will be made available on social media and as inserts in city bills.
Estimated Cost:	<$100
Benefits:	Citizens of Brunswick would have the best information about best practices of water usage during periods of drought reducing the risk of wildfires and water shortages
Plan for Implementation	
Responsible Organization/Department:	City of Brunswick
Supporting Organization/Department:	n/a
Action/Project Priority:	Medium Priority
Timeline for Completion:	1 year
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

4.9 City of Sumner Mitigation Actions

Action Worksheet	
Name of Jurisdiction:	City of Sumner
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure
Problem being Mitigated:	Flood waters entering community
Action or Project	
Applicable Goal Statement:	Goal 2: Minimize property damage due to flooding, levee failure, and dam failure
Action/Project Number:	Sumner 2025.1
Name of Action or Project:	Flood Mitigation
Mitigation Category:	Structure and Infrastructure Projects, Natural Systems Protection
Action or Project Description:	Develop plan to address flooding around sewer system and/or Installation of flood prevention measures around the community to stop the waters from entering the community's sewer system.
Estimated Cost:	$1,000,000
Benefits:	Structures will not be subject to sewage back up due to flooding.
Plan for Implementation	
Responsible Organization/Department:	City of Sumner
Supporting Organization/Department:	n/a
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	BRIC, HMGP, HMA
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	Ongoing
Report of Progress:	Due to lack of funding, the project has not been completed

Action Worksheet	
Name of Jurisdiction:	City of Sumner
Risk / Vulnerability	
Hazard(s) Addressed:	Thunderstorms, Tornado
Problem being Mitigated:	Warning siren
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning.
Action/Project Number:	City of Sumner 2025.2
Name of Action or Project:	Install/Update Warning Siren
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Installation/Updating Warning Sirens to provide early warning to the residents of Sumner
Estimated Cost:	$75,000
Benefits:	Reduce loss of life and injury due to weather hazards by providing citizens with early warning and time to take shelter
Plan for Implementation	
Responsible Organization/Department:	City of Sumner
Supporting Organization/Department:	n/a
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	HMGP, CDBG
Local Planning Mechanisms to be Used in Implementation, if any:	Local emergency service
Progress Report	
Action Status:	New
Report of Progress:	New Action, No Progress

Action Worksheet	
Name of Jurisdiction:	City of Sumner
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Lack of knowledge and procedure for reducing strain on water supply and reducing risk to Wildfire during drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire.
Action/Project Number:	City of Sumner 2025.3
Name of Action or Project:	Educate citizens on best practices during drought.
Mitigation Category:	Education and Outreach, Natural Systems Protection
Action or Project Description:	Provide education to the citizens of Sumner to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires. These materials will be made available on social media and as inserts in city bills.
Estimated Cost:	< $100
Benefits:	City residents would have best information about best practices of water usage during periods of drought
Plan for Implementation	
Responsible Organization/Department:	City of Sumner
Supporting Organization/Department:	n/a
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	City General Budget
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

Action Worksheet	
Name of Jurisdiction:	City of Sumner
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure, Severe Thunderstorms
Problem being Mitigated:	Lack of compliance with NFIP requirements.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure.
Action/Project Number:	Sumner 2025.4
Name of Action or Project:	Participation in NFIP
Mitigation Category:	Natural Systems
Action or Project Description:	Develop the floodplain ordinance in Sumner to comply with NFIP standards by: • Adopting NFIP minimum floodplain management criteria via local regulation • Adopting the latest effective Flood Insurance Rate Map (FIRM) • Implement and enforce local floodplain management regulations to regulate and permit development in SFHA's, if applicable • Develop ordinance to address the requirements of the NFIP • Develop procedure to implement the substantial improvement/substantial damage provisions of floodplain management after an event
Estimated Cost:	$0
Benefits:	Complying with the NFIP ensures that the citizens of Sumner will continue to have access to NFIP insurance.
Plan for Implementation	
Responsible Organization/Department:	The City of Sumner, Mayor, and Aldermen
Supporting Organization/Department:	n/a
Action/Project Priority:	Medium
Timeline for Completion:	2026
Potential Fund Sources:	The existing general operating budget.
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain Ordinance
Progress Report	
Action Status:	New
Report of Progress:	n/a

Action Worksheet	
Name of Jurisdiction:	City of Sumner
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather
Problem being Mitigated:	Education on mitigation measures for various hazards in Sumner
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	Sumner 2025.4
Name of Action or Project:	Provide educational materials on various methods the citizens of Keytesville could take to mitigate damage and injuries caused by natural hazards in the region
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of Sumner to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the county's social media page and included in the city's utility bills (see Chariton County action 2025.7).
Estimated Cost:	< $200
Benefits:	Citizens of Sumner would have the best information about eliminating or reducing damages and/or injury due to natural hazards
Plan for Implementation	
Responsible Organization/Department:	City Government
Supporting Organization/Department:	Chariton County, Local utility companies
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

4.10 Brunswick R-II Mitigation Actions

Action Worksheet	
Name of Jurisdiction:	Brunswick R-II
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather
Problem being Mitigated:	Education on mitigation measures for various hazards in the school district
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 2: Minimize property damage due to flooding, levee failure, and dam failure. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	Brunswick R-II 2025.0
Name of Action or Project:	Provide educational materials on various methods the students' families could take to mitigate damage and injuries caused by natural hazards in the region
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the students' families to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the county's social media page and included in the city's utility bills (see Chariton County action 2025.7).
Estimated Cost:	< $200
Benefits:	Students and their families would have the best information about eliminating or reducing damages and/or injury due to natural hazards
Plan for Implementation	
Responsible Organization/Department:	City Government
Supporting Organization/Department:	Chariton County, Local utility companies
Action/Project Priority:	Medium Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	City Funds
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	New
Report of Progress:	New Action, not started

Action Worksheet	
Name of Jurisdiction:	Brunswick R-II
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Thunderstorms, Extreme Temperature, Severe Winter Weather
Problem being Mitigated:	Lack of safe shelter for students and residents of the district during hazardous events and in the event of extreme temperature by providing heating and/or cooling center to residents in need
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather.
Action/Project Number:	Brunswick R-II 2025.1
Name of Action or Project:	Safe Room Construction
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Construct a safe room for the residents of the district to provide shelter during hazardous weather events and provide heating and/or cooling center to residents in the district in the event of a power outage or extreme temperatures. Saferoom could be utilized as “staging area” in the event of a widespread disaster to distribute emergency supplies, provide emergency first aid, and allow for charging electronic devices for residents without power.
Estimated Cost:	$1,000,000
Benefits:	Save human life and injury by providing shelter during weather events
Plan for Implementation	
Responsible Organization/Department:	Brunswick R-II School District, Superintendent
Supporting Organization/Department:	City of Brunswick
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	HMGP, BRIC, local bond to fund storm shelter, HUD, FHA
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	Ongoing
Report of Progress:	This project has not been completed due to lack of funding.
Action Worksheet	

Name of Jurisdiction:	Brunswick R-II
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Thunderstorms, Extreme Temperature, Severe Winter Weather,
Problem being Mitigated:	Lack of safe shelter for students and residents of the district during hazardous events and in the event of extreme temperature by providing heating and/or cooling center to residents in need
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather.
Action/Project Number:	Brunswick R-II 2025.1
Name of Action or Project:	Safe Room Construction
Mitigation Category:	Prevention, Structure and Infrastructure Projects, Emergency Services
Action or Project Description:	Construct a safe room for the residents of the district to provide shelter during hazardous weather events and provide heating and/or cooling center to residents in the district in the event of a power outage or extreme temperatures. Saferoom could be utilized as “staging area” in the event of a widespread disaster to distribute emergency supplies, provide emergency first aid, and allow for charging electronic devices for residents without power.
Estimated Cost:	$1,000,000
Benefits:	Save human life and injury by providing shelter during weather events
Plan for Implementation	
Responsible Organization/Department:	Brunswick R-II School District, Superintendent
Supporting Organization/Department:	City of Brunswick
Action/Project Priority:	High Priority
Timeline for Completion:	1-5 years
Potential Fund Sources:	HMGP, BRIC, local bond to fund storm shelter, HUD, FHA
Local Planning Mechanisms to be Used in Implementation, if any:	School emergency plan
Progress Report	
Action Status:	Ongoing
Report of Progress:	This project has not been completed due to lack of funding.

Table 4.4. Mitigation Action Matrix

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
	Structure and Infrastructure Projects							
CC 2025.1	Continue Participation in NFIP	Chariton County	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
CC 2025.2	Drainage Ditch Debris Plan	Chariton County	High	1,2	Flooding, Dam Failure, Levee Failure, Severe Thunderstorms			
CC 2025.3	Installation and Upgrade Warning Sirens	Chariton County	High	1	Tornadoes, Severe Thunderstorms,			
CC 2025.4	Improve Transportation Infrastructure	Chariton County	High	1,2,4	Flooding, Severe Thunderstorms, Winter Weather	X	X	
CC 2025.5	Safe Rooms and Storm Shelters	Chariton County	High	1,3	Tornado, Severe Thunderstorms, Extreme Temperatures,		X	
K 2025.1	Update Warning Siren	Keytesville	High	1,3,4,5	Tornadoes, Severe Thunderstorm, Wildfire, Severe Winter Weather, Earthquake			
K 2025.3	Drainage Ditch Debris Removal	Keytesville	High	1,2	Flooding, Dam Failure, Severe Thunderstorms, Winter Weather			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
K 2025.2	Safe Room	Keytesville	High	1,3,5	Tornado, Severe Thunderstorm, Earthquake, Extreme Temperatures	X	X	
K 2025.4	Protection of Water Well Field	Keytesville	High	1,2,4	Flooding, Severe Thunderstorms, Levee Failure, Winter Weather		X	
K 2025.5	Continue to Participate in the NFIP	Keytesville	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
M 2025.1	Maintain Transportation Infrastructure	Mendon	High	1,2,4				
S 2025.1	Installation of Warning Siren	Salisbury	High	1,2,3,4,5	Severe Thunderstorms, Severe Winter Weather, Tornado, Wildfire, Extreme Temperatures, Flooding, Earthquakes			
S 2025.2	Generator for City Hall/Municipal Utility Office	Salisbury	High	1,4	Extreme Temperature, Severe Thunderstorm, Severe Winter Weather, Tornado			
S 2025.3	Continued Participation in NFIP	Salisbury	High	2	Flooding, Dam Failure, Levee Failure	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
B 2025.1	Continued Participation in NFIP	Brunswick	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
B 2025.2	Property Acquisition and Structure Demolition	Brunswick	High	2	Flooding, Dam Failure, Levee Failure			X
B 2025.3	Early Warning Siren	Brunswick	High	1,3,4,5	Severe Thunderstorms, Tornado, Wildfire, Earthquake			
B 2025.4	Maintain Transportation Infrastructure	Brunswick	High	1,2,3,4,5	Flooding, Severe Thunderstorms, Winter Weather		X	
B 2025.5	Generator for City Hall/Municipal Utility Office	Brunswick	High	1,4	Extreme Temperature, Severe Thunderstorms, Severe Winter Weather, Tornado			
S 2025.1	Flood Mitigation – Sewer	Sumner	High	2	Flooding, Dam Failure, Levee Failure		X	
S 2025.2	Install/Update Warning Siren	Sumner	High	1,2,4,5	Thunderstorms, Severe Winter Weather, Tornado, Wildfire, Flooding, Levee Failure, Dam Failure, Earthquake			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
S 2025.4	Continue Participation in NFIP	Sumner	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
BR-II 2025.1	Safe Room	Brunswick R-II	High	1,3,4	Tornado, Severe Thunderstorms, Extreme Temperature, Severe Winter Weather		X	
	Natural Systems Protection							
CC 2025.1	Continue Participation in NFIP	Chariton County	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
CC 2025.2	Drainage Ditch Debris Plan	Chariton County	High	1,2	Flooding, Dam Failure, Levee Failure, Severe Thunderstorms			
CC 2025.4	Improve Transportation Infrastructure	Chariton County	High	1,2,4	Flooding, Severe Thunderstorms, Winter Weather	X	X	
CC 2025.6	Educate on best practices during Drought	Chariton County	Med.	3	Drought, Wildfire			
K 2025.4	Protection of Water Well Field	Keytesville	High	1,2,4	Flooding, Severe Thunderstorms, Levee Failure, Winter Weather		X	
K 2025.5	Continue to Participate in the NFIP	Keytesville	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
K 2025.6	Educate on Best Practices During Drought	Keytesville	High	3	Drought, Wildfire			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
M 2025.1	Maintain Transportation Infrastructure	Mendon	High	1,2,4	Flooding, Severe Thunderstorms, Winter Weather, Levee Failure, Dam Failure		X	
M 2025.3	Educate on Best Practices During Drought	Mendon	High	3	Drought, Wildfire			
S 2025.3	Continued Participation in NFIP	Salisbury	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
S 2025.4	Education on Best Practices During Drought	Salisbury	High	3	Drought, Wildfire			
B 2025.1	Continued Participation in NFIP	Brunswick	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
B 2025.6	Flood Mitigation	Brunswick	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
S 2025.3	Educate on Best Practices During Drought	Sumner	High	3	Drought, Wildfire			
S 2025.4	Continue Participation in NFIP	Sumner	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
	Planning and Regulation							
CC 2025.1	Continue Participation in NFIP	Chariton County	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
CC 2025.2	Drainage Ditch Debris Removal	Chariton County	High	1,2	Flooding, Dam Failure, Levee Failure, Severe Thunderstorms			
K 2025.3	Drainage Ditch Debris Removal	Keytesville	High	1,2	Flooding, Dam Failure, Severe Thunderstorms, Winter Weather			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
K 2025.5	Continue to Participate in the NFIP	Keytesville	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
B 2025.1	Continued Participation in NFIP	Brunswick	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
S 2025.4	Continue Participation in NFIP	Sumner	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
	Education and Outreach							
CC 2025.1	Continue Participation in NFIP	Chariton County	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
CC 2025.6	Educate on best practices during Drought	Chariton County	High	3	Drought, Wildfire			
CC 2025.7	Educate on mitigation measures for various hazards in Chariton County	Chariton County	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
K 2025.7	Educate on Mitigation Measures for Keytesville	Keytesville	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			
K 2025.5	Continue to Participate in the NFIP	Keytesville	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
K 2025.6	Educate on Best Practices During Drought	Keytesville	High	3	Drought, Wildfire			
M 2025.2	NOAA Radios	Mendon	High	1,2,3,4,5	Flooding, Earthquakes, Severe Thunderstorms, Severe Winter Weather, Tornado, Wildfire			
M 2025.3	Educate on Best Practices During Drought	Mendon	High	3	Drought, Wildfire			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
M 2025.4	Educate on Mitigation Measures for Mendon	Mendon	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			
S 2025.3	Continued Participation in NFIP	Salisbury	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
S 2025.4	Education on Best Practices During Drought	Salisbury	High	3	Drought, Wildfire			
S 2025.5	Educate on Mitigation Measures for Salisbury	Salisbury	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			
B 2025.1	Continued Participation in NFIP	Brunswick	High	2	Flooding, Dam Failure, Levee Failure	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
B 2025.7	Educate on Mitigation Measures for Brunswick	Brunswick	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			
B 2025.8	Educate on Best Practices During Drought	Brunswick	High	3	Drought, Wildfire			
S 2025.3	Educate on Best Practices During Drought	Sumner	High	3	Drought, Wildfire			
S 2025.4	Continue Participation in NFIP	Sumner	High	2	Flooding, Dam Failure, Levee Failure	X	X	X
S 2025.4	Educate on Mitigation Measures for Sumner	Sumner	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
BR-II 2025.0	Educate on Mitigation Measures for Brunswick R-II School District Residents	Brunswick R-II	Medium	1,2,3,4,5	Flooding, Dam Failure, Levee Failure, Tornado, Extreme Temperatures, Earthquake, Severe Thunderstorms, Severe Winter Weather			

5 PLAN MAINTENANCE PROCESS

5 PLAN MAINTENANCE PROCESS 5.1

5.1 Monitoring, Evaluating, and Updating the Plan 5.1

5.1.1 Responsibility for Plan Maintenance 5.1

5.1.2 Plan Maintenance Schedule 5.2

5.1.3 Plan Maintenance Process 5.2

5.2 Incorporation into Existing Planning Mechanisms 5.3

5.3 Continued Public Involvement 5.5

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 State Emergency Management Agency (SEMA) requires that Hazard Mitigation Plans be reviewed periodically, at least annually, to ensure that goals and objectives are being considered. Revisions to the actions or strategies may be required, as well as acknowledging completed successful mitigations. This section of the Chariton County Multi-jurisdictional Hazard Mitigation Plan provides the process to review, revise, and update the plan.

The maintenance of the plan shall be delegated to the County Emergency Management Committee. They meet quarterly and following any disaster declarations, and will invite members of the MPC to attend these meetings to discuss the plan progress and determine if any updates or amendments need to be considered.

Maintenance shall involve agreement of the participating jurisdictions, including school and special districts, to:

- Meet annually, and after a disaster event, to monitor and evaluate the implementation of the plan;
- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high priority, low- or no-cost recommended actions;
- Maintain vigilant monitoring of multi-objective, cost-share, and other funding opportunities to help the community implement the plan's recommended actions for which no current funding exists;

- Monitor and assist in implementation and update of this plan;
- Keep the concept of mitigation in the forefront of community decision making by identifying plan recommendations when other community goals, plans, and activities overlap, influence, or directly affect increased community vulnerability to disasters;
- Report on plan progress and recommended changes to the County Board of Supervisors and governing bodies of participating jurisdictions; and
- Inform and solicit input from the public.

The Chariton County Emergency Management Committee is an advisory body and can only make recommendations to county, city, town, or district elected officials. Its primary duty is to coordinate emergency departments within the county. It will attempt 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[10(a)]. 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 Chariton County Emergency Management Committee meets quarterly, and will hold additional meetings after a state or federally declared hazard event as appropriate to monitor progress and update the mitigation strategy. The Chariton County Emergency Management Director will be responsible for initiating the plan reviews and will invite members of the MPC (or other designated responsible entity) 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

There were no changes made in the plan due to changes in priorities of any jurisdiction that participated in the development of the plan. The plan MUST describe the process for evaluating the plan for effectiveness, including evaluation criteria, when it will be evaluated for effectiveness, and who will be responsible for this evaluation.

The plan must identify how, when and by whom the plan will be assessed for effectiveness at achieving its stated purpose and goals (evaluating). Progress on the proposed actions can be monitored by evaluating changes in vulnerabilities identified in the plan. The MPC (and the Chariton County Emergency Committee) 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[10(b)] 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 in cooperation with the Chariton County Emergency Committee) deems appropriate and necessary. Changes will be approved by the Chariton County Commissioners 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.

Where possible, plan participants, including school and special districts, will use existing plans and/or programs to implement hazard mitigation actions. Based on the capability assessments of the participating jurisdictions, communities in Chariton 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;
- Chariton County Emergency Operations Plan;
- Capital improvement plans and budgets;
- Other community plans within the County, such as water conservation plans, storm water management plans, and parks and recreation plans;
- 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 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 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 Chariton 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 Management 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
Chariton County	Transportation Advisory Committee (TAC)	Highway Department attended all planning meetings and identified actions relating to transportation infrastructure were included in annual update to Unfunded Needs List and the State Transportation Improvement Plan	Highway Department attended all planning meetings and identified actions relating to transportation infrastructure were included in annual update to Unfunded Needs List and the State Transportation Improvement Plan
Chariton County	CEDS, LEPC, Council Budgeting Session	Annual review, county emergency plan review	Annual CEDS Review, County Emergency Plan Review
City of Brunswick	CEDS, Emergency Plan, City Ordinances, Floodplain Ordinance	Annual Review	Annual CEDS Review, Emergency Plan Review, Regional Transportation Plan
City of Keytesville	CEDS, Emergency Plan, City Ordinances, Floodplain Ordinance	Annual Review	Annual CEDS Review, Emergency Plan Review, Regional Transportation Plan
City of Salisbury	CEDS, Emergency Plan, City Ordinances, Floodplain Ordinance	Annual Review	Annual CEDS Review, Emergency Plan Review, Regional Transportation Plan
City of Sumner	CEDS, Emergency Plan, City Ordinances, Floodplain Ordinance	Annual Review	Annual CEDS Review, Emergency Plan Review, Regional Transportation Plan
City of Mendon	CEDS, Emergency Plan,	Annual Review	Annual CEDS Review,

	City Ordinances,		Emergency Plan Review, Regional Transportation Plan

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, as well as, on the Chariton County website and social media accounts 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: Sources

- 2020 Block Geography (US Census Bureau) & National Land Cover Dataset (MRLC)
- American Meteorological Society
- BC Ministry of Forests, Lands, and Natural Resource Operations
- County and local Comprehensive Plans to the extent available
- County Emergency Management
- County Flood Insurance Rate Map, FEMA
- Data Collection Questionnaires completed by each jurisdiction.
- Decennial Census
- DESE
- Department of Geography
- Encyclopedia Britannica, Inc.
- Environmental Protection Agency
- Federal Emergency Management Agency (FEMA)
- Flood Insurance Administration
- Flood Insurance Study, FEMA
- Hazards US (HAZUS)
- Iowa Department of Natural Resources
- Chariton County LEPC
- Missouri Department of Commerce & Insurance
- Missouri Department of Conservation
- Missouri Department of Health and Human Services; health.mo.gov
- Missouri Department of Natural Resources
- Missouri Department of Transportation
- Missouri Division of Fire Marshal Safety
- Missouri Hazard Mitigation Plans (2013, 2018, and 2023)
- Missouri Public Service Commission
- National Agricultural Statistics Service (Agriculture production/losses)
- National Centers for Environmental Information
- National Drought Mitigation Center Drought Reporter
- National Fire Incident Reporting System (NFIRS)
- National Inventory of Dams
- National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI);
- National Weather Service
- NFIP Community Status Book
- Oxford Brooks University
- Previously approved Chariton County Hazard Mitigation Plan (2021)
- Purdue University
- SEMA
- SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin
- State of Missouri GIS data
- Tornado and Storm Research Organization (TORRO)
- United States Geological Survey (USGS)
- US Army Corps of Engineers
- US Bureau of the Census and Annual population estimates

- US Community Survey, 2022
- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics
- US Department of Transportation
- US Drought Monitor
- US Fish and Wildlife Service
- www.tornadochaser.net
- www.weather.gov

Appendix B: Planning Documentation & Invitations

Mayor Jermaine Solomon
City Clerk LaNique Solomon
109 N Sycamore St
Dalton, Mo 65246

Mayor Lois Rogers
City Clerk Lesa Longfield
PO Box 88
Mendon, Mo 64660

Mayor Jeff Grey
City Clerk Tammy Veneman
107 S Street
Rothville, Mo 64676

Mayor Brittney DeWitt
City Clerk Mary Williams
111 West Centre St.
Sumner, Mo 64681

Mayor Kenny Wright
City Clerk Ronda Wright
403 East Hooper
Triplett, Mo 65286

Miller Pecan Farms, Inc
Pecan Ave
DeWitt, Mo 64639

Missouri American Water Co.
Attn: Jeremy Miller
329 S Small St
Brunswick, Mo 65236

Superintendent William Perkins
27247 Highway 5
Keytesville, Mo 65261

Superintendent Eric Hoyt
PO Box 43
Mendon, Mo 64660

Superintendent Todd Willhite
PO Box 314
Salisbury, MO 65281

Superintendent Cara Engelbrecht
1008 County Rd
Brunswick, Mo 65236

Missouri Valley Human Resource
601 E Broadway St.
Brunswick, MO 65236

Glasgow Food Pantry
706 Water St.
Glasgow, MO 65254

Hale United Methodist Food Pantry
409 E Sunset Dr.
Hale, MO 64643

Ministries in Linn County
122 W Clark St.
Brookfield, MO 64628

Mendon Christian Church
313 Long St.
Mendon, MO 64660

Salisbury Senior Center
304 S Broadway
Salisbury, MO 65281

Bristol Manor (assisted living)
102 N Willie Ave.
Salisbury, MO 65281

Family Health Center
307 S Broadway
Salisbury, MO 65281

Grand River Medical Clinic
815 E Broadway St
Brunswick, MO 65236

Salisbury Food Pantry
311 E Patterson Ave.
Salisbury, MO 65281

Brunswick Housing Authority
510 N Adams St.
Brunswick, MO 65236

Hale Ministerial Alliance
406 Mulberry St
Hale, MO 64643

Mendon United Methodist Church
301 Felt St.
Mendon, MO 64660

Rothville Baptist Church
140 Main St.
Rothville, MO 64676

Senior Citizens Nutrition Site
123 Main St.
Slater, MO 65349

Glasgow Garden Living Center
100 Audsley Dr.
Glasgow, MO 65254

Chariton Valley Family Medicine
413 W 2nd St
Salisbury, MO 65281

Chariton County Health Department
206 State St.
Keytesville, MO 65261

Keytesville Christian Church
200 W Bridge St.
Keytesville, MO 65261

1st Baptist Church
110 N Ash St.
Keytesville, MO 65261

Brunswick United Methodist Church
201 N Jackson St.
Brunswick, MO 65236

1st Baptist Church
106 S Taylor St.
Brunswick, MO 65236

Baptist Church
620 S Hutchinson Ave.
Salisbury, MO 65281

Immanuel Lutheran Church
124 W 3rd St
Salisbury, MO 65281

Bynumville Christian Church
1010 Morningside Dr.
Salisbury, MO 65281

Missouri Valley Community Action
601 E Broadway
Brunswick, MO 65236

Center for Human Services
179 W Slater St.
Marshall, MO 65340

Brunswick Senior Center
801 E Broadway
Brunswick, MO 65236

Methodist Church
408 W Finnel Dr.
Keytesville, MO 65261

Brunswick Baptist Church
210 W Broadway St.
Brunswick, MO 65236

St. John Lutheran Church
319 E Broadway St.
Brunswick, MO 65236

Christian Church
109 N Polk St.
Brunswick, MO 65236

1st Christian Church
311 S Broadway
Salisbury, MO 65281

Salisbury United Methodist Church
318 S Broadway
Salisbury, MO 65281

Chariton County Community Foundation
201 S Cherry St.
Keytesville, MO 65261

Joe W Ingram Trust Community Services
211 S. Broadway
Salisbury, MO 65281

Salisbury Senior Center
304 S Broadway
Salisbury, MO 65281

Chariton County Community Foundation
201 S. Cherry St.
Keytesville, MO 65261

Title	First Name	Last Name	Company Name	Address Line 1	Address Line 2	City	State
	Jeff	Grey	Rothville	107 S Street		Rothville	Missouri
	Tammy	Veneman	Rothville	107 S Street		Rothville	Missouri
	Stephen	Kacvinsky	Salisbury	128 W 2nd St	PO Box 168	Salisbury	Missouri
	Courtney	Cole	Salisbury	128 W 2nd St	PO Box 168	Salisbury	Missouri
	Tom	Burkart	Salisbury	128 W 2nd St	PO Box 168	Salisbury	Missouri
	Mitzi	Schuchmann	Keytesville	306 S Cherry St		Keytesville	Missouri
	Evan	Emmerich	Keytesville	306 S Cherry St		Keytesville	Missouri
	Jared	Meyer	Keytesville	306 S Cherry St		Keytesville	Missouri
	Terry	Milford	Keytesville	306 S Cherry St		Keytesville	Missouri
	Erick	Billups	Keytesville	307 S Cherry St		Keytesville	Missouri
Superintendent	William W.	Perkins	RIII School	27247 Highway 5		Keytesville	Missouri
	Keytesville	Fire Dept	Keytesville	201 W Bridge St		Keytesville	Missouri
	Diane	Rice	Brunswick	115 W Broadway		Brunswick	Missouri
	Sarah	Clubine	Brunswick	115 W Broadway		Brunswick	Missouri
	Jermaine	Solomon	Dalton	109 N Sycamore St		Dalton	Missouri
	LaNique	Solomon	Dalton	109 N Sycamore St		Dalton	Missouri
	Ronald	Rogers	Mendon	PO Box 88		Mendon	Missouri
	Lesa	Longfield	Mendon	PO Box 88		Mendon	Missouri
Superintendent	Eric	Hoyt	Mendon	18475 Highway 11	P.O. Box 43	Mendon	Missouri
Superintendent	Ronald	Garber	Mendon	18475 Highway 11	P.O. Box 43	Mendon	Missouri
Chief	Austin	Rash	MFPD	505 Main St		Mendon	Missouri
Chief	James	Cole	SPD	123 W 2nd St		Salisbury	Missouri
Superintendent	Todd	Willhite	R-IV School	1000 S Maple Ave	PO Box 314	Salisbury	Missouri
Principal	Ryan	Taylor	High School	1000 S Maple Ave	PO Box 314	Salisbury	Missouri
Principal							
Chief	John	Noll	BFD	14672 Bee Branch		Salisbury	Missouri
Chief	James	Cruse	SCFD	128 W 2nd St.		Salisbury	Missouri
	Bill	Pearman	Ambulance	212 S Weber		Salisbury	Missouri
	Jerry	Osterman	Sumner	111 W Centre St		Sumner	Missouri
	Bonita	Hawkins	Sumner	111 W Centre St		Sumner	Missouri

Title	First Name	Last Name	Company Name	Address Line 1	Address Line 2	City	State
Chief	Randy	Thudium	Sumner	PO Box 111		Sumner	Missouri
Mayor	Kenny	Wright	Triplett	403 E Hooper		Triplett	Missouri
	Ronda	Wright	Triplett	403 E Hooper		Triplett	Missouri

Green Hills
Regional Planning Commission
810 Washington Street, Trenton, Missouri 64683

Press Release:

Public Meeting Scheduled for Chariton County's Hazard Mitigation Plan Update

Contact: Amanda George, (660) 359-5636 ext. 25, amanda@ghrpc.org

The public is welcome to attend the upcoming meetings about updating the Chariton County Hazard Mitigation Plan. The Green Hills Regional Planning Commission has been contracted to assist in the development of this plan update.

The purpose of a Hazard Mitigation Plan is to reduce the loss of life and property during hazardous events.

The plan will ideally help increase coordination between local, state, and federal agencies during times of disaster. In addition, by completing a hazard mitigation plan, Chariton County will be entitled to apply for future federal relief dollars to fund specific mitigation projects, designed to reduce and/or eliminate vulnerabilities resulting from disaster events throughout the County.

There are 3 meetings scheduled:

Thursday, May 16th
3-4:30 pm
Brunswick City Hall

Tuesday, May 21st
3-4:30 pm
Keytesville Courthouse

Thursday, May 23rd
3-4:30 pm
Salisbury City Hall

If you are unable to attend and would like further information, please contact Green Hills Regional Planning Commission.

Green Hills
Regional Planning Commission
810 Washington Street, Trenton, Missouri 64683

Press Release:

Public Meeting Scheduled for Chariton County's Hazard Mitigation Plan Update

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Facebook Post pg. 1

WHEN A DISASTER OCCURS IS YOUR COMMUNITY READY?





The Chariton County Hazard Mitigation Planning process is underway! Contact Amanda@ghrpc.org or (660) 359-5636 ext. 25 for more information.

Facebook Post pg. 2

Chariton County Hazard Mitigation Plan

Meeting Locations:

- Thursday, May 16th Brunswick, MO @ City Hall from 3-4:30PM
- Tuesday, May 21st in Keytesville, MO @ the Courthouse 3-4:30PM
- Thursday, May 23rd in Salisbury, MO @ City Hall from 3-4:30PM



> Hazard Mitigation is any sustained action taken to reduce or eliminate the long-term risk to life and property from hazard events.

Green Hills Regional Planning Commission

Posters & Facebook



Hazard Mitigation Planning Event

Is your community prepared for disaster?

We want to hear from you!

The Chariton County Hazard Mitigation Plan is being updated. Please attend one of the following meetings if you would like to participate.

Keytesville	**Brunswick**	**Salisbury**
@ Courthouse	City Hall	City Hall
June 20, 2024	June 25, 2024	June 27, 2024
5 PM - 7:30 PM	3 PM - 4:30 PM	3 PM - 4:30 PM

Contact Green Hills Regional Planning Commission for more information. (660) 359-5636 or amanda@ghrpc.org

Green Hills
Regional Planning Commission
810 Washington Street, Trenton, Missouri 64683
660-359-3096 GHRPC.org Fax: 660-776-3900

April 16, 2024

To whom it may concern:

This letter is to invite you to participate in the Chariton County Hazard Mitigation Planning Process.

What is the hazard mitigation planning process?

It is the process that state and local leaders and interested citizens go through to understand the risks that we face in our county and how we can reduce these risks. The goal is to develop a plan that will, "reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural disasters."

This is an ongoing process with the requirement that plans for each county be updated at least every 5 years. The Green Hills Planning Commission has been contracted to assist in the development and creation of this plan for Chariton County.

The local mitigation planning process has three steps:

Step 1 – Public Involvement – Planning creates a way to solicit and consider input from a diverse section of our community. This will ideally promote discussion about creating a safer, more disaster-resilient community.

Step 2 – Risk Assessment – The mitigation plan should identify natural hazards and risks that could impact our community. This could be based on historical experience or by simply being aware of the risks that we may face as a community.

Step 3 – Mitigation Strategy – This is based on public input, identified risks, and available capabilities. The strategy will include our approach for implementing mitigation activities that are cost-effective, technically feasible, and environmentally sound.

Please attend the public meeting at Location to be determined on Date and Time to be determined, In the meantime, please do not hesitate to contact me if you have any questions or concerns.

Thank you,

Amanda George
Assistant Planner Hazard Mitigation & TAC
amanda@ghrpc.org / 660-359-5636 ext. 25

Green Hills
Regional Planning Commission
810 Washington Street, Trenton, Missouri 64683

Date

On behalf of the County, you are invited to participate in updating the Chariton County Multi-Jurisdictional Hazard Mitigation Plan. Jurisdictions (including county and city governments, public school districts, and special districts) that do not participate in an approved Hazard Mitigation Plan are NOT eligible to apply for FEMA's Hazard Mitigation Assistance grants.

To be considered a participating Jurisdiction in the County's Plan, the Questionnaire enclosed with this letter will need to be completed and returned by **Date.**

Chariton County Multi-Jurisdictional Hazard Mitigation Plan Update

Location

Address

Date & Time

Your County Commissioners are working to update the County Multi-Jurisdictional Hazard Mitigation Plan to better protect the people and property of your County from the effects of natural hazard events. The existing plan was approved by FEMA approximately 4-5 years ago. 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 for the County and the participating jurisdictions in the County 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 the 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 natural hazard events. The County Multi-Jurisdictional Hazard Mitigation Plan Update will address a comprehensive list

of natural hazards likely to impact each County. The identified mitigation policies and actions will be based on an assessment of natural 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 is typically 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 in the County.

What is My Role in the Planning Process?

The Green Hills Regional Planning Commission has taken the lead in updating this plan. The point of contact is Amanda George, Hazard Mitigation Planner or Lisa Colson, Director of Programs. 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, public school districts, and special 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:

- Contribute to the informational planning meeting and/or planning process;
- Providing requested data (as available);
- Reviewing and providing comments on plan drafts;
- Advertising, coordinating, and participating in the public input process; and
- Formal adoption of the plan which encompasses your submitted information.

What can I expect by participating in the informational meeting and planning process?

You will be provided with information on what activities are required to be performed to be included in the plan. Required activities include the following:

- Participating jurisdictions will be required to complete as much of the data questionnaire as possible and return, complete critical/essential facilities, and non-governments employer form. Review project timeline.
- Risk Assessment: Review and provide comments on the risk assessment.
- Mitigation Strategy: Updating of existing mitigation actions and identification and development of new mitigation strategies based upon the risk assessment will be completed.

Additional Resources

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

- County Multi-Jurisdictional Hazard Mitigation Plan specific to each county, http://www.ghrpc.org
- 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, http://www.fema.gov/emergency-managers/risk-management/hazard-mitigation-planning/regulations-guidance
- Local Hazard Mitigation Planning Fact Sheet, enclosed for your reference.

- If you have any additional questions or are unable to attend any of the scheduled meetings, please contact me at the office number or email address below.

Thank you,

Amanda George
Hazard Mitigation Planner
Green Hills Regional Planning Commission
Office: (660) 359-5636 Ext. 25, Text: (660) 953-0815
email: amanda@ghrpc.org

Enclosures

Green Hills
Regional Planning Commission
810 Washington Street, Trenton, Missouri 64683

June 3, 2024

To Whom it May Concern,

You are receiving this letter to make sure that you are aware of the Hazard Mitigation Plan update that is taking place in Chariton County. By participating in the creation of this plan you are ensuring that your jurisdiction is eligible for Hazard Mitigation Grant Assistance. If a jurisdiction does not participate in the development of the plan, they will not be eligible to receive FEMA/SEMA Hazard Mitigation Grant Assistance.

I have enclosed a poster outlining the upcoming meeting times and locations, a Frequently Asked Questions about Hazard Mitigation, and a FEMA fact sheet. However, please feel free to contact me if you have any questions or concerns.

Thank you,

Amanda George
Transportation Planner & Hazard Mitigation Specialist
Green Hills Regional Planning Commission
810 Washington St.
Trenton, MO 64683
(660) 359-5636 ext. 11
amanda@ghrpc.org

What is Hazard Mitigation?

Hazard Mitigation is "any action taken to reduce or eliminate the long-term risks to human life and property from Natural Hazards." For example: rebuilding a bridge destroyed by flooding to its original design ***IS NOT*** mitigation, it is merely replacement. Rebuilding the bridge with structural modifications that make it more resistant to flood damage in the future ***IS*** hazard mitigation.

What is a Hazard Mitigation Plan?

A Hazard Mitigation Plan is a document created by a committee made up of stakeholders in the community (In this case, Chariton County, cities in Chariton County, and special districts located in Chariton County). During the planning process, this committee looks at information about the potential impacts of natural disasters and develops long-term strategies for protecting people and property in future hazard events by developing feasible and cost-effective mitigation projects.

Doesn't Chariton County Already Have a Hazard Mitigation Plan?

Chariton County does currently have a Hazard Mitigation Plan in effect – however, FEMA requires that to remain current, current Hazard Mitigation Plans must be updated on a five-year schedule. The current Chariton County Plan is set to expire.

Why do we need a Hazard Mitigation Plan?

State, Tribal, and Local governments are required to develop a Hazard Mitigation Plan as a condition of receiving certain types of non-emergency disaster assistance (most specifically the Hazard Mitigation Grant Program).

How is Hazard Mitigation Planning Done?

In a broad sense, it is very much like land use or emergency response planning. A planning committee is created, information is compiled and analyzed, risks and assets are identified, and a plan is formulated to address those risks to the best of the communities' economic and administrative ability. This plan is then adopted by participating jurisdictions (including school districts and educational institutions).

For more detailed information on Hazard Mitigation Planning, you may visit the Missouri State Emergency Management Agency's webpage on Hazard Mitigation at http://sema.dps.mo.gov/programs/mitigation_management.php. Meeting reminders and other notifications will be provided to committee members via email, phone calls, or text messages.

Who is on the Hazard Mitigation Committee?

At a minimum, the committee must be composed of one representative from each of the participating jurisdictions that wishes to adopt and be covered under the finished plan. Ideally, the committee is also populated with people from various sectors of the community, from public safety professionals, representatives of underserved populations, to ordinary citizens. In addition, it is best if the communities seek input from neighboring communities outside their own jurisdictions. FEMA has drastically increased its focus on public participation over the years, and any jurisdictions that has not met the minimum level of required participation will be ineligible to adopt the plan and will therefore be ineligible for certain types of funding.

When will the Hazard Mitigation Committee Meet?

There will be a series of three meetings, besides this initial kick-off meeting.

Kick-Off	Previous Meeting	Overview of planning process, out-reach strategy discussion, hand out materials, Surveys, and Jurisdictional Questionnaires
Meeting 1	Keytesville Courthouse 6/20; Brunswick City Hall 6/25; and Salisbury City Hall 6/27	A short repeat of the overview for new participants, brief review of the previous plan, conduct a "risk assessment" of the jurisdictions participating
Meeting 2	To Be Announced	New Plan Development: what elements of the old plan should remain, be altered, or added. Mitigation Strategy for hazards.
Meeting 3	To Be Announced	Overview of the rough draft of the completed plan, review of the maintenance and update process, discussion of resolutions of adoptions. Once the plan is drafted, it will be made available for public comment for 30 days.
Submit Draft	To Be Announced	Submit 1st draft to SEMA; once approved will be sent to FEMA for final review.

Planning & Regulatory Capabilities

Planning and regulatory capabilities are the codes, ordinances, policies, laws, plans and programs that guide growth and development. These capabilities can either support risk reduction or create areas that are more vulnerable to disaster. Common planning capabilities include comprehensive or master plans, housing plans, capital improvement programs, transportation plans, economic development strategies, disaster recovery plans and others. Also evaluate less-common plans if they exist, such as resilience and climate adaptation plans, natural resource plans, historic preservation plans, and water efficiency and conservation plans. Local plans have specific actions or policies that support community goals and drive decisions.

This type of capability also includes regulations and related processes. The plan must discuss the existing building codes and land use and development ordinances. Land use and development ordinances include zoning, subdivision, floodplain management, wildfire or steep slope regulations. They also include processes like site plan review. These capabilities regulate where land is developed and how buildings are constructed. Planning and regulatory capabilities include current plans and regulations. You should also consider a participant's ability to change and improve them as needed.

Administrative and Technical Capabilities

Administrative and technical capabilities are the participant's staff, skills and tools. These capabilities can be used for mitigation planning and to carry out specific mitigation actions. They also include the ability to access, coordinate and implement these resources effectively. Think of these as "people-powered" capabilities.

Human resources can include staff and volunteer engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, floodplain managers, climate and sustainability coordinators and communications specialists. For jurisdictions with limited staff, consider capacity as well as capability. Staff members may have the right skills, but do they have time to support mitigation? Local Handbook Update 84 This category can go beyond paid staff. It can include other public and private sector resources. County, regional, quasigovernmental or nongovernmental agencies may be able to support mitigation. Community-based organizations and other grassroots groups can also help, especially in underserved communities. They have deep roots in their communities and may have technical experts or lived experiences that can support mitigation.

Financial Capabilities

Financial capabilities are the resources to fund mitigation actions. Talking about funding and financial capabilities is important because mitigation actions have different costs. Mitigation actions like outreach programs are lower cost and often use staff time and existing budgets. Other actions, like earthquake retrofits, could require substantial funding from local, state and federal partners.

Consider a wide range of financial capabilities in the assessment, such as:

- Property, sales, income or special purpose taxes.
- General funds.
- Utility service fees.
- Impact fees from new development and redevelopment.
- General obligation or special purpose bonds.
- Federal funding.
- State funding.
- Private or nonprofit grants, loans or funding.
- Any other previously identified potential cash or third-party, in-kind contributions.

For any of these, consider whether the resource has been used in the past. If it has, for what kinds of activities? Could it be used for mitigation? If the funding is local, could it be used for the local match of a federal grant?

One important local government action to get funds into mitigation projects is to describe how capital projects are prioritized among competing priorities. Are projects ranked, and how? How does mitigation fit into the capital improvement plan? Are there any financial policies in place that direct available funds to mitigation projects, or that can be used as non-federal grant match?

Education and Outreach Capabilities

Education and outreach capabilities are programs and methods that can communicate about and encourage risk reduction. These programs may be run by a participant or a community-based partner. Partners, especially those who work with underserved communities, can connect the planning team to education and outreach capabilities.

Education and outreach activities can often be the easiest and most impactful activities for local agencies. They are easy to combine with other efforts. For example, education and outreach can bring mitigation and resilience topics to places where community members are already convened. While they take careful planning, these activities can often be accomplished without outside grant funding or expertise.

Examples of education and outreach capabilities include:

- Fire safety programs
- Flood, dam, and levee safety outreach, including awareness of inundation zones
- Public-private partnerships around disaster preparedness and recovery
- Other federal or nongovernmental organization programs like the National Weather Service Storm Ready program or the National Fire Protection Association's Firewise USA Program.

Activities and awareness campaigns like the Great Shakeout should also be included. Some communities have their own public information or communications office to handle outreach initiatives.

NFIP: National Flood Insurance Program

The NFIP supports flood risk reduction before and after disasters. It helps reduce the socioeconomic impact of floods. The NFIP allows property owners and renters in participating communities to purchase federal flood insurance policies to recover financial losses after a flood. To participate in the NFIP, communities adopt and enforce floodplain management policies to reduce the effects of flooding.

The NFIP is a key capability for plan participants. The local mitigation plan must describe how each community complies with the NFIP. For the most part, NFIP communities are local governments, excluding special districts. The local floodplain administrator is a key resource for understanding NFIP-related capabilities. If a jurisdiction does not participate in the NFIP, state this in the plan and explain why.

The NFIP touches all four types of capabilities:

- Planning & Regulatory. Adopting floodplain management regulations and managing development in the floodplain is an NFIP requirement.
- Administrative & Technical. Each community must designate a floodplain administrator. Other administrative and technical capabilities that support NFIP compliance may relate to permitting, zoning or site plan review.
- Financial. Having NFIP policies supports financial capabilities. Having NFIP policies in a community speeds recovery and allows post-disaster funds to be used elsewhere. Joining the NFIP gives communities access to other kinds of pre- and post-disaster funding for mitigation.
- Education & Outreach. Education and outreach programs and tools through the NFIP may support flood risk communication and mitigation.

Hazard Mitigation Planning for Local Governments

This fact sheet provides an overview of mitigation planning for local governments.

Natural hazards can cause loss of life and damage property and infrastructure. These events can also harm a community's economic, social and environmental well-being. Hazard mitigation lessens the impacts of natural hazards by taking actions before the next event. Hazard mitigation plans raise awareness of hazards, risks and vulnerabilities. They also identify ways to reduce risk and focus local resources on the greatest risks. At the same time, they communicate local priorities to state and federal officials.

The Local Mitigation Planning Process

The mitigation planning process encourages local governments, including special districts, to work mitigation into other planning processes. Examples of these may include land use, housing, transportation, economic development, floodplain management and others. Mitigation planning has four steps:

1. **Identify the Planning Team and Organize Resources:** Gather the resources you will need for a successful mitigation planning process. Reach out to technical experts. Define the planning area. Find partners, such as non-profits, to join the planning process. The 2022 Local Mitigation Planning Policy Guide explains this process.
2. **Assess Risks:** Identify each hazard's characteristics and potential effects. Find where the hazard may occur. Which people, properties or assets may be in harm's way? It is wise to speak with representatives from sectors that support diverse communities within the planning area. It is also a good idea to talk with people representing community lifelines, such as water and power infrastructure.
3. **Develop a Mitigation Strategy:** Set goals and long-term strategies to avoid or lessen the effects of natural hazards. Local governments should base their strategy on an assessment of their regulatory, administrative and financial capabilities that can support risk reduction.
4. **Adopt and Implement the Plan:** Bring the plan to life by adopting it and carrying out the mitigation actions in the strategy.

Benefits of Hazard Mitigation for Local Governments

Mitigation is an investment in future safety and sustainability. Mitigation planning helps you act now, before a disaster, to reduce losses. Mitigation plans are also a prerequisite for some kinds of non-emergency disaster assistance. Mitigation planning can:

- Increase public safety and prevent loss of life and injury.

FEMA

- Reduce damage to existing and future development.
- Prevent harm to economic, cultural and environmental assets.
- Reduce downtime, speed up recovery and lower response costs.
- Meet other community objectives. These include capital improvements, infrastructure protection, open space preservation and economic resilience.

Mitigation Actions for Risk Reduction

Mitigation actions can reduce losses from natural hazards. The four types of mitigation actions are:

- **Plans and Regulations:** Set policies or codes that guide the way government authorities develop land and build structures.
- **Structure and Infrastructure Projects:** Update existing buildings and infrastructure or build to higher standards.
- **Education and Awareness Programs:** Teach visitors, residents, and elected officials about hazards and ways to reduce risks.
- **Natural Systems Protection:** Minimize damage and losses while saving or restoring the functions of natural systems.

Mitigation Plan Implementation and Monitoring

Communities can act by completing mitigation projects and adding mitigation to other plans and programs. Monitoring how the plan is carried out makes sure it stays relevant as priorities and development patterns change. A local government must update its hazard mitigation plan every 5 years.

FEMA has several guides, tools and resources to help communities create hazard mitigation plans.

- Hazard mitigation planning regulations and guidance direct the development of state, local, tribal and territorial hazard mitigation plans.
- The Local Mitigation Planning Policy Guide is an official document local governments can use to develop, update and carry out their plans. It includes tools and examples. The Local Mitigation Planning Handbook is also a useful reference.
- Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards gives example mitigation actions based on hazard type.
- Create a Hazard Mitigation Plan has planning resources and information on virtual and in-person trainings.

5/16/24

Chariton County/Brunswick Kickoff HMP Meeting

Printed Name	Jurisdiction	Commute Time	Email	Mobile Number	Text messages? Yes or No
Mary Hafemeister	Lower Chariton River Levee Dist.	35 min.	maryhafe@yahoo.com	Home 660-481-2234	
Jeff Milford	Chariton Co Comm	35 min	westcommission@charitoncounty.com	Cell 660-414-5292	
Kevin Dickens	Chariton County AMB	—	Bcast740@YAHOO.com	660-973-3487 660-388-6115	yes N/A
Donald Cravens	Chariton County Ambulance		icod@cvalley.net	660-388-6115	
DEB SMITH	RESIDENT/ FOOD PANTRY	5MI	—	660 651 8170	
Wendell Turner	City Council & Food Pantry	5 min	wmjturner@hotmail.com	6604145717	yes
DIANE RICE	MAYOR BRUNSWICK		brunswick.mo.mayor@gmail.com		
TINA REICHERT	BRUNSWICK CHAMBER RESIDENT	10 MIN.	Brunswickmochamber@gmail.com	816-853-6390	YES

5/21/24

Chariton County/Keytesville Kickoff HMP Meeting

Printed Name	Jurisdiction	Commute Time	Email	Mobile Number	Text messages? Yes or No
Colleen Hinshaw	GHRPC	1½	colleen@ghrpc.org	641-203-2348	yes
Evan Emmerich	Chariton Co	–	commission3@chariton.mo.us	660-676-5082	Yes
Mitzi Schuchmann	County Clerk	–	countyclerk@charitonco.com	660-~~288-3273~~ 414-5629	~~no~~ yes
Amanda George	GHRPC	1 ½	amanda@ghrpc.org	660-953-0815	yes

on HMP in Public

5/23/2024

Chariton County/Salisbury Kickoff HMP Meeting

Printed Name	Jurisdiction	Commute Time	Email	Mobile Number	Text messages? Yes or No
Zach Jones	Salisbury FD		ZJones.SFD@gmail.com	660-414-5835	NO
Courtney Cok	City of Salisbury		Cityclerk@salisburymo.net	660-833-6428	NO
Steve Snider	Salisbury Alderman		—	660-833-8381	NO
Jared Meyer	Chariton County Commission		eastcommission@charitonco.com	816-719-0808	
Christina Brashear	Chariton County EMD		charitoncoemd@gmail.com	660-676-8864	NO
Robert Snider	City of Glasgow		RSNIDER@glasgowmo.org	660-888-7787	Yes
Steve Kaccius	Salisbury		MRUNNER@cvalley.net	660 621 3549	YES

Risk Assessment 6/20/2024

Chariton County/Keytesville HMP Meeting

Printed Name	Jurisdiction	Commute Time	Email	Mobile Number	Text messages? Yes or No
Evan Emmerich	Chariton Co				
Cara Engelbrecht	Brunswick R-II School	10 minutes	cengelbrecht@brunswick.k12.mo.us	(660) 788-1179	Yes
Mitzi Schuchmann	Chariton Co	0	countyclerk@charitoncocom	660-414-5629	yes
Amanda George	GHRPC	1.75	amanda@ghrpc.org		

June 25, 2024

Chariton County/Brunswick HMP Meeting

Printed Name	Jurisdiction	Commute Time	Email	Mobile Number	Text messages? Yes or No
Stede Winkey	City Sumner	30 mins	StedeWinkey@yahoo.com	319-330-2048	YES
Erick Billups-	Chariton Co Sheriff	10 mins	Sheriff@charitonco.com	660-414-5778	NO
Jeff Culley	Brunswick PD	0 min	Jeffreyculley89@gmail.com	660 734 5144	NO
Kevin Haley	ASB – Brunswick	0 min	Kevin@agriservices.com	660-233-2016	YES
Tina Reichert	Brunswick Comm Bldg		tinamariereichert@icloud.com	816-853-6300	Yes
Bill Jackson	L-246 Levee	5 min	bpjackson2018@gmail	660-553-8997	YES
Paula Burkhart					
Tom Burkhart					
Mary Hafemeister	Lower Chariton River Levee Dist.	25 min	maryhafe@yahoo.com	660-414-5292	yes
Diane Rice	Brunswick	10 min	brunswick.mo.mayor@gmail.com	(660)414 6370	yes

June 27, 2024

Chariton County/Salisbury HMP Meeting

Printed Name	Jurisdiction	Commute Time	Email	Mobile Number	Text messages? Yes or No
Lesa Longfield	City of Meadow	1 hr	cityofmeadow@gmail.com	660-412-3672	yes
Lois Rogers	City of Meadow	1 hr	l-trau@hotmail.com	660-272-3805	No
Zach Jones	Salisbury FD				
Jared Meyer	County Commission				
Tom Burkhart	City of Salisbury	0	scs@salisburymo.net	660-788-1670	Y
Joe Smedley	City of Salisbury	0		660-788-1721	Y
Matt Swan	City of Salisbury	0		660-788 1726	Y
Mike Humphrey	City of Salisbury		mjhumphrey@hotmail	660 621 0321	Y
Steve Krachinsky	City Salisbury	0	MRUNNER@CHARTER.NET	660 621 3549	Y

10-29-24

Chariton County Hazard Mitigation Sign In Sheet

Printed Name	Job/Title	Jurisdiction	Round-trip Mileage	Date & Time
Julia McKenzie	Mayor	City of Keytesville		10/29/24 11:00
Delaina Sommerfeld	City Clerk	City of Keytesville		10/29/24 11:00

10-29-24

Chariton County Hazard Mitigation Sign In Sheet

Printed Name	Job/Title	Jurisdiction	Round-trip Mileage	Date & Time
Diane Rice	Mayor	Brunswick		Oct. 29, 2024
Amanda George	HMP	GHRPC		Oct 29, 2024 12:30pm

Chariton County Hazard Mitigation Sign In Sheet Date: 12/9/2024 Time: 3:00 PM - 3:30pm

Printed Name	Job/Title	Jurisdiction	Round-trip Mileage	Commute Time
Terry Milford				
Even Emmerich				
Jared Meyer				
Fritz Schuchmann				

Chariton County Hazard Mitigation Sign In Sheet Date: 12/12/2024 Time: _____ - _____

Printed Name	Job/Title	Jurisdiction	Round-trip Mileage	Commute Time
Courtney Cole	City Clerk	City of Salisbury		
Stephen J. Kaczinsky	Mayor	City of Salisbury		
Steve Winkey	Alderman	City of Sumner		

Appendix C

Data Collection Questionnaires

Assessment of Previously Proposed Actions

STAPLEE Worksheets

Natural Hazard Questionnaires

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Small Local Governments

County: Chariton _____

Jurisdiction: Chariton 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: Evan Emmerich _____

Phone: 660-288-4805 _____

Email: commission@charitonco.com _____

Date: 9/9/2024 _____

Please return questionnaires by mail, email, or fax to:

Name: Amanda George _____

Address: 810 Washington St. Trenton, MO 64683 _____

Email: amanda@ghrpc.org _____

Fax: (660) 776-3900 _____

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 or Land-Use Plan		Date:
Capital Improvement Plan		Date:
Transportation Plan / Highway Department		Date:
Emergency Operations Plan	Yes	Date: Last done in 2014
Local Recovery Plan		Date:
Debris Management Plan		Date:
Firewise or other fire mitigation plan		Date:
Economic Development Plan	Enhanced Enterprise Zone	Date: 10/5/2009
Policies/Ordinance		
Zoning Ordinance		Passed many years ago but never enforced.
Building Code		Version:
Floodplain Ordinance		Date: 2014?
Drainage/Stormwater Ordinance		
Site Plan Review Requirements		
Historic Preservation Ordinance		

Element	Yes, No, N/A	Comments and/or Weblink
Program		
National Flood Insurance Program (NFIP)	Yes	
NFIP Community Rating System (CRS) program	Yes	If so, what is your current level rating? Unsure
National Weather Service (NWS) Storm Ready Certification		
Firewise Community Certification		
Building Code Effectiveness Grading (BCEGs)		
ISO Fire Rating	Rating:	
Public Education or information programs (i.e., responsible water use, fire safety, household preparedness, or environmental education		
Mutual Aid Agreements		
Studies/Reports/Maps		
Critical Facilities Inventory		
Vulnerable Population Inventory		
Staff/Department		**Full Time or Part Time?**
Building Code Official / Building Inspector		
Engineer		
Development Planner		
NFIP Floodplain Administrator	Yes	Part time as Commissioner's responsibility
Mapping Specialist (GIS)	Yes	Full time in the Assessor's Office
Public Works Official		
Emergency Management Coordinator	Yes	Part Time
Local Emergency Planning Committee	Yes	Part time coordinator. Meet quarterly.
Sanitation Department		
Highway/Transportation Department	Yes	Full time county road and bridge department
Economic Development Department	Yes	Volunteer board
Housing Department		
Historic Preservation		

Element	Yes, No, N/A	Comments and/or Weblink
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	Yes in the past but unsure if they're still active	The county still has contacts with the Red Cross organization for when there is an emergency.
Salvation Army		
Veterans Groups		
Local Environmental Organization		
Homeowner Associations	Yes	Lake Nehai
Neighborhood Associations		
Chamber of Commerce		
Community Organizations (Lions, Kiwanis, etc.		
Financial Resources		**Is your jurisdiction able to? Yes or No**
Apply for Community Development Block Grants		Yes
Fund projects thru Capital Improvements funding		
Authority to levy taxes for specific purposes		Yes
Fees for water, sewer, gas, or electric services		
Impact fees for new development		
Incur debt through general obligation bonds		Yes
Incur debt through special tax bonds		
Incur debt through private activities		
Withhold spending in hazard prone areas		

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 or Land-Use Plan	
Capital Improvement Plan	
Transportation Plan / Highway Department	
Emergency Operations Plan	
Local Recovery Plan	
Debris Management Plan	
Firewise or other fire mitigation plan	
Economic Development Plan	

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members) 3 member County Commission

2. 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.

3. 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.

4. How many outdoor warning sirens are in your community? No

   How are they activated (indicate responsible department/personnel)?

5. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe. No

6. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?

   Please provide address locations:

7. Identify residential, commercial and industrial development in your jurisdiction since last plan update.

8. 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.

9. 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.
Potential Grain Belt Express high voltage power line running east/west across the entire county.

10. Please list major employers in your jurisdiction with an estimated number of employees.

11. 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?

12. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.
We participate and issue permits when necessary.

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**
Drought - **D**	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.

Asset Inventory

Please list critical facilities and other community assets, the square feet, values, and occupancy/capacity. If not applicable, enter "N/A"). In the last column, use the codes from the previous page to indicate hazards to which the asset is vulnerable. Add as many rows as needed. If this information is available in GIS format, please provide.

Critical Facilities

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards
Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers						
Courthouse	306 S Cherry St, Keytesville					
Sheriff's Department/911	307 S Cherry St, Keytesville					

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards
High Potential Loss Facilities such as power plants, dams/levees, military installations, hazardous materials sites, shelters, day care centers, nursing homes, main government buildings (Do not include schools—they will be reported by the school districts)						
Missouri River Levee						
Grand River Levee						
Chariton River Levee						
Pioneer Nursing Home	Marceline, MO					
Chariton Park Nursing Home	Salisbury, MO					
Transportation and Lifelines such as highways, bridges, and tunnels; railroads and facilities, bus facilities, airports, water treatment facilities, natural gas facilities and pipelines, oil facilities, oil facilities and pipelines, communications facilities						
Enbridge Pipeline						
Sinclaire Pipeline						
BP Pipeline						

***If replacement cost data is not available, use the best available data (assessed valuation or other method for estimating cost) and explain any data deficiencies.**

Economic Assets (Major Employers, etc)

Asset	Address	Product/ Service	Value (if known)	Number of Employees	Hazards

HISTORIC HAZARD EVENTS

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

HISTORIC HAZARD EVENTS (continued)

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: Chariton County

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

The worksheet should include information on the status of the action and progress made in implementation, if any. This includes:

- For **completed actions** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- Some of the actions might have been **ongoing** in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.
- If **no progress** has been made in the implementation of a given action, discuss why. Note that implementation is not a requirement. However, if no progress has been made, perhaps this is an action that would be appropriate to delete in the updated plan.

During review of the previously approved actions, consider whether any new actions should be proposed. Perhaps damages from a recent hazard event have indicated the need for new approaches to protect property and life. Review the problem statements from the updated plan for ideas. Also review the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013)*.

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
County 2020.1	NFIP Participation	x				Keep
County 2020.2	Flood Mitigation			x		Keep
County 2020.3	Installation/Upgrade Warning Sirens			x		Keep

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
County 2020.4	Maintain transportation infrastructure		x			Keep
County 2020.5	Debris Removal	x				x
County 2020.6	Response to Pandemic	x				x
County 2020.7	Safe Rooms and Storm Shelters			x		Keep

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Small Local Governments

County: Chariton

Jurisdiction: City of Mendon

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: Lee a Longfield

Phone: 660 - 412-3672

Email: cityofmendon@gmail.com

Date: 10-21-24

Please return questionnaires by mail, email, or fax to:

Name: Amanda George

Address: 810 Washington St. Trenton, MO 64683

Email: amanda@ghrpc.org

Phone: (660) 359-5636 ext. 11

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 or Land-Use Plan	No	Date:
Capital Improvement Plan	No	Date:
Transportation Plan / Highway Department	Yes	Date:
Emergency Operations Plan	No	Date:
Local Recovery Plan	No	Date:
Debris Management Plan	No	Date:
Firewise or other fire mitigation plan	No	Date:
Economic Development Plan	No	Date:
Policies/Ordinance		
Zoning Ordinance	No	
Building Code	No	Version:
Floodplain Ordinance	Yes	Date:
Drainage/Stormwater Ordinance	No	
Site Plan Review Requirements	No	
Historic Preservation Ordinance	No	
Program		
National Flood Insurance Program (NFIP)	No	

NFIP Community Rating System (CRS) program	n/a	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: n/a	
Public Education or information programs (i.e., responsible water use, fire safety, household preparedness, or environmental education	No	
Mutual Aid Agreements	No	
Studies/Reports/Maps		
Critical Facilities Inventory	No	
Vulnerable Population Inventory	No	
Staff/Department		**Full Time or Part Time?**
Building Code Official / Building Inspector	No	
Engineer	No	
Development Planner	No	
NFIP Floodplain Administrator	No	
Mapping Specialist (GIS)	No	
Public Works Official	No	
Emergency Management Coordinator	No	
Local Emergency Planning Committee	No	
Sanitation Department	No	
Highway/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	
Local Environmental Organization	No	
Homeowner Associations	No	
Neighborhood Associations	No	
Chamber of Commerce	No	
Community Organizations (Lions, Kiwanis, etc.	Yes	Lions, Friends of Brandon

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	No
Fees for water, sewer, gas, or electric services	Yes
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 or Land-Use Plan	No
Capital Improvement Plan	No
Transportation Plan / Highway Department	Please provide details yes
Emergency Operations Plan	No
Local Recovery Plan	No
Debris Management Plan	No
Firewise or other fire mitigation plan	No
Economic Development Plan	No

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

   Mayor: Lois Rogers; City Clerk: Lesa Longfield; 4 Aldermen: Greg Young, Blaine Adams, Justin Fainter, Boshko Ognenovski

2. 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 at this time

3. 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.

4. How many outdoor warning sirens are in your community? 1

   How are they activated (indicate responsible department/personnel)? [redacted], Chariton County Sheriff Office

5. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.
   No

6. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?
   No

   Please provide address locations:

7. Identify residential, commercial and industrial development in your jurisdiction since last plan update.

   No developments in the last 5 years

8. 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.

   There is no expected development

9. 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 plans for new facilities or infrastructure within the next 5 years

10. Please list major employers in your jurisdiction with an estimated number of employees.

    Please list any employers with more than 15 employees if any.

11. 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?

    Lesa Longfield participated in the last plan development. There were no meeting held regarding the hazard mitigation plan within the last 5 years.

12. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.
    n/a

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**
Drought - **D**	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.

Asset Inventory

Please list critical facilities and other community assets, the square feet, values, and occupancy/capacity. If not applicable, enter "N/A"). In the last column, use the codes from the previous page to indicate hazards to which the asset is vulnerable. Add as many rows as needed. If this information is available in GIS format, please provide.

Critical Facilities N/A

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards
Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers						N/A

High Potential Loss Facilities such as power plants, dams/levees, military installations, hazardous materials sites, shelters, day care centers, nursing homes, main government buildings (Do not include schools—they will be reported by the school districts)						
~~Communications Tower~~						
Government Building ?						
Water Tower						
Transportation and Lifelines such as highways, bridges, and tunnels; railroads and facilities, bus facilities, airports, water treatment facilities, natural gas facilities and pipelines, oil facilities, oil facilities and pipelines, communications facilities						
Rail						
Highway CC						

***If replacement cost data is not available, use the best available data (assessed valuation or other method for estimating cost) and explain any data deficiencies.**

HISTORIC HAZARD EVENTS

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

HISTORIC HAZARD EVENTS (continued)

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

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Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: City of Mendon

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

The worksheet should include information on the status of the action and progress made in implementation, if any. This includes:

- For **completed actions** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- Some of the actions might have been **ongoing** in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.
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#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
Mendon 2020.1	Maintain Transportation Infrastructure			X		
Mendon 2020.2	NOAA Radios ?					

City of Sumner

Identifying Vulnerable Assets for Chariton County

Look back at the Hazard Identification Worksheet where you described issues that you have had with the identified hazards. We are now going to look at specific community assets that can be affected by the identified hazards.

Instructions: For the hazards that affect your community, identify two to three examples of assets that can be affected by the identified hazards.

Vulnerable Assets	What makes this group/asset vulnerable during hazards? Have there ever been issues with recovery after an event?
People (Residents, workers, visiting populations, and socially vulnerable populations like seniors, individuals with disabilities, lower-income individuals, etc.)	
Many old Residents	
Structures (Community centers, historic places, planned capital improvement)	
Community Center	
Sewer Lift Station	
Roads	
Economic Assets (Major employers, primary economic sectors, key infrastructure like telecommunications networks)	
None	

Natural, Historic, and Cultural Resources (Areas of conservation, beaches, parks, critical habitats)	
Swan Lake National Wildlife Refuge	
Critical Facilities and Infrastructure (Hospitals, law enforcement, water, power)	
Sewer Lift Station	
Community Activities (Major local events such as festivals or economic events like farming or fishing)	
Wild Goose festival	
Hunting - fishing	
farming	
Are there other assets that you can think to include?	

City of Sumner

Hazard Identification for Chariton County

Use this worksheet to identify which hazards can affect your community. Not all hazards apply to the planning area. For the ones that do, describe how they have been an issue in the past, or if they are a future concern.

Instructions: Describe where there may be recurring problems that you would like to see addressed.

Hazard	Is this a hazard for your community? Yes/No	If yes, briefly describe how. Think about specific locations or recurring issues that you know of in your community.
Dam Failure	No	
Drought	NO	
Earthquake	NO	
Erosion	NO	
Extreme Temperatures	No	
Flood (Riverine & Flash)	YES	Puts HOMES & SEWER SYSTEM at Ris
Hail	YES	Aging structures & people
Lightning	YES	SAME
Severe Wind	YES	SAME
Severe Winter Weather	YES	ESPECIALLY Aging Population
Subsidence/ Sinkholes	NO	
Tornado	YES	Structures & people
Wildfire	NO	
If there are additional hazards that you would like to include, please add them here.		

City of Sumner

Mitigation Strategy

Worksheet 4: Capability Assessment

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or could help to carry out hazard mitigation activities. Use this worksheet to list which capabilities your community already has and how they can be built on. No community will have all of these capabilities. You may work with partners or stakeholders who can supplement your local programs and staff.

In the tables below, note which capabilities apply. Consider some of the prompts to describe a little bit about each capability.

PLANNING AND REGULATORY

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.

Capability Type	In Place	Notes
Plans	**Yes/No**	**Does the plan address hazards? Can the plan be used to implement mitigation actions? When was it last updated?**
Capital Improvements Plan	No	
Climate Change Adaptation Plan	No	
Community Wildfire Protection Plan	No	
Comprehensive/Master Plan	No	
Continuity of Operations Plan	No	
Economic Development Plan	No	
Land Use Plan	No	
Local Emergency Operations Plan	No	
Stormwater Management Plan	No	
Transportation Plan	No	

Capability Type	In Place	Notes
Other (describe)		
Land Use Planning and Ordinances	**Yes/No**	**Is the ordinance an effective measure for reducing hazard impacts? Is it adequately administered and enforced?**
Acquisition of land for open space and public recreation use	NO	
Building code	NO	
Flood insurance rate maps	NO	
Floodplain ordinance	NO	
Substantial Damage Plan	NO	
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	NO	
Subdivision ordinance	NO	
Zoning ordinance	NO	
Other		
How can these capabilities be expanded and improved to reduce risk?		

ADMINISTRATIVE AND TECHNICAL

Administrative and technical capabilities include staff and their skills. They also include tools that can help you carry out mitigation actions. If you do not have local staff, consider how state and regional partners can help.

Capability Type	In Place	Notes
Administrative	**Yes/No**	**Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?**
Chief Building Official	NO	
Civil Engineer	NO	
Community Planner	NO	
Emergency Manager	NO	
Floodplain Administrator	YES	
GIS Coordinator	NO	
Planning Commission	NO	
Other		
Technical	**Yes/No**	**Has capability been used to assess/mitigate risk in the past?**
Grant writing	NO	
Hazard data and information	NO	
GIS analysis	NO	
Mutual aid agreements	NO	
Other	NO	
How can these capabilities be expanded and improved to reduce risk?		

FINANCIAL

Note whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

City of Sumner

Hazard Identification for Chariton County

Use this worksheet to identify which hazards can affect your community. Not all hazards apply to the planning area. For the ones that do, describe how they have been an issue in the past, or if they are a future concern.

Instructions: Describe where there may be recurring problems that you would like to see addressed.

Hazard	Is this a hazard for your community? Yes/No	If yes, briefly describe how. Think about specific locations or recurring issues that you know of in your community.
Dam Failure	No	
Drought	NO	
Earthquake	NO	
Erosion	NO	
Extreme Temperatures	NO	
Flood (Riverine & Flash)	YES	Puts HOMES & SEWER System at Ris
Hail	YES	Aging structures & people
Lightning	YES	Same
Severe Wind	YES	Same
Severe Winter Weather	YES	Especially Aging Population
Subsidence/ Sinkholes	NO	
Tornado	YES	Structures & people
Wildfire	NO	
If there are additional hazards that you would like to include, please add them here.		

Capability Type	In Place	Notes
Hazard awareness campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, school programs, public events)	NO	
Local news	NO	
Organizations that represent/advocate for/interact with underserved and vulnerable communities	NO	
Social media	NO	
Other		

How can these capabilities be expanded and improved to reduce risk?

Worksheet 5: National Flood Insurance Program (NFIP)

Use this worksheet to collect information on your community's participation in and continued compliance with the NFIP. Also, note areas for improvement that could be potential mitigation actions. State the source of information if different from the one included.

NFIP Topic	Source of Information	Comments
Staff Resources		
Who is responsible for floodplain management in your community? Do they serve any roles other than Community Floodplain Administrator (FPA)?	STEVE WINKEL ALDERMAN	
Is the Community FPA or NFIP Coordinator a Certified Floodplain Manager?	Community FPA NO	
Is floodplain management an auxiliary function?	Community FPA NONE	
Explain NFIP administration services (e.g., permit review, GIS, inspections, engineering capability).	Community FPA NONE	
What are the barriers to running an effective NFIP program in the community, if any?	Community FPA	
Insurance Summary		
How many NFIP policies are in the community? What is the total premium and coverage?	State NFIP Coordinator or FEMA NFIP Specialist	
How many claims have been paid out in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	FEMA NFIP or Insurance Specialist	
How many structures (residential and non-residential) are exposed to flood risk within the community?	Community FPA 50+	
Are there any repetitive or severe repetitive loss structures in the community?		

NFIP Topic	Source of Information	Comments
Describe any areas of flood risk with limited NFIP policy coverage.	Community FPA and FEMA Insurance Specialist	
How does the community teach property owners or other stakeholders about the importance flood insurance?		
What digital sources (like the FEMA Map Service Center, National Flood Hazard Layer) or non-regulatory tools does the community use?		
Compliance History		
Is the community currently suspended from the NFIP?	State NFIP Coordinator, FEMA NFIP Specialist, community records	
Are there any outstanding compliance issues? (i.e., current violations)?	No	
How does the community identify substantially damaged/improved structures? What is the process to make sure these structures are brought into compliance?		
When was the most recent Community Assistance Visit (CAV or Community Assistance Contact (CAC)?		
Is a CAV or CAC scheduled or needed?		
Regulation		
When did the community enter the NFIP?	Community Status Book	
Are the FIRMs digital or paper?	Community FPA	
How does the community enforce local floodplain regulations and monitor compliance?		

NFIP Topic	Source of Information	Comments
Do floodplain development regulations meet or exceed FEMA or state minimum requirements? If so, in what ways?	Community FPA	
How are Letters of Map Change (LOMCs) tracked and compiled?		
Explain the permitting process.	Community FPA, State, FEMA NFIP Flood Insurance Manual Community FPA, FEMA CRS Coordinator, ISO representative CRS manual	
Community Rating System (CRS)		
Does the community participate in CRS? If so, what is the community's CRS Class Ranking?	Community FPA, State, FEMA NFIP	
What categories and activities provide CRS points, and how can the class be improved?	Flood Insurance Manual	
Does the plan include CRS planning requirements?	Community FPA, FEMA CRS Coordinator, ISO representative, CRS manual	

NEXT STEPS

If you were unsure or answered "no" to any of these questions, consider short- and long-term action items to address them. If you need help identifying trainings or other resources, contact your State Hazard Mitigation Officer or State NFIP Coordinator.

RESOURCE LIST

FEMA Substantial Damage Estimator Tool

National Flood Hazard Layer

FEMA Flood Map Service Center

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Small Local Governments

County: Chariton _____

Jurisdiction: City of Brunswick _____

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: [illegible]

Phone: 660 414 4378

Email: brunswick.mo.mayor@gmail.com

Date: 10/29/2024

Please return questionnaires by mail, email, or fax to:

Name: Amanda George _____

Address: 810 Washington St. Trenton, MO 64683 _____

Email: amanda@ghrpc.org _____

Fax: (660) 776-3900 _____

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 or Land-Use Plan	Yes	Date:
Capital Improvement Plan	No	Date:
Transportation Plan / Highway Department	Yes	Date:
Emergency Operations Plan	No	Date:
Local Recovery Plan	No	Date:
Debris Management Plan	Yes	Date:
Firewise or other fire mitigation plan	No	Date:
Economic Development Plan	Yes	Date:
Policies/Ordinance		
Zoning Ordinance	No	
Building Code	No	Version:
Floodplain Ordinance	Yes	Date:
Drainage/Stormwater Ordinance	No	
Site Plan Review Requirements	No	
Historic Preservation Ordinance	No	

Element	Yes, No, N/A	Comments and/or Weblink
Program		
National Flood Insurance Program (NFIP)	Yes	
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:	n/a
Public Education or information programs (i.e., responsible water use, fire safety, household preparedness, or environmental education	Yes	Provide details if possible NFIP Info / Contacts Monthly Announcements through billing & Facebook
Mutual Aid Agreements	Yes	
Studies/Reports/Maps		
Critical Facilities Inventory	No	
Vulnerable Population Inventory	No	
Staff/Department		**Full Time or Part Time?**
Building Code Official / Building Inspector	Yes – building inspector	? Jeffrey Gulley
Engineer	No	
Development Planner	No	
NFIP Floodplain Administrator	Yes	? Diane Rice
Mapping Specialist (GIS)	No	
Public Works Official	No	
Emergency Management Coordinator	Yes	? Rick Derenzy
Local Emergency Planning Committee	No	
Sanitation Department	No	
Highway/Transportation Department	No	
Economic Development Department	No	
Housing Department	No	
Historic Preservation	No	

Element	Yes, No, N/A	Comments and/or Weblink
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	No	
Salvation Army	No	
Veterans Groups	Yes	
Local Environmental Organization	Yes	
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		No
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		yes

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 or Land-Use Plan	No
Capital Improvement Plan	No
Transportation Plan / Highway Department	No
Emergency Operations Plan	No
Local Recovery Plan	No
Debris Management Plan	Yes
Firewise or other fire mitigation plan	No
Economic Development Plan	No

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

   Mayor: Diane Rice; City Clerk: Sarah Clubine; 4 Alderman: Michael Hamilton, Rodger Lewellen, Timothy Rice, & Wendell Turner
   Please make any changes if necessary Current

2. 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 at this time.

3. 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.

   Elderly populations could be more vulnerable to extreme temperatures.
   Brunswick has disadvantaged community designations

4. How many outdoor warning sirens are in your community? 3

   How are they activated (indicate responsible department/personnel)? Ambulance District

5. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.

   No

6. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?
   No

   Please provide address locations:

7. Identify residential, commercial and industrial development in your jurisdiction since last plan update. If none, leave blank
   Ray Carroll Grain at Hwy 24 & 11 - just outside
   Quilt Shop - Retreat Center & Sewing Shop -
   Grand River Marketplace -

8. 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 new developments planned for the next 5 years.

9. 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

10. Please list major employers in your jurisdiction with an estimated number of employees.

    Please list employers of more than 15 employees.

    Brunswick Nursing Home
    AgriServices of Brunswick
    Brunswick R-II Schools
    Ray-Carroll Grain

11. 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?

    Cindy Collier (participant from Brunswick)

    The committee did not meet as set forth in the last plan.

12. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

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**
Drought - **D**	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.

Asset Inventory

Please list critical facilities and other community assets, the square feet, values, and occupancy/capacity. If not applicable, enter "N/A"). In the last column, use the codes from the previous page to indicate hazards to which the asset is vulnerable. Add as many rows as needed. If this information is available in GIS format, please provide.

Critical Facilities

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards
Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers						
Fire Service						
Police Station						
Health Care Facility						

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards
High Potential Loss Facilities such as power plants, dams/levees, military installations, hazardous materials sites, shelters, day care centers, nursing homes, main government buildings (Do not include schools—they will be reported by the school districts)						
Child Care Facility						
City Hall						
Natural Gas Facility						
Pumpstation						
Wastewater						
Electric Power Facility						
Communications Tower						
Transportation and Lifelines such as highways, bridges, and tunnels; railroads and facilities, bus facilities, airports, water treatment facilities, natural gas facilities and pipelines, oil facilities, oil facilities and pipelines, communications facilities						
Rail						

***If replacement cost data is not available, use the best available data (assessed valuation or other method for estimating cost) and explain any data deficiencies.**

Economic Assets (Major Employers, etc)

Asset	Address	Product/ Service	Value (if known)	Number of Employees	Hazards

HISTORIC HAZARD EVENTS

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	Brunswick
Type of event	Tornado / Storm Prep & Clean-Up
Nature and magnitude of event	City Limits - Most Roofs Damaged /
Location	Homes / Garages have trees down
Date of event	Storm - July 16, 2024
Injuries	
Deaths	-0-
Property damage	-Roofs-
Infrastructure damage	City Barn, Shelters, [redacted]
Crop damage	
Business/economic impacts	
Road/school/other closures	Hwy 24 - 1 day -
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

HISTORIC HAZARD EVENTS (continued)

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	Brunswick
Type of event	Flooding / Storm-Water due to local rains
Nature and magnitude of event	
Location	East Side Brunswick - Hwy 24 & Schoo
Date of event	Multiple
Injuries	-0-
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	Threatens School - Senior Housing / Emergency Services
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	Would like to improve storm water drainage under the N.S. Railroad.

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: City of Brunswick

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

The worksheet should include information on the status of the action and progress made in implementation, if any. This includes:

- For **completed actions** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- Some of the actions might have been **ongoing** in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.
- If **no progress** has been made in the implementation of a given action, discuss why. Note that implementation is not a requirement. However, if no progress has been made, perhaps this is an action that would be appropriate to delete in the updated plan.

During review of the previously approved actions, consider whether any new actions should be proposed. Perhaps damages from a recent hazard event have indicated the need for new approaches to protect property and life. Review the problem statements from the updated plan for ideas. Also review the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).*

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
Brunswick 2020.1	NFIP Participation					
Brunswick 2020.2	Property Acquisition and Structure Demolition					
Brunswick 2020.3	Early Warning Sirens					

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
Brunswick 2020.4	Maintain transportation infrastructure		✓			✓
Brunswick 2020.5	Generator for City Hall/Municipal Utility Office			✓	Keep - will proceed when budget allows	✓
Brunswick 2020.6	Flood Mitigation		✓			M

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Small Local Governments

County: Chariton

Jurisdiction: City of Salisbury

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: Courtney Cole, City Clerk

Phone: 660-388-6197

Email: Cityclerk@Salisburymo.net

Date: 5-31-24

Please return questionnaires by mail, email, or fax to:

Name: Amanda George

Address: 810 Washington St. Trenton, MO 64683

Email: amanda@ghrpc.org

Fax: (660) 776-3900

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 or Land-Use Plan	NO	Date:
Capital Improvement Plan	NO	Date:
Transportation Plan / Highway Department	NO	Date:
Emergency Operations Plan		Date:
Local Recovery Plan		Date:
Debris Management Plan	NO	Date:
Firewise or other fire mitigation plan		Date:
Economic Development Plan	NO	Date:
Policies/Ordinance		
Zoning Ordinance	Yes	Sec. 405.900 of City's
Building Code	Yes (local only)	Version: Code
Floodplain Ordinance	yes	Date: 2015
Drainage/Stormwater Ordinance	Yes	Sec 525 of City's code
Site Plan Review Requirements	no	
Historic Preservation Ordinance	no	

Element	Yes, No, N/A	Comments and/or Weblink
Program		
National Flood Insurance Program (NFIP)	Yes	
NFIP Community Rating System (CRS) program		If so, what is your current level rating?
National Weather Service (NWS) Storm Ready Certification		
Firewise Community Certification		
Building Code Effectiveness Grading (BCEGs)		
ISO Fire Rating	Rating: 10/10X	
Public Education or information programs (i.e., responsible water use, fire safety, household preparedness, or environmental education		
Mutual Aid Agreements	Yes	
Studies/Reports/Maps		
Critical Facilities Inventory		
Vulnerable Population Inventory		
Staff/Department		**Full Time or Part Time?**
Building Code Official / Building Inspector	Yes	Part time
Engineer	NO	
Development Planner	NO	
NFIP Floodplain Administrator	Yes	Mayor - part time
Mapping Specialist (GIS)	NO	
Public Works Official	Yes	Full time
Emergency Management Coordinator	Yes	Part time
Local Emergency Planning Committee	NO	
Sanitation Department	NO	
Highway/Transportation Department	? - Street Dept - Yes	- Full time
Economic Development Department	NO	
Housing Department	NO	
Historic Preservation	NO	

Element	Yes, No, N/A	Comments and/or Weblink
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	NO	
Salvation Army	NO	
Veterans Groups	NO	
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-voter approval
Incur debt through special tax bonds		Yes-voter approval
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 or Land-Use Plan	Follows ordinances in place
Capital Improvement Plan	Budgeted Annually
Transportation Plan / Highway Department	Transportation Tax Funds major Street work
Emergency Operations Plan	Updated annually w/ DNR & Emergency mgmt.
Local Recovery Plan	No such program
Debris Management Plan	City offers a site for residents to drop off yard debr
Firewise or other fire mitigation plan	none
Economic Development Plan	No longer have an economic Dorelop. Director

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

   Mayor - 1
   City Council - 6

2. 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.

   We did a big stormwater project on Maple Street after residential flooding in 2020 & 2021.

3. 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 at this time

4. How many outdoor warning sirens are in your community? 5

   How are they activated (indicate responsible department/personnel)?
   911 office

5. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.

   no

6. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards? Yes - Bonner Highschool - Funded w/ Fema Grant

   Please provide address locations:

   1000 S. Maple Ave

7. Identify residential, commercial and industrial development in your jurisdiction since last plan update.

   no new Industrial & a few individual home builds

8. 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 new development expected In Floodplain

9. 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.

A new Concrete Block manufaturer Is expected to build a plant within the City's Industrial Park soon.

10. Please list major employers in your jurisdiction with an estimated number of employees.

School — unknown
MFA — unknown
Ag Center — unknown

11. 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?

unknown

12. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

There Is only a tiny piece In the floodplain within the City's Industrial Park and until May of 2024 it had been owned by the City so we have not been active with compliance/ enforcement

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**
Drought - **D**	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.

Asset Inventory

Please list critical facilities and other community assets, the square feet, values, and occupancy/capacity. If not applicable, enter "N/A"). In the last column, use the codes from the previous page to indicate hazards to which the asset is vulnerable. Add as many rows as needed. If this information is available in GIS format, please provide.

Critical Facilities

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards
Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers						
Police Station	123 W. 2nd St.	1620	179,225	20,448		N/A
Fire Station	128 W. 2nd St.	1800	435,000	186,000		n/A

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards
High Potential Loss Facilities such as power plants, dams/levees, military installations, hazardous materials sites, shelters, day care centers, nursing homes, main government buildings (Do not include schools—they will be reported by the school districts)						
Salisbury City Hall	128 W 2nd St.	2457	521,969	49,296		N/A
Salisbury Early Learning Center	615 S. Weber Ave		1,000,000	?		N/A
Generators	128 W. 2nd St.	1100	1,157,695	0		N/A
Transportation and Lifelines such as highways, bridges, and tunnels; railroads and facilities; bus facilities, airports, water treatment facilities, natural gas facilities and pipelines, oil facilities, oil facilities and pipelines, communications facilities						
Water Plant	506 W. 2nd St.	2400	1,838,234	3,848		n/A
Water Tower	128 W 2nd St.	3420	1,155,527	0		

***If replacement cost data is not available, use the best available data (assessed valuation or other method for estimating cost) and explain any data deficiencies.**

Economic Assets (Major Employers, etc)

Asset	Address	Product/ Service	Value (if known)	Number of Employees	Hazards

HISTORIC HAZARD EVENTS

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

HISTORIC HAZARD EVENTS (continued)

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: City of Salisbury

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

The worksheet should include information on the status of the action and progress made in implementation, if any. This includes:

- For **completed actions** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- Some of the actions might have been **ongoing** in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.
- If **no progress** has been made in the implementation of a given action, discuss why. Note that implementation is not a requirement. However, if no progress has been made, perhaps this is an action that would be appropriate to delete in the updated plan.

During review of the previously approved actions, consider whether any new actions should be proposed. Perhaps damages from a recent hazard event have indicated the need for new approaches to protect property and life. Review the problem statements from the updated plan for ideas. Also review the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).*

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
Salisbury 2020.1	Installation Warning Siren			X	Funding Not Available	✓
Salisbury 2020.2	Generator for City Hall/Municipal Utility Office			X	Funding Not Available	✓
Salisbury 2020.3	NFIP Participation		X			✓

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Special Districts

County: Chariton

Special District Name: Lower Chariton Levee 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. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: Mary Hafemeister

Phone: 660-414-5292

Email: maryhafe@yahoo.com

Date: 06-20-2024

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. 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		
Capital Improvement Plan	Date:	
Emergency Operations Plan	Date:	
Continuity of Operations Plan	Date:	
Community Wildfire Protection Plan	Date:	
Other:		
Policies		
Programs		
Cross-Connection Program		
Hydrant Flushing Program		
Public Education/Awareness		
Tree Trimming Program		
Mutual Aid Agreements		
Other:		

Element	Yes, No, N/A	Comments and/or Weblink
Studies/Reports/Maps		
Evacuation Route Map		
Critical Facilities Inventory		
Staff/Department		**Full Time or Part Time?**

Financial Resources	Is your jurisdiction able to? Yes or No
Fund projects thru Capital Improvements funding	
Fees for water, sewer, gas, or electric services	
Incur debt through general obligation bonds	
Incur debt through special tax bonds	
Incur debt through private activities	
Withhold spending in hazard prone areas	

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
Capital Improvement Plan	
Emergency Operations Plan	
Continuity of Operations Plan	
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	

Additional Questions

1. How is your Special District structure organized? (Board of Directors, Commission, how many members)

   Board of Directors 5 members
   Levee Board Secretary
   Contracted Maintain Man

2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.

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.

   Levee is kept up to U.S. Corp specs.

4. 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?

   Board Secretary filled out the needed paperwork.

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**
Drought - **D**	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
Fire station
Emergency Operations Centers

High Potential Loss Facilities
Power plants
Dams/levees
Hazardous material sites
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

Asset Inventory

Please list critical facilities and other community assets, the square feet, values, and occupancy/capacity. If not applicable, enter "N/A"). In the last column, use the codes from the previous page to indicate hazards to which the asset is vulnerable. Add as many rows as needed. If this information is available in GIS format, please provide.

Critical Facilities

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards
Essential Facilities such as fire stations, Emergency Operations Centers						
no facilities						

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards
High Potential Loss Facilities such as power plants, dams/levees, hazardous materials sites, main government buildings (Do not include schools—they will be reported by the school districts)						
Transportation and Lifelines such as highways, bridges, and tunnels; railroads and facilities, bus facilities, airports, water treatment facilities, natural gas facilities and pipelines, oil facilities, oil facilities and pipelines, communications facilities						

***If replacement cost data is not available, use the best available data (assessed valuation or other method for estimating cost) and explain any data deficiencies.**

HISTORIC HAZARD EVENTS

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	Lower Chariton River Levee District
Type of event	Floods in 1993 & 2019
Nature and magnitude of event	Broke Levee in 1993
Location	South West area of Chariton Co
Date of event	July 1993 & May 2019
Injuries	
Deaths	
Property damage	Damage to Homes & Buildings in 1993 | No Structural Damage 2019
Infrastructure damage	Levee section rebuilt in 1993
Crop damage	Complete loss on 30,000 acres | Some crop losses
Business/economic impacts	Loss to ag ~~business~~ businesses
Road/school/other closures	Road closures R + KK (complete both years)
Other damage	
Insured losses	Our levee is a U.S Corp levee
Federal/state disaster relief funding	FEMA
Source of information	
Comments	

HISTORIC HAZARD EVENTS (continued)

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: _____

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

The worksheet should include information on the status of the action and progress made in implementation, if any. This includes:

- For **completed actions** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- Some of the actions might have been **ongoing** in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.
- If **no progress** has been made in the implementation of a given action, discuss why. Note that implementation is not a requirement. However, if no progress has been made, perhaps this is an action that would be appropriate to delete in the updated plan.

During review of the previously approved actions, consider whether any new actions should be proposed. Perhaps damages from a recent hazard event have indicated the need for new approaches to protect property and life. Review the problem statements from the updated plan for ideas. Also review the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).*

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		

Lower Chariton River Levee District

Hazard Identification for Chariton County

Use this worksheet to identify which hazards can affect your community. Not all hazards apply to the planning area. For the ones that do, describe how they have been an issue in the past, or if they are a future concern.

Instructions: Describe where there may be recurring problems that you would like to see addressed.

Hazard	Is this a hazard for your community? Yes/No	If yes, briefly describe how. Think about specific locations or recurring issues that you know of in your community.
Dam Failure		
Drought		Crop damage - Lost revenue to farmers & to the county
Earthquake		
Erosion		after heavy rains, there are always damage to gravel roads
Extreme Temperatures		
Flood (Riverine & Flash)		Crop Damage - Damage to homes - Loss of revenue
Hail		Crop damage & damage to homes & cars
Lightning		
Severe Wind		
Severe Winter Weather		
Subsidence/ Sinkholes		
Tornado		
Wildfire		

If there are additional hazards that you would like to include, please add them here.

Flooding - There are several major levees in the county. When sandbagging & supplies are needed, it is very expensive.

There is always road closures during flooding events.

Lower Chariton River Levee District

Identifying Vulnerable Assets for Chariton County

Look back at the Hazard Identification Worksheet where you described issues that you have had with the identified hazards. We are now going to look at specific community assets that can be affected by the identified hazards.

Instructions: For the hazards that affect your community, identify two to three examples of assets that can be affected by the identified hazards.

Vulnerable Assets	What makes this group/asset vulnerable during hazards? Have there ever been issues with recovery after an event?
People (Residents, workers, visiting populations, and socially vulnerable populations like seniors, individuals with disabilities, lower-income individuals, etc.)	
Structures (Community centers, historic places, planned capital improvement)	
Economic Assets (Major employers, primary economic sectors, key infrastructure like telecommunications networks)	
Natural, Historic, and Cultural Resources (Areas of conservation, beaches, parks, critical habitats)	
Critical Facilities and Infrastructure (Hospitals, law enforcement, water, power)	

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Small Local Governments

County: Chariton _____

Jurisdiction: City of Keytesville _____

Return by: 10/20/2024

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: Delaina Sommerfeld and Julie McKenzie

Phone: 660-288-3745

Email: citykey@mcmsys.com

Date: _____

Please return questionnaires by mail, email, or fax to:

Name: Amanda George _____

Address: 810 Washington St. Trenton, MO 64683 _____

Email: amanda@ghrpc.org _____

Phone: (660) 359-5636 ext. 11 _____

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 or Land-Use Plan	No	Date:
Capital Improvement Plan	No	Date:
Transportation Plan / Highway Department	No	Date:
Emergency Operations Plan	No	Date:
Local Recovery Plan	No	Date:
Debris Management Plan	No	Date:
Firewise or other fire mitigation plan	No	Date:
Economic Development Plan	No	Date:
Policies/Ordinance		
Zoning Ordinance	No	
Building Code	Yes	Version: Ord. 366
Floodplain Ordinance	Yes	Date:
Drainage/Stormwater Ordinance	No	
Site Plan Review Requirements	No	
Historic Preservation Ordinance	No	

Element	Yes, No, N/A	Comments and/or Weblink
Program		
National Flood Insurance Program (NFIP)	No	
NFIP Community Rating System (CRS) program	n/a	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: n/a	
Public Education or information programs (i.e., responsible water use, fire safety, household preparedness, or environmental education	No	
Mutual Aid Agreements	Yes	
Studies/Reports/Maps		
Critical Facilities Inventory	No	
Vulnerable Population Inventory	No	
Staff/Department		**Full Time or Part Time?**
Building Code Official / Building Inspector	No	
Engineer	No	
Development Planner	No	
NFIP Floodplain Administrator	Yes	
Mapping Specialist (GIS)	No	
Public Works Official	No	
Emergency Management Coordinator	No	
Local Emergency Planning Committee	No	
Sanitation Department	No	
Highway/Transportation Department	No	
Economic Development Department	No	
Housing Department	No	
Historic Preservation	No	

Element	Yes, No, N/A	Comments and/or Weblink
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross		
Salvation Army		
Veterans Groups		
Local Environmental Organization		
Homeowner Associations		
Neighborhood Associations		
Chamber of Commerce		
Community Organizations (Lions, Kiwanis, etc.		
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		No
Fees for water, sewer, gas, or electric services		Yes
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 or Land-Use Plan	no
Capital Improvement Plan	No
Transportation Plan / Highway Department	Yes
Emergency Operations Plan	No
Local Recovery Plan	No
Debris Management Plan	No
Firewise or other fire mitigation plan	No
Economic Development Plan	No

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

   Mayor: Julie McKenzie; City Clerk: Delaina Sommerfeld; 4 Aldermen: Roy Bennett, Cheryl Jackson, Laura Friesz, and Marshall Meagher

2. 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

3. 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.

4. How many outdoor warning sirens are in your community? 1

   How are they activated (indicate responsible department/personnel)?
   Chariton County Sheriff Department - E911

5. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.

   No

6. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?
   No

   Please provide address locations:

7. Identify residential, commercial and industrial development in your jurisdiction since last plan update.

   No new development in the last 5 years

8. 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.

   There is no development expected to occur within the next 5 years

9. 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.

   Nothing planned in the next 5 years

10. Please list major employers in your jurisdiction with an estimated number of employees.

11. 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?

    Delaina Summerfield assisted with the last plan. No, not meeting occurred within the 5 years.

12. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.
    Please provide a copy of the local ordinance for NFIP

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**
Drought - **D**	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.

Asset Inventory

Please list critical facilities and other community assets, the square feet, values, and occupancy/capacity. If not applicable, enter "N/A"). In the last column, use the codes from the previous page to indicate hazards to which the asset is vulnerable. Add as many rows as needed. If this information is available in GIS format, please provide.

Critical Facilities

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards
Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers						
Fire Service	201 W Bridge St, Keytesville					
Health Care Facility						
Police Station	404 W Bridge St, Keytesville					

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards
High Potential Loss Facilities such as power plants, dams/levees, military installations, hazardous materials sites, shelters, day care centers, nursing homes, main government buildings (Do not include schools—they will be reported by the school districts)						
Child Care Facility						
Government Buildings						
Transportation and Lifelines such as highways, bridges, and tunnels; railroads and facilities, bus facilities, airports, water treatment facilities, natural gas facilities and pipelines, oil facilities, oil facilities and pipelines, communications facilities						

*If replacement cost data is not available, use the best available data (assessed valuation or other method for estimating cost) and explain any data deficiencies.

Economic Assets (Major Employers, etc) (15 or more employees)

Asset	Address	Product/ Service	Value (if known)	Number of Employees	Hazards

HISTORIC HAZARD EVENTS

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

HISTORIC HAZARD EVENTS (continued)

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: City of Keytesville

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

The worksheet should include information on the status of the action and progress made in implementation, if any. This includes:

- For **completed actions** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- Some of the actions might have been **ongoing** in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.
- If **no progress** has been made in the implementation of a given action, discuss why. Note that implementation is not a requirement. However, if no progress has been made, perhaps this is an action that would be appropriate to delete in the updated plan.

During review of the previously approved actions, consider whether any new actions should be proposed. Perhaps damages from a recent hazard event have indicated the need for new approaches to protect property and life. Review the problem statements from the updated plan for ideas. Also review the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).*

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
Keytesville 2020.1	Update Warning Sirens			X	Waiting on grant opportunities	✓
Keytesville 2020.2	Build a safe room			X		X
Keytesville 2020.3	Maintain Transportation Infrastructure		X			✓

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
Keytesville 2020.4	Address Flooding Levee around water well field around wells			X	Funding availabilities?	
Keytesville 2020.5	Secondary Access Point for School					X
Keytesville 2020.6	NFIP Participation		X			✓

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Chariton County

School District / Educational Institution Name: Brunswick R-II

Return by: August 1, 2024

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:Cara Engelbrecht

Phone: 660-548-3550

Email:cengelbrecht@brunswick.k12.mo.us

Date:10/22/2024

Please return questionnaires by mail, email, or fax to:

Name: Amanda George

Address: 810 Washington St., Trenton, MO 64683

Email: amanda@ghrpc.org

Phone: (660) 359-5636 ext. 11 Fax: (660) 776-3900

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	y		
Capital Improvement Plan	y		
School Emergency Plan Shelter in place protocols Evacuation protocols	y		
Weapons Policy	y		

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)	y		
Emergency Manager	n		
Grant Writer	n		
Public Information Officer	n		

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.

2. Does your school buildings' have NOAA Weather Radios?

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?

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.

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?

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.

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

Name of Asset	Address	Area (sq.ft.)	Replacement Value (Insured) ($)	Contents Value ($)	Occupancy/ Capacity (#)	Natural Hazards

HISTORIC HAZARD EVENTS

Please fill out one sheet for each significant hazard event that affected **your school district / institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

HISTORIC HAZARD EVENTS (continued)

Please fill out one sheet for each significant hazard event that affected **your school district /institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Source of information	
Comments	

SHOW-ME COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN

Action Title: NFIP Participation	**Jurisdiction:** Chariton County
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		2
P: Is it Politically acceptable?		2
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		3
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 would be saved.	7
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	10
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 37

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Cheriton County Commission

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Chariton County 2025.2	**Jurisdiction:** Chariton County
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		3
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 would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	7
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 35

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Chariton County Commission

SHOW-ME COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN

Action Title: Chariton County 2025.3	**Jurisdiction:** Chariton County
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		5
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		2
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 would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 37

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Chariton County Commission

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Chariton County 2025.4	**Jurisdiction:** Chariton County
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		2
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 would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	7
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 34

Priority Level: ☒ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): Chariton County Commission

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Charlton County 2025.5	**Jurisdiction:** Charlton County
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		2
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		1
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 would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 29

Priority Level: ☐ High (30+ points) ☒ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): Charlton County Commission

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Chariton County 2025.6	**Jurisdiction:** Chariton County
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		2
T: Is it Technically feasible and potentially successful?		2
A: Does the jurisdiction have the administrative capacity to execute this action?		2
P: Is it Politically acceptable?		2
L: Is there Legal authority to implement?		2
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		1
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 would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 25

Priority Level: ☐ High (30+ points) ☒ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): Chariton County Commission

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: NFIP	**Jurisdiction:** City of Salisbury
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	3	
T: Is it Technically feasible and potentially successful?	3	
A: Does the jurisdiction have the administrative capacity to execute this action?	3	
P: Is it Politically acceptable?	3	
L: Is there Legal authority to implement?	3	
E: Is it Economically beneficial?	3	
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	3	
Will historic structures be saved or protected?	0	
Could it be implemented quickly?	2	
STAPLEE Score		23

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 would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	10
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 38

Priority Level: ☒ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): Courtney Cole, City Clerk 660-388-6197

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Generators for City Hall	**Jurisdiction:** City of Salisbury
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	3	
T: Is it Technically feasible and potentially successful?	3	
A: Does the jurisdiction have the administrative capacity to execute this action?	3	
P: Is it Politically acceptable?	3	
L: Is there Legal authority to implement?	3	
E: Is it Economically beneficial?	3	
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	3	
Will historic structures be saved or protected?	2	
Could it be implemented quickly?	2	
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 would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 35

Priority Level: [X] High (30+ points) [ ] Medium (25-29 points) [ ] Low (less than 25 points)

Completed by (name/title/phone #): Courtney Cole, City Clerk 660-388-6197

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Warning Siren	**Jurisdiction:** City of Salisbury
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	3	
T: Is it Technically feasible and potentially successful?	3	
A: Does the jurisdiction have the administrative capacity to execute this action?	3	
P: Is it Politically acceptable?	3	
L: Is there Legal authority to implement?	3	
E: Is it Economically beneficial?	3	
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	3	
Will historic structures be saved or protected?	2	
Could it be implemented quickly?	1	
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 would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 39

Priority Level: ☒ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): Courtney Cole, City Clerk 660-388-6197

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Maintain Transportation Infrastucture	**Jurisdiction:** City of Mendon
Action ID: 2025.2	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	3	3
T: Is it Technically feasible and potentially successful?	3	3
A: Does the jurisdiction have the administrative capacity to execute this action?	3	3
P: Is it Politically acceptable?	3	3
L: Is there Legal authority to implement?	1	1
E: Is it Economically beneficial?	3	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	3	3
Will historic structures be saved or protected?	3	3
Could it be implemented quickly?	2	2
STAPLEE Score		24

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 would be saved.	7
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	9
Mitigation Effectiveness Score		16

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 40

Priority Level: ☐High (30+ points) ■Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Lesa Longfield/ City Clerk/ 660-412-3672

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: NOAA Radios	**Jurisdiction:** City of Mendon
Action ID: 2025.2	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	3	3
T: Is it Technically feasible and potentially successful?	3	3
A: Does the jurisdiction have the administrative capacity to execute this action?	3	3
P: Is it Politically acceptable?	3	3
L: Is there Legal authority to implement?	1	1
E: Is it Economically beneficial?	3	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	2	2
Will historic structures be saved or protected?	3	3
Could it be implemented quickly?	3	3
STAPLEE Score		24

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 would be saved.	9
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	9
Mitigation Effectiveness Score		18

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 42

Priority Level: ☒ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): Lesa Longfield / City Clerk/ 660-412-3672

SHOW-ME COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN

Action Title: Education on Drought/Wildfires	**Jurisdiction:** City of Mendon
Action ID: 2025.3	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	3	3
T: Is it Technically feasible and potentially successful?	3	3
A: Does the jurisdiction have the administrative capacity to execute this action?	3	3
P: Is it Politically acceptable?	3	3
L: Is there Legal authority to implement?	1	1
E: Is it Economically beneficial?	1	1
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	3	3
Will historic structures be saved or protected?	3	3
Could it be implemented quickly?	3	3
STAPLEE Score		20

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 would be saved.	9
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	9
Mitigation Effectiveness Score		18

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 38

Priority Level: ☒ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): Lesa Longfield/ City Clerk/ 660-412-3672

MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN

STAPLEE Worksheet		
Name of Jurisdiction:	City of Keytesville	
Action or Project		
Action/Project Number:	Keytesville 2025.1	
Name of Action or Project:	Update Warning Siren	
Mitigation Category:	Structure and Infrastructure Projects	
STAPLEE Criteria	**Evaluation Rating** Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	**Score**
S: Is it **Socially** Acceptable	Yes	3
T: Is it **Technically** feasible and potentially successful?	Yes	3
A: Does the jurisdiction have the **Administrative** capacity to execute this action?	Yes	3
P: Is it **Politically** acceptable?	Yes	3
L: Is there **Legal** authority to implement?	Yes	3
E: Is it **Economically** beneficial?	Prob. No	1
E: Will the project have either a neutral or positive impact on the natural **Environment?**	Neutral	3
Will historic structures be saved or protected?	No	0
Could it be implemented quickly?	Maybe	2
	STAPLEE SCORE	21
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.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
	MITIGATION EFFECTIVENESS SCORE	15
	TOTAL SCORE (STAPLEE + Mitigation Effectiveness)	36

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

Completed by
(Name, Title, Phone Number) Julia McKenzie, Mayor 660-788-4122

STAPLEE Worksheet		
Name of Jurisdiction:	City of Keytesville	
Action or Project		
Action/Project Number:	Keytesville 2025.2	
Name of Action or Project:	Safe Room	
Mitigation Category:	Structure & Infrastructure Project	
STAPLEE Criteria	**Evaluation Rating** Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	**Score**
S: Is it **Socially** Acceptable	Yes	3
T: Is it **Technically** feasible and potentially successful?	Maybe Yes	2
A: Does the jurisdiction have the **Administrative** capacity to execute this action?	Yes	3
P: Is it **Politically** acceptable?	Yes	3
L: Is there **Legal** authority to implement?	Yes	3
E: Is it **Economically** beneficial?	NO	0
E: Will the project have either a neutral or positive impact on the natural **Environment?**	Neutral	3
Will historic structures be saved or protected?	No	0
Could it be implemented quickly?	Maybe Yes	2
	STAPLEE SCORE	19
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.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
	MITIGATION EFFECTIVENESS SCORE	15
	TOTAL SCORE (STAPLEE + Mitigation Effectiveness)	34

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

Completed by
(Name, Title, Phone Number) Julie McKenzie Mayor 660-788-4122

STAPLEE Worksheet		
Name of Jurisdiction:	City of Keytesville	
Action or Project		
Action/Project Number:	Keytesville 2025.3	
Name of Action or Project:	Debris Removal	
Mitigation Category:	Structure and Infrastructure Project	
STAPLEE Criteria	**Evaluation Rating** Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	**Score**
S: Is it **Socially** Acceptable	Yes	3
T: Is it **Technically** feasible and potentially successful?	Yes	3
A: Does the jurisdiction have the **Administrative** capacity to execute this action?	Yes	3
P: Is it **Politically** acceptable?	yes	3
L: Is there **Legal** authority to implement?	yes	3
E: Is it **Economically** beneficial?	Maybe Yes	2
E: Will the project have either a neutral or positive impact on the natural **Environment?**	Neutral	2
Will historic structures be saved or protected?	No	0
Could it be implemented quickly?	Maybe Yes	2
	STAPLEE SCORE	21
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.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	10
	MITIGATION EFFECTIVENESS SCORE	15
	TOTAL SCORE (STAPLEE + Mitigation Effectiveness)	36

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

Completed by
(Name, Title, Phone Number) Julia McKenzie, Mayor 660-788-4132

STAPLEE Worksheet		
Name of Jurisdiction:	Keytesville	
Action or Project		
Action/Project Number:	Keytesville 2025.4	
Name of Action or Project:	Protection of Water well field	
Mitigation Category:	Structure and Infrastructure	
STAPLEE Criteria	**Evaluation Rating** Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	**Score**
S: Is it **Socially** Acceptable	Y	3
T: Is it **Technically** feasible and potentially successful?	Y	3
A: Does the jurisdiction have the **Administrative** capacity to execute this action?	Y	3
P: Is it **Politically** acceptable?	Maybe	2
L: Is there **Legal** authority to implement?	Y	3
E: Is it **Economically** beneficial?	Maybe	2
E: Will the project have either a neutral or positive impact on the natural **Environment?**	Positive	3
Will historic structures be saved or protected?	No	0
Could it be implemented quickly?	No	0
	STAPLEE SCORE	19
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.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	8
	MITIGATION EFFECTIVENESS SCORE	13
	TOTAL SCORE (STAPLEE + Mitigation Effectiveness)	32

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

Completed by
(Name, Title, Phone Number) Julie McKenzie Mayor 660-788-4122

MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN

STAPLEE Worksheet		
Name of Jurisdiction:	City of Keytesville	
Action or Project		
Action/Project Number:	Keytesville 2025.5	
Name of Action or Project:	NFIP Participation	
Mitigation Category:	Natural Systems, Planning & Reg.	
STAPLEE Criteria	**Evaluation Rating** Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	**Score**
S: Is it **Socially** Acceptable	Maybe	2
T: Is it **Technically** feasible and potentially successful?	Y	3
A: Does the jurisdiction have the **Administrative** capacity to execute this action?	Y	3
P: Is it **Politically** acceptable?	Y	3
L: Is there **Legal** authority to implement?	Y	3
E: Is it **Economically** beneficial?	Prob. NO	1
E: Will the project have either a neutral or positive impact on the natural **Environment?**		3
Will historic structures be saved or protected?	NO	0
Could it be implemented quickly?	Y	3
	STAPLEE SCORE	21
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.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	10
	MITIGATION EFFECTIVENESS SCORE	15
	TOTAL SCORE (STAPLEE + Mitigation Effectiveness)	36

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

Completed by
(Name, Title, Phone Number) Julia McKenzie, Mayor 660-788-4122

MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

STAPLEE Worksheet		
Name of Jurisdiction:	City of Keytesville	
Action or Project		
Action/Project Number:	Keytesville 2025.6	
Name of Action or Project:	Educate citizens on best practices dro	
Mitigation Category:	Education & Outreach	
STAPLEE Criteria	**Evaluation Rating** Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	**Score**
S: Is it **Socially** Acceptable	Y	3
T: Is it **Technically** feasible and potentially successful?	Maybe	2
A: Does the jurisdiction have the **Administrative** capacity to execute this action?	Maybe	2
P: Is it **Politically** acceptable?	Y	3
L: Is there **Legal** authority to implement?	Y	3
E: Is it **Economically** beneficial?	Prob. NO	1
E: Will the project have either a neutral or positive impact on the natural **Environment?**	Maybe Yes	2
Will historic structures be saved or protected?	NO	0
Could it be implemented quickly?	Y	3
	STAPLEE SCORE	19
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.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	7
	MITIGATION EFFECTIVENESS SCORE	12
	TOTAL SCORE (STAPLEE + Mitigation Effectiveness)	31

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

Completed by
(Name, Title, Phone Number) Julie McKenzie Mayor 660-788-4122

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Educate on drought best practices	**Jurisdiction:** City of Salisbury
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	3	
T: Is it Technically feasible and potentially successful?	3	
A: Does the jurisdiction have the administrative capacity to execute this action?	3	
P: Is it Politically acceptable?	3	
L: Is there Legal authority to implement?	3	
E: Is it Economically beneficial?	2	
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	3	
Will historic structures be saved or protected?	0	
Could it be implemented quickly?	3	
STAPLEE Score		23

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 would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	10
Mitigation Effectiveness Score		15

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 38

Priority Level: ☒ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): Courtney Cole, City Clerk 660-388-6197

SHOW-ME COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN

Action Title: Flood Mitigation	**Jurisdiction:** Sumner
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		3
Will historic structures be saved or protected?		0
Could it be implemented quickly?		0
STAPLEE Score		20

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 would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	10
Mitigation Effectiveness Score		15

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 35

Priority Level: ☐ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #):

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Warning Siren	**Jurisdiction:** Sumner
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		1
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		2
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score** 20
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		35

Total Score (STAPLEE Score + Mitigation Effectiveness Score): _____

Priority Level: ☒ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): _____

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Drought Education	**Jurisdiction:** Sumner
Action ID: Sumner 2025.3	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		0
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		2
STAPLEE Score		19

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 would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		10

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 29

Priority Level: ☐ High (30+ points) ☒ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #):

Hazard Questionnaire

Chariton County is currently preparing a Hazard Mitigation Plan. The questionnaire should be completed by an adult. The information you provide will be used to help improve public/private coordination, mitigation, and risk reduction efforts in your county. The survey should take less than 30 minutes to complete. This is a public opinion survey. The results will inform local natural hazard mitigation planning. Your returned, completed survey indicates your willingness to take part in the study. Participation in this study is voluntary and anonymous. None of the information you provide will be attributed to you directly. Thank you for your time.

Natural Hazard Information

First, we would like to know about your experiences with natural hazards.

1. During the past five years, in the county you currently reside in, have you or someone in your household directly experienced a natural disaster such as an earthquake, severe windstorm, flood, wildfire, or other type of natural disaster?

   xYes

   ☐No

   If "YES". Which of these natural disasters have you or someone in your household experienced in the past five years? ***(Please check all that apply)***

   ☐Dam Failure

   ☐Drought

   ☐Earthquake

   xFlood

   ☐Extreme Temperature (hot & cold)

   ☐Wildfire

   ☐Thunderstorm/Severe Storm

   ☐Severe Winter Storm

   ☐Tornado

   ☐Other (specify):

   Click or tap here to enter text.

2. How concerned are you about the following natural disasters affecting your county? ***(Check the corresponding box for each hazard)***

Natural Disaster	Very concerned	Somewhat concerned	Neutral	Not very concerned	Not concerned
Dam Failure	☐	☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐
Extreme Temperatures	☐	☐	☐	☐	☐
Flood	x	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐	☐

Thunderstorm/Severe Storm	x	☐	☐	☐	☐
Severe Winter Storm	x	☐	☐	☐	☐
Tornado	x	☐	☐	☐	☐
Other:Click or tap here to enter text.	☐	☐	☐	☐	☐
Click or tap here to enter text.	☐	☐	☐	☐	☐

3. Have you ever received information about how to make members of your household and your home safer from natural disasters?

   xYes

   ☐No ***(if NO Skep to Question 5)***

   If "YES", how recently?

   ☐Within the last 6 months
   ☐Between 6 and 12 months
   xBetween 1 and 2 years
   ☐Between 2 and 5 years
   ☐5 years or more

4. From whom did you **last** receive information about how to make members of your household and your home safer from natural disasters? ***(Please check only one)***

   ☐News Media
   ☐Government Agency
   ☐Insurance agent or company
   ☐Utility company
   ☐University or research institution
   xNeighbor/friend/family member
   ☐Elected official
   ☐American Red Cross
   ☐Other non-profit organization
   ☐Social media (e.g., Facebook)
   ☐Not sure
   ☐Other: Click or tap here to enter text.

5. Whom would you <u>most trust</u> to provide you with information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

   ☐New media
   ☐Government agency
   ☐Insurance agent or company
   ☐Utility company
   ☐University or research institution
   xNeighbor/friend/family member
   ☐Elected official
   ☐American Red Cross
   ☐Other non-profit organization
   ☐Social media (e.g., Facebook)
   ☐Not sure
   ☐Other: Click or tap here to enter text.

6. What is the most effective way for you to receive information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

Newspapers:
- ☐Newspaper stories
- ☐Newspaper ads

Television
- ☐Television news
- ☐Television ads

Radio:
- ☐Radio news
- ☐Radio ads

Internet:
- xEmail newsletters
- ☐Online news outlets
- ☐Social media (e.g., Facebook)

Other methods:
- ☐Schools
- ☐Outdoor advertisements (billboards, etc.)
- ☐Books
- ☐Mail
- ☐Fire Department/Rescue
- ☐Fact sheet/brochure
- ☐Chamber of Commerce
- ☐Public workshops/meetings
- ☐Magazine
- ☐University or research
- ☐Other:

7. Prior to receiving this survey, were you aware of your county's Hazard Mitigation Plan (HMP)?

   xYes

   ☐No

8. Prior to receiving this survey, were you aware that the Federal Emergency Management Agency (FEMA) requires your county to update the HMP every five years in order for your county to eligible for federal pre- and post-disaster hazard mitigation funds?

   ☐Yes

   xNo

Community Vulnerabilities and Hazard Mitigation Strategies

In order to assess community risk, we need to understand which community assets may be vulnerable to natural hazards in the region. Vulnerable assets are those community features, economic components, environmental resources, etc.). The next set of questions will focus on vulnerable assets in your community and your preferred strategies to mitigate risk to those assets.

9. Community assets are features, characteristics, or resources that either make a community unique or allow the community to function. In your opinion, which of the following *categories* are most susceptible to the impacts caused by natural hazards in your county? ***(Please rank the community assets in order of vulnerability, 1 being MOST vulnerable and 6 being LEAST vulnerable)***

Community Assets	**Potential Natural Hazard Impact**	**Order of Vulnerability**
Human	Loss of life and/or injuries	1
Economic	Business closures and/or job losses	3
Infrastructure	Damage or loss of bridges/ utilities, schools, etc.	2

Cultural/Historic	Damage or loss of libraries, museums, fairgrounds, etc.	5
Environmental	Damage or loss of forests, rangeland, waterways, etc.	6
Governance	Ability to maintain order and/or provide public amenities and services	4

10. Next, we would like to know what specific types of community assets are most important to you. ***(Check the corresponding box for each asset)***

Community Assets	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Elder-care facilities	X	☐	☐	☐	☐
Schools (K-12)	☐	☐	X	☐	☐
Hospitals	X	☐	☐	☐	☐
Major bridges	X	☐	☐	☐	☐
Fire/Police	X	☐	☐	☐	☐
Community Assets (cont.)	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Museums/Historic Buildings	☐	☐	X	☐	☐
Small Businesses	X	☐	☐	☐	☐
City Hall	X	☐	☐	☐	☐
Courthouse	X	☐	☐	☐	☐
Parks	☐	☐	X	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐

11. A number of activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory. ***(Please check the box that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters)***

Community-Wide Strategies	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Not Sure
I support a regulatory approach to reducing risk	☐	☐	☐	X	☐	☐
I support a non-regulatory approach to reducing risk	X	☐	☐	☐	☐	☐
I support a mix of both regulatory and non-regulatory approaches to reducing risk	☐	☐	X	☐	☐	☐
I support policies to prohibit development in areas subject to natural hazards	☐	☐	☐	X	☐	☐
I support the use of tax dollars (federal and/or local)	☐	☐	☐	X	☐	☐

to compensate landowners for not developing in areas subject to natural hazards						
I support the use of local tax dollars to reduce risks and losses from natural disasters	☐	X	☐	☐	☐	☐
I support protecting historical and cultural structures	☐	☐	X	☐	☐	☐
I would be willing to make my home more disaster resilient	☐	X	☐	☐	☐	☐
I support steps to safeguard the local economy following a disaster event	X	☐	☐	☐	☐	☐
I support improving the disaster preparedness of local schools	☐	☐	X	☐	☐	☐
I support a local inventory of at-risk buildings and infrastructure	☐	☐	X	☐	☐	☐
I support the disclosure of natural hazard risks during real estate transactions	X	☐	☐	☐	☐	☐

12. Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for natural hazards in your county. ***(Please tell us how important each one is to you)***

Statements	Very important	somewhat important	Neutral	Not very Important	Not Important
Protecting private property	X	☐	☐	☐	☐
Protecting critical facilities (transportation networks, hospitals, fire stations)	X	☐	☐	☐	☐
Preventing development in hazard prone areas	☐	☐	X	☐	☐
Enhancing the function of natural features (e.g., streams, wetlands)	☐	☐	☐	X	☐
Protecting historical and cultural landmarks	☐	☐	☐	X	☐
Protecting and reducing damage to utilities	X	☐	☐	☐	☐
Strengthening emergency services (e.g., police, fire, ambulance)	X	☐	☐	☐	☐
Disclosing natural hazard risks during real estate transactions	X	☐	☐	☐	☐
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	X	☐	☐	☐	☐

Mitigation and Preparedness Activities in Your Household

Households can mitigate and prepare for natural hazards in order to prevent damage to property, injuries, and loss of life. The precautions you take and training you receive can make a big difference in your ability to recover from a natural disaster or emergency. Access to basic services, such as electricity, gas, water, telephones, and emergency care may be cut off temporarily, or you may have to evacuate at a moment's notice. The following questions focus on your household's preparedness for disaster events.

13. In the following, please check those activities that you have done in your household, plan to doin the near future, have not done, or are unable to do. ***(Please check one answer for each preparedness activity)***

In your household, have you or someone in your household:	Have done	Plan to do	Not done	Unable to do
Attended meeting or received written information on natural disasters or emergency preparedness?	X	☐	☐	☐
Talked with members in your household about what to do in case of a natural	X	☐	☐	☐

disaster or emergency?				
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	x	☐	☐	☐
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, or other emergency supplies)?	x	☐	☐	☐
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?	☐	☐	x	☐
Prepared your home by having smoke detectors on each level of the house?	x	☐	☐	☐
Discussed or created a utility shutoff procedure in the event of a natural disaster?	x	☐	☐	☐

General Household Information

Finally, we would appreciate any information you are willing to share with us about you and your household. This information will remain confidential and is for survey comparison purposes only.

14. Gender:

    ☐Male

    xFemale

15. Please indicate your level of education:

    ☐Highschool graduate/GED

    xSome college/trade school

    ☐College degree

    ☐Postgraduate degree

    ☐Other (Please specify): _____

16. What is your total household income?

    ☐Less than $10,000

    ☐$10,000-$29,999

    ☐$30,000-$59,999

    ☐$60,000-$79,999

    ☐$80,000-$99,999

    x$100,000-$149,999

☐More than $150,000

17. Zip Code (optional): 65236

18. Please specify your race:

☐American Indian or Alaska Native

☐Asian

☐Black or African American

☐Native Hawaiian or Other Pacific Islander

xWhite

19. Please specify your ethnicity:

☐Hispanic or Latino

xNot Hispanic or Latino

20. How long have you lived in Chariton County?

☐Less than one year

☐1-5 years

☐5-9 years

☐10-19 years

x20 years or more

21. Do you own or rent your home?

xOwn

☐Rent

22. Please feel free to provide any additional comments in the space provided:
Click or tap here to enter text.

Hazard Questionnaire

Chariton County is currently preparing a Hazard Mitigation Plan. The questionnaire should be completed by an adult. The information you provide will be used to help improve public/private coordination, mitigation, and risk reduction efforts in your county. The survey should take less than 30 minutes to complete. This is a public opinion survey. The results will inform local natural hazard mitigation planning. Your returned, completed survey indicates your willingness to take part in the study. Participation in this study is voluntary and anonymous. None of the information you provide will be attributed to you directly. Thank you for your time.

Natural Hazard Information

First, we would like to know about your experiences with natural hazards.

1. During the past five years, in the county you currently reside in, have you or someone in your household directly experienced a natural disaster such as an earthquake, severe windstorm, flood, wildfire, or other type of natural disaster?

   xYes

   ☐No

   If "YES". Which of these natural disasters have you or someone in your household experienced in the past five years? ***(Please check all that apply)***

   ☐Dam Failure

   ☐Drought

   ☐Earthquake

   xFlood

   ☐Extreme Temperature (hot & cold)

   ☐Wildfire

   ☐Thunderstorm/Severe Storm

   ☐Severe Winter Storm

   ☐Tornado

   ☐Other (specify):

   Click or tap here to enter text.

2. How concerned are you about the following natural disasters affecting your county? ***(Check the corresponding box for each hazard)***

Natural Disaster	Very concerned	Somewhat concerned	Neutral	Not very concerned	Not concerned
Dam Failure	☐	☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐
Extreme Temperatures	☐	☐	☐	☐	☐
Flood	x	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐	☐

Thunderstorm/Severe Storm	x	☐	☐	☐	☐
Severe Winter Storm	x	☐	☐	☐	☐
Tornado	x	☐	☐	☐	☐
Other:Click or tap here to enter text.	☐	☐	☐	☐	☐
Click or tap here to enter text.	☐	☐	☐	☐	☐

3. Have you ever received information about how to make members of your household and your home safer from natural disasters?

   xYes

   ☐No ***(if NO Skep to Question 5)***

   If "YES", how recently?

   ☐Within the last 6 months
   ☐Between 6 and 12 months
   xBetween 1 and 2 years
   ☐Between 2 and 5 years
   ☐5 years or more

4. From whom did you **last** receive information about how to make members of your household and your home safer from natural disasters? ***(Please check only one)***

   ☐News Media
   ☐Government Agency
   ☐Insurance agent or company
   ☐Utility company
   ☐University or research institution
   xNeighbor/friend/family member
   ☐Elected official
   ☐American Red Cross
   ☐Other non-profit organization
   ☐Social media (e.g., Facebook)
   ☐Not sure
   ☐Other: Click or tap here to enter text.

5. Whom would you most trust to provide you with information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

   ☐New media
   ☐Government agency
   ☐Insurance agent or company
   ☐Utility company
   ☐University or research institution
   xNeighbor/friend/family member
   ☐Elected official
   ☐American Red Cross
   ☐Other non-profit organization
   ☐Social media (e.g., Facebook)
   ☐Not sure
   ☐Other: Click or tap here to enter text.

6. What is the most effective way for you to receive information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

Newspapers:
- ☐Newspaper stories
- ☐Newspaper ads

Television
- ☐Television news
- ☐Television ads

Radio:
- ☐Radio news
- ☐Radio ads

Internet:
- xEmail newsletters
- ☐Online news outlets
- ☐Social media (e.g., Facebook)

Other methods:
- ☐Schools
- ☐Outdoor advertisements (billboards, etc.)
- ☐Books
- ☐Mail
- ☐Fire Department/Rescue
- ☐Fact sheet/brochure
- ☐Chamber of Commerce
- ☐Public workshops/meetings
- ☐Magazine
- ☐University or research
- ☐Other: _____

7. Prior to receiving this survey, were you aware of your county's Hazard Mitigation Plan (HMP)?

   xYes

   ☐No

8. Prior to receiving this survey, were you aware that the Federal Emergency Management Agency (FEMA) requires your county to update the HMP every five years in order for your county to eligible for federal pre- and post-disaster hazard mitigation funds?

   ☐Yes

   xNo

Community Vulnerabilities and Hazard Mitigation Strategies

In order to assess community risk, we need to understand which community assets may be vulnerable to natural hazards in the region. Vulnerable assets are those community features, economic components, environmental resources, etc.). The next set of questions will focus on vulnerable assets in your community and your preferred strategies to mitigate risk to those assets.

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Community Assets	**Potential Natural Hazard Impact**	**Order of Vulnerability**
Human	Loss of life and/or injuries	1
Economic	Business closures and/or job losses	3
Infrastructure	Damage or loss of bridges/ utilities, schools, etc.	2

Cultural/Historic	Damage or loss of libraries, museums, fairgrounds, etc.	5
Environmental	Damage or loss of forests, rangeland, waterways, etc.	6
Governance	Ability to maintain order and/or provide public amenities and services	4

10. Next, we would like to know what specific types of community assets are most important to you. ***(Check the corresponding box for each asset)***

Community Assets	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Elder-care facilities	X	☐	☐	☐	☐
Schools (K-12)	☐	☐	X	☐	☐
Hospitals	X	☐	☐	☐	☐
Major bridges	X	☐	☐	☐	☐
Fire/Police	X	☐	☐	☐	☐
Community Assets (cont.)	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Museums/Historic Buildings	☐	☐	X	☐	☐
Small Businesses	X	☐	☐	☐	☐
City Hall	X	☐	☐	☐	☐
Courthouse	X	☐	☐	☐	☐
Parks	☐	☐	X	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐

11. A number of activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory. ***(Please check the box that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters)***

Community-Wide Strategies	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Not Sure
I support a regulatory approach to reducing risk	☐	☐	☐	X	☐	☐
I support a non-regulatory approach to reducing risk	X	☐	☐	☐	☐	☐
I support a mix of both regulatory and non-regulatory approaches to reducing risk	☐	☐	X	☐	☐	☐
I support policies to prohibit development in areas subject to natural hazards	☐	☐	☐	X	☐	☐
I support the use of tax dollars (federal and/or local)	☐	☐	☐	X	☐	☐

to compensate landowners for not developing in areas subject to natural hazards						
I support the use of local tax dollars to reduce risks and losses from natural disasters	☐	X	☐	☐	☐	☐
I support protecting historical and cultural structures	☐	☐	X	☐	☐	☐
I would be willing to make my home more disaster resilient	☐	X	☐	☐	☐	☐
I support steps to safeguard the local economy following a disaster event	X	☐	☐	☐	☐	☐
I support improving the disaster preparedness of local schools	☐	☐	X	☐	☐	☐
I support a local inventory of at-risk buildings and infrastructure	☐	☐	X	☐	☐	☐
I support the disclosure of natural hazard risks during real estate transactions	X	☐	☐	☐	☐	☐

12. Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for natural hazards in your county. ***(Please tell us how important each one is to you)***

Statements	Very important	somewhat important	Neutral	Not very Important	Not Important
Protecting private property	X	☐	☐	☐	☐
Protecting critical facilities (transportation networks, hospitals, fire stations)	X	☐	☐	☐	☐
Preventing development in hazard prone areas	☐	☐	X	☐	☐
Enhancing the function of natural features (e.g., streams, wetlands)	☐	☐	☐	X	☐
Protecting historical and cultural landmarks	☐	☐	☐	X	☐
Protecting and reducing damage to utilities	X	☐	☐	☐	☐
Strengthening emergency services (e.g., police, fire, ambulance)	X	☐	☐	☐	☐
Disclosing natural hazard risks during real estate transactions	X	☐	☐	☐	☐
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	X	☐	☐	☐	☐

Mitigation and Preparedness Activities in Your Household

Households can mitigate and prepare for natural hazards in order to prevent damage to property, injuries, and loss of life. The precautions you take and training you receive can make a big difference in your ability to recover from a natural disaster or emergency. Access to basic services, such as electricity, gas, water, telephones, and emergency care may be cut off temporarily, or you may have to evacuate at a moment's notice. The following questions focus on your household's preparedness for disaster events.

13. In the following, please check those activities that you have done in your household, plan to doin the near future, have not done, or are unable to do. ***(Please check one answer for each preparedness activity)***

In your household, have you or someone in your household:	Have done	Plan to do	Not done	Unable to do
Attended meeting or received written information on natural disasters or emergency preparedness?	X	☐	☐	☐
Talked with members in your household about what to do in case of a natural	X	☐	☐	☐

disaster or emergency?				
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	X	☐	☐	☐
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, or other emergency supplies)?	X	☐	☐	☐
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?	☐	☐	X	☐
Prepared your home by having smoke detectors on each level of the house?	X	☐	☐	☐
Discussed or created a utility shutoff procedure in the event of a natural disaster?	X	☐	☐	☐

General Household Information

Finally, we would appreciate any information you are willing to share with us about you and your household. This information will remain confidential and is for survey comparison purposes only.

14. Gender:

    ☐Male

    xFemale

15. Please indicate your level of education:

    ☐Highschool graduate/GED

    xSome college/trade school

    ☐College degree

    ☐Postgraduate degree

    ☐Other (Please specify): _____

16. What is your total household income?

    ☐Less than $10,000

    ☐$10,000-$29,999

    ☐$30,000-$59,999

    ☐$60,000-$79,999

    ☐$80,000-$99,999

    x$100,000-$149,999

☐More than $150,000

17. Zip Code (optional): 65236

18. Please specify your race:

☐American Indian or Alaska Native

☐Asian

☐Black or African American

☐Native Hawaiian or Other Pacific Islander

xWhite

19. Please specify your ethnicity:

☐Hispanic or Latino

xNot Hispanic or Latino

20. How long have you lived in Chariton County?

☐Less than one year

☐1-5 years

☐5-9 years

☐10-19 years

x20 years or more

21. Do you own or rent your home?

xOwn

☐Rent

22. Please feel free to provide any additional comments in the space provided:
Click or tap here to enter text.

Hazard Questionnaire

Chariton County is currently preparing a Hazard Mitigation Plan. The questionnaire should be completed by an adult. The information you provide will be used to help improve public/private coordination, mitigation, and risk reduction efforts in your county. The survey should take less than 30 minutes to complete. This is a public opinion survey. The results will inform local natural hazard mitigation planning. Your returned, completed survey indicates your willingness to take part in the study. Participation in this study is voluntary and anonymous. None of the information you provide will be attributed to you directly. Thank you for your time.

Natural Hazard Information

First, we would like to know about your experiences with natural hazards.

1. During the past five years, in the county you currently reside in, have you or someone in your household directly experienced a natural disaster such as an earthquake, severe windstorm, flood, wildfire, or other type of natural disaster?
   - ☐ Yes
   - ☒ No

   If "YES". Which of these natural disasters have you or someone in your household experienced in the past five years? ***(Please check all that apply)***

   - ☐ Dam Failure
   - ☐ Drought
   - ☐ Earthquake
   - ☐ Flood
   - ☐ Extreme Temperature (hot & cold)
   - ☐ Wildfire
   - ☐ Thunderstorm/Severe Storm
   - ☐ Severe Winter Storm
   - ☐ Tornado
   - ☐ Other (specify): _____

2. How concerned are you about the following natural disasters affecting your county? ***(Check the corresponding box for each hazard)***

Natural Disaster	Very concerned	Somewhat concerned	Neutral	Not very concerned	Not concerned
Dam Failure					X
Drought	X				
Earthquake				X	
Extreme Temperatures	X				
Flood	X				
Wildfire				X	
Thunderstorm/Severe Storm	X				
Severe Winter Storm			X		
Tornado	X				
Other: levee failure	X				

3. Have you ever received information about how to make members of your household and your home safer from natural disasters?

- ☐ Yes
- ☑ No ***(if NO Skep to Question 5)***

If "YES", how recently?

- ☐ Within the last 6 months
- ☐ Between 6 and 12 months
- ☐ Between 1 and 2 years
- ☐ Between 2 and 5 years
- ☐ 5 years or more

4. From whom did you **last** receive information about how to make members of your household and your home safer from natural disasters? ***(Please check only one)***

- ☐ News Media
- ☐ Government Agency
- ☐ Insurance agent or company
- ☐ Utility company
- ☐ University or research institution
- ☐ Neighbor/friend/family member
- ☐ Elected official
- ☐ American Red Cross
- ☐ Other non-profit organization
- ☐ Social media (e.g., Facebook)
- ☐ Not sure
- ☐ Other: _____

5. Whom would you <u>most trust</u> to provide you with information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

- ☐ New media
- ☐ Government agency
- ☐ Insurance agent or company
- ☒ Utility company
- ☒ University or research institution
- ☐ Neighbor/friend/family member
- ☐ Elected official
- ☒ American Red Cross
- ☐ Other non-profit organization
- ☐ Social media (e.g., Facebook)
- ☐ Not sure
- ☐ Other: _____

6. What is the <u>most effective</u> way for you to receive information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

Newspapers:

- ☐ Newspaper stories
- ☐ Newspaper ads

Television

- ☐ Television news
- ☐ Television ads

Radio:

- ☐ Radio news
- ☐ Radio ads

Internet:

- ☒ Email newsletters
- ☐ Online news outlets
- ☒ Social media (e.g., Facebook)

Other methods:

- ☐ Schools
- ☐ Outdoor advertisements (billboards, etc.)
- ☐ Books
- ☒ Mail
- ☐ Fire Department/Rescue Fact sheet/brochure
- ☐ Chamber of Commerce
- ☐ Public workshops/meetings
- ☐ Magazine
- ☐ University or research
- ☐ Other: _____

7. Prior to receiving this survey, were you aware of your county's Hazard Mitigation Plan (HMP)?
   - [X] Yes
   - [ ] No
8. Prior to receiving this survey, were you aware that the Federal Emergency Management Agency (FEMA) requires your county to update the HMP every five years in order for your county to eligible for federal pre- and post-disaster hazard mitigation funds?
   - [ ] Yes
   - [X] No

Community Vulnerabilities and Hazard Mitigation Strategies

In order to assess community risk, we need to understand which community assets may be vulnerable to natural hazards in the region. Vulnerable assets are those community features, economic components, environmental resources, etc.). The next set of questions will focus on vulnerable assets in your community and your preferred strategies to mitigate risk to those assets.

9. Community assets are features, characteristics, or resources that either make a community unique or allow the community to function. In your opinion, which of the following *categories* are most susceptible to the impacts caused by natural hazards in your county? ***(Please rank the community assets in order of vulnerability, 1 being MOST vulnerable and 6 being LEAST vulnerable)***

Community Assets	**Potential Natural Hazard Impact**	**Order of Vulnerability**
Human	Loss of life and/or injuries	1
Economic	Business closures and/or job losses	2
Infrastructure	Damage or loss of bridges/ utilities, schools, etc.	4
Cultural/Historic	Damage or loss of libraries, museums, fairgrounds, etc.	6
Environmental	Damage or loss of forests, rangeland, waterways, etc.	5
Governance	Ability to maintain order and/or provide public amenities and services	3

10. Next, we would like to know what specific types of community assets are most important to you. ***(Check the corresponding box for each asset)***

Community Assets	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Elder-care facilities	X				
Schools (K-12)	X				
Hospitals			X		
Major bridges	X				
Fire/Police	X				
Community Assets (cont.)	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**

Museums/Historic Buildings	X				
Small Businesses	X				
City Hall	X				
Courthouse			X		
Parks	X				
Other: CAMPING RIVERSIDE	X				
Other: BOAT ACCESS	X				
Other: TOURISM	X				
Other:					
Other:					

11. A number of activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory. ***(Please check the box that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters)***

Community-Wide Strategies	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Not Sure
I support a regulatory approach to reducing risk				X		
I support a non-regulatory approach to reducing risk	X					
I support a mix of both regulatory and non-regulatory approaches to reducing risk			X			
I support policies to prohibit development in areas subject to natural hazards	X					
I support the use of tax dollars (federal and/or local) to compensate landowners for not developing in areas subject to natural hazards						X
I support the use of local tax dollars to reduce risks and losses from natural disasters	X					
I support protecting historical and cultural structures	X					
I would be willing to make my home more disaster resilient	X					
I support steps to safeguard the local economy following a disaster event	X					
I support improving the disaster preparedness of local schools	X					
I support a local inventory of at-risk buildings and infrastructure	X					
I support the disclosure of natural hazard risks during real estate transactions	X					

12. Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for natural hazards in your county. ***(Please tell us how important each one is to you)***

Statements	Very important	somewhat important	Neutral	Not very Important	Not Important
Protecting private property	X				
Protecting critical facilities (transportation networks, hospitals, fire stations)	X				
Preventing development in hazard prone areas	X				
Enhancing the function of natural features (e.g., streams, wetlands)	X				
Protecting historical and cultural landmarks	X				
Protecting and reducing damage to utilities	X				
Strengthening emergency services (e.g., police, fire, ambulance)	X				
Disclosing natural hazard risks during real estate transactions	X				
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	X				

Mitigation and Preparedness Activities in Your Household

Households can mitigate and prepare for natural hazards in order to prevent damage to property, injuries, and loss of life. The precautions you take and training you receive can make a big difference in your ability to recover from a natural disaster or emergency. Access to basic services, such as electricity, gas, water, telephones, and emergency care may be cut off temporarily, or you may have to evacuate at a moment's notice. The following questions focus on your household's preparedness for disaster events.

13. In the following, please check those activities that you <u>have done</u> in your household, <u>plan to do</u> in the near future, <u>have not done</u>, or are <u>unable to do</u>. ***(Please check one answer for each preparedness activity)***

In your household, have you or someone in your household:	Have done	Plan to do	Not done	Unable to do
Attended meeting or received written information on natural disasters or emergency preparedness?	X			
Talked with members in your household about what to do in case of a natural disaster or emergency?	X			
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?		X		
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, or other emergency supplies)?	X			
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?			X	
Prepared your home by having smoke detectors on each level of the house?	X			
Discussed or created a utility shutoff procedure in the event of a natural disaster?			X	

General Household Information

Finally, we would appreciate any information you are willing to share with us about you and your household. This information will remain confidential and is for survey comparison purposes only.

14. Gender:
    - ☐ Male
    - ☒ Female

15. Please indicate your level of education:
    - ☐ Highschool graduate/GED
    - ☒ Some college/trade school
    - ☐ College degree
    - ☐ Postgraduate degree
    - ☐ Other (Please specify): _____

16. What is your total household income?
    - ☐ Less than $10,000
    - ☐ $10,000-$29,999
    - ☐ $30,000-$59,999
    - ☒ $60,000-$79,999
    - ☐ $80,000-$99,999
    - ☐ $100,000-$149,999
    - ☐ More than $150,000

17. Zip Code (optional): 65236

18. Please specify your race:
    - ☐ American Indian or Alaska Native
    - ☐ Asian

Hazard Questionnaire

Chariton County is currently preparing a Hazard Mitigation Plan. The questionnaire should be completed by an adult. The information you provide will be used to help improve public/private coordination, mitigation, and risk reduction efforts in your county. The survey should take less than 30 minutes to complete. This is a public opinion survey. The results will inform local natural hazard mitigation planning. Your returned, completed survey indicates your willingness to take part in the study. Participation in this study is voluntary and anonymous. None of the information you provide will be attributed to you directly. Thank you for your time.

Natural Hazard Information

First, we would like to know about your experiences with natural hazards.

1. During the past five years, in the county you currently reside in, have you or someone in your household directly experienced a natural disaster such as an earthquake, severe windstorm, flood, wildfire, or other type of natural disaster?

   ☒Yes

   ☐No

   If "YES". Which of these natural disasters have you or someone in your household experienced in the past five years? ***(Please check all that apply)***

   ☐Dam Failure

   ☒Drought

   ☐Earthquake

   ☒Flood

   ☐Extreme Temperature (hot & cold)

   ☐Wildfire

   ☐Thunderstorm/Severe Storm

   ☐Severe Winter Storm

   ☐Tornado

   ☐Other (specify):

   Click or tap here to enter text.

2. How concerned are you about the following natural disasters affecting your county? ***(Check the corresponding box for each hazard)***

Natural Disaster	Very concerned	Somewhat concerned	Neutral	Not very concerned	Not concerned
Dam Failure	☐	☐	☐	☐	☒
Drought	☐	☒	☐	☐	☐
Earthquake	☐	☐	☐	☐	☒
Extreme Temperatures	☐	☐	☒	☐	☐
Flood	☐	☒	☐	☐	☐
Wildfire	☐	☐	☐	☒	☐

Thunderstorm/Severe Storm	☐	☒	☐	☐	☐
Severe Winter Storm	☐	☒	☐	☐	☐
Tornado	☐	☒	☐	☐	☐
Other:Click or tap here to enter text.	☐	☐	☐	☐	☐
Click or tap here to enter text.	☐	☐	☐	☐	☐

3. Have you ever received information about how to make members of your household and your home safer from natural disasters?

   ☒Yes

   ☐No ***(if NO Skep to Question 5)***

   If "YES", how recently?

   ☒Within the last 6 months
   ☐Between 6 and 12 months
   ☐Between 1 and 2 years
   ☐Between 2 and 5 years
   ☐5 years or more

4. From whom did you **last** receive information about how to make members of your household and your home safer from natural disasters? ***(Please check only one)***

   ☒News Media
   ☐Government Agency
   ☐Insurance agent or company
   ☐Utility company
   ☐University or research institution
   ☐Neighbor/friend/family member
   ☐Elected official
   ☐American Red Cross
   ☐Other non-profit organization
   ☒Social media (e.g., Facebook)
   ☐Not sure
   ☐Other: Click or tap here to enter text.

5. Whom would you <u>most trust</u> to provide you with information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

   ☐New media
   ☐Government agency
   ☐Insurance agent or company
   ☐Utility company
   ☐University or research institution
   ☐Neighbor/friend/family member
   ☐Elected official
   ☐American Red Cross
   ☐Other non-profit organization
   ☐Social media (e.g., Facebook)
   ☒Not sure
   ☐Other: Click or tap here to enter text.

6. What is the most effective way for you to receive information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

Newspapers:
- ☒ Newspaper stories
- ☐ Newspaper ads

Television
- ☐ Television news
- ☐ Television ads

Radio:
- ☒ Radio news
- ☐ Radio ads

Internet:
- ☐ Email newsletters
- ☐ Online news outlets
- ☒ Social media (e.g., Facebook)

Other methods:
- ☒ Schools
- ☐ Outdoor advertisements (billboards, etc.)
- ☐ Books
- ☐ Mail
- ☐ Fire Department/Rescue
- ☐ Fact sheet/brochure
- ☐ Chamber of Commerce
- ☐ Public workshops/meetings
- ☐ Magazine
- ☐ University or research
- ☐ Other:

7. Prior to receiving this survey, were you aware of your county's Hazard Mitigation Plan (HMP)?

   ☒ Yes

   ☐ No

8. Prior to receiving this survey, were you aware that the Federal Emergency Management Agency (FEMA) requires your county to update the HMP every five years in order for your county to eligible for federal pre- and post-disaster hazard mitigation funds?

   ☐ Yes

   ☒ No

Community Vulnerabilities and Hazard Mitigation Strategies

In order to assess community risk, we need to understand which community assets may be vulnerable to natural hazards in the region. Vulnerable assets are those community features, economic components, environmental resources, etc.). The next set of questions will focus on vulnerable assets in your community and your preferred strategies to mitigate risk to those assets.

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Community Assets	**Potential Natural Hazard Impact**	**Order of Vulnerability**
Human	Loss of life and/or injuries	Click or tap here to enter text.
Economic	Business closures and/or job losses	Click or tap here to enter text.

Infrastructure	Damage or loss of bridges/ utilities, schools, etc.	Click or tap here to enter text.
Cultural/Historic	Damage or loss of libraries, museums, fairgrounds, etc.	Click or tap here to enter text.
Environmental	Damage or loss of forests, rangeland, waterways, etc.	Click or tap here to enter text.
Governance	Ability to maintain order and/or provide public amenities and services	Click or tap here to enter text.

10. Next, we would like to know what specific types of community assets are most important to you. ***(Check the corresponding box for each asset)***

Community Assets	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Elder-care facilities	☐	☒	☐	☐	☐
Schools (K-12)	☒	☐	☐	☐	☐
Hospitals	☒	☐	☐	☐	☐
Major bridges	☒	☐	☐	☐	☐
Fire/Police	☒	☐	☐	☐	☐
Community Assets (cont.)	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Museums/Historic Buildings	☐	☒	☐	☐	☐
Small Businesses	☒	☐	☐	☐	☐
City Hall	☐	☒	☐	☐	☐
Courthouse	☐	☒	☐	☐	☐
Parks	☐	☒	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐

11. A number of activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory. ***(Please check the box that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters)***

Community-Wide Strategies	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Not Sure
I support a regulatory approach to reducing risk	☐	☐	☐	☒	☐	☐
I support a non-regulatory approach to reducing risk	☐	☒	☐	☐	☐	☐
I support a mix of both regulatory and non-regulatory approaches to reducing risk	☐	☐	☒	☐	☐	☐

I support policies to prohibit development in areas subject to natural hazards	☐	☐	☒	☐	☐	☐
I support the use of tax dollars (federal and/or local) to compensate landowners for not developing in areas subject to natural hazards	☐	☐	☒	☐	☐	☐
I support the use of local tax dollars to reduce risks and losses from natural disasters	☐	☒	☐	☐	☐	☐
I support protecting historical and cultural structures	☐	☐	☒	☐	☐	☐
I would be willing to make my home more disaster resilient	☐	☐	☒	☐	☐	☐
I support steps to safeguard the local economy following a disaster event	☐	☒	☐	☐	☐	☐
I support improving the disaster preparedness of local schools	☐	☒	☐	☐	☐	☐
I support a local inventory of at-risk buildings and infrastructure	☐	☐	☒	☐	☐	☐
I support the disclosure of natural hazard risks during real estate transactions	☐	☒	☐	☐	☐	☐

12. Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for natural hazards in your county. ***(Please tell us how important each one is to you)***

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Protecting private property	☒	☐	☐	☐	☐
Protecting critical facilities (transportation networks, hospitals, fire stations)	☒	☐	☐	☐	☐
Preventing development in hazard prone areas	☐	☒	☐	☐	☐
Enhancing the function of natural features (e.g., streams, wetlands)	☐	☒	☐	☐	☐
Protecting historical and cultural landmarks	☐	☒	☐	☐	☐
Protecting and reducing damage to utilities	☐	☒	☐	☐	☐
Strengthening emergency services (e.g., police, fire, ambulance)	☐	☒	☐	☐	☐
Disclosing natural hazard risks during real estate transactions	☐	☒	☐	☐	☐
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	☐	☒	☐	☐	☐

Mitigation and Preparedness Activities in Your Household

Households can mitigate and prepare for natural hazards in order to prevent damage to property, injuries, and loss of life. The precautions you take and training you receive can make a big difference in your ability to recover from a natural disaster or emergency. Access to basic services, such as electricity, gas, water, telephones, and emergency care may be cut off temporarily, or you may have to evacuate at a moment's notice. The following questions focus on your household's preparedness for disaster events.

13. In the following, please check those activities that you have done in your household, plan to do in the near future, have not done, or are unable to do. ***(Please check one answer for each preparedness activity)***

In your household, have you or someone in your household:	Have done	Plan to do	Not done	Unable to do
Attended meeting or received written information on natural disasters or emergency preparedness?	☒	☐	☐	☐
Talked with members in your household about what to do in case of a natural disaster or emergency?	☒	☐	☐	☐
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	☐	☐	☒	☐
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, or other emergency supplies)?	☐	☐	☒	☐
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?	☐	☐	☒	☐
Prepared your home by having smoke detectors on each level of the house?	☒	☐	☐	☐
Discussed or created a utility shutoff procedure in the event of a natural disaster?	☒	☐	☐	☐

General Household Information

Finally, we would appreciate any information you are willing to share with us about you and your household. This information will remain confidential and is for survey comparison purposes only.

14. Gender:

    ☒Male

    ☐Female

15. Please indicate your level of education:

    ☒Highschool graduate/GED

    ☒Some college/trade school

    ☐College degree

    ☐Postgraduate degree

    ☐Other (Please specify): _____

16. What is your total household income?

    ☐Less than $10,000

    ☐$10,000-$29,999

    ☐$30,000-$59,999

☐$60,000-$79,999

☐$80,000-$99,999

☐$100,000-$149,999

☐More than $150,000

17. Zip Code (optional):

18. Please specify your race:

☐American Indian or Alaska Native

☐Asian

☐Black or African American

☐Native Hawaiian or Other Pacific Islander

☒White

19. Please specify your ethnicity:

☐Hispanic or Latino

☒Not Hispanic or Latino

20. How long have you lived in Chariton County?

☐Less than one year

☐1-5 years

☐5-9 years

☐10-19 years

☒20 years or more

21. Do you own or rent your home?

☒Own

☐Rent

22. Please feel free to provide any additional comments in the space provided:
Click or tap here to enter text.

Hazard Questionnaire

Chariton County is currently preparing a Hazard Mitigation Plan. The questionnaire should be completed by an adult. The information you provide will be used to help improve public/private coordination, mitigation, and risk reduction efforts in your county. The survey should take less than 30 minutes to complete. This is a public opinion survey. The results will inform local natural hazard mitigation planning. Your returned, completed survey indicates your willingness to take part in the study. Participation in this study is voluntary and anonymous. None of the information you provide will be attributed to you directly. Thank you for your time.

Natural Hazard Information

First, we would like to know about your experiences with natural hazards.

1. During the past five years, in the county you currently reside in, have you or someone in your household directly experienced a natural disaster such as an earthquake, severe windstorm, flood, wildfire, or other type of natural disaster?
   - ☐ Yes
   - ☑ No

   If "YES". Which of these natural disasters have you or someone in your household experienced in the past five years? ***(Please check all that apply)***

   - ☐ Dam Failure
   - ☐ Drought
   - ☐ Earthquake
   - ☐ Flood
   - ☐ Extreme Temperature (hot & cold)
   - ☐ Wildfire
   - ☐ Thunderstorm/Severe Storm
   - ☐ Severe Winter Storm
   - ☐ Tornado
   - ☐ Other (specify): _____

2. How concerned are you about the following natural disasters affecting your county? ***(Check the corresponding box for each hazard)***

Natural Disaster	Very concerned	Somewhat concerned	Neutral	Not very concerned	Not concerned
Dam Failure					X
Drought	X				
Earthquake			X		
Extreme Temperatures	X				
Flood	X				
Wildfire				X	
Thunderstorm/Severe Storm	X				
Severe Winter Storm		X			
Tornado	X				
Other: levee failure	X				

3. Have you ever received information about how to make members of your household and your home safer from natural disasters?

- ☐ Yes
- ☑ No ***(if NO Skep to Question 5)***

If "YES", how recently?

- ☐ Within the last 6 months
- ☐ Between 6 and 12 months
- ☐ Between 1 and 2 years
- ☐ Between 2 and 5 years
- ☐ 5 years or more

4. From whom did you **last** receive information about how to make members of your household and your home safer from natural disasters? ***(Please check only one)***

- ☐ News Media
- ☐ Government Agency
- ☐ Insurance agent or company
- ☐ Utility company
- ☐ University or research institution
- ☐ Neighbor/friend/family member
- ☐ Elected official
- ☐ American Red Cross
- ☐ Other non-profit organization
- ☐ Social media (e.g., Facebook)
- ☐ Not sure
- ☐ Other: _____

5. Whom would you <u>most trust</u> to provide you with information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

- ☐ New media
- ☐ Government agency
- ☐ Insurance agent or company
- ☑ Utility company
- ☐ University or research institution
- ☑ Neighbor/friend/family member
- ☐ Elected official
- ☑ American Red Cross
- ☐ Other non-profit organization
- ☐ Social media (e.g., Facebook)
- ☐ Not sure
- ☐ Other: _____

6. What is the <u>most effective</u> way for you to receive information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

Newspapers:

- ☑ Newspaper stories
- ☑ Newspaper ads

Television

- ☐ Television news
- ☐ Television ads

Radio:

- ☐ Radio news
- ☐ Radio ads

Internet:

- ☐ Email newsletters
- ☐ Online news outlets
- ☐ Social media (e.g., Facebook)

Other methods:

- ☐ Schools
- ☐ Outdoor advertisements (billboards, etc.)
- ☐ Books
- ☐ Mail
- ☐ Fire Department/Rescue
- ☑ Fact sheet/brochure
- ☐ Chamber of Commerce
- ☐ Public workshops/meetings
- ☐ Magazine
- ☐ University or research
- ☐ Other: _____

7. Prior to receiving this survey, were you aware of your county's Hazard Mitigation Plan (HMP)?
   - ☐ Yes
   - ☑ No
8. Prior to receiving this survey, were you aware that the Federal Emergency Management Agency (FEMA) requires your county to update the HMP every five years in order for your county to eligible for federal pre- and post-disaster hazard mitigation funds?
   - ☐ Yes
   - ☑ No

Community Vulnerabilities and Hazard Mitigation Strategies

In order to assess community risk, we need to understand which community assets may be vulnerable to natural hazards in the region. Vulnerable assets are those community features, economic components, environmental resources, etc.). The next set of questions will focus on vulnerable assets in your community and your preferred strategies to mitigate risk to those assets.

9. Community assets are features, characteristics, or resources that either make a community unique or allow the community to function. In your opinion, which of the following *categories* are most susceptible to the impacts caused by natural hazards in your county? ***(Please rank the community assets in order of vulnerability, 1 being MOST vulnerable and 6 being LEAST vulnerable)***

Community Assets	**Potential Natural Hazard Impact**	**Order of Vulnerability**
Human	Loss of life and/or injuries	1
Economic	Business closures and/or job losses	3
Infrastructure	Damage or loss of bridges/ utilities, schools, etc.	5
Cultural/Historic	Damage or loss of libraries, museums, fairgrounds, etc.	2
Environmental	Damage or loss of forests, rangeland, waterways, etc.	4
Governance	Ability to maintain order and/or provide public amenities and services	6

10. Next, we would like to know what specific types of community assets are most important to you. ***(Check the corresponding box for each asset)***

Community Assets	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Elder-care facilities	✓				
Schools (K-12)	✓				
Hospitals			✓		
Major bridges	✓				
Fire/Police	✓				
Community Assets (cont.)	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**

Museums/Historic Buildings	X					
Small Businesses	X					
City Hall	X					
Courthouse				NA		
Parks				NA		
Other: homes	X					
Other:						
Other:						
Other:						
Other:						

11. A number of activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory. ***(Please check the box that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters)***

Community-Wide Strategies	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Not Sure
I support a regulatory approach to reducing risk				X		
I support a non-regulatory approach to reducing risk	X					
I support a mix of both regulatory and non-regulatory approaches to reducing risk			X			
I support policies to prohibit development in areas subject to natural hazards					X	
I support the use of tax dollars (federal and/or local) to compensate landowners for not developing in areas subject to natural hazards						X
I support the use of local tax dollars to reduce risks and losses from natural disasters	X					
I support protecting historical and cultural structures	X					
I would be willing to make my home more disaster resilient	X					
I support steps to safeguard the local economy following a disaster event	X					
I support improving the disaster preparedness of local schools	X					
I support a local inventory of at-risk buildings and infrastructure	X					
I support the disclosure of natural hazard risks during real estate transactions	X					

12. Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for natural hazards in your county. ***(Please tell us how important each one is to you)***

Statements	Very important	somewhat important	Neutral	Not very Important	Not Important
Protecting private property	X				
Protecting critical facilities (transportation networks, hospitals, fire stations)	X				
Preventing development in hazard prone areas			X		
Enhancing the function of natural features (e.g., streams, wetlands)	X				
Protecting historical and cultural landmarks	X				
Protecting and reducing damage to utilities	X				
Strengthening emergency services (e.g., police, fire, ambulance)	X				
Disclosing natural hazard risks during real estate transactions		X			
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	X				

Mitigation and Preparedness Activities in Your Household

Households can mitigate and prepare for natural hazards in order to prevent damage to property, injuries, and loss of life. The precautions you take and training you receive can make a big difference in your ability to recover from a natural disaster or emergency. Access to basic services, such as electricity, gas, water, telephones, and emergency care may be cut off temporarily, or you may have to evacuate at a moment's notice. The following questions focus on your household's preparedness for disaster events.

13. In the following, please check those activities that you <u>have done</u> in your household, <u>plan to do</u> in the near future, <u>have not done</u>, or are <u>unable to do</u>. ***(Please check one answer for each preparedness activity)***

In your household, have you or someone in your household:	Have done	Plan to do	Not done	Unable to do
Attended meeting or received written information on natural disasters or emergency preparedness?			✓	
Talked with members in your household about what to do in case of a natural disaster or emergency?	✓			
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	✓			
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, or other emergency supplies)?			✓	
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?		✓		
Prepared your home by having smoke detectors on each level of the house?	✓			
Discussed or created a utility shutoff procedure in the event of a natural disaster?	✓			

General Household Information

Finally, we would appreciate any information you are willing to share with us about you and your household. This information will remain confidential and is for survey comparison purposes only.

14. Gender:
    - ☐ Male
    - ☑ Female

15. Please indicate your level of education:
    - ☐ Highschool graduate/GED
    - ☐ Some college/trade school
    - ☐ College degree
    - ☑ Postgraduate degree
    - ☐ Other (Please specify): _____

16. What is your total household income?
    - ☐ Less than $10,000
    - ☐ $10,000-$29,999
    - ☐ $30,000-$59,999
    - ☐ $60,000-$79,999
    - ☑ $80,000-$99,999
    - ☐ $100,000-$149,999
    - ☐ More than $150,000

17. Zip Code (optional): 65236

18. Please specify your race:
    - ☐ American Indian or Alaska Native
    - ☐ Asian
    - ☐ Black or African American
    - ☐ Native Hawaiian or Other Pacific Islander
    - ☑ White

19. Please specify your ethnicity:
    - ☐ Hispanic or Latino
    - ☑ Not Hispanic or Latino

20. How long have you lived in Mercer County? Chariton
    - ☐ Less than one year
    - ☐ 1-5 years
    - ☐ 5-9 years
    - ☐ 10-19 years
    - ☑ 20 years or more

21. Do you own or rent your home?
    - ☑ Own
    - ☐ Rent

22. Please feel free to provide any additional comments in the space provided:

Hazard Questionnaire

Chariton County is currently preparing a Hazard Mitigation Plan. The questionnaire should be completed by an adult. The information you provide will be used to help improve public/private coordination, mitigation, and risk reduction efforts in your county. The survey should take less than 30 minutes to complete. This is a public opinion survey. The results will inform local natural hazard mitigation planning. Your returned, completed survey indicates your willingness to take part in the study. Participation in this study is voluntary and anonymous. None of the information you provide will be attributed to you directly. Thank you for your time.

Natural Hazard Information

First, we would like to know about your experiences with natural hazards.

1. During the past five years, in the county you currently reside in, have you or someone in your household directly experienced a natural disaster such as an earthquake, severe windstorm, flood, wildfire, or other type of natural disaster?

   ☐Yes

   ☑No

   If "YES". Which of these natural disasters have you or someone in your household experienced in the past five years? ***(Please check all that apply)***

   •

   ☐Dam Failure

   ☐Drought

   ☐Earthquake

   ☐Flood

   ☐Extreme Temperature (hot & cold)

   ☐Wildfire

   ☐Thunderstorm/Severe Storm

   ☐Severe Winter Storm

   ☐Tornado

   ☐Other (specify):

   Click or tap here to enter text.

2. How concerned are you about the following natural disasters affecting your county? ***(Check the corresponding box for each hazard)***

Natural Disaster	Very concerned	Somewhat concerned	Neutral	Not very concerned	Not concerned
Dam Failure	☐	☐	☐	☐	☑
Drought	☐	☑	☐	☐	☐
Earthquake	☐	☐	☑	☐	☐
Extreme Temperatures	☑	☐	☐	☐	☐
Flood	☑	☐	☐	☐	☐
Wildfire	☐	☐	☐	☑	☐
Thunderstorm/Severe Storm	☐	☑	☐	☐	☐
Severe Winter Storm	☐	☑	☐	☐	☐
Tornado	☑	☐	☐	☐	☐
Other:Click or tap here to enter text.	☐	☐	☐	☐	☐
Click or tap here to enter text.	☐	☐	☐	☐	☐

3. Have you ever received information about how to make members of your household and your home safer from natural disasters?

   ☐Yes
   ☑No ***(if NO Skep to Question 5)***

   If "YES", how recently?
   - ☐Within the last 6 months
   - ☐Between 6 and 12 months
   - ☐Between 1 and 2 years
   - ☐Between 2 and 5 years
   - ☐5 years or more

4. From whom did you **last** receive information about how to make members of your household and your home safer from natural disasters? ***(Please check only one)***

   •

   ☐News Media
   ☐Government Agency
   ☐Insurance agent or company
   ☐Utility company
   ☐University or research institution
   ☐Neighbor/friend/family member
   ☐Elected official
   ☐American Red Cross
   ☐Other non-profit organization
   ☐Social media (e.g., Facebook)
   ☐Not sure
   ☐Other: Click or tap here to enter text.

5. Whom would you <u>most trust</u> to provide you with information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

- ☐ New media
- ☐ Government agency
- ☑ Insurance agent or company
- ☑ Utility company
- ☐ University or research institution
- ☐ Neighbor/friend/family member
- ☐ Elected official
- ☑ American Red Cross
- ☐ Other non-profit organization
- ☐ Social media (e.g., Facebook)
- ☐ Not sure
- ☐ Other: Click or tap here to enter text.

6. What is the <u>most effective</u> way for you to receive information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

Newspapers:
- ☐ Newspaper stories
- ☐ Newspaper ads

Television
- ☐ Television news
- ☐ Television ads

Radio:
- ☐ Radio news
- ☐ Radio ads

Internet:
- ☑ Email newsletters
- ☐ Online news outlets
- ☐ Social media (e.g., Facebook)

Other methods:
- ☐ Schools
- ☐ Outdoor advertisements (billboards, etc.)
- ☐ Books
- ☐ Mail
- ☐ Fire Department/Rescue
- ☑ Fact sheet/brochure
- ☐ Chamber of Commerce
- ☐ Public workshops/meetings
- ☑ Magazine
- ☐ University or research
- ☐ Other:

7. Prior to receiving this survey, were you aware of your county's Hazard Mitigation Plan (HMP)?

☐Yes
☑No

8. Prior to receiving this survey, were you aware that the Federal Emergency Management Agency (FEMA) requires your county to update the HMP every five years in order for your county to eligible for federal pre- and post-disaster hazard mitigation funds?

☐Yes
☑No

Community Vulnerabilities and Hazard Mitigation Strategies

In order to assess community risk, we need to understand which community assets may be vulnerable to natural hazards in the region. Vulnerable assets are those community features, economic components, environmental resources, etc.). The next set of questions will focus on vulnerable assets in your community and your preferred strategies to mitigate risk to those assets.

9. Community assets are features, characteristics, or resources that either make a community unique or allow the community to function. In your opinion, which of the following *categories* are most susceptible to the impacts caused by natural hazards in your county? ***(Please rank the community assets in order of vulnerability, 1 being MOST vulnerable and 6 being LEAST vulnerable)***

Community Assets	**Potential Natural Hazard Impact**	**Order of Vulnerability**
Human	Loss of life and/or injuries	Click or tap here to enter text.
Economic	Business closures and/or job losses	Click or tap here to enter text. 2
Infrastructure	Damage or loss of bridges/ utilities, schools, etc.	Click or tap here to enter text. 4
Cultural/Historic	Damage or loss of libraries, museums, fairgrounds, etc.	Click or tap here to enter text. 5
Environmental	Damage or loss of forests, rangeland, waterways, etc.	Click or tap here to enter text. 6
Governance	Ability to maintain order and/or provide public amenities and services	Click or tap here to enter text. 1

10. Next, we would like to know what specific types of community assets are most important to you. ***(Check the corresponding box for each asset)***

Community Assets	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Elder-care facilities	☑	☐	☐	☐	☐
Schools (K-12)	☑	☐	☐	☐	☐
Hospitals	☐	☐	☑	☐	☐

Major bridges	☒	☐	☐	☐	☐
Fire/Police	☐	☒	☐	☐	☐
Community Assets (cont.)	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Museums/Historic Buildings	☒	☐	☐	☐	☐
Small Businesses	☒	☐	☐	☐	☐
City Hall	☐	☒	☐	☐	☐
Courthouse	☐	☐	☒	☐	☐
Parks	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐

11. A number of activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory. ***(Please check the box that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters)***

Community-Wide Strategies	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Not Sure
I support a regulatory approach to reducing risk	☐	☐	☑	☐	☐	☐
I support a non-regulatory approach to reducing risk	☐	☑	☐	☐	☐	☐
I support a mix of both regulatory and non-regulatory approaches to reducing risk	☑	☐	☐	☐	☐	☐
I support policies to prohibit development in areas subject to natural hazards	☐	☐	☐	☐	☑	☐
I support the use of tax dollars (federal and/or local) to compensate landowners for not developing in areas subject to natural hazards	☐	☐	☑	☐	☐	☐
I support the use of local tax dollars to reduce risks and losses from natural disasters	☐	☑	☐	☐	☐	☐
I support protecting historical and cultural structures	☑	☐	☐	☐	☐	☐
I would be willing to make my home more disaster resilient	☑	☐	☐	☐	☐	☐
I support steps to safeguard the local economy following a disaster event	☑	☐	☐	☐	☐	☐
I support improving the disaster preparedness of local schools	☑	☐	☐	☐	☐	☐
I support a local inventory of at-risk buildings and infrastructure	☑	☐	☐	☐	☐	☐
I support the disclosure of natural hazard risks during real estate transactions	☑	☐	☐	☐	☐	☐

12. Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for natural hazards in your county. ***(Please tell us how important each one is to you)***

Statements	Very important	somewhat important	Neutral	Not very important	Not important
Protecting private property	☑	☐	☐	☐	☐
Protecting critical facilities (transportation networks, hospitals, fire stations)	☑	☐	☐	☐	☐
Preventing development in hazard prone areas	☐	☐	☐	☑	☐
Enhancing the function of natural features (e.g., streams, wetlands)	☑	☐	☐	☐	☐
Protecting historical and cultural landmarks	☑	☐	☐	☐	☐
Protecting and reducing damage to utilities	☑	☐	☐	☐	☐
Strengthening emergency services (e.g., police, fire, ambulance)	☑	☐	☐	☐	☐
Disclosing natural hazard risks during real estate transactions	☑	☐	☐	☐	☐
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	☑	☐	☐	☐	☐

Mitigation and Preparedness Activities in Your Household

Households can mitigate and prepare for natural hazards in order to prevent damage to property, injuries, and loss of life. The precautions you take and training you receive can make a big difference in your ability to recover from a natural disaster or emergency. Access to basic services, such as electricity, gas, water, telephones, and emergency care may be cut off temporarily, or you may have to evacuate at a moment's notice. The following questions focus on your household's preparedness for disaster events.

13. In the following, please check those activities that you <u>have done</u> in your household, <u>plan to do</u> in the near future, <u>have not done</u>, or are <u>unable to do</u>. ***(Please check one answer for each preparedness activity)***

In your household, have you or someone in your household:	Have done	Plan to do	Not done	Unable to do
Attended meeting or received written information on natural disasters or emergency preparedness?	☐	☑	☐	☐
Talked with members in your household about what to do in case of a natural disaster or emergency?	☑	☐	☐	☐
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	☑	☐	☐	☐
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, or other emergency supplies)?	☐	☐	☑	☐
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?	☐	☐	☑	☐
Prepared your home by having smoke detectors on each level of the house?	☑	☐	☐	☐
Discussed or created a utility shutoff procedure in the event of a natural disaster?	☑	☐	☐	☐

General Household Information

Finally, we would appreciate any information you are willing to share with us about you and your household. This information will remain confidential and is for survey comparison purposes only.

14. Gender:

- ☐ Male
- ☐ Female

15. Please indicate your level of education:

- ☐ Highschool graduate/GED
- ☐ Some college/trade school
- ☐ College degree
- ☐ Postgraduate degree
- ☐ Other (Please specify): _____

16. What is your total household income?

- ☐ Less than $10,000
- ☐ $10,000-$29,999
- ☐ $30,000-$59,999
- ☐ $60,000-$79,999
- ☐ $80,000-$99,999
- ☐ $100,000-$149,999
- ☐ More than $150,000

Not Answering

17. Zip Code (optional): 65236

18. Please specify your race:

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White

19. Please specify your ethnicity:

☐Hispanic or Latino

☒Not Hispanic or Latino

20. How long have you lived in Chariton County?

☐Less than one year

☐1-5 years

☐5-9 years

☐10-19 years

☒20 years or more

21. Do you own or rent your home?

☒Own

☐Rent

22. Please feel free to provide any additional comments in the space provided:
Click or tap here to enter text.

Hazard Questionnaire

Chariton County is currently preparing a Hazard Mitigation Plan. The questionnaire should be completed by an adult. The information you provide will be used to help improve public/private coordination, mitigation, and risk reduction efforts in your county. The survey should take less than 30 minutes to complete. This is a public opinion survey. The results will inform local natural hazard mitigation planning. Your returned, completed survey indicates your willingness to take part in the study. Participation in this study is voluntary and anonymous. None of the information you provide will be attributed to you directly. Thank you for your time.

Natural Hazard Information

First, we would like to know about your experiences with natural hazards.

1. During the past five years, in the county you currently reside in, have you or someone in your household directly experienced a natural disaster such as an earthquake, severe windstorm, flood, wildfire, or other type of natural disaster?
   - ■ Yes
   - ☐ No

   If "YES". Which of these natural disasters have you or someone in your household experienced in the past five years? ***(Please check all that apply)***

   - ☐ Dam Failure
   - ☐ Drought
   - ☐ Earthquake
   - ☐ Flood
   - ☐ Extreme Temperature (hot & cold)
   - ☐ Wildfire
   - ■ Thunderstorm/Severe Storm
   - ☐ Severe Winter Storm
   - ☐ Tornado
   - ☐ Other (specify): _____

2. How concerned are you about the following natural disasters affecting your county? ***(Check the corresponding box for each hazard)***

Natural Disaster	Very concerned	Somewhat concerned	Neutral	Not very concerned	Not concerned
Dam Failure				X	
Drought		X			
Earthquake					
Extreme Temperatures		X			
Flood		X			
Wildfire					
Thunderstorm/Severe Storm		X			
Severe Winter Storm		X			
Tornado		X			
Other:					

3. Have you ever received information about how to make members of your household and your home safer from natural disasters?
   - ■ Yes
   - ☐ No ***(if NO Skep to Question 5)***

   If "YES", how recently?
   - ☐ Within the last 6 months
   - ■ Between 6 and 12 months
   - ☐ Between 1 and 2 years
   - ☐ Between 2 and 5 years
   - ☐ 5 years or more

4. From whom did you **last** receive information about how to make members of your household and your home safer from natural disasters? ***(Please check only one)***
   - ■ News Media
   - ☐ Government Agency
   - ☐ Insurance agent or company
   - ☐ Utility company
   - ☐ University or research institution
   - ☐ Neighbor/friend/family member
   - ☐ Elected official
   - ☐ American Red Cross
   - ☐ Other non-profit organization
   - ☐ Social media (e.g., Facebook)
   - ☐ Not sure
   - ☐ Other: _____

5. Whom would you <u>most trust</u> to provide you with information about how to make your household and home safer from natural disasters? ***(Please check up to three)***
   - ■ New media
   - ☐ Government agency
   - ☐ Insurance agent or company
   - ☐ Utility company
   - ☐ University or research institution
   - ☐ Neighbor/friend/family member
   - ☐ Elected official
   - ☐ American Red Cross
   - ☐ Other non-profit organization
   - ☐ Social media (e.g., Facebook)
   - ☐ Not sure
   - ☐ Other: _____

6. What is the <u>most effective</u> way for you to receive information about how to make your household and home safer from natural disasters? ***(Please check up to three)***

   Newspapers:
   - ☐ Newspaper stories
   - ☐ Newspaper ads

   Television
   - ■ Television news
   - ☐ Television ads

   Radio:
   - ☐ Radio news
   - ☐ Radio ads

   Internet:
   - ☐ Email newsletters
   - ■ Online news outlets
   - ☐ Social media (e.g., Facebook)

   Other methods:
   - ☐ Schools
   - ☐ Outdoor advertisements (billboards, etc.)
   - ☐ Books
   - ☐ Mail
   - ☐ Fire Department/Rescue
   - ☐ Fact sheet/brochure
   - ☐ Chamber of Commerce
   - ■ Public workshops/meetings
   - ☐ Magazine
   - ☐ University or research
   - ☐ Other: _____

7. Prior to receiving this survey, were you aware of your county's Hazard Mitigation Plan (HMP)?
   - ■ Yes
   - ☐ No
8. Prior to receiving this survey, were you aware that the Federal Emergency Management Agency (FEMA) requires your county to update the HMP every five years in order for your county to eligible for federal pre- and post-disaster hazard mitigation funds?
   - ■ Yes
   - ☐ No

Community Vulnerabilities and Hazard Mitigation Strategies

In order to assess community risk, we need to understand which community assets may be vulnerable to natural hazards in the region. Vulnerable assets are those community features, economic components, environmental resources, etc.). The next set of questions will focus on vulnerable assets in your community and your preferred strategies to mitigate risk to those assets.

9. Community assets are features, characteristics, or resources that either make a community unique or allow the community to function. In your opinion, which of the following *categories* are most susceptible to the impacts caused by natural hazards in your county? ***(Please rank the community assets in order of vulnerability, 1 being MOST vulnerable and 6 being LEAST vulnerable)***

Community Assets	**Potential Natural Hazard Impact**	**Order of Vulnerability**
Human	Loss of life and/or injuries	1
Economic	Business closures and/or job losses	2
Infrastructure	Damage or loss of bridges/ utilities, schools, etc.	4
Cultural/Historic	Damage or loss of libraries, museums, fairgrounds, etc.	5
Environmental	Damage or loss of forests, rangeland, waterways, etc.	6
Governance	Ability to maintain order and/or provide public amenities and services	3

10. Next, we would like to know what specific types of community assets are most important to you. ***(Check the corresponding box for each asset)***

Community Assets	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**
Elder-care facilities	✓				
Schools (K-12)	✓				
Hospitals	✓				
Major bridges		✓			
Fire/Police	✓				
Community Assets (cont.)	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not Important**

Museums/Historic Buildings	✓				
Small Businesses		✓			
City Hall	✓				
Courthouse					
Parks	✓				
Other: _____					
Other: _____					
Other: _____					
Other: _____					
Other: _____					

11. A number of activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory. ***(Please check the box that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters)***

Community-Wide Strategies	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Not Sure
I support a regulatory approach to reducing risk	✓					
I support a non-regulatory approach to reducing risk		✓				
I support a mix of both regulatory and non-regulatory approaches to reducing risk		✓				
I support policies to prohibit development in areas subject to natural hazards		✓				
I support the use of tax dollars (federal and/or local) to compensate landowners for not developing in areas subject to natural hazards		✓				
I support the use of local tax dollars to reduce risks and losses from natural disasters		✓				
I support protecting historical and cultural structures		✓				
I would be willing to make my home more disaster resilient		✓				
I support steps to safeguard the local economy following a disaster event	✓					
I support improving the disaster preparedness of local schools	✓					
I support a local inventory of at-risk buildings and infrastructure		✓				
I support the disclosure of natural hazard risks during real estate transactions	✓					

12. Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for natural hazards in your county. ***(Please tell us how important each one is to you)***

Statements	Very important	somewhat important	Neutral	Not very Important	Not Important
Protecting private property	✓				
Protecting critical facilities (transportation networks, hospitals, fire stations)	✓				
Preventing development in hazard prone areas	✓				
Enhancing the function of natural features (e.g., streams, wetlands)					
Protecting historical and cultural landmarks	✓				
Protecting and reducing damage to utilities	✓				
Strengthening emergency services (e.g., police, fire, ambulance)	✓				
Disclosing natural hazard risks during real estate transactions	✓				
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	✓				

Mitigation and Preparedness Activities in Your Household

Households can mitigate and prepare for natural hazards in order to prevent damage to property, injuries, and loss of life. The precautions you take and training you receive can make a big difference in your ability to recover from a natural disaster or emergency. Access to basic services, such as electricity, gas, water, telephones, and emergency care may be cut off temporarily, or you may have to evacuate at a moment's notice. The following questions focus on your household's preparedness for disaster events.

13. In the following, please check those activities that you <u>have done</u> in your household, <u>plan to do</u> in the near future, <u>have not done</u>, or are <u>unable to do</u>. ***(Please check one answer for each preparedness activity)***

In your household, have you or someone in your household:	Have done	Plan to do	Not done	Unable to do
Attended meeting or received written information on natural disasters or emergency preparedness?	✓			
Talked with members in your household about what to do in case of a natural disaster or emergency?	✓			
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	✓			
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, or other emergency supplies)?	✓			
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?	✓			
Prepared your home by having smoke detectors on each level of the house?	✓			
Discussed or created a utility shutoff procedure in the event of a natural disaster?	✓			

General Household Information

Finally, we would appreciate any information you are willing to share with us about you and your household. This information will remain confidential and is for survey comparison purposes only.

14. Gender:
    - [x] Male
    - [ ] Female

15. Please indicate your level of education:
    - [x] Highschool graduate/GED
    - [ ] Some college/trade school
    - [ ] College degree
    - [ ] Postgraduate degree
    - [ ] Other (Please specify): _____

16. What is your total household income?
    - [ ] Less than $10,000
    - [ ] $10,000-$29,999
    - [x] $30,000-$59,999
    - [ ] $60,000-$79,999
    - [ ] $80,000-$99,999
    - [ ] $100,000-$149,999
    - [ ] More than $150,000

17. Zip Code (optional): _____

18. Please specify your race:
    - [ ] American Indian or Alaska Native
    - [ ] Asian
    - [ ] Black or African American
    - [ ] Native Hawaiian or Other Pacific Islander
    - [x] White

19. Please specify your ethnicity:
    - [ ] Hispanic or Latino
    - [x] Not Hispanic or Latino

20. How long have you lived in Mercer County?
    - [ ] Less than one year
    - [ ] 1-5 years
    - [ ] 5-9 years
    - [ ] 10-19 years
    - [ ] 20 years or more

21. Do you own or rent your home?
    - [x] Own
    - [ ] Rent

22. Please feel free to provide any additional comments in the space provided:

Appendix D: List of Critical Facilities

Appendix E:

Adoption Resolutions

Floodplain Ordinances

Dam Inspection Report

CHARITON COUNTY, MISSOURI RESOLUTION NO. 24-12-01

A RESOLUTION OF THE CHARITON COUNTY COMMISSION ADOPTING THE CHARTION COUNTY HAZARD MITIGATION PLAN.

WHEREAS the Chariton County Commission recognizes the threat that natural hazards pose to people and property within the Chariton County; and

WHEREAS the Chariton County Commission has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Chariton County Hazard Mitigation Plan, 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 Chariton County, Missouri from the impacts of future hazards and disasters; and

WHEREAS the Chariton County Commission recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the Chariton County Commission will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by the Chariton County Commission demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY THE Chariton County Commission, in the State of Missouri, THAT:

In accordance with Section 49.650 RSMo, the Chariton County Commission adopts the final *FEMA-approved Plan.*

ADOPTED by a vote of 3 in favor and 0 against, and 0 abstaining, this 30th day of December, 2024.

Evan Emmerich, Presiding Commissioner

Jared Meyer, Eastern District Commissioner

Terry Milford, Western District Commissioner

ATTEST:

Mitzi Schuchmann, County Clerk

CITY OF SALISBURY, MISSOURI

Resolution #176

A RESOLUTION OF THE CITY OF SALISBURY ADOPTING THE CHARITON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE 2025

WHEREAS the City of Salisbury recognizes the threat that natural hazards pose to people and property within the City of Salisbury; and

WHEREAS the City of Salisbury has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Chariton County Multi-Jurisdictional Hazard Mitigation Plan Update 2025 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 City of Salisbury from the impacts of future hazards and disasters; and

WHEREAS the City of Salisbury recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the City of Salisbury will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by the City of Salisbury demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan.*

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF SALISBURY, in the State of Missouri, THAT:

In accordance with adopting resolutions, the City of Salisbury adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of 5 in favor and 0 against, and 0 abstaining, the 9th day of January, 2025.

By (Sig): Stephen J. Kacvinsky
Print name: Stephen J. Kacvinsky, Mayor

ATTEST: Courtney Cole
By (Sig.):
Print name: Courtney Cole, City Clerk

APPROVED AS TO FORM: Courtney Cole
By (Sig.):
Print name: Courtney Cole, City Clerk

Brunswick R-II School District Brunswick, Missouri Resolution

A RESOLUTION OF THE BRUNSWICK R-II SCHOOL DISTRICT ADOPTING THE

WHEREAS the Brunswick R-II School District the threat that natural hazards pose to people and property within the Brunswick R-II School District; and

WHEREAS the Brunswick R-II School District has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Chariton County Hazard Mitigation Plan, 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 *Brunswick R-II School District* from the impacts of future hazards and disasters; and

WHEREAS the Brunswick R-II School District recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the Brunswick R-II School District will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by the Brunswick R-II School District demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY THE BRUNSWICK R-II SCHOOL DISTRICT, in the State of Missouri, THAT:

In accordance with (*local rule for adopting resolutions*), the Brunswick R-II School District adopts the final *FEMA-approved Plan*.

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

By (Sig): Reggie Sims, Asst
Print name: REGGIE SIMS

ATTEST:
By (Sig.): Kimberly Kellogg
Print name: Kimberly Kellogg

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

Bill No. 02112025 Ordinance No. 02112025

A RESOLUTION OF THE CITY OF MENDON ADOPTING THE LOCAL HAZARD MITIGATION PLAN

WHEREAS the City of Mendon recognizes the threat that natural hazards pose to people and property within the City of Mendon; and

WHEREAS the City of Mendon has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Local Hazard Mitigation Plan, 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 City of Mendon from the impacts of future hazards and disasters; and

WHEREAS the City of Mendon recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the City of Mendon will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by the City of Mendon demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan.*

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF MENDON, in the State of Missouri, THAT:

In accordance, that all ordinances or parts of ordinances enacted that are in conflict herewith are hereby repealed and the City of Mendon adopts the final *FEMA-approved Plan.*

ADOPTED by a vote of 4 in favor and 0 against, and 0 abstaining, this 11th day of February, 2025.

By (Mayor): Lois Rogers
Print name: Lois Rogers

ATTEST:
By (Clerk.): Lesa Longfield
Print name: Lesa Longfield

APPROVED AS TO FORM:
By (Clerk.): Lesa Longfield
Print name: Lesa Longfield

City of Sumner, Missouri RESOLUTION NO. 2025

A RESOLUTION OF THE CITY OF SUMNER ADOPTING THE Chariton County Hazard Mitigation Plan

WHEREAS the City of Sumner recognizes the threat that natural hazards pose to people and property within the City of Sumner; and

WHEREAS the City of Sumner has participated in the preparation of a multi=-jurisdictional local hazard mitigation plan, hereby known as the Chariton County Hazard Mitigation Plan, 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 City of Sumner from the impacts of future hazards and disasters; and

WHEREAS the City of Sumner recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the City of Sumner will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by the City of Sumner demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF SUMNER, in the State of Missouri, THAT:

In accordance with Local Rules, the City of Sumner adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of All in favor and None against, and None abstaining, this 13th day of January, 2025.

By (Sig.): Brittney Dewitt

Print Name: Brittney Dewitt

ATTEST:

By (Sig.): Mary Williams, City Clerk

Print Name: Mary Williams, City Clerk

APPROVED AS TO FORM:

By (Sig.): Merri Woody

Print Name: Merri Woody

RECEIVED

JAN 21 2025

Green Hills Regional
Planning Commission

City of Brunswick, Missouri RESOLUTION NO. 25-01-01

A RESOLUTION OF THE CITY OF BRUNSWICK ADOPTING THE HAZARD MITIGATION PLAN

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

WHEREAS the City of Brunswick has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the **Chariton County Multi-jurisdictional Hazard Mitigation** Plan, 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 City of Brunswick from the impacts of future hazards and disasters; and

WHEREAS the City of Brunswick 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 City of Brunswick demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF BRUNSWICK, in the State of Missouri, THAT:

In accordance with the Disaster Mitigation Act of 2000, the City of Brunswick adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of 3 in favor and 0 against, and 0 abstaining, this 21st day of January, 2025

By (Sig): Diane Rice, Mayor
Print name: Diane Rice

ATTEST:
By (Sig.):
Print name: Sarah Clubine

RESOLUTION 2024-11-01 ADOPTING Chariton County Hazard Mitigation PLAN

City of Keytesville, Missouri, Resolution 2024-11-01.

A RESOLUTION OF THE CITY OF KEYTESVILLE ADOPTING THE HAZARD MITIGATION PLAN.

WHEREAS, the City of Keytesville recognizes the threat that natural hazards pose to people and property within the City of Keytesville; and

WHEREAS THE City of Keytesville has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Chariton County Hazard Mitigation Plan, 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 City of Keytesville from the impacts of future hazards and disasters; and

WHEREAS the City of Keytesville recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the City of Keytesville will endeavor to integrate the Plan into the comprehensive planning process; and

WHEREAS adoption by the City of Keytesville demonstrates their commitment to hazard mitigation and achieving the goals outlined in the Plan.

NOW THEREFORE, BE IT ORDAINED TY THE CITY OF KEYTESVILLE, in the State of Missouri, THAT:

In accordance with Ordinance 372, the City of Keytesville adopts the final FEMA-approved Plan.

Adopted by a vote of 4 in favor and 0 against, and 0 abstaining, this 12th, day of November, 2024.

Julia McKenzie, Mayor

Julia McKenzie, Mayor

ATTEST:

DeLaina Sommerfeld

DeLaina Sommerfeld, City Clerk

APPROVED AS TO FORM:

Marshall Meagher

Marshall Meagher, Mayor Pro Temp

Chapter 410. Floodplain Management

ATTACHMENTS
Attachment 1 - Flood Insurance Rate Map Panel 415
Attachment 2 - Flood Insurance Rate Map Panel 420

Article I. Statutory Authorization, Findings Of Fact, And Purposes

Section 410.010. Statutory Authorization.

[Ord. No. 15-08-02 Art. I § A, 8-13-2015]
The Legislature of the State of Missouri has, in 79.110, RSMo., delegated the responsibility to local governmental units to adopt floodplain management regulations designed to protect the health, safety, and general welfare. Therefore, the Board of Aldermen of the City of Salisbury, Missouri, ordains as follows.

Section 410.020. Findings Of Fact.

[Ord. No. 15-08-02 Art. I § B, 8-13-2015]

A. Flood Losses Resulting From Periodic Inundation. The special flood hazard areas of the City of Salisbury, Missouri, are subject to inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base; all of which adversely affect the public health, safety and general welfare.

B. General Causes Of The Flood Losses. These flood losses are caused by the cumulative effect of development in any delineated floodplain causing increases in flood heights and velocities; and the occupancy of flood hazard areas by uses vulnerable to floods, hazardous to others, inadequately elevated, or otherwise unprotected from flood damages.

Section 410.030. Statement Of Purpose.

[Ord. No. 15-08-02 Art. I § C, 8-13-2015]

A. It is the purpose of this Chapter to promote the public health, safety, and general welfare; to minimize those losses described in Section **410.020(A)**; to establish or maintain the community's eligibility for participation in the National Flood Insurance Program (NFIP), as defined in 44 CFR 59.22(a)(3); and to meet the requirements of 44 CFR 60.3(b) by applying the provisions of this Chapter to:

   1. Restrict or prohibit uses that are dangerous to health, safety, or property in times of flooding or cause undue increases in flood heights or velocities;

2. Require uses vulnerable to floods, including public facilities that serve such uses, be provided with flood protection at the time of initial construction; and

3. Protect individuals from buying lands that are unsuited for the intended development purposes due to the flood hazard.

Article II. General Provisions

Section 410.040. Lands To Which Chapter Applies.

[Ord. No. 15-08-02 Art. II § A, 8-13-2015]
This Chapter shall apply to all lands within the jurisdiction of the City of Salisbury identified as unnumbered A zones on the Flood Insurance Rate Map (FIRM), dated May 16, 2012, map panel numbers 29041C0415D and 29041C0420D, as amended, and any future revisions thereto.[1] In all areas covered by this Chapter, no development shall be permitted except through the issuance of a floodplain development permit granted by the Board of Aldermen or its duly designated representative under such safeguards and restrictions as the Board of Aldermen or the designated representative may reasonably impose for the promotion and maintenance of the general welfare, health of the inhabitants of the community, and as specifically noted in Article **IV**.

[1] *Editor's Note: Said map panels are included as attachments to this Chapter.*

Section 410.050. Floodplain Administrator.

[Ord. No. 15-08-02 Art. II § B, 8-13-2015]
The Mayor is hereby designated as the Floodplain Administrator under this Chapter.

Section 410.060. Compliance.

[Ord. No. 15-08-02 Art. II § C, 8-13-2015]
No development located within the special flood hazard areas of this community shall be located, extended, converted, or structurally altered without full compliance with the terms of this Chapter and other applicable regulations.

Section 410.070. Abrogation And Greater Restrictions.

[Ord. No. 15-08-02 Art. II § D, 8-13-2015]
It is not intended by this Chapter to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this Chapter imposes greater restrictions, the provisions of this Chapter shall prevail. All other ordinances inconsistent with this Chapter are hereby repealed to the extent of the inconsistency only.

Section 410.080. Interpretation.

[Ord. No. 15-08-02 Art. II § E, 8-13-2015]
In their interpretation and application, the provisions of this Chapter shall be held to be minimum requirements, shall be liberally construed in favor of the Governing Body, and shall not be deemed a limitation or repeal of any other powers granted by State Statutes.

Section 410.090. Warning And Disclaimer Of Liability.

[Ord. No. 15-08-02 Art. II § F, 8-13-2015]
The degree of flood protection required by this Chapter is considered reasonable for regulatory purposes and is based on engineering and scientific methods of study. Larger floods may occur on rare occasions or the flood heights may be increased by manmade or natural causes, such as ice jams and bridge openings restricted by debris. This Chapter does not imply that areas outside unnumbered A zones or land uses permitted within such areas will be free from flooding or flood damage. This Chapter shall not create a liability on the part of the City of Salisbury, any officer or employee thereof, for any flood damages that may result from reliance on this Chapter or any administrative decision lawfully made thereunder.

Article III. Administration

Section 410.100. Floodplain Development Permit (Required).

[Ord. No. 15-08-02 Art. III § A, 8-13-2015]
A floodplain development permit shall be required for all proposed construction or other development, including the placement of manufactured homes, in the areas described in Article **II**, Section **410.040**. No person, firm, corporation, or unit of government shall initiate any development or substantial improvement or cause the same to be done without first obtaining a separate floodplain development permit for each structure or other development.

Section 410.110. Designation Of Floodplain Administrator.

[Ord. No. 15-08-02 Art. III § B, 8-13-2015]
The Mayor is hereby appointed to administer and implement the provisions of this Chapter.

Section 410.120. Duties And Responsibilities Of Floodplain Administrator.

[Ord. No. 15-08-02 Art. III § C, 8-13-2015]

A. Duties of the Mayor shall include, but not be limited to:

1. Review of all applications for floodplain development permits to assure that sites are reasonably safe from flooding and that the floodplain development permit requirements of this Chapter have been satisfied;

2. Review of all applications for floodplain development permits for proposed development to assure that all necessary permits have been obtained from Federal, State, or local governmental agencies from which prior approval is required by Federal, State, or local law;

3. Review all subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding;

4. Issue floodplain development permits for all approved applications;

5. Notify adjacent communities and the Missouri State Emergency Management Agency (MO SEMA) prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA);

6. Assure that the flood-carrying capacity is not diminished and shall be maintained within the altered or relocated portion of any watercourse.

7. Where base flood elevation from other sources is utilized within unnumbered A zones:

a. Verify and maintain a record of the actual elevation (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures;

b. Verify and maintain a record of the actual elevation (in relation to mean sea level) that the new or substantially improved non-residential structures have been floodproofed;

c. When floodproofing techniques are utilized for a particular non-residential structure, the Mayor shall require certification from a registered professional engineer or architect.

Section 410.130. Application For Floodplain Development Permit.

[Ord. No. 15-08-02 Art. III § D, 8-13-2015]

A. To obtain a floodplain development permit, the applicant shall first file an application in writing on a form furnished for that purpose. Every floodplain development permit application shall:

1. Describe the land on which the proposed work is to be done by lot, block and tract, house and street address, or similar description that will readily identify and specifically locate the proposed building or work;

2. Identify and describe the work to be covered by the floodplain development permit;

3. Indicate the use or occupancy for which the proposed work is intended;

4. Indicate the assessed value of the structure and the fair market value of the improvement;

5. Identify the existing base flood elevation and the elevation of the proposed development;

6. Give such other information as reasonably may be required by the Mayor;

7. Be accompanied by plans and specifications for proposed construction; and

8. Be signed by the permittee or his or her authorized agent who may be required to submit evidence to indicate such authority.

Article IV. Provisions For Flood Hazard Reduction

Section 410.140. General Standards.

[Ord. No. 15-08-02 Art. IV § A, 8-13-2015]

A. No permit for floodplain development shall be granted for new construction, substantial improvements, and other improvements, including the placement of manufactured homes, within any unnumbered A zone unless the conditions of this Section are satisfied.

B. All areas identified as unnumbered A zones on the FIRM are subject to inundation of the one-hundred-year flood; however, the base flood elevation is not provided. Development within unnumbered A zones is subject to all provisions of this Chapter. If Flood Insurance Study data is not available, the community shall obtain, review, and reasonably utilize any base flood elevation or floodway data currently available from Federal, State, or other sources.

C. All new construction, subdivision proposals, substantial improvements, prefabricated buildings, placement of manufactured homes, and other developments shall require:

1. Design or adequate anchorage to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy;

2. Construction with materials resistant to flood damage;

3. Utilization of methods and practices that minimize flood damages;

4. All electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service facilities be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding;

5. New or replacement water supply systems and/or sanitary sewage systems be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters, and on-site waste disposal systems be located so as to avoid impairment or contamination; and

6. Subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, located within special flood hazard areas are required to assure that:

   a. All such proposals are consistent with the need to minimize flood damage;

   b. All public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage;

   c. Adequate drainage is provided so as to reduce exposure to flood hazards; and

   d. All proposals for development, including proposals for manufactured home parks and subdivisions, of five (5) acres or fifty (50) lots, whichever is lesser, include within such proposals base flood elevation data.

D. Storage, Material, And Equipment.

1. The storage or processing of materials within the special flood hazard area that are in time of flooding buoyant, flammable, explosive, or could be injurious to human, animal, or plant life is prohibited.

2. Storage of other material or equipment may be allowed if not subject to major damage by floods, if firmly anchored to prevent flotation, or if readily removable from the area within the time available after a flood warning.

E. Accessory Structures. Structures used solely for parking and limited storage purposes, not attached to any other structure on the site, of limited investment value, and not larger than four hundred (400) square feet, may be constructed at-grade and wet-floodproofed, provided there is no human habitation or occupancy of the structure; the structure is of single-wall design; a variance has been granted from the standard floodplain management requirements of this Chapter; and a floodplain development permit has been issued.

Section 410.150. Specific Standards.

[Ord. No. 15-08-02 Art. IV § B, 8-13-2015]

A. In all areas of special flood hazard, once base flood elevation data is obtained as set forth in Article **IV**, Section **410.140(B)**, the following provisions are required:

1. Residential Construction. New construction or substantial improvement of any residential structure, including manufactured homes, shall have the lowest floor, including basement, elevated to one (1) foot above the base flood level.

2. Non-Residential Construction. New construction or substantial improvement of any commercial, industrial, or other non-residential structure, including manufactured homes, shall have the lowest floor, including basement, elevated to one (1) foot above the base flood level or, together with attendant utility and sanitary facilities, be floodproofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered professional engineer or architect

shall certify that the standards of this Subsection are satisfied. Such certification shall be provided to the Floodplain Administrator as set forth in Article **III**, Section **410.120(A)(7)(c)**.

3. Require, for all new construction and substantial improvements, that fully enclosed areas below lowest floor used solely for parking of vehicles, building access, or storage in an area other than a basement and that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria:

   a. A minimum of two (2) openings having a total net area of not less than one (1) square inch for every square foot of enclosed area subject to flooding shall be provided; and

   b. The bottom of all openings shall be no higher than one (1) foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices, provided that they permit the automatic entry and exit of floodwaters.

B. In all areas of special flood hazard, once floodway data is obtained, as set forth in Article **IV**, Section **410.140(B)**, the following provisions are required:

   1. The designated floodway shall be based on the standard that the area chosen for the floodway must be designed to carry the waters of the base flood, without increasing the water surface elevation more than one (1) foot at any point; and

   2. The community shall prohibit any encroachments, including fill, new construction, substantial improvements, and other development within the designated regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

Section 410.160. Manufactured Homes.

[Ord. No. 15-08-02 Art. IV § C, 8-13-2015]

A. All manufactured homes to be placed within special flood hazard areas shall be required to be installed using methods and practices that minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors.

B. Require manufactured homes that are placed or substantially improved within unnumbered A zones on the community's FIRM on sites outside of manufactured home parks or subdivisions; in a new manufactured home park or subdivision; in an expansion to an existing manufactured home park or subdivision; or in an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as the result of a flood be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to one (1) foot above the base flood level and be securely attached to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

C. Require that manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within unnumbered A zones on the community's FIRM that are not subject to the provisions of Article **IV**, Section **410.160(B)** of this Chapter, be elevated so that either:

   1. The lowest floor of the manufactured home is one (1) foot above the base flood level; or

   2. The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade

and be securely attached to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

Section 410.170. Recreational Vehicles.

[Ord. No. 15-08-02 Art. IV § D, 8-13-2015]

A. Require that recreational vehicles placed on sites within unnumbered A zones on the community's FHBM or FIRM either:

1. Be on the site for fewer than one hundred eighty (180) consecutive days;

2. Be fully licensed and ready for highway use (NOTE: A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick-disconnect type utilities and security devices, and has no permanently attached additions.); or

3. Meet the permitting, elevation, and the anchoring requirements for manufactured homes of this Chapter.

Article V. Floodplain Management Variance Procedures

Section 410.180. Establishment Of Appeal Board.

[Ord. No. 15-08-02 Art. V § A, 8-13-2015]
The Board of Aldermen, as established by the City of Salisbury, shall hear and decide appeals and requests for variances from the floodplain management requirements of this Chapter.

Section 410.190. Responsibility Of Appeal Board.

[Ord. No. 15-08-02 Art. V § B, 8-13-2015]

A. Where an application for a floodplain development permit or request for a variance from the floodplain management regulations is denied by the Mayor, the applicant may apply for such floodplain development permit or variance directly to the Appeal Board, as defined in Article **V**, Section **410.180**.

B. The Board of Aldermen shall hear and decide appeals when it is alleged that there is an error in any requirement, decision, or determination made by the Mayor in the enforcement or administration of this Chapter.

Section 410.200. Further Appeals.

[Ord. No. 15-08-02 Art. V § C, 8-13-2015]
Any person aggrieved by the decision of the Board of Aldermen or any taxpayer may appeal such decision to the Chariton County Circuit Court as provided in 89.110, RSMo.

Section 410.210. Floodplain Management Variance Criteria.

[Ord. No. 15-08-02 Art. V § D, 8-13-2015]

A. In passing upon such applications for variances, the Board of Aldermen shall consider all technical data and evaluations, all relevant factors, standards specified in other Sections of this Chapter, and

the following criteria:

1. The danger to life and property due to flood damage;
2. The danger that materials may be swept onto other lands to the injury of others;
3. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
4. The importance of the services provided by the proposed facility to the community;
5. The necessity to the facility of a waterfront location, where applicable;
6. The availability of alternative locations, not subject to flood damage, for the proposed use;
7. The compatibility of the proposed use with existing and anticipated development;
8. The relationship of the proposed use to the comprehensive plan and floodplain management program for that area;
9. The safety of access to the property in times of flood for ordinary and emergency vehicles;
10. The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters, if applicable, expected at the site; and
11. The costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities, such as sewer, gas, electrical, and water systems; streets; and bridges.

Section 410.220. Conditions For Approving Floodplain Management Variances.

[Ord. No. 15-08-02 Art. V § E, 8-13-2015]

A. Generally, variances may be issued for new construction and substantial improvements to be erected on a lot of one-half (1/2) acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing Subsections **(B)** through **(F)** below have been fully considered. As the lot size increases beyond the one-half (1/2) acre, the technical justification required for issuing the variance increases.

B. Variances may be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places, the State Inventory of Historic Places, or local inventory of historic places upon determination, provided the proposed activity will not preclude the structure's continued historic designation.

C. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

D. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

E. Variances shall only be issued upon a showing of good and sufficient cause, a determination that failure to grant the variance would result in exceptional hardship to the applicant, and a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

F. A community shall notify the applicant in writing over the signature of a community official that the issuance of a variance to construct a structure below base flood level will result in increased premium rates for flood insurance up to amounts as high as twenty-five dollars ($25.00) for one

hundred dollars ($100.00) of insurance coverage, and such construction below the base flood level increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this Chapter.

Section 410.230. Conditions For Approving Variances For Accessory Structures.

[Ord. No. 15-08-02 Art. V § F, 8-13-2015]

A. Any variance granted for an accessory structure shall be decided individually based on a case by case analysis of the building's unique circumstances. Variances granted shall meet the following conditions as well as those criteria and conditions set forth in Article **V**, Sections **410.210** and **410.220** of this Chapter.

B. In order to minimize flood damages during the one-hundred-year flood and the threat to public health and safety, the following conditions shall be included for any variance issued for accessory structures that are constructed at-grade and wet-floodproofed.

1. Use of the accessory structures must be solely for parking and limited storage purposes in flood-prone areas only.

2. For any new or substantially damaged accessory structures, the exterior and interior building components and elements (i.e., foundation, wall framing, exterior and interior finishes, flooring, etc.) below the highest adjacent grade must be built with flood-resistant materials in accordance with Article **IV**, Section **410.140(C)(2)** of this Chapter.

3. The accessory structures must be adequately anchored to prevent flotation, collapse, or lateral movement of the structure in accordance with Article **IV**, Section **410.140(C)(1)** of this Chapter. All of the building's structural components must be capable of resisting specific flood-related forces, including hydrostatic, buoyancy, and hydrodynamic and debris impact forces.

4. Any mechanical, electrical, or other utility equipment must be located above the highest adjacent grade or floodproofed so that they are contained within a watertight, floodproofed enclosure that is capable of resisting damage during flood conditions in accordance with Article **IV**, Section **410.140(C)(4)** of this Chapter.

5. The accessory structures must meet all National Flood Insurance Program (NFIP) opening requirements. The NFIP requires that enclosure or foundation walls subject to the one-hundred-year flood contain openings that will permit the automatic entry and exit of floodwaters in accordance with the NFIP regulations.

6. Equipment, machinery, or other contents must be protected from any flood damage.

7. No disaster relief assistance under any program administered by any Federal agency shall be paid for any repair or restoration costs of the accessory structures.

8. A community shall notify the applicant in writing over the signature of a community official that the issuance of a variance to construct a structure below the highest adjacent grade will result in increased premium rates for flood insurance up to amounts as high as twenty-five dollars ($25.00) for one hundred dollars ($100.00) of insurance coverage, and such construction below the highest adjacent grade increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this Chapter.

9. Wet-floodproofing construction techniques must be reviewed and approved by the community and a registered professional engineer or architect prior to the issuance of any floodplain development permit for construction.

Article VI. Penalties For Violation

Section 410.240. Violations And Penalties.

[Ord. No. 15-08-02 Art. VI § 1, 8-13-2015]

A. Violation of the provisions of this Chapter or failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with granting of variances) shall constitute an ordinance violation. Any person who violates this Chapter or fails to comply with any of its requirements shall, upon conviction thereof, be fined not more than one hundred dollars ($100.00), and in addition, shall pay all costs and expenses involved in the case. Each day such violation continues shall be considered a separate offense.

B. Nothing herein contained shall prevent the City of Salisbury or other appropriate authority from taking such other lawful action as is necessary to prevent or remedy any violation.

Article VII. Amendments

Section 410.250. Amendments Generally.

[Ord. No. 15-08-02 Art. VII § 1, 8-13-2015]
The regulations, restrictions, and boundaries set forth in this Chapter may from time to time be amended, supplemented, changed, or appealed to reflect any and all changes in the National Flood Disaster Protection Act of 1973; provided, however, that no such action may be taken until after a public hearing in relation thereto, at which parties of interest and citizens shall have an opportunity to be heard. Notice of the time and place of such hearing shall be published in a newspaper of general circulation in the City of Salisbury. At least twenty (20) days shall elapse between the date of this publication and the public hearing. A copy of such amendments will be provided to the Region VII office of the Federal Emergency Management Agency (FEMA). The regulations of this Chapter are in compliance with the National Flood Insurance Program (NFIP) regulations.

Article VIII. Definitions

Section 410.260. Terms Defined.

[Ord. No. 15-08-02 Art. VIII § 1, 8-13-2015]
Unless specifically defined below, words or phrases used in this Chapter shall be interpreted so as to give them the same meaning they have in common usage and to give this Chapter its most reasonable application.

100-YEAR FLOOD
See "base flood."

ACCESSORY STRUCTURE
See "appurtenant structure."

ACTUARIAL RATES
See "risk premium rates."

ADMINISTRATOR
The Federal Insurance Administrator.

AGENCY
The Federal Emergency Management Agency (FEMA).

AGRICULTURAL COMMODITIES

Agricultural products and livestock.

AGRICULTURAL STRUCTURE

Any structure used exclusively in connection with the production, harvesting, storage, drying, or raising of agricultural commodities.

APPEAL

A request for review of the Floodplain Administrator's interpretation of any provision of this Chapter or a request for a variance.

APPURTENANT STRUCTURE

A structure that is on the same parcel of property as the principle structure to be insured and the use of which is incidental to the use of the principal structure.

AREA OF SPECIAL FLOOD HAZARD

The land in the floodplain within a community subject to a one percent (1%) or greater chance of flooding in any given year.

BASE FLOOD

The flood having a one percent (1%) chance of being equaled or exceeded in any given year.

BASEMENT

Any area of the structure having its floor subgrade (below ground level) on all sides.

BUILDING

See "structure."

CHIEF EXECUTIVE OFFICER or CHIEF ELECTED OFFICIAL

The official of the community who is charged with the authority to implement and administer laws, ordinances, and regulations for that community.

COMMUNITY

Any State or area or political subdivision thereof, which has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction.

DEVELOPMENT

Any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, levees, levee systems, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials.

ELEVATED BUILDING

For insurance purposes, a non-basement building which has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.

ELIGIBLE COMMUNITY or PARTICIPATING COMMUNITY

A community for which the Administrator has authorized the sale of flood insurance under the National Flood Insurance Program (NFIP).

EXISTING CONSTRUCTION

For the purposes of determining rates, structures for which the start of construction commenced before the effective date of the FIRM or before January 1, 1975, for FIRMs effective before that date. "Existing construction" may also be referred to as "existing structures."

EXISTING MANUFACTURED HOME PARK OR SUBDIVISION

A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is

completed before the effective date of the floodplain management regulations adopted by a community.

EXPANSION TO AN EXISTING MANUFACTURED HOME PARK OR SUBDIVISION

The preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

FLOOD ELEVATION DETERMINATION

A determination by the Administrator of the water surface elevations of the base flood, that is, the flood level that has a one percent (1%) or greater chance of occurrence in any given year.

FLOOD ELEVATION STUDY

An examination, evaluation and determination of flood hazards.

FLOOD INSURANCE RATE MAP (FIRM)

An official map of a community on which the Administrator has delineated both the special flood hazard areas and the risk premium zones applicable to the community.

FLOOD INSURANCE STUDY (FIS)

An examination, evaluation and determination of flood hazards, and if appropriate, corresponding water surface elevations.

FLOOD or FLOODING

A general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland and/or the unusual and rapid accumulation or runoff of surface waters from any source.

FLOODPLAIN MANAGEMENT

The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works, and floodplain management regulations.

FLOODPLAIN MANAGEMENT REGULATIONS

Zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as floodplain and grading ordinances) and other applications of police power. The term describes such State or local regulations, in any combination thereof, that provide standards for the purpose of flood damage prevention and reduction.

FLOODPLAIN or FLOOD-PRONE AREA

Any land area susceptible to being inundated by water from any source (see "flooding").

FLOODPROOFING

Any combination of structural and non-structural additions, changes, or adjustments to structures that reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, or structures and their contents.

FLOODWAY or REGULATORY FLOODWAY

The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot.

FREEBOARD

A factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood, as determined from data available from other sources, and floodway conditions, such as bridge openings and the hydrological effect of urbanization of the watershed.

FUNCTIONALLY DEPENDENT USE

A use that cannot perform its intended purpose unless it is located or carried out in close proximity to water. This term includes only docking facilities and facilities that are necessary for the loading and unloading of cargo or passengers, but does not include long-term storage or related manufacturing facilities.

HIGHEST ADJACENT GRADE

The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

HISTORIC STRUCTURE

Any structure that is:

1. Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;

2. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

3. Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or

4. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

    a. By an approved state program as determined by the Secretary of the Interior; or

    b. Directly by the Secretary of the Interior in states without approved programs.

LOWEST FLOOR

The lowest floor of the lowest enclosed area, including basement. An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access, or storage in an area other than a basement area is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable floodproofing design requirements of this Chapter.

MANUFACTURED HOME

A structure, transportable in one or more sections, that is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does not include a recreational vehicle.

MANUFACTURED HOME PARK OR SUBDIVISION

A parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale.

MAP

The Flood Hazard Boundary Map (FHBM), Flood Insurance Rate Map (FIRM), or the Flood Boundary and Floodway Map (FBFM) for a community issued by the Federal Emergency Management Agency (FEMA).

MARKET VALUE or FAIR MARKET VALUE

An estimate of what is fair, economic, just and equitable value under normal local market conditions.

MEAN SEA LEVEL

For purposes of the National Flood Insurance Program (NFIP), the National Geodetic Vertical Datum (NGVD) of 1929 or other datum to which base flood elevations shown on a community's

Flood Insurance Rate Map (FIRM) are referenced.

NEW CONSTRUCTION

For the purposes of determining insurance rates, structures for which the start of construction commenced on or after the effective date of an initial FIRM or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, "new construction" means structures for which the start of construction commenced on or after the effective date of the floodplain management regulations adopted by a community and includes any subsequent improvements to such structures.

NEW MANUFACTURED HOME PARK OR SUBDIVISION

A manufactured home park or subdivision for which the construction of facilities for servicing the lot on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of floodplain management regulations adopted by the community.

(NFIP)

The National Flood Insurance Program (NFIP).

PARTICIPATING COMMUNITY or ELIGIBLE COMMUNITY

A community in which the Administrator has authorized the sale of flood insurance.

PERSON

Includes any individual or group of individuals, corporation, partnership, association, or any other entity, including Federal, State, and local governments and agencies.

PRINCIPALLY ABOVE GROUND

At least fifty-one percent (51%) of the actual cash value of the structure, less land value, is above ground.

RECREATIONAL VEHICLE

A vehicle which is built on a single chassis, four hundred (400) square feet or less when measured at the largest horizontal projections, designed to be self-propelled or permanently towable by a light-duty truck, and designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

REMEDY A VIOLATION

To bring the structure or other development into compliance with Federal, State, or local floodplain management regulations, or if this is not possible, to reduce the impacts of its noncompliance.

REPETITIVE LOSS

Flood-related damages sustained by a structure on two (2) separate occasions during a ten-year period for which the cost of repairs at the time of each such flood event equals or exceeds twenty-five percent (25%) of the market value of the structure before the damage occurred.

RISK PREMIUM RATES

Those rates established by the Administrator pursuant to individual community studies and investigations which are undertaken to provide flood insurance in accordance with Section 1307 of the National Flood Disaster Protection Act of 1973[1] and the accepted actuarial principles. "Risk premium rates" include provisions for operating costs and allowances.

SPECIAL FLOOD HAZARD AREA

See "area of special flood hazard."

SPECIAL HAZARD AREA

An area having special flood hazards and shown on an FHBM, FIRM or FBFM as zones (unnumbered or numbered) A or AE.

START OF CONSTRUCTION

Includes substantial improvements, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvements were within one hundred eighty (180) days of the permit date. The "actual start" means either the first placement of permanent construction of a structure on a site, such as the pouring of slabs or footings, the installation of piles, the construction of columns, any work beyond the stage of excavation, or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling, the installation of streets and/or walkways, excavation for a basement, footings, piers, foundations, the erection of temporary forms, nor installation on the property of accessory structures, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the "actual start of construction" means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

STATE COORDINATING AGENCY

That agency of the state government, or other office designated by the Governor of the state or by state Statute at the request of the Administrator to assist in the implementation of the National Flood Insurance Program (NFIP) in that state.

STRUCTURE

For floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home. "Structure," for insurance purposes, means a walled and roofed building other than a gas or liquid storage tank that is principally above ground and affixed to a permanent site, as well as a manufactured home on a permanent foundation. For the latter purpose, the term includes a building while in the course of construction, alteration or repair, but does not include building materials or supplies intended for use in such construction, alteration or repair, unless such materials or supplies are within an enclosed building on the premises.

SUBSTANTIAL DAMAGE

Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed fifty percent (50%) of the market value of the structure before the damage occurred. The term includes repetitive loss buildings (see definition).

1. For the purposes of this definition, "repair" is considered to occur when the first repair or reconstruction of any wall, ceiling, floor, or other structural part of the building commences.

2. The term does not apply to:

    a. Any project for improvement of a building required to comply with existing health, sanitary, or safety code specifications which have been identified by the Code Enforcement Official and which are solely necessary to assure safe living conditions; or

    b. Any alteration of an historic structure, provided that the alteration will not preclude the structure's continued designation as an historic structure; or

    c. Any improvement to a building.

SUBSTANTIAL IMPROVEMENT

Any combination of reconstruction, alteration, or improvement to a building, taking place during a ten-year period, in which the cumulative percentage of improvement equals or exceeds fifty percent (50%) of the current market value of the building. For the purposes of this definition, an improvement occurs when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the building. This term includes structures, which have incurred repetitive loss or substantial damage, regardless of the actual repair work done. The term does not apply to:

1. Any project for improvement of a building required to comply with existing health, sanitary, or safety code specifications which have been identified by the Code Enforcement Official and

which are solely necessary to assure safe living conditions; or

2. Any alteration of an historic structure, provided that the alteration will not preclude the structure's continued designation as an historic structure; or

3. Any building that has been damaged from any source or is categorized as repetitive loss.

SUBSTANTIALLY IMPROVED EXISTING MANUFACTURED HOME PARKS OR SUBDIVISIONS

Where the repair, reconstruction, rehabilitation or improvement of the streets, utilities and pads equals or exceeds fifty percent (50%) of the value of the streets, utilities and pads before the repair, reconstruction or improvement commenced.

VARIANCE

A grant of relief by the community from the terms of a floodplain management regulation. Flood insurance requirements remain in place for any varied use or structure and cannot be varied by the community.

VIOLATION

The failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required by this Chapter is presumed to be in violation until such time as that documentation is provided.

WATER SURFACE ELEVATION

The height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929 (or other datum where specified), of floods of various magnitudes and frequencies in the floodplain.

[1] *Editor's Note: See 42 U.S.C. § 4014.*

CITY OF SALISBURY, MISSOURI

BILL NO. 15-08-02 ORDINANCE NO. 15-08-02

AN ORDINANCE ADOPTING FLOODPLAIN MANAGEMENT TERMS AND PROCEDURE

BE IT ORDAINED by the Board of Aldermen of the City of Salisbury, Missouri as follows:

FLOODPLAIN MANAGEMENT ORDINANCE
60.3(b)

ARTICLE 1 STATUTORY AUTHORIZATION, FINDINGS OF FACT, AND PURPOSES

SECTION A. STATUTORY AUTHORIZATION

The Legislature of the State of Missouri has in RSMO 79.110 delegated the responsibility to local governmental units to adopt floodplain management regulations designed to protect the health, safety, and general welfare. Therefore, the Board of Aldermen of the City of Salisbury, Missouri ordains as follows:

SECTION B. FINDINGS OF FACT

1. *Flood Losses Resulting from Periodic Inundation*

   The special flood hazard areas of the City of Salisbury, Missouri are subject to inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base; all of which adversely affect the public health, safety and general welfare.

2. *General Causes of the Flood Losses*

   These flood losses are caused by (1) the cumulative effect of development in any delineated floodplain causing increases in flood heights and velocities; and (2) the occupancy of flood hazard areas by uses vulnerable to floods, hazardous to others, inadequately elevated, or otherwise unprotected from flood damages.

SECTION C. STATEMENT OF PURPOSE

It is the purpose of this ordinance to promote the public health, safety, and general welfare; to minimize those losses described in Article 1, Section B (1); to establish or maintain the community's eligibility for participation in the National Flood Insurance Program (NFIP) as defined in 44 Code of Federal Regulations (CFR) 59.22(a)(3); and to meet the requirements of 44 CFR 60.3(b) by applying the provisions of this ordinance to:

1. restrict or prohibit uses that are dangerous to health, safety, or property in times of flooding or

cause undue increases in flood heights or velocities;

2. require uses vulnerable to floods, including public facilities that serve such uses, be provided with flood protection at the time of initial construction; and

3. protect individuals from buying lands that are unsuited for the intended development purposes due to the flood hazard.

ARTICLE 2 GENERAL PROVISIONS

SECTION A. LANDS TO WHICH ORDINANCE APPLIES

This chapter shall apply to all lands within the jurisdiction of the City of Salisbury identified on attached sheets as unnumbered A zones, on the Flood Insurance Rate Map (FIRM) dated May 16, 2012 on map panel numbers 29041C0415D and 29041C0420D as amended, and any future revisions thereto. In all areas covered by this ordinance, no development shall be permitted except through the issuance of a floodplain development permit, granted by the Board of Aldermen or its duly designated representative under such safeguards and restrictions as the Board of Aldermen or the designated representative may reasonably impose for the promotion and maintenance of the general welfare, health of the inhabitants of the community, and as specifically noted in Article 4.

SECTION B. FLOODPLAIN ADMINISTRATOR

The Mayor is hereby designated as the Floodplain Administrator under this ordinance.

SECTION C. COMPLIANCE

No development located within the special flood hazard areas of this community shall be located, extended, converted, or structurally altered without full compliance with the terms of this ordinance and other applicable regulations.

SECTION D. ABROGATION AND GREATER RESTRICTIONS

It is not intended by this ordinance to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this ordinance imposes greater restrictions, the provisions of this ordinance shall prevail. All other ordinances inconsistent with this ordinance are hereby repealed to the extent of the inconsistency only.

SECTION E. INTERPRETATION

In their interpretation and application, the provisions of this ordinance shall be held to be minimum requirements, shall be liberally construed in favor of the governing body, and shall not be deemed a limitation or repeal of any other powers granted by State statutes.

SECTION F. WARNING AND DISCLAIMER OF LIABILITY

The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on engineering and scientific methods of study. Larger floods may occur on rare occasions or the flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This ordinance does not imply that areas outside unnumbered A

zones or land uses permitted within such areas will be free from flooding or flood damage. This ordinance shall not create a liability on the part of the City of Salisbury, any officer or employee thereof, for any flood damages that may result from reliance on this ordinance or any administrative decision lawfully made thereunder.

SECTION G. SEVERABILITY

If any section, clause, provision, or portion of this ordinance is adjudged unconstitutional or invalid by a court of appropriate jurisdiction, the remainder of this ordinance shall not be affected thereby.

ARTICLE 3 ADMINISTRATION

SECTION A. FLOODPLAIN DEVELOPMENT PERMIT **(REQUIRED)**

A floodplain development permit shall be required for all proposed construction or other development, including the placement of manufactured homes, in the areas described in Article 2, Section A. No person, firm, corporation, or unit of government shall initiate any development or substantial-improvement or cause the same to be done without first obtaining a separate floodplain development permit for each structure or other development.

SECTION B. DESIGNATION OF FLOODPLAIN ADMINISTRATOR

The Mayor is hereby appointed to administer and implement the provisions of this ordinance.

SECTION C. DUTIES AND RESPONSIBILITIES OF FLOODPLAIN ADMINISTRATOR

Duties of the Mayor shall include, but not be limited to:

1. review of all applications for floodplain development permits to assure that sites are reasonably safe from flooding and that the floodplain development permit requirements of this ordinance have been satisfied;

2. review of all applications for floodplain development permits for proposed development to assure that all necessary permits have been obtained from Federal, State, or local governmental agencies from which prior approval is required by Federal, State, or local law;

3. review all subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding;

4. issue floodplain development permits for all approved applications;

5. notify adjacent communities and the Missouri State Emergency Management Agency (MO SEMA) prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA);

6. assure that the flood carrying capacity is not diminished and shall be maintained within the altered or relocated portion of any watercourse.

7. where base flood elevation from other sources is utilized within unnumbered A zones:

   a. verify and maintain a record of the actual elevation (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures;

   b. verify and maintain a record of the actual elevation (in relation to mean sea level) that the new or substantially improved non-residential structures have been floodproofed;

   c. when floodproofing techniques are utilized for a particular non-residential structure, the Mayor shall require certification from a registered professional engineer or architect.

SECTION D. APPLICATION FOR FLOODPLAIN DEVELOPMENT PERMIT

To obtain a floodplain development permit, the applicant shall first file an application in writing on a form furnished for that purpose. Every floodplain development permit application shall:

1. describe the land on which the proposed work is to be done by lot, block and tract, house and street address, or similar description that will readily identify and specifically locate the proposed building or work;

2. identify and describe the work to be covered by the floodplain development permit;

3. indicate the use or occupancy for which the proposed work is intended;

4. indicate the assessed value of the structure and the fair market value of the improvement;

5. identify the existing base flood elevation and the elevation of the proposed development;

6. give such other information as reasonably may be required by the Mayor;

7. be accompanied by plans and specifications for proposed construction; and

8. be signed by the permittee or his authorized agent who may be required to submit evidence to indicate such authority.

ARTICLE 4 PROVISIONS FOR FLOOD HAZARD REDUCTION

SECTION A. GENERAL STANDARDS

1. No permit for floodplain development shall be granted for new construction, substantial-improvements, and other improvements, including the placement of manufactured homes, within any unnumbered A zone unless the conditions of this section are satisfied.

2. All areas identified as unnumbered A zones on the FIRM are subject to inundation of the 100-year flood; however, the base flood elevation is not provided. Development within unnumbered A zones is subject to all provisions of this ordinance. If Flood Insurance Study data is not available,

the community shall obtain, review, and reasonably utilize any base flood elevation or floodway data currently available from Federal, State, or other sources.

3. All new construction, subdivision proposals, substantial-improvements, prefabricated buildings, placement of manufactured homes, and other developments shall require:

   a. design or adequate anchorage to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy;

   b. construction with materials resistant to flood damage;

   c. utilization of methods and practices that minimize flood damages;

   d. all electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service facilities be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding;

   e. new or replacement water supply systems and/or sanitary sewage systems be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters, and on-site waste disposal systems be located so as to avoid impairment or contamination; and

   f. subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, located within special flood hazard areas are required to assure that:

      (1) all such proposals are consistent with the need to minimize flood damage;

      (2) all public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage;

      (3) adequate drainage is provided so as to reduce exposure to flood hazards; and

      (4) all proposals for development, including proposals for manufactured home parks and subdivisions, of five (5) acres or fifty (50) lots, whichever is lesser, include within such proposals base flood elevation data.

4. *Storage, material, and equipment*

   a. The storage or processing of materials within the special flood hazard area that are in time of flooding buoyant, flammable, explosive, or could be injurious to human, animal, or plant life is prohibited.

   b. Storage of other material or equipment may be allowed if not subject to major damage by floods, if firmly anchored to prevent flotation, or if readily removable from the area within the time available after a flood warning.

5. *Accessory Structures*

Structures used solely for parking and limited storage purposes, not attached to any other structure on the site, of limited investment value, and not larger than 400 square feet, may be constructed at-grade and wet-floodproofed provided there is no human habitation or occupancy

of the structure; the structure is of single-wall design; a variance has been granted from the standard floodplain management requirements of this ordinance; and a floodplain development permit has been issued.

SECTION B. SPECIFIC STANDARDS

1. In all areas of special flood hazard, once **base flood elevation** data is obtained, as set forth in Article 4, Section A(2), the following provisions are required:

   a. *Residential Construction*

   New construction or substantial-improvement of any residential structure, including manufactured homes, shall have the lowest floor, including basement, elevated to one (1) foot above the base flood level.

   b. *Non-Residential Construction*

   New construction or substantial-improvement of any commercial, industrial, or other non-residential structure, including manufactured homes, shall have the lowest floor, including basement, elevated to one (1) foot above the base flood level or, together with attendant utility and sanitary facilities, be floodproofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification shall be provided to the Floodplain Administrator as set forth in Article 3, Section C(7)(c).

   c. Require, for all new construction and substantial-improvements, that fully enclosed areas below lowest floor used solely for parking of vehicles, building access, or storage in an area other than a basement and that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria:

      (1) A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided; and

      (2) the bottom of all opening shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

2. In all areas of special flood hazard, once **floodway** data is obtained, as set forth in Article 4, Section A(2), the following provisions are required:

   a. The designated floodway shall be based on the standard that the area chosen for the floodway must be designed to carry the waters of the base flood, without increasing the water surface elevation more than one foot at any point; and

   b. the community shall prohibit any encroachments, including fill, new construction,

substantial- improvements, and other development within the designated regulatory

floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in **any** increase in flood levels within the community during the occurrence of the base flood discharge.

SECTION C. MANUFACTURED HOMES

1. All manufactured homes to be placed within special flood hazard areas shall be required to be installed using methods and practices that minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors.

2. Require manufactured homes that are placed or substantially improved within unnumbered A zones on the community's FIRM on sites:

   a. outside of manufactured home park or subdivision;

   b. in a new manufactured home park or subdivision;

   c. in an expansion to and existing manufactured home park or subdivision; or

   d. in an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial-damage" as the result of a flood,

   be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to one (1) foot above the base flood level and be securely attached to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

3. Require that manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within unnumbered A zones on the community's FIRM, that are not subject to the provisions of Article 4, Section C(2) of this ordinance, be elevated so that either:

   a. the lowest floor of the manufactured home is one (1) foot above the base flood level; or

   b. the manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade and be securely attached to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

SECTION D. RECREATIONAL VEHICLES

1. Require that recreational vehicles placed on sites within unnumbered A zones on the community's FHBM or FIRM either:

   a. be on the site for fewer than 180 consecutive days,

b. be fully licensed and ready for highway use*; or

c. meet the permitting, elevation, and the anchoring requirements for manufactured homes of this ordinance.

*A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick-disconnect type utilities and security devices, and has no permanently attached additions.

ARTICLE 5 FLOODPLAIN MANAGEMENT VARIANCE PROCEDURES

SECTION A. ESTABLISHMENT OF APPEAL BOARD

The Board of Aldermen as established by the City of Salisbury shall hear and decide appeals and requests for variances from the floodplain management requirements of this ordinance.

SECTION B. RESPONSIBILITY OF APPEAL BOARD

Where an application for a floodplain development permit or request for a variance from the floodplain management regulations is denied by the Mayor the applicant may apply for such floodplain development permit or variance directly to the Appeal Board, as defined in Article 5, Section A.

The Board of Aldermen shall hear and decide appeals when it is alleged that there is an error in any requirement, decision, or determination made by the Mayor in the enforcement or administration of this ordinance.

SECTION C. FURTHER APPEALS

Any person aggrieved by the decision of the Board of Aldermen or any taxpayer may appeal such decision to the Chariton County Circuit Court as provided in RSMO 89.110.

SECTION D. FLOODPLAIN MANAGEMENT VARIANCE CRITERIA

In passing upon such applications for variances, the Board of Aldermen shall consider all technical data and evaluations, all relevant factors, standards specified in other sections of this ordinance, and the following criteria:

1. the danger to life and property due to flood damage;

2. the danger that materials may be swept onto other lands to the injury of others;

3. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;

4. the importance of the services provided by the proposed facility to the community;
5. the necessity to the facility of a waterfront location, where applicable;

6. the availability of alternative locations, not subject to flood damage, for the proposed use;

7. the compatibility of the proposed use with existing and anticipated development;

8. the relationship of the proposed use to the comprehensive plan and floodplain management program for that area;

9. the safety of access to the property in times of flood for ordinary and emergency vehicles;

10. the expected heights, velocity, duration, rate of rise and sediment transport of the flood waters, if applicable, expected at the site; and,

11. the costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems; streets; and bridges.

SECTION E. CONDITIONS FOR APPROVING FLOODPLAIN MANAGEMENT VARIANCES

1. Generally, variances may be issued for new construction and substantial-improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items 2 through 6 below have been fully considered. As the lot size increases beyond the one-half acre, the technical justification required for issuing the variance increases.

2. Variances may be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places, the State Inventory of Historic Places, or local inventory of historic places upon determination provided the proposed activity will not preclude the structure's continued historic designation.

3. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

4. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

5. Variances shall only be issued upon (a) a showing of good and sufficient cause, (b) a determination that failure to grant the variance would result in exceptional hardship to the applicant, and (c) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

6. A community shall notify the applicant in writing over the signature of a community official that (1) the issuance of a variance to construct a structure below base flood level will result in increased premium rates for flood insurance up to amounts as high as $25.00 for $100.00 of insurance coverage and (2) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this ordinance.

SECTION F. CONDITIONS FOR APPROVING VARIANCES FOR ACCESSORY STRUCTURES

Any variance granted for an accessory structure shall be decided individually based on a case by case analysis of the building's unique circumstances. Variances granted shall meet the following conditions as well as those criteria and conditions set forth in Article 5, Sections D and E of this ordinance.

In order to minimize flood damages during the 100-year flood and the threat to public health and safety, the following conditions shall be included for any variance issued for accessory structures that are constructed at-grade and wet-floodproofed.

1. Use of the accessory structures must be solely for parking and limited storage purposes in flood-prone areas only.

2. For any new or substantially damaged accessory structures, the exterior and interior building components and elements (i.e., foundation, wall framing, exterior and interior finishes, flooring, etc.) below highest adjacent grade, must be built with flood-resistant materials in accordance with Article 4, Section A (2)(b) of this ordinance.

3. The accessory structures must be adequately anchored to prevent flotation, collapse, or lateral movement of the structure in accordance with Article 4, Section A (2)(a) of this ordinance. All of the building's structural components must be capable of resisting specific flood-related forces including hydrostatic, buoyancy, and hydrodynamic and debris impact forces.

4. Any mechanical, electrical, or other utility equipment must be located above highest adjacent grade or floodproofed so that they are contained within a watertight, floodproofed enclosure that is capable of resisting damage during flood conditions in accordance with Article 4, Section A (2)(d) of this ordinance.

5. The accessory structures must meet all National Flood Insurance Program (NFIP) opening requirements. The NFIP requires that enclosure or foundation walls, subject to the 100-year flood, contain openings that will permit the automatic entry and exit of floodwaters in accordance with the NFIP regulations.

6. Equipment, machinery, or other contents must be protected from any flood damage.

7. No disaster relief assistance under any program administered by any Federal agency shall be paid for any repair or restoration costs of the accessory structures.

8. A community shall notify the applicant in writing over the signature of a community official that (1) the issuance of a variance to construct a structure below highest adjacent grade will result in increased premium rates for flood insurance up to amounts as high as $25.00 for $100.00 of insurance coverage and (2) such construction below highest adjacent grade increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this ordinance.

9. Wet-floodproofing construction techniques must be reviewed and approved by the community and registered professional engineer or architect prior to the issuance of any floodplain development permit for construction.

ARTICLE 6 PENALTIES FOR VIOLATION

Violation of the provisions of this ordinance or failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with granting of variances) shall constitute a misdemeanor. Any person who violates this ordinance or fails to comply with any of its requirements shall, upon conviction thereof, be fined not more than $ 100.00, and in addition, shall pay all costs and expenses involved in the case. Each day such violation continues shall be considered a separate offense.

Nothing herein contained shall prevent the City of Salisbury or other appropriate authority from taking such other lawful action as is necessary to prevent or remedy any violation.

ARTICLE 7 AMENDMENTS

The regulations, restrictions, and boundaries set forth in this ordinance may from time to time be amended, supplemented, changed, or appealed to reflect any and all changes in the National Flood Disaster Protection Act of 1973, provided, however, that no such action may be taken until after a public hearing in relation thereto, at which parties of interest and citizens shall have an opportunity to be heard. Notice of the time and place of such hearing shall be published in a newspaper of general circulation in the City of Salisbury. At least 20 days shall elapse between the date of this publication and the public hearing. A copy of such amendments will be provided to the Region VII office of the Federal Emergency Management Agency (FEMA). The regulations of this ordinance are in compliance with the National Flood Insurance Program (NFIP) regulations.

ARTICLE 8 DEFINITIONS

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the same meaning they have in common usage and to give this ordinance its most reasonable application.

"100-year Flood" *see "base flood."*

"Accessory Structure" means the same as *"appurtenant structure."*

"Actuarial Rates" *see "risk premium rates."*

"Administrator" means the Federal Insurance Administrator.

"Agency" means the Federal Emergency Management Agency (FEMA).

"Agricultural Commodities" means agricultural products and livestock.

"Agricultural Structure" means any structure used exclusively in connection with the production, harvesting, storage, drying, or raising of agricultural commodities.

"Appeal" means a request for review of the Floodplain Administrator's interpretation of any provision of this ordinance or a request for a variance.

"Appurtenant Structure" means a structure that is on the same parcel of property as the principle structure to be insured and the use of which is incidental to the use of the principal structure.

"Area of Special Flood Hazard" is the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year.

"Base Flood" means the flood having a one percent chance of being equaled or exceeded in any given year.

"Basement" means any area of the structure having its floor subgrade (below ground level) on all sides.

"Building" *see "structure."*

"Chief Executive Officer" or "Chief Elected Official" means the official of the community who is charged with the authority to implement and administer laws, ordinances, and regulations for that community.

"Community" means any State or area or political subdivision thereof, which has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction.

"Development" means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, levees, levee systems, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials.

"Elevated Building" means for insurance purposes, a non-basement building which has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.

"Eligible Community" or "Participating Community" means a community for which the Administrator has authorized the sale of flood insurance under the National Flood Insurance Program (NFIP).

"Existing Construction" means for the purposes of determining rates, structures for which the *"start of construction"* commenced before the effective date of the FIRM or before January 1, 1975, for FIRMs effective before that date. *"existing construction"* may also be referred to as *"existing structures."*

"Existing Manufactured Home Park or Subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the floodplain management regulations adopted by a community.

"Expansion to an Existing Manufactured Home Park or Subdivision" means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

"Flood" or "Flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland and/or (2) the unusual and rapid accumulation or runoff of surface waters from any source.

"Flood Elevation Determination" means a determination by the Administrator of the water surface elevations of the base flood, that is, the flood level that has a one percent or greater chance of

occurrence in any given year.

"Flood Elevation Study" means an examination, evaluation and determination of flood hazards.

"Flood Insurance Rate Map (FIRM)" means an official map of a community, on which the Administrator has delineated both the special flood hazard areas and the risk premium zones applicable to the community.

"Flood Insurance Study (FIS)" means an examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations.

"Floodplain" or "Flood-prone Area" means any land area susceptible to being inundated by water from any source *(see "flooding")*.

"Floodplain Management" means the operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works, and floodplain management regulations.

"Floodplain Management Regulations" means zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as floodplain and grading ordinances) and other applications of police power. The term describes such state or local regulations, in any combination thereof, that provide standards for the purpose of flood damage prevention and reduction.

"Floodproofing" means any combination of structural and nonstructural additions, changes, or adjustments to structures that reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, or structures and their contents.

"Floodway" or "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

"Freeboard" means a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. *"Freeboard"* tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway, as determined from data available from other sources, conditions, such as bridge openings and the hydrological effect of urbanization of the watershed.

"Functionally Dependent Use" means a use that cannot perform its intended purpose unless it is located or carried out in close proximity to water. This term includes only docking facilities and facilities that are necessary for the loading and unloading of cargo or passengers, but does not include long-term storage or related manufacturing facilities.

"Highest Adjacent Grade" means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

"Historic Structure" means any structure that is (a) listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (b) certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (c) individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or (d) individually listed on a local inventory of historic places in communities with historic preservation

programs that have been certified either (1) by an approved state program as determined by the Secretary of the Interior or (2) directly by the Secretary of the Interior in states without approved programs.

"Lowest Floor" means the lowest floor of the lowest enclosed area, including basement. An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access, or storage, in an area other than a basement area, is not considered a building's lowest floor, **provided** that such enclosure is not built so as to render the structure in violation of the applicable floodproofing design requirements of this ordinance.

"Manufactured Home" means a structure, transportable in one or more sections, that is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term *"manufactured home"* **does not include** a *"recreational vehicle."*

"Manufactured Home Park or Subdivision" means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

"Map" means the Flood Hazard Boundary Map (FHBM), Flood Insurance Rate Map (FIRM), or the Flood Boundary and Floodway Map (FBFM) for a community issued by the Federal Emergency Management Agency (FEMA).

"Market Value" or "Fair Market Value" means an estimate of what is fair, economic, just and equitable value under normal local market conditions.

"Mean Sea Level" means, for purposes of the National Flood Insurance Program (NFIP), the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which base flood elevations shown on a community's Flood Insurance Rate Map (FIRM) are referenced.

"New Construction" means, for the purposes of determining insurance rates, structures for which the *"start of construction"* commenced on or after the effective date of an initial FIRM or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, *"new construction"* means structures for which the *"start of construction"* commenced on or after the effective date of the floodplain management regulations adopted by a community and includes any subsequent improvements to such structures.

"New Manufactured Home Park or Subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lot on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of floodplain management regulations adopted by the community.
"(NFIP)" means the National Flood Insurance Program (NFIP).

"Participating Community" also known as an *"eligible community,"* means a community in which the Administrator has authorized the sale of flood insurance.

"Person" includes any individual or group of individuals, corporation, partnership, association, or any other entity, including Federal, State, and local governments and agencies.

"Principally Above Ground" means that at least 51 percent of the actual cash value of the structure, less land value, is above ground.

"Recreational Vehicle" means a vehicle which is (a) built on a single chassis; (b) 400 square feet or less when measured at the largest horizontal projections; (c) designed to be self-propelled or

permanently towable by a light- duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

"Remedy A Violation" means to bring the structure or other development into compliance with Federal, State, or local floodplain management regulations; or, if this is not possible, to reduce the impacts of its noncompliance.

"Repetitive Loss" means flood-related damages sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each such flood event, equals or exceeds twenty-five percent of the market value of the structure before the damage occurred.

"Risk Premium Rates" means those rates established by the Administrator pursuant to individual community studies and investigations which are undertaken to provide flood insurance in accordance with Section 1307 of the National Flood Disaster Protection Act of 1973 and the accepted actuarial principles. *"Risk premium rates"* include provisions for operating costs and allowances.

"Special Flood Hazard Area" *see "area of special flood hazard."*

"Special Hazard Area" means an area having special flood hazards and shown on an FHBM, FIRM or FBFM as zones (unnumbered or numbered) A or AE.

"Start of Construction" includes substantial-improvements, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvements were within 180 days of the permit date. The ***actual start*** means either the first placement of permanent construction of a structure on a site, such as the pouring of slabs or footings, the installation of piles, the construction of columns, any work beyond the stage of excavation, or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling, the installation of streets and/or walkways, excavation for a basement, footings, piers, foundations, the erection of temporary forms, nor installation on the property of accessory structures, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial-improvement, the ***actual start of construction*** means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

"State Coordinating Agency" means that agency of the state government, or other office designated by the governor of the state or by state statute at the request of the Administrator to assist in the implementation of the National Flood Insurance Program (NFIP) in that state.

"Structure" means, for floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home. *"Structure"* for insurance purposes, means a walled and roofed building, other than a gas or liquid storage tank, that is principally above ground and affixed to a permanent site, as well as a manufactured home on a permanent foundation. For the latter purpose, the term includes a building while in the course of construction, alteration or repair, but does not include building materials or supplies intended for use in such construction, alteration or repair, unless such materials or supplies are within an enclosed building on the premises.

"Substantial-Damage" means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred. The term includes Repetitive Loss buildings (see definition).

For the purposes of this definition, "repair" is considered to occur when the first repair or reconstruction of any wall, ceiling, floor, or other structural part of the building commences.

The term does not apply to:

a.) Any project for improvement of a building required to comply with existing health, sanitary, or safety code specifications which have been identified by the Code Enforcement Official and which are solely necessary to assure safe living conditions, or

b.) Any alteration of a "historic structure" provided that the alteration will not preclude the structure's continued designation as a "historic structure", or

c.) Any improvement to a building.

"Substantial Improvement" means any combination of reconstruction, alteration, or improvement to a building, taking place during a ten year period, in which the cumulative percentage of improvement equals or exceeds fifty percent of the current market value of the building. For the purposes of this definition, an improvement occurs when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the building. This term includes structures, which have incurred "repetitive loss" or "substantial damage", regardless of the actual repair work done.

The term does not apply to:

a.) any project for improvement of a building required to comply with existing health, sanitary, or safety code specifications which have been identified by the Code Enforcement Official and which are solely necessary to assure safe living conditions, or

b.) Any alteration of a "historic structure" provided that the alteration will not preclude the structure's continued designation as a "historic structure." Or

c.) Any building that has been damaged from any source or is categorized as repetitive loss.

"Substantially improved existing manufactured home parks or subdivisions" is where the repair, reconstruction, rehabilitation or improvement of the streets, utilities and pads equals or exceeds 50 percent of the value of the streets, utilities and pads before the repair, reconstruction or improvement commenced.

"Variance" means a grant of relief by the community from the terms of a floodplain management regulation. Flood insurance requirements remain in place for any varied use or structure and cannot be varied by the community.

"Violation" means the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required by this ordinance is presumed to be in violation until such time as that documentation is provided.

"Water Surface Elevation" means the height, in relation to the National Geodetic Vertical Datum

(NGVD) of 1929 (or other datum where specified) of floods of various magnitudes and frequencies in the floodplain.

READ TWO TIMES, PASSED AND APPROVED this 13th **day of** August **, 2015.**

Alderman voting yes Bales, Emmerich, Hubbard, Thompson, Harvey

Alderman voting no Ø

Aldermen abstaining Ø

Stephen Kacvinsky, MAYOR

Attest:
Courtney Cole, City Clerk

THIS ORDINANCE APPROVED BY THE MAYOR ON THE 13th **DAY OF** August **, 2015.**

Stephen Kacvinsky, MAYOR

Attest:
Courtney Cole, City Clerk

CERTIFICATE OF ADOPTION

The undersigned clerk for the City of Salisbury hereby certifies that the forgoing is a true and accurate copy of the Floodplain Management Ordinance for the City of Salisbury, Missouri, ADOPTED AND APPROVED by the Governing Body of Salisbury, Missouri, on the 13th day of August, 2015.

Courtney Cole, City Clerk

Place seal here.



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0415D

FIRM
FLOOD INSURANCE RATE MAP

CHARITON COUNTY, MISSOURI AND INCORPORATED AREAS

PANEL 415 OF 600
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CHARITON COUNTY	290079	0415	D
SALISBURY, CITY OF	290041	0415	D

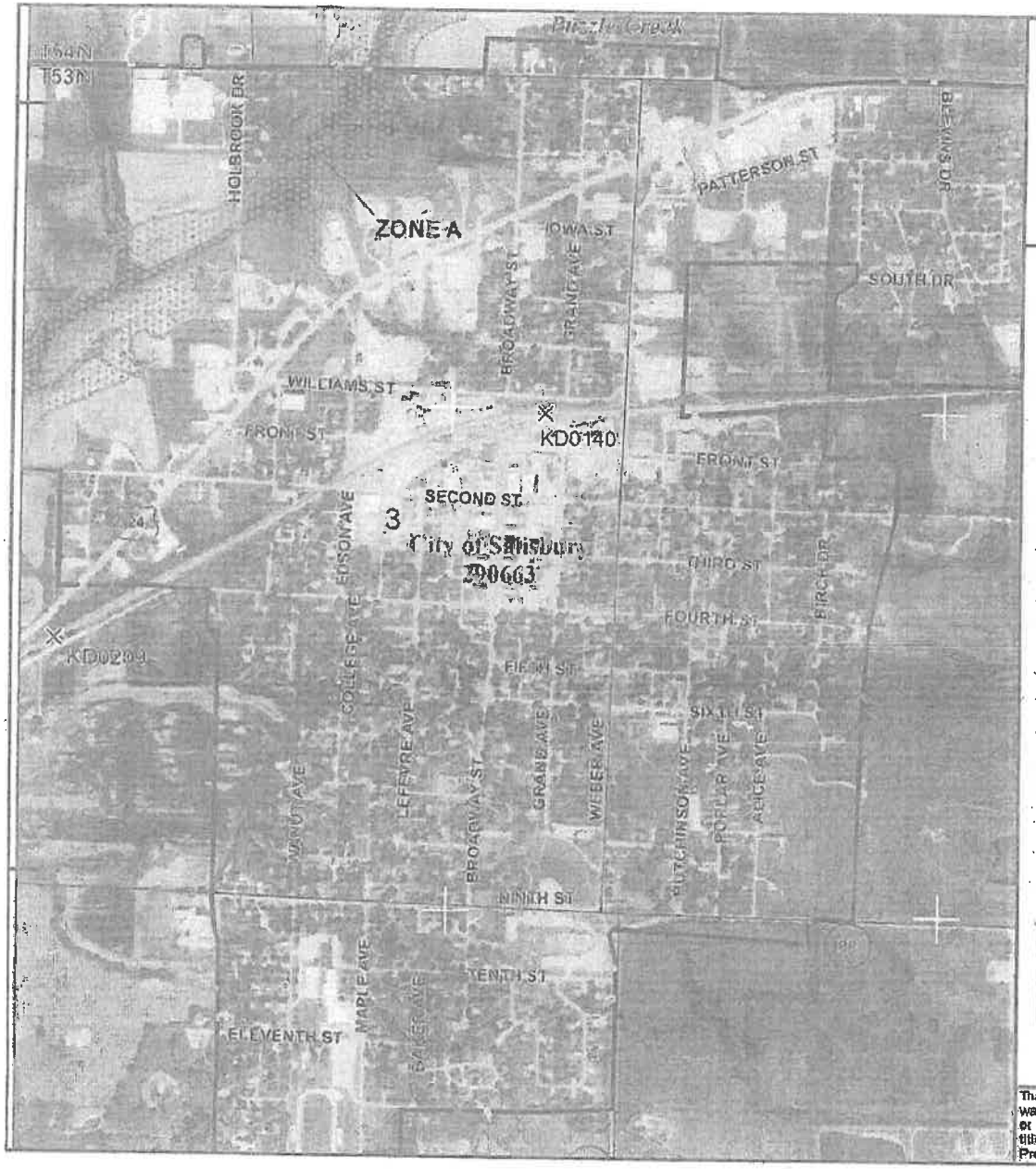
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
29041C0415D

EFFECTIVE DATE
MAY 16, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using FIRMette On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 1000'

500 0 1000 2000

FEET

PANEL 0420D

FIRM

FLOOD INSURANCE RATE MAP

CHARITON COUNTY, MISSOURI AND INCORPORATED AREAS

PANEL 420 OF 600

(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CHARITON COUNTY	290073	0420	D
SALISBURY, CITY OF	290663	0420	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

NATIONAL FLOOD INSURANCE PROGRAM

MAP NUMBER
29041C0420D

EFFECTIVE DATE
MAY 16, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

RESOLUTION 2024-11-01 ADOPTING FLOODPLAIN MANAGEMENT PLAN

City of Keytesville, Missouri, Resolution 2024-11-01.

A RESOLUTION OF THE CITY OF KEYTESVILLE ADOPTING THE FLOODPLAIN MANAGEMENT PLAN.

WHEREAS, the City of Keytesville recognizes the threat that natural hazards pose to people and property within the City of Keytesville; and

WHEREAS THE City of Keytesville has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Floodplain Management Plan, 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 City of Keytesville from the impacts of future hazards and disasters; and

WHEREAS the City of Keytesville recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the City of Keytesville will endeavor to integrate the Plan into the comprehensive planning process; and

WHEREAS adoption by the City of Keytesville demonstrates their commitment to hazard mitigation and achieving the goals outlined in the Plan.

NOW THEREFORE, BE IT ORDAINED TY THE CITY OF KEYTESVILLE, in the State of Missouri, THAT:

In accordance with Ordinance 372, the City of Keytesville adopts the final FEMA-approved Plan.

Adopted by a vote of 4 in favor and 0 against, and 0 abstaining, this 12th, day of November, 2024.

Julia McKenzie, Mayor

Julia McKenzie, Mayor

ATTEST:

DeLaina Sommerfeld

DeLaina Sommerfeld, City Clerk

APPROVED AS TO FORM:

Marshall Meagher

Marshall Meagher, Mayor Pro Temp

MODEL FLOODPLAIN MANAGEMENT ORDINANCE

60.3(d)

The following model ordinance pertains only to the special flood hazard areas in a community that participates in the Regular Program Phase of the National Flood Insurance Program (rather than the Emergency Program Phase). It has been designed to meet minimum Federal requirements as published in Title 44 of the Code of Federal Regulations.

Not all sections in this model ordinance may be applicable to a community that wishes to adopt a floodplain management ordinance. **Before adoption, this model ordinance should be thoroughly studied by community officials, planning commissions, and the community's attorney, as to its adequacy and suitability to the community's needs.** This will ensure that the community's specific floodplain management issues are governed in a reasonable manner without inflicting unnecessary hardships on people living in flood-prone areas.

This model does not prohibit development in the special flood hazard areas. It does set forth minimum performance standards for new construction or substantially improved structures. Communities may apply stricter regulations than the minimum Federal requirements. For assistance in tailoring this ordinance to meet your community's specific needs, a Community Mitigation Programs Specialist may be contacted at the following address:

DHS/FEMA Region VII, Mitigation Division
Floodplain Management & Insurance Branch
9221 Ward Parkway, Suite 300
Kansas City, MO 64114

[Article 1, Section B(3)]

d. Delineation of floodway encroachment lines within which no development is permitted that would cause any increase in flood height.

e. Delineation of flood fringe, i.e., that area outside the floodway encroachment lines, but still subject to inundation by the base flood.

SECTION C. STATEMENT OF PURPOSE

It is the purpose of this ordinance to promote the public health, safety, and general welfare; to minimize those losses described in Article 1, Section B (1); to establish or maintain the community's eligibility for participation in the National Flood Insurance Program (NFIP) as defined in 44 Code of Federal Regulations (CFR) 59.22(a)(3); and to meet the requirements of 44 CFR 60.3(d) by applying the provisions of this ordinance to:

1. restrict or prohibit uses that are dangerous to health, safety, or property in times of flooding or cause undue increases in flood heights or velocities;

2. require uses vulnerable to floods, including public facilities that serve such uses, be provided with flood protection at the time of initial construction; and

3. protect individuals from buying lands that are unsuited for the intended development purposes due to the flood hazard.

ARTICLE 2 GENERAL PROVISIONS

SECTION A. LANDS TO WHICH ORDINANCE APPLIES

This ordinance shall apply to all lands within the jurisdiction of Chariton County identified as numbered and unnumbered A zones and AE zones, on the Flood Insurance Rate Map (FIRM) on Chariton County Index Panel 29041CIND0A dated May 16, 2012 as amended, and any future revisions thereto. In all areas covered by this ordinance, no development shall be permitted except through the issuance of a floodplain development permit, granted by the County Commission or its duly designated representative under such safeguards and restrictions as the County Commission or the designated representative may reasonably impose for the promotion and maintenance of the general welfare, health of the inhabitants of the community, and as specifically noted in Article 4.

SECTION B. FLOODPLAIN ADMINISTRATOR

The Chariton County Presiding Commissioner is hereby appointed to administer and implement the provisions of this ordinance.

[Article 3 Section B]

SECTION B. DESIGNATION OF FLOODPLAIN ADMINISTRATOR

The Chariton County Presiding Commissioner is hereby appointed to administer and implement the provisions of this ordinance.

SECTION C. DUTIES AND RESPONSIBILITIES OF FLOODPLAIN ADMINISTRATOR

Duties of the floodplain administrator shall include, but not be limited to:

1. review of all applications for floodplain development permits to assure that sites are reasonably safe from flooding and that the floodplain development permit requirements of this ordinance have been satisfied;

2. review of all applications for floodplain development permits for proposed development to assure that all necessary permits have been obtained from Federal, State, or local governmental agencies from which prior approval is required by Federal, State, or local law;

3. review all subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding;

4. issue floodplain development permits for all approved applications;

5. notify adjacent communities and the Missouri State Emergency Management Agency (MO SEMA) to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA);

6. assure that the flood carrying capacity is not diminished and shall be maintained within the altered or relocated portion of any watercourse.

7. verify and maintain a record of the actual elevation (in relation to mean sea level) of the lowest floor, including basement, of all new or substantially improved structures;

8. verify and maintain a record of the actual elevation (in relation to mean sea level) that the new or substantially improved non-residential structures have been floodproofed;

9. when floodproofing techniques are utilized for a particular non-residential structure, the floodplain administrator shall require certification from a registered professional engineer or architect.

4. All new construction, subdivision proposals, substantial-improvements, prefabricated structures, placement of manufactured homes, and other developments shall require:

   a. design or adequate anchorage to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy;

   b. construction with materials resistant to flood damage;

   c. utilization of methods and practices that minimize flood damages;

   d. all electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service facilities be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding;

   e. new or replacement water supply systems and/or sanitary sewage systems be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters, and on-site waste disposal systems be located so as to avoid impairment or contamination; and

   f. subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, located within special flood hazard areas are required to assure that:

      (1) all such proposals are consistent with the need to minimize flood damage;

      (2) all public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage;

      (3) adequate drainage is provided so as to reduce exposure to flood hazards; and

      (4) all proposals for development, including proposals for manufactured home parks and subdivisions, of five (5) acres or fifty (50) lots, whichever is lesser, include within such proposals base flood elevation data.

5. *Storage, material, and equipment*

   a. The storage or processing of materials within the special flood hazard area that are in time of flooding buoyant, flammable, explosive, or could be injurious to human, animal, or plant life is prohibited.

   b. Storage of other material or equipment may be allowed if not subject to major damage by floods, if firmly anchored to prevent flotation, or if readily removable from the area within the time available after a flood warning.

c. Require, for all new construction and substantial-improvements, that fully enclosed areas below lowest floor used solely for parking of vehicles, building access, or storage in an area other than a basement and that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria:

(1) A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided; and

(2) the bottom of all opening shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

SECTION C. MANUFACTURED HOMES

1. All manufactured homes to be placed within all unnumbered and numbered A zones and AE zones, on the community's FIRM shall be required to be installed using methods and practices that minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors.

2. Require manufactured homes that are placed or substantially improved within unnumbered or numbered A zones and AE zones, on the community's FIRM on sites:

a. outside of manufactured home park or subdivision;

b. in a new manufactured home park or subdivision;

c. in an expansion to and existing manufactured home park or subdivision; or

d. in an existing manufactured home park or subdivision on which a manufactured home has incurred substantial-damage as the result of a flood,

be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely attached to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

3. Require that manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within all unnumbered and numbered A zones and AE zones, on the community's FIRM, that are not subject to the provisions of Article 4, Section C(2) of this ordinance, be elevated so that either:

a. the lowest floor of the manufactured home is to or above the base flood level; or

[Article 4, Section C (3)]

ARTICLE 5 FLOODPLAIN MANAGEMENT VARIANCE PROCEDURES

SECTION A. ESTABLISHMENT OF APPEAL BOARD

The County Commission as established by Chariton County shall hear and decide appeals and requests for variances from the floodplain management requirements of this ordinance.

SECTION B. RESPONSIBILITY OF APPEAL BOARD

When an application for a floodplain development permit or request for a variance from the floodplain management regulations is denied by the floodplain administrator, the applicant may apply for such floodplain development permit or variance directly to the appeal board, as defined in Article 5, Section A.

The appeal board shall hear and decide appeals when it is alleged that there is an error in any requirement, decision, or determination made by the floodplain administrator in the enforcement or administration of this ordinance.

SECTION C. FURTHER APPEALS

Any person aggrieved by the decision of the Chariton County Commission or any taxpayer may appeal such decision to the Circuit Court of Chariton County as provided in RSMO 49.615.

SECTION D. FLOODPLAIN MANAGEMENT VARIANCE CRITERIA

In passing upon such applications for variances, the Chariton County Commission shall consider all technical data and evaluations, all relevant factors, standards specified in other sections of this ordinance, and the following criteria:

1. the danger to life and property due to flood damage;
2. the danger that materials may be swept onto other lands to the injury of others;
3. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
4. the importance of the services provided by the proposed facility to the community;
5. the necessity to the facility of a waterfront location, where applicable;
6. the availability of alternative locations, not subject to flood damage, for the proposed use;
7. the compatibility of the proposed use with existing and anticipated development;
8. the relationship of the proposed use to the comprehensive plan and floodplain management program for that area;
9. the safety of access to the property in times of flood for ordinary and emergency vehicles;

[Article 5, Section F(1)]

1. All agricultural structures considered for a variance from the floodplain management regulations of this ordinance shall demonstrate that the varied structure is located in wide, expansive floodplain areas and no other alternate location outside of the special flood hazard area exists for the agricultural structure. Residential structures, such as farm houses, cannot be considered agricultural structures.

2. Use of the varied structures must be limited to agricultural purposes in zone A only as identified on the community's Flood Insurance Rate Map (FIRM).

3. For any new or substantially damaged agricultural structures, the exterior and interior building components and elements (i.e., foundation, wall framing, exterior and interior finishes, flooring, etc.) below the base flood elevation, must be built with flood-resistant materials in accordance with Article 4, Section A (4)(b) of this ordinance.

4. The agricultural structures must be adequately anchored to prevent flotation, collapse, or lateral movement of the structures in accordance with Article 4, Section A (4)(a) of this ordinance. All of the building's structural components must be capable of resisting specific flood-related forces including hydrostatic, buoyancy, and hydrodynamic and debris impact forces.

5. Any mechanical, electrical, or other utility equipment must be located above the base flood elevation or floodproofed so that they are contained within a watertight, floodproofed enclosure that is capable of resisting damage during flood conditions in accordance with Article 4, Section A (4)(d) of this ordinance.

6. The agricultural structures must meet all National Flood Insurance Program (NFIP) opening requirements. The NFIP requires that enclosure or foundation walls, subject to the 100-year flood, contain openings that will permit the automatic entry and exit of floodwaters in accordance with Article 4, Section B (1)(c) of this ordinance.

7. The agricultural structures must comply with the floodplain management floodway encroachment provisions of Article 4, Section D(2) of this ordinance. No variances may be issued for agricultural structures within any designated floodway, if any increase in flood levels would result during the 100-year flood.

8. Major equipment, machinery, or other contents must be protected from any flood damage.

9. No disaster relief assistance under any program administered by any Federal agency shall be paid for any repair or restoration costs of the agricultural structures.

10. A community shall notify the applicant in writing over the signature of a community official that (1) the issuance of a variance to construct a structure below base flood level will result in increased premium rates for flood insurance up to amounts as high as $25.00 for $100.00 of insurance coverage and (2) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this ordinance.

11. Wet-floodproofing construction techniques must be reviewed and approved by the community and a registered professional engineer or architect prior to the issuance of any floodplain development permit for construction.

[Article 5, Section G(10)]

10. Wet-floodproofing construction techniques must be reviewed and approved by the community and registered professional engineer or architect prior to the issuance of any floodplain development permit for construction.

ARTICLE 6 PENALTIES FOR VIOLATION

Violation of the provisions of this ordinance or failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with granting of variances) shall constitute a misdemeanor. Any person who violates this ordinance or fails to comply with any of its requirements shall, upon conviction thereof, be fined not more than $250.00, and in addition, shall pay all costs and expenses involved in the case. Each day such violation continues shall be considered a separate offense. Nothing herein contained shall prevent Chariton County or other appropriate authority from taking such other lawful action as is necessary to prevent or remedy any violation.

ARTICLE 7 AMENDMENTS

The regulations, restrictions, and boundaries set forth in this ordinance may from time to time be amended, supplemented, changed, or appealed to reflect any and all changes in the National Flood Disaster Protection Act of 1973, provided, however, that no such action may be taken until after a public hearing in relation thereto, at which parties of interest and citizens shall have an opportunity to be heard. Notice of the time and place of such hearing shall be published in a newspaper of general circulation in Chariton County. At least 20 days shall elapse between the date of this publication and the public hearing. A copy of such amendments will be provided to the Region VII office of the Federal Emergency Management Agency (FEMA). The regulations of this ordinance are in compliance with the National Flood Insurance Program (NFIP) regulations.

ARTICLE 8 DEFINITIONS

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the same meaning they have in common usage and to give this ordinance its most reasonable application.

"100-year Flood" *see "base flood."*

"Accessory Structure" means the same as *"appurtenant structure."*

"Actuarial Rates" *see "risk premium rates."*

"Administrator" means the Federal Insurance Administrator.

"Agency" means the Federal Emergency Management Agency (FEMA).

"Agricultural Commodities" means agricultural products and livestock.

"Agricultural Structure" means any structure used exclusively in connection with the production, harvesting, storage, drying, or raising of agricultural commodities.

"Appeal" means a request for review of the Floodplain Administrator's interpretation of any provision of this ordinance or a request for a variance.

"Flood Boundary and Floodway Map (FBFM)" means an official map of a community on which the Administrator has delineated both special flood hazard areas and the designated regulatory floodway.

"Flood Elevation Determination" means a determination by the Administrator of the water surface elevations of the base flood, that is, the flood level that has a one percent or greater chance of occurrence in any given year.

"Flood Elevation Study" means an examination, evaluation and determination of flood hazards.

"Flood Fringe" means the area outside the floodway encroachment lines, but still subject to inundation by the regulatory flood.

"Flood Hazard Boundary Map (FHBM)" means an official map of a community, issued by the Administrator, where the boundaries of the flood areas having special flood hazards have been designated as (unnumbered or numbered) A zones.

"Flood Insurance Rate Map (FIRM)" means an official map of a community, on which the Administrator has delineated both the special flood hazard areas and the risk premium zones applicable to the community.

"Flood Insurance Study (FIS)" means an examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations.

"Floodplain" or "Flood-prone Area" means any land area susceptible to being inundated by water from any source *(see "flooding")*.

"Floodplain Management" means the operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works, and floodplain management regulations.

"Floodplain Management Regulations" means zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as floodplain and grading ordinances) and other applications of police power. The term describes such state or local regulations, in any combination thereof, that provide standards for the purpose of flood damage prevention and reduction.

"Floodproofing" means any combination of structural and nonstructural additions, changes, or adjustments to structures that reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, or structures and their contents.

"Floodway" or "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

"Floodway Encroachment Lines" means the lines marking the limits of floodways on Federal, State and local floodplain maps.

"Freeboard" means a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. *"Freeboard"* tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as bridge openings and the hydrological effect of urbanization of the watershed.

"New Manufactured Home Park or Subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lot on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of floodplain management regulations adopted by the community.

"(NFIP)" means the National Flood Insurance Program (NFIP).

"Participating Community" also known as an *"eligible community,"* means a community in which the Administrator has authorized the sale of flood insurance.

"Person" includes any individual or group of individuals, corporation, partnership, association, or any other entity, including Federal, State, and local governments and agencies.

"Principally Above Ground" means that at least 51 percent of the actual cash value of the structure, less land value, is above ground.

"Recreational Vehicle" means a vehicle which is (a) built on a single chassis; (b) 400 square feet or less when measured at the largest horizontal projections; (c) designed to be self-propelled or permanently towable by a light- duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

"Remedy A Violation" means to bring the structure or other development into compliance with Federal, State, or local floodplain management regulations; or, if this is not possible, to reduce the impacts of its noncompliance.

"Repetitive Loss" means flood-related damages sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each such flood event, equals or exceeds twenty-five percent of the market value of the structure before the damage occurred.

"Risk Premium Rates" means those rates established by the Administrator pursuant to individual community studies and investigations which are undertaken to provide flood insurance in accordance with Section 1307 of the National Flood Disaster Protection Act of 1973 and the accepted actuarial principles. *"Risk premium rates"* include provisions for operating costs and allowances.

"Special Flood Hazard Area" *see "area of special flood hazard."*

"Special Hazard Area" means an area having special flood hazards and shown on an FHBM, FIRM or FBFM as zones (unnumbered or numbered) A and AE.

"Start of Construction" includes substantial-improvements, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvements were within 180 days of the permit date. The ***actual start*** means either the first placement of permanent construction of a structure on a site, such as the pouring of slabs or footings, the installation of piles, the construction of columns, any work beyond the stage of excavation, or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling, the installation of streets and/or walkways, excavation for a basement, footings, piers, foundations, the erection of temporary forms, nor installation on the property of accessory

"Substantial Improvement" means any combination of reconstruction, alteration, or improvement to a building, taking place during a ten year period, in which the cumulative percentage of improvement equals or exceeds fifty percent of the current market value of the building. For the purposes of this definition, an improvement occurs when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the building. This term includes structures, which have incurred "repetitive loss" or "substantial damage", regardless of the actual repair work done.

The term does not apply to:

a.) any project for improvement of a building required to comply with existing health, sanitary, or safety code specifications which have been identified by the Code Enforcement Official and which are solely necessary to assure safe living conditions, or

b.) Any alteration of a "historic structure" provided that the alteration will not preclude the structure's continued designation as a "historic structure." Or

c.) Any building that has been damaged from any source or is categorized as repetitive loss.

** Recommend development of written and adopted policy and procedure.

"Substantially improved existing manufactured home parks or subdivisions" is where the repair, reconstruction, rehabilitation or improvement of the streets, utilities and pads equals or exceeds 50 percent of the value of the streets, utilities and pads before the repair, reconstruction or improvement commenced.

"Variance" means a grant of relief by the community from the terms of a floodplain management regulation. Flood insurance requirements remain in place for any varied use or structure and cannot be varied by the community.

"Violation" means the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required by this ordinance is presumed to be in violation until such time as that documentation is provided.

"Water Surface Elevation" means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929 (or other datum where specified) of floods of various magnitudes and frequencies in the floodplain.

Ordinance # 372

FLOODPLAIN MANAGEMENT ORDINANCE
60.3(c)

ARTICLE 1 STATUTORY AUTHORIZATION, FINDINGS OF FACT, AND PURPOSES

SECTION A. STATUTORY AUTHORIZATION

The Legislature of the State of Missouri has in RSMo 79.110 delegated the responsibility to local governmental units to adopt floodplain management regulations designed to protect the health, safety, and general welfare. Therefore, the Board of Aldermen of the City of Keytesville, Missouri ordains as follows:

SECTION B. FINDINGS OF FACT

1. *Flood Losses Resulting from Periodic Inundation*

   The special flood hazard areas of the City of Keytesville, Missouri are subject to inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base; all of which adversely affect the public health, safety and general welfare.

2. *General Causes of the Flood Losses*

   These flood losses are caused by (1) the cumulative effect of development in any delineated floodplain causing increases in flood heights and velocities; and (2) the occupancy of flood hazard areas by uses vulnerable to floods, hazardous to others, inadequately elevated, or otherwise unprotected from flood damages.

3. *Methods Used To Analyze Flood Hazards*

   The Flood Insurance Study (FIS) that is the basis of this ordinance uses a standard engineering method of analyzing flood hazards which consist of a series of interrelated steps.

   a. Selection of a base flood that is based upon engineering calculations which permit a consideration of such flood factors as its expected frequency of occurrence, the area inundated, and the depth of inundation. The base flood selected for this ordinance is representative of large floods which are characteristic of what can be expected to occur on the particular streams subject to this ordinance. It is the general order of a flood which could be expected to have a one percent chance of occurrence in any one year as delineated on the Federal Insurance Administrator's FIS, and illustrative materials for Chariton County dated May 16, 2012 as amended, and any future revisions thereto.

   b. Calculation of water surface profiles are based on a standard hydraulic engineering analysis of the capacity of the stream channel and overbank areas to convey the regulatory flood.

[Article 1, Section C]

SECTION C. STATEMENT OF PURPOSE

It is the purpose of this ordinance to promote the public health, safety, and general welfare; to minimize those losses described in Article 1, Section B (1); to establish or maintain the community's eligibility for participation in the National Flood Insurance Program (NFIP) as defined in 44 Code of Federal Regulations (CFR) 59.22(a)(3); and to meet the requirements of 44 CFR 60.3(c) by applying the provisions of this ordinance to:

1. restrict or prohibit uses that are dangerous to health, safety, or property in times of flooding or cause undue increases in flood heights or velocities;

2. require uses vulnerable to floods, including public facilities that serve such uses, be provided with flood protection at the time of initial construction; and

3. protect individuals from buying lands that are unsuited for the intended development purposes due to the flood hazard.

ARTICLE 2 GENERAL PROVISIONS

SECTION A. LANDS TO WHICH ORDINANCE APPLIES

This ordinance shall apply to all lands within the jurisdiction of the City of Keytesville identified as unnumbered and numbered A zones and AE Zones on the Flood Insurance Rate Map (FIRM) for Chariton County dated May 16, 2012 on map panels 29041C0379D, 29041C0385D, 29041C0387D,and 29041C0391D, as amended, and any future revisions thereto. In all areas covered by this ordinance, no development shall be permitted except through the issuance of a floodplain development permit, granted by the Board of Aldermen or its duly designated representative under such safeguards and restrictions as the Board of Aldermen or the designated representative may reasonably impose for the promotion and maintenance of the general welfare, health of the inhabitants of the community, and as specifically noted in Article 4.

SECTION B. FLOODPLAIN ADMINISTRATOR

The Mayor is hereby designated as the Floodplain Administrator under this ordinance.

SECTION C. COMPLIANCE

No development located within the special flood hazard areas of this community shall be located, extended, converted, or structurally altered without full compliance with the terms of this ordinance and other applicable regulations.

[Article 2, Section D]

SECTION D. ABROGATION AND GREATER RESTRICTIONS

It is not intended by this ordinance to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this ordinance imposes greater restrictions, the provisions of this ordinance shall prevail. All other ordinances inconsistent with this ordinance are hereby repealed to the extent of the inconsistency only.

SECTION E. INTERPRETATION

In their interpretation and application, the provisions of this ordinance shall be held to be minimum requirements, shall be liberally construed in favor of the governing body, and shall not be deemed a limitation or repeal of any other powers granted by State statutes.

SECTION F. WARNING AND DISCLAIMER OF LIABILITY

The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on engineering and scientific methods of study. Larger floods may occur on rare occasions or the flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This ordinance does not imply that areas outside the floodplain or land uses permitted within such areas will be free from flooding or flood damage. This ordinance shall not create a liability on the part of the City of Keytesville, any officer or employee thereof, for any flood damages that may result from reliance on this ordinance or any administrative decision lawfully made thereunder.

SECTION G. SEVERABILITY

If any section, clause, provision, or portion of this ordinance is adjudged unconstitutional or invalid by a court of appropriate jurisdiction, the remainder of this ordinance shall not be affected thereby.

ARTICLE 3 ADMINISTRATION

SECTION A. FLOODPLAIN DEVELOPMENT PERMIT **(REQUIRED)**

A floodplain development permit shall be required for all proposed construction or other development, including the placement of manufactured homes, in the areas described in Article 2, Section A. No person, firm, corporation, or unit of government shall initiate any development or substantial-improvement or cause the same to be done without first obtaining a separate floodplain development permit for each structure or other development.

SECTION B. DESIGNATION OF FLOODPLAIN ADMINISTRATOR

The Mayor is hereby appointed to administer and implement the provisions of this ordinance.

[Article 3, Section C]

SECTION C. DUTIES AND RESPONSIBILITIES OF FLOODPLAIN ADMINISTRATOR

Duties of the Mayor shall include, but not be limited to:

1. review of all applications for floodplain development permits to assure that sites are reasonably safe from flooding and that the floodplain development permit requirements of this ordinance have been satisfied;

2. review of all applications for floodplain development permits for proposed development to assure that all necessary permits have been obtained from Federal, State, or local governmental agencies from which prior approval is required by Federal, State, or local law;

3. review all subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding;

4. issue floodplain development permits for all approved applications;

5. notify adjacent communities and the Missouri State emergency Management Agency (Mo SEMA) prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA);

6. assure that the flood carrying capacity is not diminished and shall be maintained within the altered or relocated portion of any watercourse.

7. verify and maintain a record of the actual elevation (in relation to mean sea level) of the lowest floor, including basement, of all new or substantially improved structures;

8. verify and maintain a record of the actual elevation (in relation to mean sea level) that the new or substantially improved non-residential structures have been floodproofed;

9. when floodproofing techniques are utilized for a particular non-residential structure, the Mayor shall require certification from a registered professional engineer or architect.

SECTION D. APPLICATION FOR FLOODPLAIN DEVELOPMENT PERMIT

To obtain a floodplain development permit, the applicant shall first file an application in writing on a form furnished for that purpose. Every floodplain development permit application shall:

1. describe the land on which the proposed work is to be done by lot, block and tract, house and street address, or similar description that will readily identify and specifically locate the proposed structure or work;

2. identify and describe the work to be covered by the floodplain development permit;

3. indicate the use or occupancy for which the proposed work is intended;

4. indicate the assessed value of the structure and the fair market value of the improvement; [Article 3, Section D (5)]

5. identify the existing base flood elevation and the elevation of the proposed development;

6. give such other information as reasonably may be required by the Mayor;

7. be accompanied by plans and specifications for proposed construction; and

8. be signed by the permittee or his authorized agent who may be required to submit evidence to indicate such authority.

ARTICLE 4 PROVISIONS FOR FLOOD HAZARD REDUCTION

SECTION A. GENERAL STANDARDS

1. No permit for floodplain development shall be granted for new construction, substantial-improvements, and other improvements, including the placement of manufactured homes, within any unnumbered or numbered A zones and AE zones, unless the conditions of this section are satisfied.

2. All areas identified as unnumbered A zones on the FIRM are subject to inundation of the 100-year flood; however, the base flood elevation is not provided. Development within unnumbered A zones is subject to all provisions of this ordinance. If Flood Insurance Study data is not available, the community shall obtain, review, and reasonably utilize any base flood elevation or floodway data currently available from Federal, State, or other sources.

3. Until a floodway is designated, no new construction, substantial-improvements, or other development, including fill, shall be permitted within any numbered A zone or AE zone on the FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

4. All new construction, subdivision proposals, substantial-improvements, prefabricated structures, placement of manufactured homes, and other developments shall require:

   a. design or adequate anchorage to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy;

   b. construction with materials resistant to flood damage;

   c. utilization of methods and practices that minimize flood damages;

   d. all electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service facilities be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding;

   e. new or replacement water supply systems and/or sanitary sewage systems be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the

systems into flood waters, and on-site waste disposal systems be located so as to avoid impairment or contamination; and

[Article 4, Section A (4)]

f. subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, located within special flood hazard areas are required to assure that:

(1) all such proposals are consistent with the need to minimize flood damage;

(2) all public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage;

(3) adequate drainage is provided so as to reduce exposure to flood hazards; and

(4) all proposals for development, including proposals for manufactured home parks and subdivisions, greater than five (5) acres or fifty (50) lots, whichever is lesser, include within such proposals base flood elevation data.

5. *Agricultural Structures*

Structures used solely for agricultural purposes in connection with the production, harvesting, storage, drying, or raising of agricultural commodities, including the raising of livestock, may be constructed at-grade and wet-floodproofed provided there is no human habitation or occupancy of the structure; the structure is of single-wall design; there is no permanent retail, wholesale, or manufacturing use included in the structure; a variance has been granted from the floodplain management requirements of this ordinance; and a floodplain development permit has been issued.

6. *Storage, material, and equipment*

a. The storage or processing of materials within the special flood hazard area that are in time of flooding buoyant, flammable, explosive, or could be injurious to human, animal, or plant life is prohibited.

b. Storage of other material or equipment may be allowed if not subject to major damage by floods, if firmly anchored to prevent flotation, or if readily removable from the area within the time available after a flood warning.

7. *Accessory Structures*

Structures used solely for parking and limited storage purposes, not attached to any other structure on the site, of limited investment value, and not larger than 400 square feet, may be constructed at-grade and wet-floodproofed provided there is no human habitation or occupancy of the structure; the structure is of single-wall design; a variance has been granted from the standard floodplain management requirements of this ordinance; and a floodplain development permit has been issued.

[Article 4, Section B]

SECTION B. SPECIFIC STANDARDS

1. In all areas identified as unnumbered and numbered A zones and AE Zones, where **base flood elevation** data have been provided, as set forth in Article 4, Section A(2), the following provisions are required:

a. *Residential Construction*

New construction or substantial-improvement of any residential structures, including manufactured homes, shall have the lowest floor, including basement, elevated to one (1) foot above base flood level.

*[*In all unnumbered and numbered A zones and AE zones, the FEMA, Region VII office recommends elevating to one foot above the base flood elevation to accommodate any floodway conditions when the floodplain is fully developed.]*

b. *Non-Residential Construction*

New construction or substantial-improvement of any commercial, industrial, or other non-residential structures, including manufactured homes, shall have the lowest floor, including basement, elevated to one (1) foot above the base flood level or, together with attendant utility and sanitary facilities, be floodproofed so that below the base flood elevation the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification shall be provided to the Floodplain Administrator as set forth in Article 3, Section C(9).

*[*The FEMA, Region VII office recommends elevating to one foot above the base flood elevation to qualify for flood insurance rates based upon floodproofing.]*

c. Require, for all new construction and substantial-improvements, that fully enclosed areas below lowest floor used solely for parking of vehicles, building access, or storage in an area other than a basement and that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria:

(1) A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided; and

[Article 4, Section B (c)]

(2) the bottom of all opening shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

SECTION C. MANUFACTURED HOMES

1. All manufactured homes to be placed within all unnumbered and numbered A zones and AE zones on the community's FIRM shall be required to be installed using methods and practices that minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors.

2. Require manufactured homes that are placed or substantially improved within unnumbered or numbered A zones and AE zones on the community's FIRM on sites:

   a. outside of a manufactured home park or subdivision;

   b. in a new manufactured home park or subdivision;

   c. in an expansion to an existing manufactured home park or subdivision; or

   d. in an existing manufactured home park or subdivision on which a manufactured home has incurred substantial-damage as the result of a flood,

   be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to one (1) foot above the base flood elevation and be securely attached to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

3. Require that manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within all unnumbered and numbered A zones and AE zones on the community's FIRM, that are not subject to the provisions of Article 4, Section C(2) of this ordinance, be elevated so that either:

   a. the lowest floor of the manufactured home is at one (1) foot above the base flood elevation; or

   b. the manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade and be securely attached to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

*[*In all unnumbered and numbered A zones and AE zones, the FEMA, Region VII office recommends elevating to one foot above the base flood elevation to accommodate any floodway conditions when the floodplain is fully developed.]*

SECTION D. FLOODWAY *(as determined from data available from other sources)*

If a community determines there are areas of special flood hazard that may be defined as floodway, through the use of base flood elevation and floodway data available from a Federal, State, or

other source, including data developed pursuant to Article 4, Section A(4)f(4), and determines this data is
[Article 4, Section D]

suitable as criteria for requiring that new construction, substantial improvements, or other development in Zone A, the community must meet the standards below:

1) Adopt a regulatory floodway based on the principle that the area chosen for the regulatory floodway must be designed to carry the waters of the base flood without increasing the water surface elevation of that flood more than one foot at any point.

2) Prohibit encroachments, including fill, new construction, substantial-improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in **any** increase in flood levels within the community during the occurrence of the base flood discharge.

SECTION E. RECREATIONAL VEHICLES

1. Require that recreational vehicles placed on sites within all unnumbered and numbered A zones and AE zones on the community's FIRM either:

   a. be on the site for fewer than 180 consecutive days, **or**

   b. be fully licensed and ready for highway use*; **or**

   c. meet the permitting, elevation, and anchoring requirements for manufactured homes of this ordinance.

   *A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick-disconnect type utilities and security devices, and has no permanently attached additions.

ARTICLE 5 FLOODPLAIN MANAGEMENT VARIANCE PROCEDURES

SECTION A. ESTABLISHMENT OF APPEAL BOARD

The Board of Aldermen as established by the City of Keytesville shall hear and decide appeals and requests for variances from the floodplain management requirements of this ordinance.

SECTION B. RESPONSIBILITY OF APPEAL BOARD

Where an application for a floodplain development permit or request for a variance from the floodplain management regulations is denied by the Mayor, the applicant may apply for such floodplain development permit or variance directly to the Appeal Board, as defined in Article 5, Section A.

The Board of Aldermen shall hear and decide appeals when it is alleged that there is an error in any requirement, decision, or determination made by the Mayor in the enforcement or administration of this ordinance.

SECTION C. FURTHER APPEALS

Any person aggrieved by the decision of the Board of Aldermen or any taxpayer may appeal such decision to the Circuit Court of Chariton County as provided in RSMo 89.110.

[Article 5, Section D]

SECTION D. FLOODPLAIN MANAGEMENT VARIANCE CRITERIA

In passing upon such applications for variances, the Board of Aldermen shall consider all technical data and evaluations, all relevant factors, standards specified in other sections of this ordinance, and the following criteria:

1. the danger to life and property due to flood damage;

2. the danger that materials may be swept onto other lands to the injury of others;

3. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;

4. the importance of the services provided by the proposed facility to the community;

5. the necessity to the facility of a waterfront location, where applicable;

6. the availability of alternative locations, not subject to flood damage, for the proposed use;

7. the compatibility of the proposed use with existing and anticipated development;

8. the relationship of the proposed use to the comprehensive plan and floodplain management program for that area;

9. the safety of access to the property in times of flood for ordinary and emergency vehicles;

10. the expected heights, velocity, duration, rate of rise and sediment transport of the flood waters, if applicable, expected at the site; and,

11. the costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems; streets; and bridges.

SECTION E. CONDITIONS FOR APPROVING FLOODPLAIN MANAGEMENT VARIANCES

1. Generally, variances may be issued for new construction and substantial-improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood elevation, providing items 2 through 6 below have been fully considered. As the lot size increases beyond the one-half acre, the technical justification required for issuing the variance increases.

2. Variances may be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places, the State Inventory of Historic Places, or local inventory of historic places upon determination provided the proposed activity will not preclude the structure's continued historic designation.

3. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

[Article 5, Section E (4)]

4. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

5. Variances shall only be issued upon (a) a showing of good and sufficient cause, (b) a determination that failure to grant the variance would result in exceptional hardship to the applicant, and (c) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

6. A community shall notify the applicant in writing over the signature of a community official that (1) the issuance of a variance to construct a structure below base flood elevation will result in increased premium rates for flood insurance up to amounts as high as $25.00 for $100.00 of insurance coverage and (2) such construction below the base flood elevation increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this ordinance.

SECTION F. CONDITIONS FOR APPROVING VARIANCES FOR AGRICULTURAL STRUCTURES

Any variance granted for an agricultural structure shall be decided individually based on a case by case analysis of the building's unique circumstances. Variances granted shall meet the following conditions as well as those criteria and conditions set forth in Article 5, Sections D and E of this ordinance.

In order to minimize flood damages during the 100-year flood and the threat to public health and safety, the following conditions shall be included for any variance issued for agricultural structures that are constructed at-grade and wet-floodproofed.

1. All agricultural structures considered for a variance from the floodplain management regulations of this ordinance shall demonstrate that the varied structure is located in wide, expansive floodplain areas and no other alternate location outside of the special flood hazard area exists for the agricultural structure. Residential structures, such as farm houses, cannot be considered agricultural structures.

2. Use of the varied structures must be limited to agricultural purposes in zone A only as identified on the community's Flood Insurance Rate Map (FIRM).

3. For any new or substantially damaged agricultural structures, the exterior and interior building components and elements (i.e., foundation, wall framing, exterior and interior finishes, flooring, etc.) below the base flood elevation, must be built with flood-resistant materials in accordance with Article 4, Section A (4)(b) of this ordinance.

4. The agricultural structures must be adequately anchored to prevent flotation, collapse, or lateral movement of the structures in accordance with Article 4, Section A (4)(a) of this ordinance. All of the building's structural components must be capable of resisting specific flood-related forces including hydrostatic, buoyancy, and hydrodynamic and debris impact forces.

5. Any mechanical, electrical, or other utility equipment must be located above the base flood level or floodproofed so that they are contained within a watertight, floodproofed enclosure that is capable of resisting damage during flood conditions in accordance with Article 4, Section A (4)(d) of this ordinance.

[Article 5, Section F (6)]

6. The agricultural structures must meet all National Flood Insurance Program (NFIP) opening requirements. The NFIP requires that enclosure or foundation walls, subject to the 100-year flood, contain openings that will permit the automatic entry and exit of floodwaters in accordance with Article 4, Section B (1)(c) of this ordinance.

7. The agricultural structures must comply with the floodplain management floodway encroachment provisions of Article 4, Section E of this ordinance. No variances may be issued for agricultural structures within any designated floodway, if any increase in flood levels would result during the 100-year flood.

8. Major equipment, machinery, or other contents must be protected from any flood damage.

9. No disaster relief assistance under any program administered by any Federal agency shall be paid for any repair or restoration costs of the agricultural structures.

10. A community shall notify the applicant in writing over the signature of a community official that (1) the issuance of a variance to construct a structure below base flood level will result in increased premium rates for flood insurance up to amounts as high as $25.00 for $100.00 of insurance coverage and (2) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this ordinance.

11. Wet-floodproofing construction techniques must be reviewed and approved by the community and a registered professional engineer or architect prior to the issuance of any floodplain development permit for construction.

SECTION G. CONDITIONS FOR APPROVING VARIANCES FOR ACCESSORY STRUCTURES

Any variance granted for an accessory structure shall be decided individually based on a case by case analysis of the building's unique circumstances. Variances granted shall meet the following conditions as well as those criteria and conditions set forth in Article 5, Sections D and E of this ordinance.

In order to minimize flood damages during the 100-year flood and the threat to public health and safety, the following conditions shall be included for any variance issued for accessory structures that are constructed at-grade and wet-floodproofed.

1. Use of the accessory structures must be solely for parking and limited storage purposes in zone A only as identified on the community's Flood Insurance Rate Map (FIRM).

2. For any new or substantially damaged accessory structures, the exterior and interior building components and elements (i.e., foundation, wall framing, exterior and interior finishes, flooring, etc.)

below the base flood elevation, must be built with flood-resistant materials in accordance with Article 4, Section A (4)(b) of this ordinance.

3. The accessory structures must be adequately anchored to prevent flotation, collapse, or lateral movement of the structure in accordance with Article 4, Section A (4)(a) of this ordinance. All of the building's structural components must be capable of resisting specific flood-related forces including hydrostatic, buoyancy, and hydrodynamic and debris impact forces.

4. Any mechanical, electrical, or other utility equipment must be located above the base flood elevation or floodproofed so that they are contained within a watertight, floodproofed enclosure that is capable of resisting damage during flood conditions in accordance with Article 4, Section A (4)(d) of this ordinance.

5. The accessory structures must meet all National Flood Insurance Program (NFIP) opening requirements. The NFIP requires that enclosure or foundation walls, subject to the 100-year flood, contain openings that will permit the automatic entry and exit of floodwaters in accordance with Article 4, Section B (1)(c) of this ordinance.

6. The accessory structures must comply with the floodplain management floodway encroachment provisions of Article 4, Section E of this ordinance. No variances may be issued for accessory structures within any designated floodway, if any increase in flood levels would result during the 100-year flood.

7. Equipment, machinery, or other contents must be protected from any flood damage.

8. No disaster relief assistance under any program administered by any Federal agency shall be paid for any repair or restoration costs of the accessory structures.

9. A community shall notify the applicant in writing over the signature of a community official that (1) the issuance of a variance to construct a structure below base flood elevation will result in increased premium rates for flood insurance up to amounts as high as $25.00 for $100.00 of insurance coverage and (2) such construction below the base flood elevation increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this ordinance.

10. Wet-floodproofing construction techniques must be reviewed and approved by the community and registered professional engineer or architect prior to the issuance of any floodplain development permit for construction.

ARTICLE 6 PENALTIES FOR VIOLATION

Violation of the provisions of this ordinance or failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with granting of variances) shall constitute a misdemeanor. Any person who violates this ordinance or fails to comply with any of its requirements shall, upon conviction thereof, be fined not more than $ 100.00, and in addition, shall pay all costs and expenses involved in the case. Each day such violation continues shall be considered a separate offense. Nothing herein contained shall prevent the City of Keytesville or other appropriate authority from taking such other lawful action as is necessary to prevent or remedy any violation.

ARTICLE 7 AMENDMENTS

The regulations, restrictions, and boundaries set forth in this ordinance may from time to time be amended, supplemented, changed, or appealed to reflect any and all changes in the National Flood Disaster Protection Act of 1973, provided, however, that no such action may be taken until after a public hearing in relation thereto, at which parties of interest and citizens shall have an opportunity to be heard. Notice of the time and place of such hearing shall be published in a newspaper of general circulation in the City of Keytesville. At least 20 days shall elapse between the date of this publication and the public hearing. A copy of such amendments will be provided to the Region VII office of the Federal Emergency Management Agency (FEMA). The regulations of this ordinance are in compliance with the National Flood Insurance Program (NFIP) regulations.

ARTICLE 8 DEFINITIONS

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the same meaning they have in common usage and to give this ordinance its most reasonable application.

"100-year Flood" *see "base flood."*

"Accessory Structure" means the same as *"appurtenant structure."*

"Actuarial Rates" *see "risk premium rates."*

"Administrator" means the Federal Insurance Administrator.

"Agency" means the Federal Emergency Management Agency (FEMA).

"Agricultural Commodities" means agricultural products and livestock.

"Agricultural Structure" means any structure used exclusively in connection with the production, harvesting, storage, drying, or raising of agricultural commodities.

"Appeal" means a request for review of the Floodplain Administrator's interpretation of any provision of this ordinance or a request for a variance.

"Appurtenant Structure" means a structure that is on the same parcel of property as the principle structure to be insured and the use of which is incidental to the use of the principal structure.

"Area of Special Flood Hazard" is the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year.

"Base Flood" means the flood having a one percent chance of being equaled or exceeded in any given year.

"Basement" means any area of the structure having its floor subgrade (below ground level) on all sides.

"Building" *see "structure."*

"Chief Executive Officer" or "Chief Elected Official" means the official of the community who is charged with the authority to implement and administer laws, ordinances, and regulations for that community.

"Community" means any State or area or political subdivision thereof, which has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction.

"Development" means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, levees, levee systems, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials.

"Elevated Building" means for insurance purposes, a non-basement building which has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.

"Eligible Community" or "Participating Community" means a community for which the Administrator has authorized the sale of flood insurance under the National Flood Insurance Program (NFIP).

"Existing Construction" means for the purposes of determining rates, structures for which the *"start of construction"* commenced before the effective date of the FIRM or before January 1, 1975, for FIRMs effective before that date. *"existing construction"* may also be referred to as *"existing structures."*

"Existing Manufactured Home Park or Subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the floodplain management regulations adopted by a community.

"Expansion to an Existing Manufactured Home Park or Subdivision" means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

"Flood" or "Flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland and/or (2) the unusual and rapid accumulation or runoff of surface waters from any source.

"Flood Boundary and Floodway Map (FBFM)" means an official map of a community on which the Administrator has delineated both special flood hazard areas and the designated regulatory floodway.

"Flood Elevation Determination" means a determination by the Administrator of the water surface elevations of the base flood, that is, the flood level that has a one percent or greater chance of occurrence in any given year.

"Flood Elevation Study" means an examination, evaluation and determination of flood hazards.

"Flood Fringe" means the area outside the floodway encroachment lines, but still subject to inundation by the regulatory flood.

"Flood Hazard Boundary Map (FHBM)" means an official map of a community, issued by the Administrator, where the boundaries of the flood areas having special flood hazards have been designated as (unnumbered or numbered) A zones.

"Flood Insurance Rate Map (FIRM)" means an official map of a community, on which the Administrator has delineated both the special flood hazard areas and the risk premium zones applicable to the community.

"Flood Insurance Study (FIS)" means an examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations.

"Floodplain" or "Flood-prone Area" means any land area susceptible to being inundated by water from any source *(see "flooding")*.

"Floodplain Management" means the operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works, and floodplain management regulations.

"Floodplain Management Regulations" means zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as floodplain and grading ordinances) and other applications of police power. The term describes such state or local regulations, in any combination thereof, that provide standards for the purpose of flood damage prevention and reduction.

"Floodproofing" means any combination of structural and nonstructural additions, changes, or adjustments to structures that reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, or structures and their contents.

"Floodway" or "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

"Floodway Encroachment Lines" means the lines marking the limits of floodways on Federal, State and local floodplain maps.

"Freeboard" means a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. *"Freeboard"* tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as bridge openings and the hydrological effect of urbanization of the watershed.

"Functionally Dependent Use" means a use that cannot perform its intended purpose unless it is located or carried out in close proximity to water. This term includes only docking facilities and facilities that are necessary for the loading and unloading of cargo or passengers, but does not include long-term storage or related manufacturing facilities.

"Highest Adjacent Grade" means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

"Historic Structure" means any structure that is (a) listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (b) certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (c) individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or (d) individually listed

on a local inventory of historic places in communities with historic preservation programs that have been certified either (1) by an approved state program as determined by the Secretary of the Interior or (2) directly by the Secretary of the Interior in states without approved programs.

"Lowest Floor" means the lowest floor of the lowest enclosed area, including basement. An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access, or storage, in an area other than a basement area, is not considered a building's lowest floor, **provided** that such enclosure is not built so as to render the structure in violation of the applicable floodproofing design requirements of this ordinance.

"Manufactured Home" means a structure, transportable in one or more sections, that is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term *"manufactured home"* **does not include** a *"recreational vehicle."*

"Manufactured Home Park or Subdivision" means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

"Map" means the Flood Hazard Boundary Map (FHBM), Flood Insurance Rate Map (FIRM), or the Flood Boundary and Floodway Map (FBFM) for a community issued by the Federal Emergency Management Agency (FEMA).

"Market Value" or "Fair Market Value" means an estimate of what is fair, economic, just and equitable value under normal local market conditions.

"Mean Sea Level" means, for purposes of the National Flood Insurance Program (NFIP), the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which base flood elevations shown on a community's Flood Insurance Rate Map (FIRM) are referenced.

"New Construction" means, for the purposes of determining insurance rates, structures for which the *"start of construction"* commenced on or after the effective date of an initial FIRM or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, *"new construction"* means structures for which the *"start of construction"* commenced on or after the effective date of the floodplain management regulations adopted by a community and includes any subsequent improvements to such structures.

"New Manufactured Home Park or Subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lot on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of floodplain management regulations adopted by the community.

"(NFIP)" means the National Flood Insurance Program (NFIP).

"Participating Community" also known as an *"eligible community,"* means a community in which the Administrator has authorized the sale of flood insurance.

"Person" includes any individual or group of individuals, corporation, partnership, association, or any other entity, including Federal, State, and local governments and agencies.

"Principally Above Ground" means that at least 51 percent of the actual cash value of the structure, less land value, is above ground.

"Recreational Vehicle" means a vehicle which is (a) built on a single chassis; (b) 400 square feet or less when measured at the largest horizontal projections; (c) designed to be self-propelled or permanently towable by a light- duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

"Remedy A Violation" means to bring the structure or other development into compliance with Federal, State, or local floodplain management regulations; or, if this is not possible, to reduce the impacts of its noncompliance.

"Repetitive Loss" means flood-related damages sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each such flood event, equals or exceeds twenty-five percent of the market value of the structure before the damage occurred.

"Risk Premium Rates" means those rates established by the Administrator pursuant to individual community studies and investigations which are undertaken to provide flood insurance in accordance with Section 1307 of the National Flood Disaster Protection Act of 1973 and the accepted actuarial principles. *"Risk premium rates"* include provisions for operating costs and allowances.

"Special Flood Hazard Area" *see "area of special flood hazard."*

"Special Hazard Area" means an area having special flood hazards and shown on an FHBM, FIRM or FBFM as zones (unnumbered or numbered) A and AE.

"Start of Construction" includes substantial-improvements, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvements were within 180 days of the permit date. The ***actual start*** means either the first placement of permanent construction of a structure on a site, such as the pouring of slabs or footings, the installation of piles, the construction of columns, any work beyond the stage of excavation, or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling, the installation of streets and/or walkways, excavation for a basement, footings, piers, foundations, the erection of temporary forms, nor installation on the property of accessory structures, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial-improvement, the ***actual start of construction*** means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

"State Coordinating Agency" means that agency of the state government, or other office designated by the governor of the state or by state statute at the request of the Administrator to assist in the implementation of the National Flood Insurance Program (NFIP) in that state.

"Structure" means, for floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home. *"Structure"* for insurance purposes, means a walled and roofed building, other than a gas or liquid storage tank, that is principally above ground and affixed to a permanent site, as well as a manufactured home on a permanent foundation. For the latter purpose, the term includes a building while in the course of construction, alteration or repair, but does not include building materials or supplies intended for use in such construction, alteration or repair, unless such materials or supplies are within an enclosed building on the premises.

"Substantial-Damage" means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred. The term includes Repetitive Loss buildings (see definition).

For the purposes of this definition, "repair" is considered to occur when the first repair or reconstruction of any wall, ceiling, floor, or other structural part of the building commences.

The term does not apply to:

a.) Any project for improvement of a building required to comply with existing health, sanitary, or safety code specifications which have been identified by the Code Enforcement Official and which are solely necessary to assure safe living conditions, or

b.) Any alteration of a "historic structure" provided that the alteration will not preclude the structure's continued designation as a "historic structure", or

c.) Any improvement to a building.

Substantial Improvement means any combination of reconstruction, alteration, or improvement to a building, taking place during a ten year period, in which the cumulative percentage of improvement equals or exceeds fifty percent of the current market value of the building. For the purposes of this definition, an improvement occurs when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the building. This term includes structures, which have incurred "repetitive loss" or "substantial damage", regardless of the actual repair work done.

The term does not apply to:

a.) any project for improvement of a building required to comply with existing health, sanitary, or safety code specifications which have been identified by the Code Enforcement Official and which are solely necessary to assure safe living conditions, or

b.) Any alteration of a "historic structure" provided that the alteration will not preclude the structure's continued designation as a "historic structure." Or

c.) Any building that has been damaged from any source or is categorized as repetitive loss.

Substantially improved existing manufactured home parks or subdivisions is where the repair, reconstruction, rehabilitation or improvement of the streets, utilities and pads equals or exceeds 50 percent of the value of the streets, utilities and pads before the repair, reconstruction or improvement commenced.

"Variance" means a grant of relief by the community from the terms of a floodplain management regulation. Flood insurance requirements remain in place for any varied use or structure and cannot be varied by the community.

"Violation" means the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required by this ordinance is presumed to be in violation until such time as that documentation is provided.

"Water Surface Elevation" means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929 (or other datum where specified) of floods of various magnitudes and frequencies in the floodplain.

ARTICLE 9 CERTIFICATE OF ADOPTION

This Floodplain Management Ordinance for the community of Keytesville, Missouri.

ADOPTED AND APPROVED by the Governing Body of Keytesville, Missouri.

This 13 day of March, 2012.

Place seal here.

Alderman	Aye	Nay
	X	
	X	

Chief Executive Officer/Chief Elected Official (Signature)

Anthony A. Lee, Mayor
Name Title

Chief Executive Officer/Chief Elected Official (Typed/printed)

ATTEST:

Signature of Recording Clerk

DeLaina L. Sommerfeld, City Clerk
Name Title

Recording Clerk (Typed/printed)

MODEL FLOODPLAIN MANAGEMENT ORDINANCE

60.3(d)

The following model ordinance pertains only to the special flood hazard areas in a community that participates in the Regular Program Phase of the National Flood Insurance Program (rather than the Emergency Program Phase). It has been designed to meet minimum Federal requirements as published in Title 44 of the Code of Federal Regulations.

Not all sections in this model ordinance may be applicable to a community that wishes to adopt a floodplain management ordinance. **Before adoption, this model ordinance should be thoroughly studied by community officials, planning commissions, and the community's attorney, as to its adequacy and suitability to the community's needs.** This will ensure that the community's specific floodplain management issues are governed in a reasonable manner without inflicting unnecessary hardships on people living in flood-prone areas.

This model does not prohibit development in the special flood hazard areas. It does set forth minimum performance standards for new construction or substantially improved structures. Communities may apply stricter regulations than the minimum Federal requirements. For assistance in tailoring this ordinance to meet your community's specific needs, a Community Mitigation Programs Specialist may be contacted at the following address:

DHS/FEMA Region VII, Mitigation Division
Floodplain Management & Insurance Branch
9221 Ward Parkway, Suite 300
Kansas City, MO 64114

ORDINANCE NO 12-04-01

FLOODPLAIN MANAGEMENT ORDINANCE 60.3(d)

ARTICLE 1 STATUTORY AUTHORIZATION, FINDINGS OF FACT, AND PURPOSES

SECTION A. STATUTORY AUTHORIZATION

The Legislature of the State of Missouri has in RSMO 49.600 delegated the responsibility to local governmental units to adopt floodplain management regulations designed to protect the health, safety, and general welfare. Therefore, the County Commission of Chariton County, Missouri ordains as follows:

SECTION B. FINDINGS OF FACT

1. *Flood Losses Resulting from Periodic Inundation*

   The special flood hazard areas of Chariton County, Missouri are subject to inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base; all of which adversely affect the public health, safety and general welfare.

2. *General Causes of the Flood Losses*

   These flood losses are caused by (1) the cumulative effect of development in any delineated floodplain causing increases in flood heights and velocities; and (2) the occupancy of flood hazard areas by uses vulnerable to floods, hazardous to others, inadequately elevated, or otherwise unprotected from flood damages.

3. *Methods Used To Analyze Flood Hazards*

   The Flood Insurance Study (FIS) that is the basis of this ordinance uses a standard engineering method of analyzing flood hazards which consist of a series of interrelated steps.

   a. Selection of a base flood that is based upon engineering calculations which permit a consideration of such flood factors as its expected frequency of occurrence, the area inundated, and the depth of inundation. The base flood selected for this ordinance is representative of large floods which are characteristic of what can be expected to occur on the particular streams subject to this ordinance. It is in the general order of a flood which could be expected to have a one percent chance of occurrence in any one year as delineated on the Federal Insurance Administrator's FIS, and illustrative materials for Chariton County, Missouri dated May 16, 2012.

   b. Calculation of water surface profiles are based on a standard hydraulic engineering analysis of the capacity of the stream channel and overbank areas to convey the regulatory flood.

   c. Computation of a floodway required to convey this flood without increasing flood heights more than one (1) foot at any point.

[Article 1, Section B(3)]

d. Delineation of floodway encroachment lines within which no development is permitted that would cause any increase in flood height.

e. Delineation of flood fringe, i.e., that area outside the floodway encroachment lines, but still subject to inundation by the base flood.

SECTION C. STATEMENT OF PURPOSE

It is the purpose of this ordinance to promote the public health, safety, and general welfare; to minimize those losses described in Article 1, Section B (1); to establish or maintain the community's eligibility for participation in the National Flood Insurance Program (NFIP) as defined in 44 Code of Federal Regulations (CFR) 59.22(a)(3); and to meet the requirements of 44 CFR 60.3(d) by applying the provisions of this ordinance to:

1. restrict or prohibit uses that are dangerous to health, safety, or property in times of flooding or cause undue increases in flood heights or velocities;

2. require uses vulnerable to floods, including public facilities that serve such uses, be provided with flood protection at the time of initial construction; and

3. protect individuals from buying lands that are unsuited for the intended development purposes due to the flood hazard.

ARTICLE 2 GENERAL PROVISIONS

SECTION A. LANDS TO WHICH ORDINANCE APPLIES

This ordinance shall apply to all lands within the jurisdiction of Chariton County identified as numbered and unnumbered A zones and AE zones, on the Flood Insurance Rate Map (FIRM) on Chariton County Index Panel 29041CIND0A dated May 16, 2012 as amended, and any future revisions thereto. In all areas covered by this ordinance, no development shall be permitted except through the issuance of a floodplain development permit, granted by the County Commission or its duly designated representative under such safeguards and restrictions as the County Commission or the designated representative may reasonably impose for the promotion and maintenance of the general welfare, health of the inhabitants of the community, and as specifically noted in Article 4.

SECTION B. FLOODPLAIN ADMINISTRATOR

The Chariton County Presiding Commissioner is hereby appointed to administer and implement the provisions of this ordinance.

[Article 2 Section C]

SECTION C. COMPLIANCE

No development located within the special flood hazard areas of this community shall be located, extended, converted, or structurally altered without full compliance with the terms of this ordinance and other applicable regulations.

SECTION D. ABROGATION AND GREATER RESTRICTIONS

It is not intended by this ordinance to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this ordinance imposes greater restrictions, the provisions of this ordinance shall prevail. All other ordinances inconsistent with this ordinance are hereby repealed to the extent of the inconsistency only.

SECTION E. INTERPRETATION

In their interpretation and application, the provisions of this ordinance shall be held to be minimum requirements, shall be liberally construed in favor of the governing body, and shall not be deemed a limitation or repeal of any other powers granted by State statutes.

SECTION F. WARNING AND DISCLAIMER OF LIABILITY

The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on engineering and scientific methods of study. Larger floods may occur on rare occasions or the flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This ordinance does not imply that areas outside the floodway and flood fringe or land uses permitted within such areas will be free from flooding or flood damage. This ordinance shall not create a liability on the part of Chariton County, any officer or employee thereof, for any flood damages that may result from reliance on this ordinance or any administrative decision lawfully made thereunder.

SECTION G. SEVERABILITY

If any section, clause, provision, or portion of this ordinance is adjudged unconstitutional or invalid by a court of appropriate jurisdiction, the remainder of this ordinance shall not be affected thereby.

ARTICLE 3 ADMINISTRATION

SECTION A. FLOODPLAIN DEVELOPMENT PERMIT **(REQUIRED)**

A floodplain development permit shall be required for all proposed construction or other development, including the placement of manufactured homes, in the areas described in Article 2, Section A. No person, firm, corporation, or unit of government shall initiate any development or substantial-improvement or cause the same to be done without first obtaining a separate floodplain development permit for each structure or other development.

[Article 3 Section B]

SECTION B. DESIGNATION OF FLOODPLAIN ADMINISTRATOR

The Chariton County Presiding Commissioner is hereby appointed to administer and implement the provisions of this ordinance.

SECTION C. DUTIES AND RESPONSIBILITIES OF FLOODPLAIN ADMINISTRATOR

Duties of the floodplain administrator shall include, but not be limited to:

1. review of all applications for floodplain development permits to assure that sites are reasonably safe from flooding and that the floodplain development permit requirements of this ordinance have been satisfied;

2. review of all applications for floodplain development permits for proposed development to assure that all necessary permits have been obtained from Federal, State, or local governmental agencies from which prior approval is required by Federal, State, or local law;

3. review all subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding;

4. issue floodplain development permits for all approved applications;

5. notify adjacent communities and the Missouri State Emergency Management Agency (MO SEMA) to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA);

6. assure that the flood carrying capacity is not diminished and shall be maintained within the altered or relocated portion of any watercourse.

7. verify and maintain a record of the actual elevation (in relation to mean sea level) of the lowest floor, including basement, of all new or substantially improved structures;

8. verify and maintain a record of the actual elevation (in relation to mean sea level) that the new or substantially improved non-residential structures have been floodproofed;

9. when floodproofing techniques are utilized for a particular non-residential structure, the floodplain administrator shall require certification from a registered professional engineer or architect.

[Article 3, Section D]

SECTION D. APPLICATION FOR FLOODPLAIN DEVELOPMENT PERMIT

To obtain a floodplain development permit, the applicant shall first file an application in writing on a form furnished for that purpose. Every floodplain development permit application shall:

1. describe the land on which the proposed work is to be done by lot, block and tract, house and street address, or similar description that will readily identify and specifically locate the proposed structure or work;

2. identify and describe the work to be covered by the floodplain development permit;

3. indicate the use or occupancy for which the proposed work is intended;

4. indicate the assessed value of the structure and the fair market value of the improvement;

5. specify whether development is located in designated flood fringe or floodway;

6. identify the existing base flood elevation and the elevation of the proposed development;

7. give such other information as reasonably may be required by the floodplain administrator;

8. be accompanied by plans and specifications for proposed construction; and

9. be signed by the permittee or his authorized agent who may be required to submit evidence to indicate such authority.

ARTICLE 4 PROVISIONS FOR FLOOD HAZARD REDUCTION

SECTION A. GENERAL STANDARDS

1. No permit for floodplain development shall be granted for new construction, substantial-improvements, and other improvements, including the placement of manufactured homes, within any numbered or unnumbered A zones and AE zones, unless the conditions of this section are satisfied.

2. All areas identified as unnumbered A zones on the FIRM are subject to inundation of the 100-year flood; however, the base flood elevation is not provided. Development within unnumbered A zones is subject to all provisions of this ordinance. If Flood Insurance Study data is not available, the community shall obtain, review, and reasonably utilize any base flood elevation or floodway data currently available from Federal, State, or other sources.

3. Until a floodway is designated, no new construction, substantial improvements, or other development, including fill, shall be permitted within any numbered A zone or AE zone on the FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

[Article 4, Section A(4)]

4. All new construction, subdivision proposals, substantial-improvements, prefabricated structures, placement of manufactured homes, and other developments shall require:

   a. design or adequate anchorage to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy;

   b. construction with materials resistant to flood damage;

   c. utilization of methods and practices that minimize flood damages;

   d. all electrical, heating, ventilation, plumbing, air-conditioning equipment, and other service facilities be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding;

   e. new or replacement water supply systems and/or sanitary sewage systems be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters, and on-site waste disposal systems be located so as to avoid impairment or contamination; and

   f. subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, located within special flood hazard areas are required to assure that:

      (1) all such proposals are consistent with the need to minimize flood damage;

      (2) all public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage;

      (3) adequate drainage is provided so as to reduce exposure to flood hazards; and

      (4) all proposals for development, including proposals for manufactured home parks and subdivisions, of five (5) acres or fifty (50) lots, whichever is lesser, include within such proposals base flood elevation data.

5. *Storage, material, and equipment*

   a. The storage or processing of materials within the special flood hazard area that are in time of flooding buoyant, flammable, explosive, or could be injurious to human, animal, or plant life is prohibited.

   b. Storage of other material or equipment may be allowed if not subject to major damage by floods, if firmly anchored to prevent flotation, or if readily removable from the area within the time available after a flood warning.

[Article 4, Section A(7)]

6. *Agricultural Structures*

Structures used solely for agricultural purposes in connection with the production, harvesting, storage, drying, or raising of agricultural commodities, including the raising of livestock, may be constructed at-grade and wet-floodproofed provided there is no human habitation or occupancy of the structure; the structure is of single-wall design; there is no permanent retail, wholesale, or manufacturing use included in the structure; a variance has been granted from the floodplain management requirements of this ordinance; and a floodplain development permit has been issued.

7. *Accessory Structures*

Structures used solely for parking and limited storage purposes, not attached to any other structure on the site, of limited investment value, and not larger than 400 square feet, may be constructed at-grade and wet-floodproofed provided there is no human habitation or occupancy of the structure; the structure is of single-wall design; a variance has been granted from the standard floodplain management requirements of this ordinance; and a floodplain development permit has been issued.

SECTION B. SPECIFIC STANDARDS

1. In all areas identified as numbered and unnumbered A zones and AE zones, where **base flood elevation** data have been provided, as set forth in Article 4, Section A(2), the following provisions are required:

a. *Residential Construction*

New construction or substantial-improvement of any residential structures, including manufactured homes, shall have the lowest floor, including basement, elevated to or above base flood elevation.

*[*In all unnumbered and numbered A zones and AE zones, the FEMA, Region VII office recommends elevating to one foot above the base flood elevation to accommodate floodway conditions when the floodplain is fully developed.]*

b. *Non-Residential Construction*

New construction or substantial-improvement of any commercial, industrial, or other non-residential structures, including manufactured homes, shall have the lowest floor, including basement, elevated to or above the base flood elevation or, together with attendant utility and sanitary facilities, be floodproofed so that below the base flood elevation the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification shall be provided to the Floodplain Administrator as set forth in Article 3, Section C(9).

*[*The FEMA, Region VII office recommends elevating to one foot above the base flood elevation to qualify for flood insurance rates based upon floodproofing.]*

c. Require, for all new construction and substantial-improvements, that fully enclosed areas below lowest floor used solely for parking of vehicles, building access, or storage in an area other than a basement and that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria:

(1) A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided; and

(2) the bottom of all opening shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

SECTION C. MANUFACTURED HOMES

1. All manufactured homes to be placed within all unnumbered and numbered A zones and AE zones, on the community's FIRM shall be required to be installed using methods and practices that minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors.

2. Require manufactured homes that are placed or substantially improved within unnumbered or numbered A zones and AE zones, on the community's FIRM on sites:

a. outside of manufactured home park or subdivision;

b. in a new manufactured home park or subdivision;

c. in an expansion to and existing manufactured home park or subdivision; or

d. in an existing manufactured home park or subdivision on which a manufactured home has incurred substantial-damage as the result of a flood,

be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely attached to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

3. Require that manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within all unnumbered and numbered A zones and AE zones, on the community's FIRM, that are not subject to the provisions of Article 4, Section C(2) of this ordinance, be elevated so that either:

a. the lowest floor of the manufactured home is to or above the base flood level; or

b. the manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade and be securely attached to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

*[*In all unnumbered and numbered A zones and AE zones, the FEMA, Region VII office recommends elevating to one foot above the base flood elevation to accommodate floodway conditions when the floodplain is fully developed.]*

SECTION D. FLOODWAY

Located within areas of special flood hazard established in Article 2, Section A are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of flood waters that carry debris and potential projectiles, the following provisions shall apply:

1. The community shall select and adopt a regulatory floodway based on the principle that the area chosen for the regulatory floodway must be designed to carry the waters of the base flood without increasing the water surface elevation of that flood more than one foot at any point.

2. The community shall prohibit any encroachments, including fill, new construction, substantial-improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in **any** increase in flood levels within the community during the occurrence of the base flood discharge.

3. If Article 4, Section D(2) is satisfied, all new construction and substantial-improvements shall comply with all applicable flood hazard reduction provisions of Article 4.

4. In unnumbered A zones, the community shall obtain, review, and reasonably utilize any base flood elevation or floodway data currently available from Federal, State, or other sources as set forth in Article 4, Section A(2).

SECTION E. RECREATIONAL VEHICLES

1. Require that recreational vehicles placed on sites within all unnumbered and numbered A zones and AE zones on the community's FIRM either:

    a. be on the site for fewer than 180 consecutive days,

    b. be fully licensed and ready for highway use*; **or**

    c. meet the permitting, elevation, and the anchoring requirements for manufactured homes of this ordinance.

*A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick-disconnect type utilities and security devices, and has no permanently attached additions.

ARTICLE 5 FLOODPLAIN MANAGEMENT VARIANCE PROCEDURES

SECTION A. ESTABLISHMENT OF APPEAL BOARD

The County Commission as established by Chariton County shall hear and decide appeals and requests for variances from the floodplain management requirements of this ordinance.

SECTION B. RESPONSIBILITY OF APPEAL BOARD

When an application for a floodplain development permit or request for a variance from the floodplain management regulations is denied by the floodplain administrator, the applicant may apply for such floodplain development permit or variance directly to the appeal board, as defined in Article 5, Section A.

The appeal board shall hear and decide appeals when it is alleged that there is an error in any requirement, decision, or determination made by the floodplain administrator in the enforcement or administration of this ordinance.

SECTION C. FURTHER APPEALS

Any person aggrieved by the decision of the Chariton County Commission or any taxpayer may appeal such decision to the Circuit Court of Chariton County as provided in RSMO 49.615.

SECTION D. FLOODPLAIN MANAGEMENT VARIANCE CRITERIA

In passing upon such applications for variances, the Chariton County Commission shall consider all technical data and evaluations, all relevant factors, standards specified in other sections of this ordinance, and the following criteria:

1. the danger to life and property due to flood damage;
2. the danger that materials may be swept onto other lands to the injury of others;
3. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
4. the importance of the services provided by the proposed facility to the community;
5. the necessity to the facility of a waterfront location, where applicable;
6. the availability of alternative locations, not subject to flood damage, for the proposed use;
7. the compatibility of the proposed use with existing and anticipated development;
8. the relationship of the proposed use to the comprehensive plan and floodplain management program for that area;
9. the safety of access to the property in times of flood for ordinary and emergency vehicles;

10. the expected heights, velocity, duration, rate of rise and sediment transport of the flood waters, if applicable, expected at the site; and,

11. the costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems; streets; and bridges.

SECTION E. CONDITIONS FOR APPROVING FLOODPLAIN MANAGEMENT VARIANCES

1. Generally, variances may be issued for new construction and substantial-improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items 2 through 6 below have been fully considered. As the lot size increases beyond the one-half acre, the technical justification required for issuing the variance increases.

2. Variances may be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places, the State Inventory of Historic Places, or local inventory of historic places upon determination provided the proposed activity will not preclude the structure=s continued historic designation.

3. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

4. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

5. Variances shall only be issued upon (a) a showing of good and sufficient cause, (b) a determination that failure to grant the variance would result in exceptional hardship to the applicant, and (c) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

6. A community shall notify the applicant in writing over the signature of a community official that (1) the issuance of a variance to construct a structure below base flood level will result in increased premium rates for flood insurance up to amounts as high as $25.00 for $100.00 of insurance coverage and (2) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this ordinance.

SECTION F. CONDITIONS FOR APPROVING VARIANCES FOR AGRICULTURAL STRUCTURES

Any variance granted for an agricultural structure shall be decided individually based on a case by case analysis of the building's unique circumstances. Variances granted shall meet the following conditions as well as those criteria and conditions set forth in Article 5, Sections D and E of this ordinance.

In order to minimize flood damages during the 100-year flood and the threat to public health and safety, the following conditions shall be included for any variance issued for agricultural structures that are constructed at-grade and wet-floodproofed.

[Article 5, Section F(1)]

1. All agricultural structures considered for a variance from the floodplain management regulations of this ordinance shall demonstrate that the varied structure is located in wide, expansive floodplain areas and no other alternate location outside of the special flood hazard area exists for the agricultural structure. Residential structures, such as farm houses, cannot be considered agricultural structures.

2. Use of the varied structures must be limited to agricultural purposes in zone A only as identified on the community's Flood Insurance Rate Map (FIRM).

3. For any new or substantially damaged agricultural structures, the exterior and interior building components and elements (i.e., foundation, wall framing, exterior and interior finishes, flooring, etc.) below the base flood elevation, must be built with flood-resistant materials in accordance with Article 4, Section A (4)(b) of this ordinance.

4. The agricultural structures must be adequately anchored to prevent flotation, collapse, or lateral movement of the structures in accordance with Article 4, Section A (4)(a) of this ordinance. All of the building's structural components must be capable of resisting specific flood-related forces including hydrostatic, buoyancy, and hydrodynamic and debris impact forces.

5. Any mechanical, electrical, or other utility equipment must be located above the base flood elevation or floodproofed so that they are contained within a watertight, floodproofed enclosure that is capable of resisting damage during flood conditions in accordance with Article 4, Section A (4)(d) of this ordinance.

6. The agricultural structures must meet all National Flood Insurance Program (NFIP) opening requirements. The NFIP requires that enclosure or foundation walls, subject to the 100-year flood, contain openings that will permit the automatic entry and exit of floodwaters in accordance with Article 4, Section B (1)(c) of this ordinance.

7. The agricultural structures must comply with the floodplain management floodway encroachment provisions of Article 4, Section D(2) of this ordinance. No variances may be issued for agricultural structures within any designated floodway, if any increase in flood levels would result during the 100-year flood.

8. Major equipment, machinery, or other contents must be protected from any flood damage.

9. No disaster relief assistance under any program administered by any Federal agency shall be paid for any repair or restoration costs of the agricultural structures.

10. A community shall notify the applicant in writing over the signature of a community official that (1) the issuance of a variance to construct a structure below base flood level will result in increased premium rates for flood insurance up to amounts as high as $25.00 for $100.00 of insurance coverage and (2) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this ordinance.

11. Wet-floodproofing construction techniques must be reviewed and approved by the community and a registered professional engineer or architect prior to the issuance of any floodplain development permit for construction.

[Article 5, Section G]

SECTION G. CONDITIONS FOR APPROVING VARIANCES FOR ACCESSORY STRUCTURES

Any variance granted for an accessory structure shall be decided individually based on a case by case analysis of the building's unique circumstances. Variances granted shall meet the following conditions as well as those criteria and conditions set forth in Article 5, Sections D and E of this ordinance.

In order to minimize flood damages during the 100-year flood and the threat to public health and safety, the following conditions shall be included for any variance issued for accessory structures that are constructed at-grade and wet-floodproofed.

1. Use of the accessory structures must be solely for parking and limited storage purposes in zone A only as identified on the community's Flood Insurance Rate Map (FIRM).

2. For any new or substantially damaged accessory structures, the exterior and interior building components and elements (i.e., foundation, wall framing, exterior and interior finishes, flooring, etc.) below the base flood elevation, must be built with flood-resistant materials in accordance with Article 4, Section A (4)(b) of this ordinance.

3. The accessory structures must be adequately anchored to prevent flotation, collapse, or lateral movement of the structure in accordance with Article 4, Section A (4)(a) of this ordinance. All of the building's structural components must be capable of resisting specific flood-related forces including hydrostatic, buoyancy, and hydrodynamic and debris impact forces.

4. Any mechanical, electrical, or other utility equipment must be located above the base flood elevation or floodproofed so that they are contained within a watertight, floodproofed enclosure that is capable of resisting damage during flood conditions in accordance with Article 4, Section A (4)(d) of this ordinance.

5. The accessory structures must meet all National Flood Insurance Program (NFIP) opening requirements. The NFIP requires that enclosure or foundation walls, subject to the 100-year flood, contain openings that will permit the automatic entry and exit of floodwaters in accordance with Article 4, Section B (1)(c) of this ordinance.

6. The accessory structures must comply with the floodplain management floodway encroachment provisions of Article 4, Section D(2) of this ordinance. No variances may be issued for accessory structures within any designated floodway, if any increase in flood levels would result during the 100-year flood.

7. Equipment, machinery, or other contents must be protected from any flood damage.

8. No disaster relief assistance under any program administered by any Federal agency shall be paid for any repair or restoration costs of the accessory structures.

9. A community shall notify the applicant in writing over the signature of a community official that (1) the issuance of a variance to construct a structure below base flood level will result in increased premium rates for flood insurance up to amounts as high as $25.00 for $100.00 of insurance coverage and (2) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with the record of all variance actions as required by this ordinance.

10. Wet-floodproofing construction techniques must be reviewed and approved by the community and registered professional engineer or architect prior to the issuance of any floodplain development permit for construction.

ARTICLE 6 PENALTIES FOR VIOLATION

Violation of the provisions of this ordinance or failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with granting of variances) shall constitute a misdemeanor. Any person who violates this ordinance or fails to comply with any of its requirements shall, upon conviction thereof, be fined not more than $250.00, and in addition, shall pay all costs and expenses involved in the case. Each day such violation continues shall be considered a separate offense. Nothing herein contained shall prevent Chariton County or other appropriate authority from taking such other lawful action as is necessary to prevent or remedy any violation.

ARTICLE 7 AMENDMENTS

The regulations, restrictions, and boundaries set forth in this ordinance may from time to time be amended, supplemented, changed, or appealed to reflect any and all changes in the National Flood Disaster Protection Act of 1973, provided, however, that no such action may be taken until after a public hearing in relation thereto, at which parties of interest and citizens shall have an opportunity to be heard. Notice of the time and place of such hearing shall be published in a newspaper of general circulation in Chariton County. At least 20 days shall elapse between the date of this publication and the public hearing. A copy of such amendments will be provided to the Region VII office of the Federal Emergency Management Agency (FEMA). The regulations of this ordinance are in compliance with the National Flood Insurance Program (NFIP) regulations.

ARTICLE 8 DEFINITIONS

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the same meaning they have in common usage and to give this ordinance its most reasonable application.

"100-year Flood" *see "base flood."*

"Accessory Structure" means the same as *"appurtenant structure."*

"Actuarial Rates" *see "risk premium rates."*

"Administrator" means the Federal Insurance Administrator.

"Agency" means the Federal Emergency Management Agency (FEMA).

"Agricultural Commodities" means agricultural products and livestock.

"Agricultural Structure" means any structure used exclusively in connection with the production, harvesting, storage, drying, or raising of agricultural commodities.

"Appeal" means a request for review of the Floodplain Administrator's interpretation of any provision of this ordinance or a request for a variance.

"Appurtenant Structure" means a structure that is on the same parcel of property as the principle structure to be insured and the use of which is incidental to the use of the principal structure.

"Area of Special Flood Hazard" is the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year.

"Base Flood" means the flood having a one percent chance of being equaled or exceeded in any given year.

"Basement" means any area of the structure having its floor subgrade (below ground level) on all sides.

"Building" *see "structure."*

"Chief Executive Officer" or "Chief Elected Official" means the official of the community who is charged with the authority to implement and administer laws, ordinances, and regulations for that community.

"Community" means any State or area or political subdivision thereof, which has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction.

"Development" means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, levees, levee systems, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials.

"Elevated Building" means for insurance purposes, a non-basement building which has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.

"Eligible Community" or "Participating Community" means a community for which the Administrator has authorized the sale of flood insurance under the National Flood Insurance Program (NFIP).

"Existing Construction" means for the purposes of determining rates, structures for which the *"start of construction"* commenced before the effective date of the FIRM or before January 1, 1975, for FIRMs effective before that date. *"existing construction"* may also be referred to as *"existing structures."*

"Existing Manufactured Home Park or Subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the floodplain management regulations adopted by a community.

"Expansion to an Existing Manufactured Home Park or Subdivision" means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

"Flood" or "Flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland and/or (2) the unusual and rapid accumulation or runoff of surface waters from any source.

"Flood Boundary and Floodway Map (FBFM)" means an official map of a community on which the Administrator has delineated both special flood hazard areas and the designated regulatory floodway.

"Flood Elevation Determination" means a determination by the Administrator of the water surface elevations of the base flood, that is, the flood level that has a one percent or greater chance of occurrence in any given year.

"Flood Elevation Study" means an examination, evaluation and determination of flood hazards.

"Flood Fringe" means the area outside the floodway encroachment lines, but still subject to inundation by the regulatory flood.

"Flood Hazard Boundary Map (FHBM)" means an official map of a community, issued by the Administrator, where the boundaries of the flood areas having special flood hazards have been designated as (unnumbered or numbered) A zones.

"Flood Insurance Rate Map (FIRM)" means an official map of a community, on which the Administrator has delineated both the special flood hazard areas and the risk premium zones applicable to the community.

"Flood Insurance Study (FIS)" means an examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations.

"Floodplain" or "Flood-prone Area" means any land area susceptible to being inundated by water from any source *(see "flooding").*

"Floodplain Management" means the operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works, and floodplain management regulations.

"Floodplain Management Regulations" means zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as floodplain and grading ordinances) and other applications of police power. The term describes such state or local regulations, in any combination thereof, that provide standards for the purpose of flood damage prevention and reduction.

"Floodproofing" means any combination of structural and nonstructural additions, changes, or adjustments to structures that reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, or structures and their contents.

"Floodway" or "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

"Floodway Encroachment Lines" means the lines marking the limits of floodways on Federal, State and local floodplain maps.

"Freeboard" means a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. *"Freeboard"* tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as bridge openings and the hydrological effect of urbanization of the watershed.

"Functionally Dependent Use" means a use that cannot perform its intended purpose unless it is located or carried out in close proximity to water. This term includes only docking facilities and facilities that are necessary for the loading and unloading of cargo or passengers, but does not include long-term storage or related manufacturing facilities.

"Highest Adjacent Grade" means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

"Historic Structure" means any structure that is (a) listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (b) certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (c) individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or (d) individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either (1) by an approved state program as determined by the Secretary of the Interior or (2) directly by the Secretary of the Interior in states without approved programs.

"Lowest Floor" means the lowest floor of the lowest enclosed area, including basement. An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access, or storage, in an area other than a basement area, is not considered a building's lowest floor, **provided** that such enclosure is not built so as to render the structure in violation of the applicable floodproofing design requirements of this ordinance.

"Manufactured Home" means a structure, transportable in one or more sections, that is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term *"manufactured home"* **does not include** a *"recreational vehicle."*

"Manufactured Home Park or Subdivision" means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

"Map" means the Flood Hazard Boundary Map (FHBM), Flood Insurance Rate Map (FIRM), or the Flood Boundary and Floodway Map (FBFM) for a community issued by the Federal Emergency Management Agency (FEMA).

"Market Value" or "Fair Market Value" means an estimate of what is fair, economic, just and equitable value under normal local market conditions.

"Mean Sea Level" means, for purposes of the National Flood Insurance Program (NFIP), the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which base flood elevations shown on a community's Flood Insurance Rate Map (FIRM) are referenced.

"New Construction" means, for the purposes of determining insurance rates, structures for which the *"start of construction"* commenced on or after the effective date of an initial FIRM or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, *"new construction"* means structures for which the *"start of construction"* commenced on or after the effective date of the floodplain management regulations adopted by a community and includes any subsequent improvements to such structures.

"New Manufactured Home Park or Subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lot on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of floodplain management regulations adopted by the community.

"(NFIP)" means the National Flood Insurance Program (NFIP).

"Participating Community" also known as an *"eligible community,"* means a community in which the Administrator has authorized the sale of flood insurance.

"Person" includes any individual or group of individuals, corporation, partnership, association, or any other entity, including Federal, State, and local governments and agencies.

"Principally Above Ground" means that at least 51 percent of the actual cash value of the structure, less land value, is above ground.

"Recreational Vehicle" means a vehicle which is (a) built on a single chassis; (b) 400 square feet or less when measured at the largest horizontal projections; (c) designed to be self-propelled or permanently towable by a light- duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

"Remedy A Violation" means to bring the structure or other development into compliance with Federal, State, or local floodplain management regulations; or, if this is not possible, to reduce the impacts of its noncompliance.

"Repetitive Loss" means flood-related damages sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each such flood event, equals or exceeds twenty-five percent of the market value of the structure before the damage occurred.

"Risk Premium Rates" means those rates established by the Administrator pursuant to individual community studies and investigations which are undertaken to provide flood insurance in accordance with Section 1307 of the National Flood Disaster Protection Act of 1973 and the accepted actuarial principles. *"Risk premium rates"* include provisions for operating costs and allowances.

"Special Flood Hazard Area" *see "area of special flood hazard."*

"Special Hazard Area" means an area having special flood hazards and shown on an FHBM, FIRM or FBFM as zones (unnumbered or numbered) A and AE.

"Start of Construction" includes substantial-improvements, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvements were within 180 days of the permit date. The ***actual start*** means either the first placement of permanent construction of a structure on a site, such as the pouring of slabs or footings, the installation of piles, the construction of columns, any work beyond the stage of excavation, or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling, the installation of streets and/or walkways, excavation for a basement, footings, piers, foundations, the erection of temporary forms, nor installation on the property of accessory

structures, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial-improvement, the ***actual start of construction*** means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

"State Coordinating Agency" means that agency of the state government, or other office designated by the governor of the state or by state statute at the request of the Administrator to assist in the implementation of the National Flood Insurance Program (NFIP) in that state.

"Structure" means, for floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home. *"Structure"* for insurance purposes, means a walled and roofed building, other than a gas or liquid storage tank, that is principally above ground and affixed to a permanent site, as well as a manufactured home on a permanent foundation. For the latter purpose, the term includes a building while in the course of construction, alteration or repair, but does not include building materials or supplies intended for use in such construction, alteration or repair, unless such materials or supplies are within an enclosed building on the premises.

"Substantial-Damage" means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred. The term includes Repetitive Loss buildings (see definition).

For the purposes of this definition, "repair" is considered to occur when the first repair or reconstruction of any wall, ceiling, floor, or other structural part of the building commences.

The term does not apply to:

a.) Any project for improvement of a building required to comply with existing health, sanitary, or safety code specifications which have been identified by the Code Enforcement Official and which are solely necessary to assure safe living conditions, or

b.) Any alteration of a "historic structure" provided that the alteration will not preclude the structure's continued designation as a "historic structure", or

c.) Any improvement to a building.

"Substantial Improvement" means any combination of reconstruction, alteration, or improvement to a building, taking place during a ten year period, in which the cumulative percentage of improvement equals or exceeds fifty percent of the current market value of the building. For the purposes of this definition, an improvement occurs when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the building. This term includes structures, which have incurred "repetitive loss" or "substantial damage", regardless of the actual repair work done.

The term does not apply to:

a.) any project for improvement of a building required to comply with existing health, sanitary, or safety code specifications which have been identified by the Code Enforcement Official and which are solely necessary to assure safe living conditions, or

b.) Any alteration of a "historic structure" provided that the alteration will not preclude the structure's continued designation as a "historic structure." Or

c.) Any building that has been damaged from any source or is categorized as repetitive loss.

** Recommend development of written and adopted policy and procedure.

"Substantially improved existing manufactured home parks or subdivisions" is where the repair, reconstruction, rehabilitation or improvement of the streets, utilities and pads equals or exceeds 50 percent of the value of the streets, utilities and pads before the repair, reconstruction or improvement commenced.

"Variance" means a grant of relief by the community from the terms of a floodplain management regulation. Flood insurance requirements remain in place for any varied use or structure and cannot be varied by the community.

"Violation" means the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required by this ordinance is presumed to be in violation until such time as that documentation is provided.

"Water Surface Elevation" means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929 (or other datum where specified) of floods of various magnitudes and frequencies in the floodplain.

ARTICLE 9 CERTIFICATE OF ADOPTION

This Floodplain Management Ordinance for the community of Chariton County, Missouri.

ADOPTED AND APPROVED by the Governing Body of Chariton County, Missouri, this 27th day of March, 2023.

Evan Emmerich, Presiding Commissioner

ATTEST:

Mitzi Schuchmann, County Clerk

It is recommended that the following forms be used in implementing the attached ordinance.

1. Floodplain Development Permit/Application

   This form should be issued to all applicants whose proposed development meets the definition of development in the community's floodplain management regulations. Copies of this form must be maintained by the community.

2. Elevation and Floodproofing Certificates

   These FEMA forms should be used to validate that the techniques used to elevate or floodproof the structure meet the community standards. Use of these particular FEMA forms is encouraged to ensure both compliance with local regulations and provide adequate information for insurance purposes. When these forms are used, the community should maintain a copy in the file with the floodplain development permit. Copies of these forms may be obtained without cost by calling the National Flood Insurance Program toll free at (800) 358-9616.

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Dru Buntin, Director

March 21, 2022

City of Marceline
C/O Mr. Roger Sullivan
116 North Kansas Avenue
Marceline, Missouri 64658 roger.sullivan@marceline.mo.us

RE: Marceline New Reservoir Dam (MO12127) Chariton County

Dear Mr. Sullivan:

As a result of an inspection of the Marceline New Reservoir Dam on March 8, 2022, I am pleased to inform you that Registration Permit R-135 has been renewed and is enclosed for your use. The term of the permit will be three years from the expiration date of the last registration permit issued for the dam and will expire on March 24, 2025. At that time, the dam will be reinspected by the Dam and Reservoir Safety Program at no cost to you. The permit is being renewed for three years based on the downstream environmental zone classification.

The inspection report and summary are enclosed for your information. If you have any questions, please feel free to contact Denise Rittenhouse at (573) 368-2175.

Thanks for your cooperation in renewing this permit.

Sincerely,

MISSOURI GEOLOGICAL SURVEY

Date: 2022.03.23 09:48:03 -05'00'

Ryan P. Stack, P.E.
Chief Engineer
Dam and Reservoir Safety Program

Enclosure

Registration Permit No. R-135
Renewed March 21, 2022

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

DAM AND RESERVOIR SAFETY COUNCIL

REGISTRATION PERMIT

Pursuant to Chapters 236.400 through 236.500 of the Revised Statutes of Missouri and the rules established by the Dam and Reservoir Safety Council, and on the basis of an inspection by the Department of Natural Resources for the Marceline New Reservoir Dam, Chariton County, all of which are made a part hereof by reference, **PERMISSION IS HEREBY GRANTED** to the City of Marceline, hereafter known as the permittee, whose address for the purpose of notices and other communications pertaining to this permit is 116 North Kansas Avenue; Marceline, Missouri 64658, which address is subject to change by written notice from the permittee, **TO OPERATE** said dam and reservoir located in Section 14, Township 56 North, Range 19 West, having identification number of MO12127. The dam has a height of 49 feet, a principal spillway elevation of 87.2 feet (site datum), an emergency spillway elevation of 91.7 feet (site datum), a minimum crest elevation of 99.2 feet (site datum), and a reservoir area of 177 acres at the water storage elevation. The approximate UTM Coordinates are 4,390,000 Meters North and 500,300 Meters East, Zone 15, subject to the following provisions:

GENERAL PROVISIONS:

1. No liability shall be imposed upon or incurred by the State of Missouri and/or the Dam and Reservoir Safety Council, or any of their officers, agents, employees, and members, officially or personally, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors, or closed corporations or successors relating to any matter hereunder. This permit shall not be construed as estopping or limiting any legal claim or right of action of the state against the permittee, its agents, employees or contractors for any damages or injury resulting from any such act or omission by them or for violation of or failure to comply with the provisions of the permit or applicable provisions of law.

2. The permittee shall comply with all Federal, State and local laws and regulations, and shall obtain such other permits as may be required.

3. In cases where the doing by the permittee of anything authorized by this permit shall involve the taking, using or damaging of any property rights or interest of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, it is the sole responsibility of the permittee, before proceeding therewith, to obtain the written consent of all persons, agencies, or authorities concerned, and to acquire all property, rights and interests necessary therefore, including flood easements or permissions for all properties which may be inundated by the dam on a temporary or permanent basis in the upstream impoundment area below the top of dam elevation.

4. The permittee shall notify the Dam and Reservoir Safety Council in writing upon the sale or other transfer of interest in the dam or reservoir.

5. Based on conditions existing at the time of issuing this permit, the Downstream Environment Zone is Class II. Future development in the vicinity of the dam and flood plain below the dam may result in a change in classification. This change will necessitate hydraulic and structural upgrading of the dam so the dam is in compliance with the rules and regulations of the Missouri Dam and Reservoir Safety Council. Permittee or its representatives, successors or assigns shall perform any such upgrading upon a change in classification and upon notification from the Missouri Dam and Reservoir Safety Council.

6. The permittee shall not alter, enlarge, reduce, repair or remove the dam, reservoir or appurtenances without first obtaining a construction permit from the Dam and Reservoir Safety Council.

7. The permittee shall immediately notify in writing, the Chief Engineer of any conditions relating to the structural stability of, hydraulic capacity of, or seepage through the dam discovered during the term of this permit which may differ from those conditions identified in the renewal inspection summary.

8. The terms and provisions of this permit shall extend to and bind the successors in authority of the Dam and Reservoir Safety Council and the legally assigned successors in interest of the permittee.

9. Maintenance of the dam and reservoir herein permitted shall be the responsibility of the permittee.

10. The term of this permit shall be three (3) years from the expiration date of the original registration permit issued for the dam and will expire on March 24, 2025. The permittee shall apply for renewal not less than sixty (60) days prior to this expiration date.

Executed at Rolla, Missouri on this 21st day of March, 2022

DAM & RESERVOIR SAFETY COUNCIL

Date: 2022.03.23 09:11:24 -05'00'

By _____
Chief Engineer
Dam and Reservoir Safety Program

ID #: MO12127	MARCELINE NEW RESERVOIR DAM	INSPECTION DATE: March 8, 2022
CHARITON COUNTY	PERMIT NUMBER: R-135	HAZARD CLASS: II

DEPARTMENT OF NATURAL RESOURCES
DAM & RESERVOIR SAFETY PROGRAM
DAM INSPECTION REPORT
MARCH 16, 2022

OWNER:	*CITY OF MARCELINE*
ADDRESS:	*C/O MR. ROGER SULLIVAN*
	116 NORTH KANSAS AVENUE
CITY/STATE/ZIP:	*MARCELINE, MISSOURI 64658*
TELEPHONE:	*660-376-0700*
EMAIL:	*roger.sullivan@marceline.mo.us*

TYPE OF DAM:	*EARTH EMBANKMENT*
PLSS:	*T56NR19WS14*

SPILLWAY TYPE(S):	**PRINCIPAL**	*Double 4-foot by 6-foot concrete drop inlet to a 54-inch diameter reinforced concrete pipe (RCP)*
	EMERGENCY	*Open channel in left abutment*

ENGINEER CERTIFICATION

☒ **I hereby certify that MARCELINE NEW RESERVOIR DAM was inspected on *March 8, 2022* in accordance with RSMO 236.400 through RSMO 236.500.**

☒ **I hereby certify that MARCELINE NEW RESERVOIR DAM did not have any observed defects that required correction at the time of the inspection.**

☒ **Judgement of Slope Stability – The embankment and appurtenant structures appeared to be in good overall condition at the time of the inspection, with no indications of slope instability or excessive seepage.**

☐ **Defects were found that will have to be corrected prior to the permit being renewed.**

SITE SURVEY

STATION	ELEVATION (ft.)[1]	COMMENTS
TBM	100.0	Temporary benchmark – Nail in downstream gate post right end of dam
PS	87.2	Principal spillway inlet
ES	91.7	Emergency spillway sill
Dam	99.2	Low point on crest of dam
WL	84.6	Water level on day of inspection
Other		
Freeboard (ft.)	**Available**	**Required**
	12.0	**7.7**

[1]Elevations are based on an assumed, local site datum of 100.0 feet at the temporary benchmark

Equipment used ☒ GPS system ☐ Auto level and rod

STATE OF MISSOURI
JOSEPH P WILSON NUMBER E-24540
REGISTERED PROFESSIONAL ENGINEER
3/16/22

INSPECTING ENGINEER
Joseph P. Wilson, PE, PH

ID #: MO12127	MARCELINE NEW RESERVOIR DAM	INSPECTION DATE: March 8, 2022
CHARITON COUNTY	PERMIT NUMBER: R-135	HAZARD CLASS: II

INSPECTION CHECKLIST

Item	Condition	Issue	Comments
1. Upstream face/riprap	MR	Vegetation	Cut and remove woody vegetation from upstream face.
2. Crest	NP		
3. Downstream face	NP		
4. Left groin	NP		
5. Right groin	NP		
6. Toe of dam	NP		
7. Principal spillway	NP		
8. Principal spillway outlet channel	MR	Vegetation	Cut and remove woody vegetation from around headwall.
8. Emergency spillway	MR	Vegetation	Cut and remove woody vegetation from spillway approach (upstream of concrete sill).
9. Emergency spillway outlet channel	NP		
10. Embankment drains	NP	Debris	Clear debris from grates and from embankment drain outlets.
11. Lake drain gates/valves	NP		
12. Other	NA		

NP = No observable problem
MR = Maintenance Required
DO = Defect Observed
EC = Emergency Condition
OR = Observation Required
NA = Not Applicable



Upstream face



Downstream face



Principal spillway inlet



Principal spillway outlet
and embankment drain outlet



Emergency spillway inlet



Emergency spillway approach



Emergency spillway channel



Bench drain covered with debris



Embankment/bench drain outlet



Embankment/bench drain outlet



Woody vegetation around discharge pipe headwall