

# LIVINGSTON COUNTY

## MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

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DISASTER!**



# CONTRIBUTORS

## Livingston County Hazard Mitigation Planning Committee

### Jurisdictional Representatives

Name	Title	Department	Jurisdiction
Derrick Allen	Chillicothe Fire and Ambulance dist.	Fire District	Chillicothe
Eric Reeter	Chillicothe Fire and Ambulance dist.	Fire District	Chillicothe
Jordan Hall	Nursing Home	Administration	Livingston
Lu Corber	Nursing Home	Administration	Livingston
Gil Gates	County Commissioner – Presiding	County	City of Chillicothe
Jordon Ralls	Livingston County Road & Bridge	Road & Bridge	County Road & Bridge
Tim Hein	City Employee	City Government	City of Ludlow
Bryce Anderson	County Commissioner	County	Livingston County
Dustin Woelfle	Sherrif	Sheriff's Dept.	Livingston County Sheriff
Dennis Hicks	County Commissioner	County	Livingston County
Kyle B. Gramenz	Alderman	City Government	City of Chula
Ann Hamilton	Chula Rural Fire Department	Fire District	Chula Rural Fire Dept.
Craig Railsback	Livingston County RIII	School	Livingston County R-III
Ed Daugherty	Chillicothe Fire Protection	Fire District	City of Chillicothe
Frank Hayden	Hedrick Medical Center	Administration	City of Chillicothe
Ed Douglas	County Commissioner – Presiding	County	Livingston County
Dan Weibers	Superintendent	Administration	Chillicothe R-II

### Stakeholder Representatives

Name	Title	Department	Jurisdiction
Derrick Allen	Chillicothe Fire and Ambulance	Fire District	City of Chillicothe
Eric Reeter	Chillicothe Fire and Ambulance	Fire District	City of Chillicothe
Jordan Hall	Nursing Home	Administration	Livingston County
Lu Corber	Nursing Home	Administration	Livingston County
Gil Gates	County Commissioner – Presiding	County	City of Chillicothe
Jordon Ralls	Livingston County Road & Bridge	Road & Bridge	Livingston County
Tim Hein	City Employee	City Government	City of Ludlow
Bryce Anderson	County Commissioner	County	Livingston
Dustin Woelfle	Sherrif	County Sheriff	Livingston
Dennis Hicks	County Commissioner	County	Livingston
Michael Booth	MO SEMA	Administration	State of Missouri
Kyle B. Gramenz	Alderman	City Government	City of Chula
Ann Hamilton	Board Member	Fire District	Chula Rural Fire Department
Craig Railsback	Superintendent	Administration	Livingston County R-III
Ed Daugherty	Chillicothe Fire Protection	Fire District	City of Chillicothe
Frank Hayden	Hedrick Medical Center	Administration	City of Chillicothe
Burnie Schneiderheinze	Superintendent	Administration	Southwest Livingston R-I
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## EXECUTIVE SUMMARY

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The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. Livingston 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. This plan is an update of the previous plan that was approved by FEMA on [insert date]. The plan and the update were prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 to result in eligibility for the Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grant Programs.

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

- Unincorporated Livingston County
- City of Chillicothe
- City of Utica
- Chillicothe R-II
- Livingston County R-III
- Southwest Livingston County R-II

The School Districts of Southwest Livingston County R-I and Livingston County R-III were invited to participate in the planning process but did not meet all the established requirements for official participation. When the future five-year update is developed for this plan, this school district again will be invited again to participate.

The City of Chula and the City of Ludlow attended the 1<sup>st</sup> planning meeting. They did not meet any other requirements for official participation. When the plan is updated in the future they will be invited again to participate.

Livingston County and the entities listed above followed a plan update process using a methodology in accordance with FEMA guidance, which began with the formation of a Mitigation Planning Committee (MPC) comprised of representatives from Livingston County and participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to Livingston 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, 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/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.

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
<b>Structure and Infrastructure Projects</b>								
County 2025.2	Committee for storm water improvements	Livingston Co.	High	1,2	Flooding, Severe thunderstorms	X	X	
County 2025.3	Critical facilities backup	Livingston Co	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
County 2025.5	Flood warning system	Livingston Co	Low	1	Flooding	x	x	
County 2025.8	Snow removal	Livingston Co.	High	4	Severe winter weather	X	X	
County 2025.9	Storm drain system	Livingston Co	Medium	2	Flooding	x	x	
County 2025.10	Storm shelters/Safe rooms	Livingston Co	High	1	Severe thunderstorms, tornado		X	
County 2025.12	Tree trimming maintenance	Livingston Co	High	1,4	Severe thunderstorms, Severe winter weather, Tornado	X	X	
County 2025.13	Installation of warning siren	Livingston Co	High	1	Severe thunderstorms, Tornado,	x	X	
County 2025.16	Debris removal	Livingston Co	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
CC 2025.1	Committee for storm water improvements	Chillicothe.	High	1,2	Flooding, Severe thunderstorms	X	X	
CC 2025.2	Upgraded culverts and storm drains	Chillicothe.	High	1,2	Flooding, Severe thunderstorms	X	X	
CC 2025.6	Critical facilities backup	Chillicothe	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CC 2025.7	Debris removal	Chillicothe	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
CC 2025.8	Storm shelters/Safe rooms	Chillicothe	High	1	Severe thunderstorms, tornado		X	
CCH 2025.2	Generator	Chula	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
CCH 2025.4	Critical facilities backup	Chula	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
CCH 2025.5	Debris removal	Chula	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
CCH 2025.6	Storm shelters/Safe rooms	Chula	High	1	Severe thunderstorms, tornado		X	
VU 2025.3	Critical facilities backup	Utica	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
VU 2025.4	Debris removal	Utica	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
VU 2025.5	Storm shelters/Safe rooms	Utica	High	1	Severe thunderstorms, tornado		X	
VU 2025.6	Generator	Utica	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
CSD 2025.2	Storm shelters/Safe rooms	Chillicothe R-II	High	1	Severe thunderstorms, tornado		X	
CSD 2025.3	Generator	Chillicothe R-II	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
LCAD 2025.3	Critical facilities backup	Livingston Co Ambulance District	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
LCAD 2025.4	Generator	Livingston Co Ambulance District	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
CFPD 2025.4	Generator	Chillicothe fire Protection district	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
<b>Natural Systems Protection</b>								
County 2025.9	Storm drain system	Livingston Co	Medium	2	Flooding	x	x	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
County 2025.12	Tree trimming maintenance	Livingston Co	High	1,4	Severe thunderstorms, Severe winter weather, Tornado	X	X	
County 2025.16	Debris removal	Livingston Co	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
County 2025.17	Participation in the NFIP	Livingston Co	High	2	Flooding	x	x	x
CC 2025.7	Debris removal	Chillicothe	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
CC 2025.9	Participation in the NFIP	Chillicothe	High	2	Flooding	x	x	x
CCH 2025.5	Debris removal	Chula	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
VU 2025.4	Debris removal	Utica	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
VU 2025.7	Participation in the NFIP	Utica	High	2	Flooding	x	x	x
<b>Planning and Regulation</b>								
County 2025.2	Committee for storm water improvements	Livingston Co.	High	1,2	Flooding, Severe thunderstorms	X	X	
County 2025.7	Monitor repetitive loss properties	Livingston Co.	High	2	Flooding			x
County 2025.9	Storm drain system	Livingston Co	Medium	2	Flooding	x	x	
County 2025.11	Survey of flood plain areas	Livingston Co	Low	2	Flooding	x	x	x

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
County 2025.15	Creation of a county-level municipality steering committee	Livingston Co	High	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
County 2025.17	Participation in the NFIP	Livingston Co	High	2	Flooding	x	x	x
CC 2025.1	Committee for storm water improvements	Chillicothe.	High	1,2	Flooding, Severe thunderstorms	X	X	
CC 2025.9	Participation in the NFIP	Chillicothe	High	2	Flooding	x	x	x
VU 2025.7	Participation in the NFIP	Utica	High	2	Flooding	x	x	x
<b>Education and Outreach</b>								
County 2025.1	Elected officials' mitigation education	Livingston Co.	High	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
County 2025.4	Mitigation education	Livingston Co	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	x

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
County 2025.6	Mitigation education for developers	Livingston Co	Medium	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
County 2025.14	Weather Alerts	Livingston Co	High	1,2,3,4	Flooding, Dam Failure, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	
County 2025.15	Creation of a county-level municipality steering committee	Livingston Co	High	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
CC 2025.3	Mitigation education for developers	Chillicothe	Medium	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CC 2025.4	Mitigation education	Chillicothe	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X
CC 2025.5	Weather Alerts	Chillicothe	High	1,2,3,4	Flooding, Dam Failure, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	
CCH 2025.1	Mitigation education	Chula	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X
CCH 2025.3	Weather Alerts	Chula	High	1,2,3,4	Flooding, Dam Failure, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
VU 2025.1	Mitigation education	Utica	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X
VU 2025.2	Weather Alerts	Utica	High	1,2,3,4	Flooding, Dam Failure, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	
CSD 2025.1	Mitigation education	Chillicothe R-II	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X
LCAD 2025.1	Mitigation education	Livingston Co. Ambulance District	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
LCAD 2025.2	Weather Alerts	Livingston Co Ambulance District	High	1,2,3,4	Flooding, Dam Failure, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	
CFPD 2025.1	Mitigation education	Chillicothe fire protection district	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X

## PREREQUISITES

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**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 D, 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 (local government); and

WHEREAS the (local government/school district) has prepared a multi-hazard mitigation plan, hereby known as (title and date of mitigation plan) in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS (title and date of mitigation plan) identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in (local government/school district) from the impacts of future hazards and disasters; and

WHEREAS adoption by the (local governing body/school district) demonstrates its 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:

Section 1. In accordance with (local rule for adopting resolutions), the (local governing body/school district) adopts the (title and date of mitigation plan). While content related to (local government/school district) may require revisions to meet the plan approval requirements, changes occurring after adoption will not require (local government/school district) to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

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

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## 1.1 PURPOSE

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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 Livingston County. Livingston 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 Livingston County, The City Chillicothe, The Village of Utica, Chillicothe R-II, Livingston County R-III, and Southwest Livingston County R-II. 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 Livingston 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 Livingston County Hazard Mitigation Plan, which was approved on June 10, 2021, was also used in the development of this update.

## 1.2 BACKGROUND AND SCOPE

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The Livingston County Hazard Mitigation Plan is the update of a plan that was approved on June 10, 2021. 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.

Livingston County and the participating entities listed above developed a Multi-Jurisdictional Hazard Mitigation Plan that was approved by FEMA in June of 2021 (hereafter referred to as the 2021 Hazard Mitigation Plan). This current planning effort serves to update that previously approved plan.

The information that is contained in the Livingston 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**

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The latest (2026) updated version of the Livingston County Hazard Mitigation Plan involves 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 2026 Livingston 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 Livingston 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

**Table 1.1. Changes Made in Plan Update**

Plan Section	Summary of Updates
<b>Executive Summary</b>	<ul style="list-style-type: none"> <li>• Added Mitigation Action Matrix Table</li> <li>• Revised the executive summary and resolution to match order of template</li> <li>• Updated goals from previous plan to better reflect hazards mitigated by current proposed actions</li> </ul>
<b>Chapter 1 - Introduction and Planning Process</b>	<ul style="list-style-type: none"> <li>• Updated members of the Mitigation Planning Committee (MPC) and participating jurisdictions formally adopted the MPC.</li> </ul>
<b>Chapter 2 - Planning Area Profile and Capabilities</b>	<ul style="list-style-type: none"> <li>• Changes include updating maps, identifying most current state plan, and updating demographic data using 2020 Census and American Community Survey Information</li> <li>• Inviting neighboring jurisdictions to participate.</li> <li>• Updated charts, graphs, tables, maps, and other information where necessary</li> </ul>
<b>Chapter 3 - Risk Assessment</b>	<ul style="list-style-type: none"> <li>• Combined extreme heat and extreme cold into one hazard: extreme temperatures.</li> <li>• Updated section with current Census information, agricultural summary, and confirming that current data is correct.</li> <li>• Incorporated information from the current 2023 Missouri State Hazard Mitigation Plan</li> <li>• Previous events updated for each hazard</li> </ul>
<b>Chapter 4 - Mitigation Strategy</b>	<ul style="list-style-type: none"> <li>• 2021 mitigation goals and strategies reviewed by planning committee and updated</li> <li>• The mitigation category of each action was added to the action worksheets</li> </ul>
<b>Chapter 5 - Plan Implementation and Maintenance</b>	<ul style="list-style-type: none"> <li>• Updated the MPC meeting for evaluating and updating the plan to annually</li> </ul>

## 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.**

Livingston 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 2025*.

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 Livingston County Mitigation Planning Committee**

Name	Title	Department	Jurisdiction
Derrick Allen	Chillicothe Fire and Ambulance dist.	Fire District	Chillicothe
Eric Reeter	Chillicothe Fire and Ambulance dist.	Fire District	Chillicothe
Jordan Hall	Nursing Home	Administration	Livingston
Lu Corber	Nursing Home	Administration	Livingston
Gil Gates	County Commissioner – Presiding	County	City of Chillicothe
Jordon Ralls	Livingston County Road & Bridge	Road & Bridge	County Road & Bridge
Tim Hein	City Employee	City Government	City of Ludlow
Bryce Anderson	County Commissioner	County	Livingston County
Dustin Woelfle	Sherrif	Sheriff’s Dept.	Livingston County Sheriff
Dennis Hicks	County Commissioner	County	Livingston County
Kyle B. Gramenz	Alderman	City Government	City of Chula
Ann Hamilton	Chula Rural Fire Department	Fire District	Chula Rural Fire Dept.
Craig Railsback	Livingston County RIII	School	Livingston County R-III

Ed Daugherty	Chillicothe Fire Protection	Fire District	City of Chillicothe
Frank Hayden	Hedrick Medical Center	Administration	City of Chillicothe
Ed Douglas	County Commissioner – Presiding	County	Livingston County
Dan Weibers	Superintendent	Administration	Chillicothe R-II

**Table 1.3. MPC Capability with Six Mitigation Categories**

Community Department/Office	Preventive Measures	Structure and Infrastructure Projects		Natural Resource Protection	Public Information	Emergency Services
		Property Protection	Structural Flood Control Projects			
Livingston County Commission	✓	✓		✓	✓	
Livingston County Road & Bridge	✓	✓	✓	✓		
Livingston County Sheriff	✓				✓	✓
City of Chillicothe	✓	✓	✓	✓	✓	
Chula Rural FD	✓	✓			✓	✓
Livingston County R-III	✓				✓	✓

### 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 the plan was gathered in part through a series of meetings held within Livingston County. The planning process for the Livingston County Hazard Mitigation Plan began during the summer of 2025, with discussions involving elected officials, community members, and other interested parties, and the planning committee was formed. (See Table 1.2 and Table 1.4).

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 1.3.

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:

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 1.4. Jurisdictional Participation in Planning Process**

Jurisdiction	Kick-off Meeting	Meeting #2	Meeting #3	Data Collection Questionnaire Response	Update/Develop Mitigation Actions
Livingston Co	X	X		X	X
Chillicothe	X	X	X	X	X
Utica	Phone Call			X	X
Chillicothe R-II					
Livingston Co. R-III	X			X	X
Livingston Co. Ambulance Dist.			X	X	
Chillicothe Fire Protection Dist.			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, Livingston 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 Livingston 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 1.5. County Mitigation Plan Update Process**

<b>Community Rating System (CRS) Planning Steps (Activity 510)</b>	<b>Local Mitigation Planning Handbook (2023) Tasks (44 CFR Part 201)</b>
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 5: Review Community Capabilities 44 CFR 201.6(b)(2) & (3)
Step 4. Assess the hazard	Task 4: 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)**

- Both initial “Meeting #1” in Livingston County occurred in the City of Chillicothe as follows:
  - City of Chillicothe: August 27th, 2025, 700 Webster St from 3:00-4:30
  - Virtual Meeting #1: August 28<sup>th</sup> 20:00-12:00pm.

- Virtual meeting #1 covered the basics of hazard mitigation planning, which needs updates every 5 years, and the requirements for HMGP Grants. The planning process was outlined, detailing 3 in-person meetings and 3 virtual meetings, with the first meeting focused on outreach and hazard identification. The requirement for the jurisdictions to participate is to fill out the Jurisdictional Questionnaire, attend at least one meeting, offer suggestions, develop actions, and adopt the plan. GHRPC had sent out letters, emails, and made phone calls to potential stakeholders, encouraging those who fill out the survey to share with the public. Each attendee was emailed a detailed copy of “Hazard Identification for Livingston County”. The meeting ended with an open floor for any other existing questions. (See Appendix B for planning process documentation)
- Jurisdictional Questionnaires were distributed to jurisdictions participating in the planning process.
- Meeting #2 occurred as follows:
  - In person meeting at 700 Webster St City of Chillicothe September 11<sup>th</sup>.
  - Virtual meeting #2: September 12<sup>th</sup> from 10:00-12:00PM.
- Both the in-person and virtual meeting #2 addressed hazard mitigation and risk assessment in Livingston County. Attendees from various organizations discussed prevention, protection, mitigation, response, and recovery measures. They ranked and charted regional hazards and worked on identifying vulnerable assets.
- In addition to scheduled meetings, informal communication regarding the planning process was conducted in person, by phone calls, and by emails.
- All meeting documentation can be found in Appendix B.
- There was an in-person and virtual Meeting #3 held on October 14, 2025, at 3PM in Chillicothe, Missouri at the Courthouse at 700 Webster St. in Chillicothe, MO. There was a virtual meeting on October 15, 2025 at 10:00AM. Notice of this meeting and a link was sent to all jurisdictions by email prior to the scheduled meeting. The virtual link for this meeting was also published on Green Hills Regional Planning Commission’s website.
- At both Meeting #3s, a brief overview was given for both Meeting #1 and Meeting #2. The purpose of the hazard mitigation plan, the identified hazards, the outreach efforts, the results of the risk assessment, and potential vulnerable assets were discussed. Eligibility requirements for being a participant were discussed, and attendees were made aware that they must attend at least one meeting, return their jurisdictional questionnaire, and adopt the plan in order to be eligible for hazard mitigation assistance grants.
- At the Planning Meeting #3 also discussed: action prioritization, Adopting the Plan, and Plan Maintenance. STAPLEE worksheets were distributed to jurisdictions to prioritize their actions.

**Table 1.6. Schedule of MPC Meetings**

Meeting	Topic	Date
Kick-off Meeting/ Meeting #1	Outreach & Hazard Identification	August 27 & August 28, 2025
Planning Meeting #2	Risk Assessment & Mitigation Strategies	Sept. 11 & Sept. 12, 2025

Planning Meeting #3	Action Prioritization, Adopting the Plan, & Plan Maintenance	Oct. 14 & Oct. 15, 2025
---------------------	--	----------------------------

**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.**

During each of the planning meetings attendees were provided with time to comment on plan development.

- Meeting #1 provided attendees with the opportunity to provide information about hazards, previous events, and considerations of vulnerabilities to natural hazards.
- Meeting #2 specifically addressed the vulnerabilities of the participating jurisdictions and discussion about addressing said vulnerabilities. Additionally, meeting #2 also addressed which hazards would pose the most risk in terms of frequency, past damage, and specific risks posed to participating jurisdictions.
- Finally, meeting #3 provided opportunity for jurisdictions to discuss hazards, potential projects, and create new actions with the intent of mitigating future damages.

A Survey Monkey public survey was created to solicit public comments. The link and the QR code were made available to all jurisdictions, published on social media, and published on the flyers that were sent to all jurisdictions.

The draft of the Livingston County Hazard Mitigation Plan was published on Green Hills Regional Planning Commission’s website on October 3, 2025. Contact information was provided to any individual that wanted to make a comment on the plan and the ability to make a comment was enabled on the GHRPC website.

All participating jurisdictions were made aware that the plan was available for public comment, and were provided with, at minimum, 30 days to review and/or comment on the plan. The availability of the plan for public comment or review was advertised on local social media pages and a press release was sent to area news outlets. All participants were also advised in person or via email of the review period.

The public survey received 7 responses and the MPC was made aware of the results of the survey during the planning process. The data collected is in Appendix C. The plan was available for public comment after being published on GHRPC website for 30 days. Notice of the plan was published on community and GHRPC Facebook pages and a press release was issued in local outlets. (See Appendix B for documentation) The plan was published to the Green Hills Regional Planning Commission on January 1, 2026. The plan was made available for public comment from January 1 to February 2, 2026. There were no comments received on the plan.

**Step 3: Coordinate with Other Departments and Agencies and Incorporate Existing Information**  
*(Handbook Task 2)*

**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.**

In the interest of involving stakeholders throughout the planning area, the following organizations and businesses were invited to participate in the hazard mitigation planning process for Livingston County.

- Neighboring Communities:
  - City of Hale
  - City of Breckenridge
- Local and regional agencies involved in hazard mitigation activities:
  - Chillicothe Fire Department
  - Chula Rural Fire District
  - Dawn Firefighters Association, LLC
  - Green Township Fire Protection District
  - Mooresville Township Fire Protection District
  - Wheeling Rural Fire Department
  - Livingston County Sheriff's Department
  - Livingston County Ambulance
  - Urgent Care Chillicothe
  - Livingston County Health
  - Hedrick Family Care
  - Northwest Health
  - Chillicothe Medical Clinic
  - Grand River Health Care
  - Chillicothe Women's Clinic
- Agencies with the authority to regulate development:
  - Chillicothe Emergency Coordinators
  - Chillicothe Floodplain Admin
  - Livingston County Floodplain Admin
  - Utica Floodplain Admin
  - City of Chillicothe
  - City of Chula
  - Village of Ludlow
  - City of Utica
  - City of Wheeling
- Business & Academia
  - Chillicothe R-II
  - Livingston County R-III
  - Southwest Livingston County R-I

- Donaldson Co.
- Midwest Quality Gloves
- Chillicothe Iron & Steel Inc
- Roberts Tool & Die
- Wal-Mart
- Tractor Supply Co
- Lowes
- Chillicothe Correctional Center
- B&B Theatres Grand 6
- Other private and non-profit interests, including underserved/vulnerable populations
  - Senior Center
  - Livingston Manor
  - Morningside Center
  - Chillicothe Manor
  - StoneBridge RCF
  - Grand River Health Care
  - Saint Luke's Home Care & Hospice
  - Cornerstone Church
  - Turning Point Church
  - Lifepoint Church
  - New Life Church
  - Church of Jesus Christ of Latter-Day Saints
  - House of Prayer Rescue Mission
  - Soul's Harbor Church of God

In addition to the invitations sent out to various stakeholders throughout the planning area, meeting notices were provided to all jurisdictions as well as flyers and social media posts that were used to promote the meetings. The information was also made available on GHRPC's website and Facebook page. A copy of the address labels, invitations, flyers, and social media posts can be found in Appendix B of the plan.

Additionally, the neighboring communities, located outside of the county, but with populations and structures located within Livingston County were also invited to attend. (Please see Appendix B for a complete list of people and organizations invited to attend, envelop scans, and social media posts from GHRPC's Facebook account).

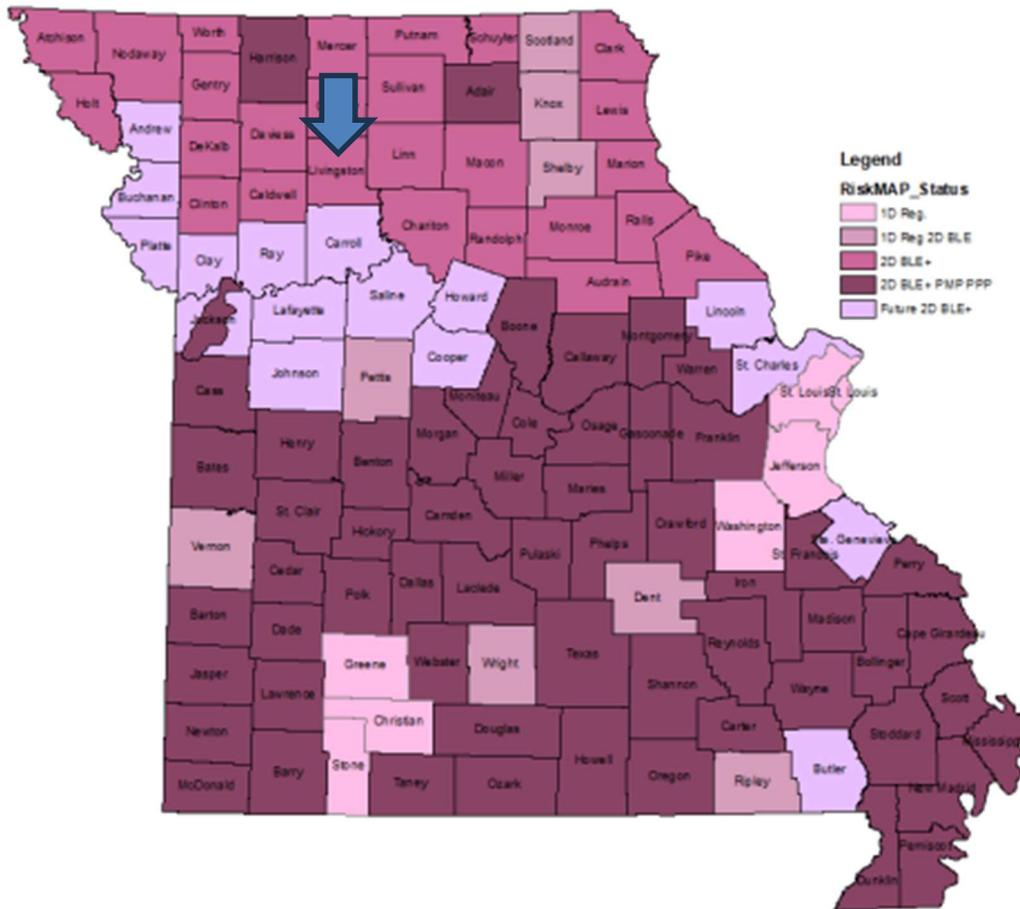
There are a few organizations that are multijurisdictional in nature whose interests relate to hazard mitigation planning in Livingston County. These groups were included in the invitation list for the meetings. Ideally, national organizations like the Red Cross should come to the table for this exercise, but Livingston County is too small to have a local chapter. Additionally, in small communities, local officials wear many hats out of necessity. A volunteer firefighter might also be a city clerk, or an alderman may also serve on the school board.

In the interest of involving stakeholders throughout the planning area, invitations, flyers, and the QR Code for the public survey were sent to the following organizations and businesses inviting them to participate in the hazard mitigation planning process for Livingston County, by either

attending the meetings and/or completing the survey.

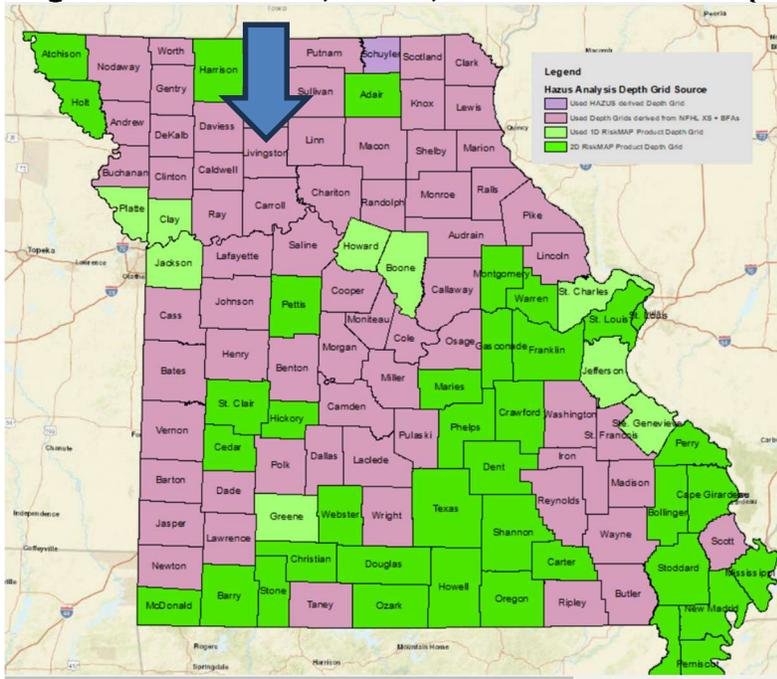
### Coordination with FEMA Risk MAP Project

**Figure 1.1. 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 Harrison 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 1.2. RiskMAP, DFIRM, and HAZUS Based Depth Grids used in HAZUS Analysis**



**Integration of Other Data, Reports, Studies, and Plans**

- In order to complete the Livingston 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. The data collection questionnaires, the 2023 Missouri State Hazard Mitigation Plan, and the 2021 Livingston County Hazard Mitigation Plan were also utilized to assess the hazards.
- Meeting #1 discussed the hazards present in each jurisdiction. The MPC determined that the hazards included in the Livingston County Hazard Mitigation Plan would be

natural hazards only.

- During Meeting #3 the MPC was asked to review the completed data collection questionnaires, the survey results, and additional information provided by plan participants. Any additional information provided through the questionnaires was incorporated into the plan.

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

- During Meeting #2 the participants and GHRPC staff rated hazards on frequency and degree of impact. This risk assessment was used to determine which hazards had the most impact in terms of financial losses, frequency of occurrences, injuries, and/or deaths related to the hazards.
- Also, during Meeting #2 each jurisdiction was asked to provide information about vulnerable assets to said jurisdiction. Included were people, structures, economic assets, natural, historic, and cultural resources, critical facilities and infrastructure, community activities, and other assets.
- 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 Livingston 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 Livingston County.

### **Step 6: Set Goals** **(Handbook Task 6)**

At the 2<sup>nd</sup> 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 Livingston 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)**

At the #3 Meeting the MPC reviewed the mitigation strategy from the previously approved plan and the updated risk assessment and proposed new actions, if any.

- Each jurisdiction was provided with a Previous Actions Worksheet. This allowed them to report on progress made on previous actions, and determine which actions would be retained, modified, or deleted. MPC members were encouraged to continue forward only those actions that substantively addressed long-term risks identified in

the risk assessment.

- Each jurisdiction was made aware that they were required to have at least one mitigation action for each identified hazard.
- 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 Livingston County Hazard Mitigation Planning Committee utilized the STAPLEE method for evaluating the priority and effectiveness of each action. The completed STAPLEE worksheets can be found in Appendix C.

### ***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 was made 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 3<sup>rd</sup> 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 once annually 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 Livingston County Hazard Mitigation Plan.

## 2 PLANNING AREA PROFILE AND CAPABILITIES

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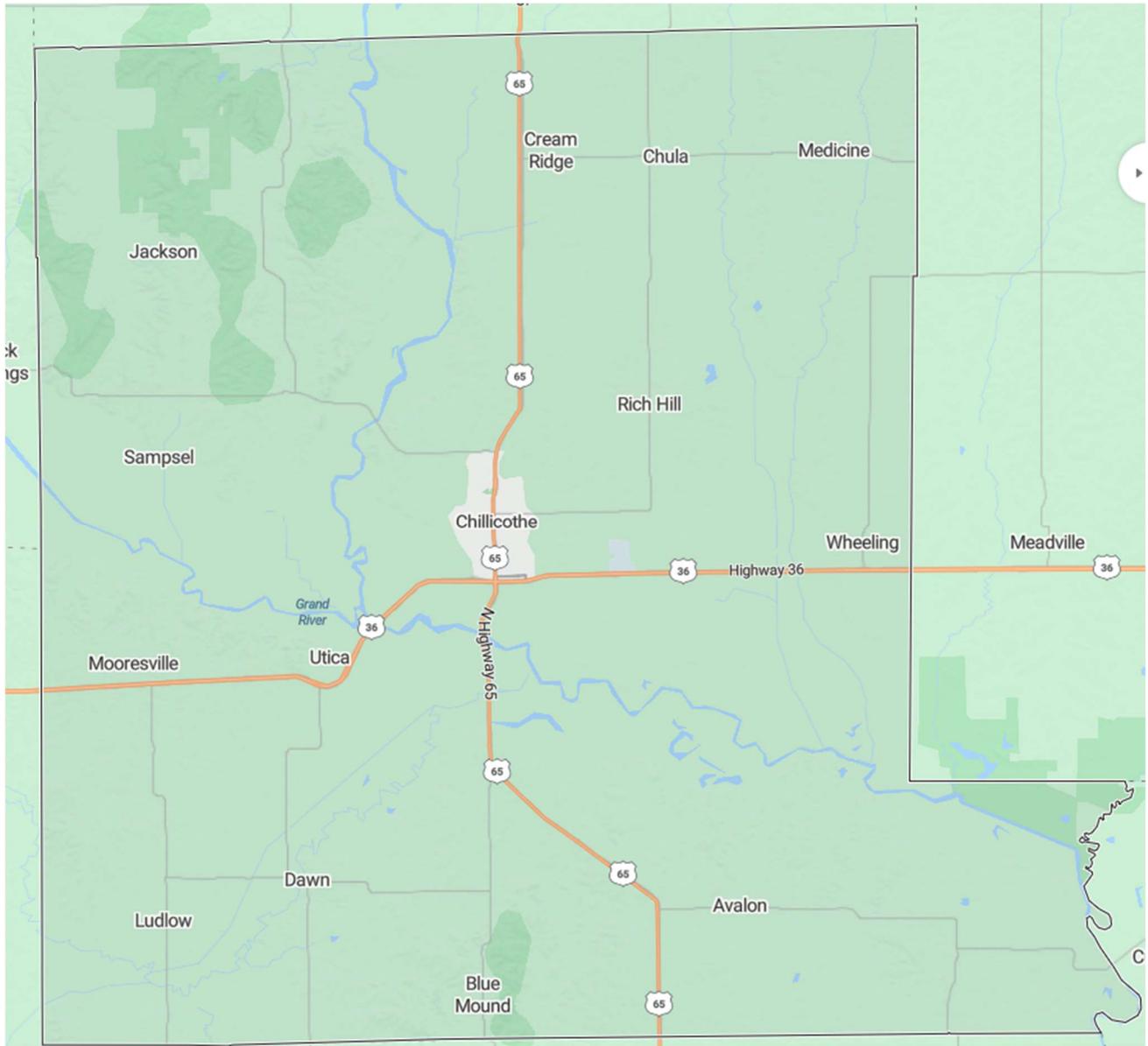
<b>2</b>	<b>PLANNING AREA PROFILE AND CAPABILITIES .....</b>	<b>2.1</b>
2.1	<i>Livingston County Planning Area Profile.....</i>	2.1
2.1.1	Geography, Geology and Topography .....	2.3
2.1.2	Climate .....	2.3
2.1.3	Population/Demographics .....	2.4
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2.1.5	Occupations .....	2.7
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2.1.7	FEMA Hazard Mitigation Assistance (HMA) Grants in Planning Area.....	2.8
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### 2.1 LIVINGSTON COUNTY PLANNING AREA PROFILE

Livingston County, Missouri, is in the north-central part of the state, established in 1837 and named after Edward Livingston. It's characterized by its natural beauty, with picturesque rolling hills and diverse landscapes ranging from farmland to forests. Chillicothe serves as the county seat and is the largest city. The county has a strong agricultural economy, with farming playing a vital role, and also has growing industries in Healthcare & Social Assistance, Retail Trade, and Manufacturing. Livingston County offers various outdoor recreational activities and boasts a rich history with numerous historical sites.

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**Figure 2.1. Map of Livingston County**



**Figure 2.2** Map of Missouri with Livingston County Highlighted in Red



### **2.1.1 Geography, Geology and Topography**

Livingston County, Missouri, has a diverse topography, ranging from gently rolling or undulating surfaces to some areas of more broken terrain. While generally not characterized by high hills, the county has areas with hills up to 120 feet high in the northwest, and a more rugged region in range 25 where hills can reach 225 feet above the West Fork of the Grand River. The county's altitude above sea level ranges from about 675 feet in river bottoms to 975 feet in the northwest corner, with Chillicothe at about 800 feet. The underlying geology of the county consists of stratified rocks from the Coal Measure Age, which are covered by a mantle of clay, sand, gravel, and boulders, largely deposited during the Glacial and Champlain epochs. These deposits vary in thickness, reaching up to 150 feet or more where glacial scouring occurred. While small areas of Coal Measure Strata are exposed, the deeper geological layers are rich in minerals like lead and zinc.

Livingston County, Missouri, encompasses a total area of 539 square miles, with the vast majority, 532 square miles, being land. The landscape is characterized by a blend of picturesque rolling hills and flat river bottomland along the Grand River. While some areas exhibit more rugged terrain with hills reaching considerable heights, particularly in the western part of the county, the county's surface is largely gently undulating or rolling. Water features make up a smaller portion of the county's total area, about 1.2%, or 6.2 square miles. The Grand River is a prominent waterway, and its tributaries, such as Shoal Creek and Big Creek, also contribute to the county's geography. Additionally, the county includes lakes and water bodies like Indian Creek Community Lake, a 192-acre lake located in the southern part of Poosey Conservation Area.

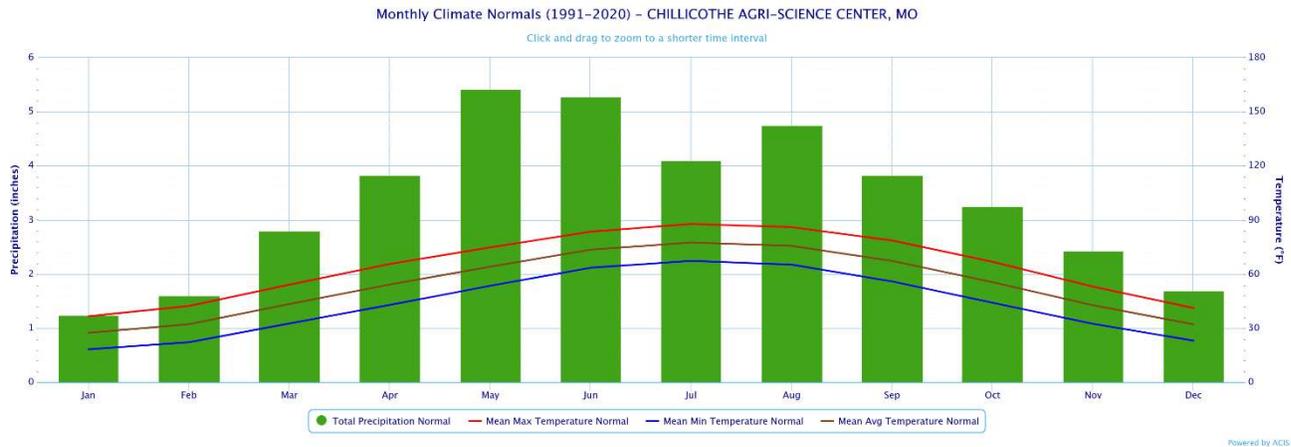
### **2.1.2 Climate**

Livingston County, Missouri, experiences a continental climate with four distinct seasons. Summers are generally warm to hot, with July typically being the warmest month with average highs around 89°F. Winters are moderately cold, with January typically being the coldest month with average lows around 17°F. The county receives an average of about 36 inches of rainfall annually. Precipitation can come in various forms, including thunderstorms, especially during spring, summer, and early fall. While snowfall can occur during winter, it is less frequent than in other seasons. Overall, Livingston County's climate is characterized by its seasonal variations and

sufficient rainfall for agriculture.

**Figure 2.2 NOAA Climate data for Chillicothe Agri-Science Center (KCDJ)**

Sour



Source: NOAA NCDC data 1990-2020 Averages

**Table 2.1. NOAA Climate table for Chillicothe Agri-Science Center (KCDJ)**

Month	Total Precipitation Normal (inches)	Mean Max Temperature Normal (°F)	Mean Min Temperature Normal (°F)	Mean Avg Temperature Normal (°F)
January	1.25	36.6	18.3	27.4
February	1.60	42.3	22.2	32.2
March	2.80	54.1	32.6	43.4
April	3.84	65.6	42.9	54.2
May	5.42	74.8	53.5	64.1
June	5.29	83.5	63.5	73.5
July	4.10	87.8	67.3	77.5
August	4.76	86.0	65.2	75.6
September	3.84	78.6	55.9	67.3
October	3.25	66.8	44.1	55.5
November	2.43	53.0	32.4	42.7
December	1.70	41.2	23.1	32.1
Annual	40.28	64.2	43.4	53.8

Source: NOAA NCDC data 1990-2020 Averages

### 2.1.3 Population/Demographics

Livingston County, Missouri, has a total population of 14,557 people, based on the 2020 Census. The population experienced a decrease of 4.8% between 2010 and 2022. In terms of demographics, the county is predominantly White (Non-Hispanic), with this group representing 91.8% of the population in 2023. Other significant racial and ethnic groups include Black or African American and Two or More Races. The county's median age is 39.9 years, suggesting a slightly

older population than the national average. Between 2010 and 2022, the population group aged 65 and older experienced the fastest growth. The county is also home to a small percentage of residents born outside the United States, with a foreign-born population of 0.851% in 2023.

Livingston County, Missouri, contains several cities, each with its own population and demographic characteristics. The largest city and county seat is Chillicothe, with a population of 9,107 as of the 2020 census. Chillicothe, like the county as a whole, is predominantly White (Non-Hispanic), with this group constituting 89.2% of the population in 2023. Other cities like Chula and Ludlow are significantly smaller in terms of population. In 2023, Chula had a population of 150, predominantly White (Non-Hispanic) at 92.7%. Ludlow, with 135 residents in 2023, is also largely White (Non-Hispanic), making up 99.3% of the population. While all cities in Livingston County have a predominantly White population, these figures highlight the variations in size and the presence of other ethnic groups within the county's urban areas.

**Table 2.2. Livingston County Population 2010-2020 by Jurisdiction**

Jurisdiction	2010 Population	2020 Population	2023 Annual Population Estimate or ACS Population	# Change (2010-2023)	% Change (2010-2023)
Livingston County	15,195	14,557	14,330	-865	-5.7%
Livingston County Unincorporated	4,847	4,702	4,582	-265	-5.5%
City of Chillicothe	9,515	9,107	9,129	-386	-4.1%
City of Chula	210	195	150	-60	-28.6%
Village of Ludlow	137	111	135	-2	-1.5%
City of Utica	269	222	199	-70	-26.0%
City of Wheeling	217	220	135	-82	-37.8%

Source: U.S. Bureau of the Census, Decennial Census, annual population estimates/ 5-Year American Community Survey 2023; \*population includes the portions of these cities in adjacent counties

Livingston County has a notable percentage of its population in both the youngest and oldest age groups. While the under-5 population decreased slightly from 2010 to 2022, the 65 and over population increased during that period.

**Table 2.3. Population of Livingston County below 5 and over 65**

Jurisdiction	Population Under 5	% Population Under 5	Population 65 and over	% Population 65 and over
Livingston County	780	5.4%	3066	21.1%
City of Chillicothe	489	5.4%	1826	20.1%
City of Chula	13	6.7%	37	19.0%
Village of Ludlow	10	9.0%	13	11.7%
City of Utica	9	4.1%	46	20.7%
City of Wheeling	20	9.1%	39	17.7%

Source: U.S. Census Bureau, Profile of General Population and Housing Characteristics (DP1)

Based on recent census data, and data from the Missouri department of economic development, The Unemployment Rate: As of April 2025, in Livingston County's unemployment rate was 3.4%. This is slightly below the overall rate for Missouri in the same month.

In 2023, the poverty rate in Livingston County was 12.2%. This is slightly less than the overall rate

for Missouri (12.6%). High School Graduates or Higher make up 88.0% of persons aged 25 years and older 18.3% of persons aged 25 years and older have a bachelor's degree or higher. 1.9% of persons aged 5 years and older in Livingston County speak a language other than English at home. None of the households reported speaking a non-English language as their primary shared language.

**Table 2.4. Unemployment, Poverty, Education, and Language Percentage Demographics, Livingston 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
Livingston County	6,351	1.5%	12.2%	43.2%	11.8%	1.9%
City of Chillicothe	3,727	1.5%	16.3%	43.9%	11.1%	1.2%
City of Chula	67	1.9%	22.0%	57.6%	5.1%	1.5%
Village of Ludlow	64	10.5%	22.2%	53.3%	5.4%	5.1%
City of Utica	132	1.1%	6.3%	40.8%	4.0%	1.1%
City of Wheeling	42	2.8%	28.1%	55.7%	10.4%	0.8%
State of Missouri	3,195,524	2.2%	12.0%	29.4%	20.2%	7.0%
Nationwide	173,038,795	2.7%	12.5%	25.9%	21.8%	22.5%

Source: U.S. Census, 2023 American Community Survey, 5-year Estimates.

## 2.1.4 History

Livingston County, Missouri, officially formed on January 6, 1837, is a tapestry woven from the threads of pioneering spirit, resourcefulness, and community building. Its history began long before its formal establishment, with indigenous tribes like the Missouri, Osage, Shawnee, and Iowa inhabiting the land. The county's formation was spurred by the Louisiana Purchase, which opened the area to westward expansion.

Early white settlers began arriving in the 1830s, drawn to the promise of the land. Samuel E. Todd built his cabin in 1831 near what is now Utica, while others, such as Elisha Hereford, settled along Medicine Creek. These pioneers, often from states like Kentucky and Tennessee, faced the challenges of frontier life, clearing land, building homes, and cultivating the soil.

The county seat, Chillicothe, was laid out in 1837, taking its name from a significant Shawnee village. The arrival of the Hannibal and St. Joseph Railroad in 1859 was a transformative event, fostering trade and economic development. This was further enhanced by the Chicago, Milwaukee & St. Paul Railroad in 1886.

Livingston County's communities each have their own unique story. Avalon, platted in 1869, gained recognition for its flour mill and popular county fair. Chula, established in 1890, thrived with the railroad and the establishment of businesses like a post office, general store, and mill. Ludlow, though a younger town, established in 1877, became known for its bank and strong community organizations. Mooresville, platted in 1860, was settled early on and was named after W.B. Moore. Utica, planted in 1837, was named for Roderick Matson's hometown in New York. And Wheeling, established in 1865, developed along with the railroad and saw its share of growth and rebuilding after a fire in 1898.

### 2.1.5 Occupations

Livingston County, Missouri, has a diverse workforce, with employment statistics highlighting the key industries and occupational groups. Based on recent data from 2022 to 2023, the county employed about 6.15k people. Largest Industries in the county are Health Care & Social Assistance this sector employs the largest number of people in Livingston County.

Another significant employer in the county is the retail trade industry. the manufacturing sector is also a major source of employment for Livingston County residents. Many people in Livingston County are also employed in education and related roles.

Livingston County experienced a slight decline in overall employment from 2022 to 2023.

**Table 2.5. Occupation Statistics, Livingston County, Missouri**

Place	Management, Business, Science, and Arts Occupations	Service Occupations	Sales and Office Occupations	Natural Resources, Construction, and Maintenance Occupations	Production, Transportation, and Material Moving Occupations
Livingston County	2,121	1,044	1,255	696	1,031
City of Chillicothe	1,166	754	722	232	713
City of Chula	7	24	10	8	16
Village of Ludlow	33	1	10	3	6
City of Utica	72	22	17	8	11
City of Wheeling	10	3	10	5	11

Source: U.S. Census, 2023 American Community Survey, 5-year Estimates.

### 2.1.6 Agriculture

The 2022 Census of Agriculture for Livingston County, Missouri, provides a detailed look into the county's agricultural landscape. Livingston County had 785 farms in 2022. These farms encompassed a substantial amount of land, totaling 286,858 acres. The average farm size in Livingston County was 365 acres.

The total market value of agricultural products sold reached a significant figure of \$138,858,000. The net cash farm income for the county was \$54,218,000. Crops accounted for the majority of sales, making up 78% of the total, while livestock, poultry, and products contributed 22%. Soybeans for beans were the leading crop in terms of acreage, followed by corn for grain. Other crops listed include forage (hay/haylage), wheat for grain, and corn for silage/green chop.

Cattle and calves were a notable part of the county's livestock production.

The census also captured information about producers, with the average age increasing and a large number of producers over 65 years old. New and beginning farmers were also identified. Conservation Reserve Program (CRP): Livingston County had a substantial amount of CRP rental payments between 2017 and 2022, ranking among the top counties in Missouri for these payments.

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

Data from FEMA indicates that as of June 2025 FEMA has funded one Hazard Mitigation project in Livingston County in the year 2009 when a safe room was constructed in Chillicothe.

**Table 2.6. FEMA HMA Grants in Livingston County from 1993-2025**

Disaster Declaration	Project Type	Sub-Grantee	Date Approved	Project Total
DR-1822	206.2: Safe Room	CHILLICOTHE R-II SCHOOL	2009	Unknown
<b>Total</b>	1			Unknown

Source: Federal Emergency Management Agency, 8/2025

## 2.1.8 FEMA Public Assistance (PA) Grants in Planning Area

In the last 25 years, 2000-2025, 11 different federally declared disasters have impacted Livingston County resulting in \$3,718,004.89 in impacts to the county.

On average since 2000 Livingston County has had a federally declared disaster every 1.9 years.

Roads and Bridges were the commonly damaged items with 150 projects, which lead to \$3,004,411.95 or more than 88% of the total in damages. Emergency Protective Measures was the second highest category with 28 projects totaling \$95,479.39

**Table 2.7. FEMA PA Grants in Livingston County from 1993-2023**

Disaster Declaratio	Project Type	Project Size	Project Total
1412	Roads and Bridges	Small	\$5,241.00
1412	Roads and Bridges	Small	\$2,910.00
1412	Roads and Bridges	Small	\$1,696.13
1412	Roads and Bridges	Small	\$2,065.88
1412	Roads and Bridges	Small	\$5,222.30
1412	Roads and Bridges	Small	\$38,417.60
1412	Roads and Bridges	Small	\$1,542.53
1412	Roads and Bridges	Small	\$2,066.48
1412	Roads and Bridges	Small	\$2,940.00
1412	Utilities	Small	\$4,790.36
1412	Roads and Bridges	Small	\$2,942.10
1412	Roads and Bridges	Small	\$2,746.88
1412	Roads and Bridges	Small	\$3,954.70
1412	Utilities	Small	\$7,363.02
1412	Utilities	Small	\$14,240.44
1412	Roads and Bridges	Small	\$12,009.03
1412	Roads and Bridges	Small	\$2,974.00
1412	Roads and Bridges	Small	\$2,485.34
1412	Roads and Bridges	Small	\$1,849.40
1412	Roads and Bridges	Small	\$2,117.67
1708	Buildings and Equipment	Large	\$73,841.35
1708	Emergency Work Donated Resources	Small	\$5,098.55
1708	Emergency Protective Measures	Small	\$12,623.07
1708	Roads and Bridges	Small	\$13,610.67
1708	Roads and Bridges	Small	\$19,536.00

1708	Roads and Bridges	Small	\$18,913.00
1708	Roads and Bridges	Small	\$1,056.00
1708	Roads and Bridges	Small	\$15,531.91
1708	Debris Removal	Small	\$5,823.02
1708	Roads and Bridges	Small	\$35,773.82
1708	Roads and Bridges	Small	\$27,802.62
1708	Roads and Bridges	Small	\$1,936.00
1708	Roads and Bridges	Small	\$6,774.95
1708	Debris Removal	Small	\$2,822.88
1708	Roads and Bridges	Small	\$2,372.59
1708	Buildings and Equipment	Small	\$24,146.00
1708	Utilities	Small	\$34,199.00
1708	Roads and Bridges	Small	\$20,203.08
1773	Roads and Bridges	Small	\$12,341.58
1773	Debris Removal	Small	\$2,112.00
1773	Roads and Bridges	Small	\$13,731.48
1773	Water Control Facilities	Small	\$21,804.26
1773	Roads and Bridges	Small	\$15,135.65
1773	Roads and Bridges	Small	\$2,861.21
1773	Roads and Bridges	Small	\$3,918.48
1773	Roads and Bridges	Small	\$14,789.00
1773	Roads and Bridges	Small	\$15,744.40
1773	Parks, Recreational Facilities, and Other	Small	\$3,203.50
1773	Roads and Bridges	Small	\$12,942.40
1773	Roads and Bridges	Small	\$17,529.63
1773	Roads and Bridges	Small	\$7,436.00
1773	Roads and Bridges	Small	\$2,993.16
1773	Roads and Bridges	Small	\$12,796.45
1773	Roads and Bridges	Small	\$19,091.25
1773	Roads and Bridges	Small	\$36,176.00
1773	Roads and Bridges	Small	\$18,365.32
1773	Roads and Bridges	Small	\$17,029.22
1773	Emergency Work Donated Resources	Small	\$704.00
1773	Roads and Bridges	Small	\$1,623.82
1773	Roads and Bridges	Small	\$18,179.34
1773	Utilities	Small	\$7,340.00
1773	Roads and Bridges	Small	\$4,211.19
1773	Roads and Bridges	Small	\$17,872.01
1773	Roads and Bridges	Small	\$11,941.59
1773	Buildings and Equipment	Small	\$1,011.07
1773	Roads and Bridges	Small	\$19,686.78
1773	Roads and Bridges	Small	\$1,176.84
1773	Roads and Bridges	Small	\$2,139.72
1773	Roads and Bridges	Small	\$4,437.82
1773	Roads and Bridges	Small	\$8,830.94
1773	Roads and Bridges	Small	\$33,210.36
1773	Roads and Bridges	Small	\$9,838.74
1847	Roads and Bridges	Small	\$5,935.60
1847	Roads and Bridges	Small	\$8,785.00
1847	Roads and Bridges	Small	\$54,619.86
1847	Roads and Bridges	Small	\$5,773.92
1847	Roads and Bridges	Small	\$6,980.03
1847	Roads and Bridges	Small	\$26,864.64
1847	Roads and Bridges	Small	\$32,746.30
1847	Roads and Bridges	Small	\$15,662.75
1847	Roads and Bridges	Small	\$2,461.90
1847	Utilities	Small	\$14,739.44
1847	Roads and Bridges	Small	\$2,851.24
1847	Roads and Bridges	Small	\$22,063.52

1847	Roads and Bridges	Small	\$40,034.69
1847	Roads and Bridges	Small	\$6,104.22
1847	Roads and Bridges	Small	\$19,569.45
1847	Roads and Bridges	Small	\$10,260.83
1847	Roads and Bridges	Small	\$18,988.72
1934	Roads and Bridges	Small	\$10,100.20
1934	Roads and Bridges	Small	\$4,010.45
1934	Roads and Bridges	Small	\$1,675.79
1934	Roads and Bridges	Small	\$16,213.78
1934	Roads and Bridges	Small	\$1,877.27
1934	Roads and Bridges	Small	\$18,362.33
1934	Roads and Bridges	Small	\$26,594.95
1934	Utilities	Small	\$31,407.36
1934	Buildings and Equipment	Small	\$45,558.92
1934	Utilities	Small	\$40,240.00
1934	Roads and Bridges	Small	\$10,399.35
1934	Roads and Bridges	Small	\$18,023.09
1934	Roads and Bridges	Small	\$18,219.77
1934	Roads and Bridges	Small	\$20,321.58
1934	Emergency Protective Measures	Small	\$1,698.88
1934	Roads and Bridges	Small	\$15,212.50
1961	Emergency Protective Measures	Small	\$1,518.00
1961	Roads and Bridges	Small	\$16,366.39
1961	Emergency Work Donated Resources	Small	\$1,132.74
1961	Emergency Work Donated Resources	Small	\$3,924.64
1961	Emergency Protective Measures	Small	\$3,570.50
1961	Emergency Work Donated Resources	Small	\$1,020.27
1961	Emergency Work Donated Resources	Small	\$2,775.85
1961	Emergency Protective Measures	Small	\$4,798.00
1961	Emergency Protective Measures	Small	\$4,020.00
1961	Emergency Work Donated Resources	Small	\$1,501.51
1961	Roads and Bridges	Small	\$5,667.07
1961	Roads and Bridges	Small	\$8,695.45
1961	Emergency Protective Measures	Small	\$8,488.50
1961	Emergency Protective Measures	Small	\$4,505.29
1961	Emergency Protective Measures	Small	\$1,226.64
1961	Emergency Protective Measures	Small	\$3,197.51
1961	Emergency Protective Measures	Small	\$4,779.04
1961	Buildings and Equipment	Small	\$1,000.00
1961	Roads and Bridges	Small	\$17,134.83
1961	Emergency Protective Measures	Small	\$5,036.51
1961	Emergency Protective Measures	Small	\$1,680.00
1961	Roads and Bridges	Small	\$6,450.84
1961	Emergency Protective Measures	Small	\$13,490.72
1961	Emergency Protective Measures	Small	\$1,366.11
1961	Emergency Protective Measures	Small	\$4,476.79
1961	Emergency Work Donated Resources	Small	\$399.55
1961	Emergency Protective Measures	Small	\$7,016.20
4200	Roads and Bridges	Small	\$16,847.15
4200	Utilities	Small	\$26,484.50
4200	Roads and Bridges	Small	\$21,879.77
4200	Roads and Bridges	Small	\$4,131.44
4200	Roads and Bridges	Small	\$25,113.17
4200	Roads and Bridges	Small	\$8,027.56
4200	Roads and Bridges	Small	\$30,626.06
4238	Public Utilities	Small	\$3,806.80
4238	Roads and Bridges	Small	\$62,045.91
4238	Roads and Bridges	Small	\$13,500.00
4238	Roads and Bridges	Small	\$41,411.50

4238	Roads and Bridges	Small	\$6,475.18
4238	Roads and Bridges	Small	\$3,654.20
4238	Roads and Bridges	Small	\$73,300.47
4238	Roads and Bridges	Small	\$62,929.69
4238	Roads and Bridges	Small	\$36,559.56
4238	Roads and Bridges	Small	\$7,573.69
4238	Roads and Bridges	Small	\$18,226.75
4238	Roads and Bridges	Small	\$5,059.72
4238	Roads and Bridges	Small	\$16,809.46
4238	Roads and Bridges	Small	\$19,497.41
4238	Roads and Bridges	Small	\$47,472.15
4238	Roads and Bridges	Small	\$9,442.60
4238	Roads and Bridges	Small	\$6,993.37
4238	Roads and Bridges	Small	\$44,771.75
4238	Roads and Bridges	Small	\$13,521.56
4238	Roads and Bridges	Small	\$17,986.34
4238	Public Utilities	Small	\$6,200.00
4238	Roads and Bridges	Small	\$6,469.42
4238	Roads and Bridges	Small	\$13,274.40
4238	Roads and Bridges	Small	\$73,783.83
4238	Roads and Bridges	Small	\$9,110.67
4238	Public Utilities	Small	\$21,983.72
4238	Roads and Bridges	Small	\$60,151.09
4238	Roads and Bridges	Small	\$20,050.62
4238	Roads and Bridges	Small	\$71,964.77
4238	Roads and Bridges	Small	\$17,101.84
4238	Roads and Bridges	Small	\$3,340.20
4238	Roads and Bridges	Small	\$15,639.00
4451	Roads and Bridges	Small	\$26,488.30
4451	Utilities	Small	\$3,649.03
4451	Roads and Bridges	Small	\$11,166.42
4451	Roads and Bridges	Small	\$48,261.67
4451	Roads and Bridges	Small	\$29,371.29
4451	Roads and Bridges	Small	\$22,429.97
4451	Roads and Bridges	Small	\$80,940.65
4451	Management Costs	Small	\$1,324.42
4451	Roads and Bridges	Small	\$12,156.69
4451	Roads and Bridges	Small	\$65,675.99
4451	Roads and Bridges	Small	\$26,295.79
4451	Roads and Bridges	Small	\$26,632.85
4451	Roads and Bridges	Small	\$114,129.69
4451	Utilities	Small	\$8,670.00
4451	Roads and Bridges	Small	\$18,000.67
4451	Management Costs	Small	\$2,058.76
4451	Roads and Bridges	Small	\$16,840.95
4451	Roads and Bridges	Small	\$75,609.53
4451	Roads and Bridges	Small	\$50,748.07
4451	Management Costs	Small	\$1,750.00
4451	Roads and Bridges	Small	\$40,560.64
4451	Utilities	Small	\$46,676.00
4451	Management Costs	Small	\$1,190.11
4490	Emergency Protective Measures	Small	\$7,864.16
4612	Roads and Bridges	Small	\$44,790.57
4612	Roads and Bridges	Small	\$45,211.87
4612	Roads and Bridges	Small	\$59,765.43
4612	Management Costs	Small	\$6,499.53
4612	Roads and Bridges	Small	\$24,385.58
4612	Management Costs	Small	\$2,149.88
4612	Management Costs	Small	\$58.14

4612	Roads and Bridges	Small	\$14,614.46
4612	Roads and Bridges	Small	\$22,833.84
4612	Roads and Bridges	Small	\$38,874.00
4612	Management Costs	Small	\$1,143.36
4612	Roads and Bridges	Small	\$17,140.87
4612	Roads and Bridges	Small	\$13,410.33
4612	Roads and Bridges	Small	\$45,583.16
4612	Management Costs	Small	\$2,279.16
4612	Utilities	Small	\$129,990.41
4612	Emergency Protective Measures	Small	\$4,123.47
<b>Total</b>			<b>\$3,718,004.89</b>

Source: Federal Emergency Management Agency – June 2025

## 2.2 JURISDICTIONAL PROFILES AND MITIGATION CAPABILITIES

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Livingston County, Missouri, is a county located in the northwestern portion of the state, with Chillicothe as its county seat and largest city. Because of Missouri's geography, the county is prone to natural disasters, including ice storms, tornadoes, severe storms, and flooding, all of which are common occurrences. The Missouri State Emergency Management Agency (SEMA) coordinates the state's response to these events. Livingston County, like the rest of Missouri, has a detailed Emergency Operations Plan to prepare for and manage responses to such hazards.

### 2.2.1 Livingston County

Livingston County, Missouri, is located in the north-central part of the state, bordering Grundy County to the north, Linn and Chariton Counties to the east, Carroll County to the south, and Caldwell and Daviess Counties to the west. It is situated within the Midwest region of the United States. The county covers a total area of 539 square miles, with the vast majority, 532 square miles, being land. The remaining 6.2 square miles (1.2%) is water. The altitude above sea level ranges from about 675 feet in the river bottoms to 975 feet in the northwest corner. Chillicothe, the county seat, is located at approximately 800 feet above sea level. The county's location in north-central Missouri places it about 90 miles northeast of Kansas City.

Livingston County, Missouri, was officially formed on January 6, 1837, from parts of Carroll County. It was named for Edward Livingston, the 11th U.S. Secretary of State. Settlement began earlier, in the 1830s, with pioneers drawn to the area's potential. Chillicothe, the county seat, was established in 1837. A crucial turning point in Livingston County's development was the arrival of the Hannibal and St. Joseph Railroad in 1859. The railroad spurred growth and the founding of new towns along its route. The county's history is marked by the development of successful farms, businesses, and educational institutions, reflecting the hardworking spirit of its residents.

Livingston County is governed by a Commission of 3 elected officials. A presiding commissioner and two associate commissioners.

County Commission, Assessor, Circuit Clerk, County Clerk, Collector/Treasurer, Coroner  
Prosecuting Attorney, Public Administrator, Recorder of Deeds, Sheriff, Surveyor

County Departments and Services include Livingston County Emergency Management, Zoning, Road and Bridge.

Livingston County has distributed brochures and information to members of the county and has advertised this information in the newspaper and on the radio. The Emergency Preparedness Committee has meetings on disaster simulations on a regular basis. There are 3 shelters in the county,

- Basement of the courthouse, but it has not been constructed to FEMA standards.
- Calvary Baptist Church, it has been constructed to FEMA standards
- Fire Station has a shelter, it has been constructed to FEMA standards

The City of Chillicothe has recently built a new Police Station.

The county has seen an increase in homelessness and a homeless shelter might be a potential need in the future.

### Mitigation Initiatives/Capabilities

The County has ordinances in place related to zoning, flood plain management, tree trimming, Nuisances, and drainage. The County does have an Emergency Management Director (EMD) and is part of a Local Emergency Planning District (LEPD). The EMD plans and directs disaster responses or crisis management activities, provides disaster preparedness training, and prepares emergency plans and procedures for natural disasters. The County has a County Emergency Plan, County Mitigation Plan, and Mutual Aid Agreements. Agriculture makes up the majority of the county.

The County has had limited mitigation activities due to limited capabilities. The County expanding its mitigation capabilities is unlikely, due to limited capabilities, both financially and in terms of staff availability.

**Table 2.8. Unincorporated Livingston County Mitigation Capabilities**

<b>Capabilities</b>	<b>Status, Including Date of Document or Policy</b>
<b>Planning Capabilities</b>	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
City Emergency Operations Plan	No
County Emergency Operations Plan	Yes
Local Recovery Plan	No
County Recovery Plan	Yes
City Mitigation Plan	No
County Mitigation Plan	Yes, Oct. 2025
Economic Development Plan	No
Transportation Plan	Yes
Land-use Plan	Yes
Flood Mitigation Assistance (FMA) Plan	Yes
Watershed Plan	Yes, Hurricane Creek WS
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan	Yes, through EOP
<b>Policies/Ordinance</b>	
Zoning Ordinance	Yes
Building Code	No
Floodplain Ordinance	Yes
Subdivision Ordinance	Yes
Tree Trimming Ordinance	Yes
Nuisance Ordinance	Yes
Stormwater Ordinance	No
Drainage Ordinance	Yes
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	No
Landscape Ordinance	Yes
Seismic Construction Ordinance	No
Debris Management Plan	No
<b>Program</b>	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	No
Hazard Awareness Program	Yes

National Flood Insurance Program (NFIP)	Yes
NFIP Community Rating System (CRS) program	No

<b>Capabilities</b>	<b>Status, Including Date of Document or Policy</b>
National Weather Service (NWS) Storm Ready	Yes
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	Yes, 3
Economic Development Program	Yes
Land Use Program	Yes, zoned
Public Education/Awareness	Yes
Property Acquisition	No
Planning/Zoning Boards	Yes
Stream Maintenance Program	No
Tree Trimming Program	Yes
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
<b>Studies/Reports/Maps</b>	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	Yes
FEMA Flood Insurance Study (Detailed)	Yes
Evacuation Route Map	Yes
Critical Facilities Inventory	Yes, Courthouse, Sheriff's Office
Vulnerable Population Inventory	Yes, EOP
Land Use Map	Yes, Planning & Zoning
<b>Staff/Department</b>	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	Yes, contracted
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Director	Yes
NFIP Floodplain Administrator	Yes
Emergency Response Team	Yes
Hazardous Materials Expert	Yes
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	Yes
Economic Development Department	Yes
Housing Department	No
Historic Preservation	Yes
<b>Non-Governmental Organizations (NGOs)</b>	
American Red Cross	No
Salvation Army	Yes
Veterans Groups	Yes
Local Environmental Organization	Yes, water quality group at Posey Conservation Area
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes

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

Source: Data Collection Questionnaire, 10/2025

## 2.2.2 City of Chillicothe

Chillicothe, Missouri, is strategically located in the central part of Livingston County, serving as the county seat. It is situated in the north-central region of the state, a part of the vast, rolling landscape of soybean, corn, and wheat fields. Chillicothe is well-connected by major highways, as U.S. Routes 36 and 65 intersect within the city. This central location in Livingston County and its position at the crossroads of these significant routes make it a key transportation and commercial hub for the surrounding area. The city is also situated relatively near waterways, with the Grand River flowing about one mile south of the city and the confluence of the Thompson River with the Grand River located roughly three miles to the southwest. Its location also makes it accessible to larger cities, as it is approximately eighty miles northeast of Kansas City, Missouri. This combination of central location within the county, access to major transportation routes, and proximity to natural features contributes to Chillicothe's prominence in Livingston County.

The history of Chillicothe, Missouri, has contributed to its current status as a vibrant city. Early settlers arrived in the 1830s, drawn to fertile land. Joseph Cox is recognized as the first settler in the area, arriving in 1833. The town was established in 1837 and named after Chillicothe, Ohio, a significant Shawnee village. The name originates from the Shawnee, meaning "the big town where we live" or "our big home".

The selection of Chillicothe as the county seat of Livingston County in 1839 was crucial to its development. The town incorporated as a city in 1855, establishing a municipal government with a mayor and councilmen in 1869. Before the railroad, Chillicothe was a small town with basic frame houses built from local timber.

The arrival of the Hannibal and St. Joseph Railroad in 1859 significantly boosted Chillicothe's growth. This railway facilitated trade and attracted new residents, leading to the construction of more brick buildings. The Chicago, Milwaukee & St. Paul Railroad also contributed to the city's progress, reaching Chillicothe in 1886.

Chillicothe is also known for being where the first automatic bread-slicing machine for commercial use was first utilized, earning it the nickname "Home of Sliced Bread". Additionally, Chillicothe was modernized by implementing water works and electric lights in 1886. The former Missouri Training School for Girls operated there from 1889 to 1981. Throughout its history, Chillicothe has remained an agricultural center and trade hub for the surrounding farming region. Today, it remains a prominent city in northern Missouri, recognized for its history, agriculture, and its claim as the birthplace of commercially sliced bread.

Chillicothe, Missouri, located in Livingston County, faces potential risks from various natural hazards common to the state. These include ice storms, which can lead to power outages and dangerous travel conditions; tornadoes, a risk particularly during the spring and summer months; severe storms, bringing threats like strong winds, hail, and lightning; and flooding, due to heavy rainfall and the proximity of the Grand River. Missouri's geography makes it prone to these types of natural disasters. The Missouri State Emergency Management Agency (SEMA) helps coordinate the state's response to these events.

**Mitigation Initiatives/Capabilities**

The City of Chillicothe has ordinances related to zoning, building codes, flood plain management, Nuisances, storm water, drainage and a debris management plan. The city enforces a nuisance ordinance through a full-time staff position; flood plain administration is handled through a part-time position. Zoning is regulated through a planning and zoning board.

The city does have an Emergency Management Director (EMD), It follows the county emergency plan. The city has participated in the County Emergency Plan, County Mitigation Plan, and Mutual Aid Agreements processes.

The city of Chillicothe has had limited mitigation activities due to limited capabilities. The city expanding its mitigation capabilities is unlikely due to limited capabilities, both financially and in terms of staff availability.

**Table 2.9. Chillicothe Mitigation Capabilities**

Capability	Status, Including Date of Document or Policy
<b>Planning Capabilities</b>	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	Yes
City Emergency Plan	Yes
County Emergency Plan	No
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	Yes, Livingston HMP
County Mitigation Plan	Yes
Economic Development Plan	Yes – Contracted
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
<b>Policies/Ordinance</b>	
Zoning Ordinance	Yes – Online
Building Code	Yes – Online
Floodplain Ordinance	Yes – Online
Subdivision Ordinance	Yes – Online
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes – Online
Storm Water Ordinance	Yes – Online
Drainage Ordinance	Yes – Online

<b>Capability</b>	<b>Status, Including Date of Document or Policy</b>
Seismic Construction Ordinance	No
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	Yes – Online
Landscape Ordinance	No
Debris Management Plan	No
<b>Program</b>	
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	Yes
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	Yes, 3
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	Yes, weather spotter, fire protection
Property Acquisition	No
Planning/Zoning Boards	Yes
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
<b>Studies/Reports/Maps</b>	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	Yes
FEMA Flood Insurance Study (Detailed)	Yes
Evacuation Route Map	No
Critical Facilities Inventory	Yes
Vulnerable Population Inventory	No
Land Use Map	Yes
<b>Staff/Department</b>	
Building Code Official	Yes – Full time
Building Inspector	Yes – Full time
Mapping Specialist (GIS)	Yes – Contracted
Engineer	Yes – Contracted
Development Planner	No
Public Works Official	Yes
Emergency Management Coordinator	Yes
NFIP Floodplain Administrator	Yes – Code officer full-time
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
County Emergency Management Commission	No
Sanitation Department	Yes
Transportation Department	Yes
Economic Development Department	Yes – Contracted mutual aid agreements
Housing Department	No
Historic Preservation	Yes
<b>Non-Governmental Organizations (NGOs)</b>	
American Red Cross	No
Salvation Army	Yes
Veterans Groups	Yes
Environmental Organization	No
Homeowner Associations	?
Neighborhood Associations	No
Chamber of Commerce	Yes

Capability	Status, Including Date of Document or Policy
Community Organizations (Lions, Kiwanis, etc.)	Yes – Elks, Kiwanis, Eagles, Lions, Masons, Kofc, 4-H, Boy and Girl Scouts, Ducks Unlimited, Quails Unlimited, Main Street Chillicothe, Ministerial Alliana, Chillicothe Car Club, Courdening Club, Festival of Lights, Livingston County Cancer Assistance.
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	Yes
Ability to withhold spending in hazard prone areas	Yes

Source: Data Collection Questionnaire, [Date](#)

## 2.2.3 City of Utica

Utica, Missouri, is a village located in Livingston County, located in the north-central part of the state. It is situated in Greene Township, a township that covers an area of 24,000 acres. The geography of Utica includes both bottom land along the river and bluffs and hills adjacent to the river. The West Fork of the Grand River is to the north of Utica, and Shoal Creek is to the south. According to the United States Census Bureau, Utica has a total area of 0.87 square miles (2.25 km<sup>2</sup>), all of which is land. Its coordinates are 39°44'36"N 93°37'39"W.

Utica, Missouri, located in Livingston County, has a history rooted in its founding and its relationship with the developing infrastructure of the 19th century. Roderick Matson, who came from Utica, New York, is credited with founding the town, platting it in 1837 and naming it after his former home. Early settlement in the area began before this, with figures like Samuel E. Todd arriving in the 1830s and establishing mills.

The arrival of the Hannibal and St. Joseph Railroad in 1859 was a significant event for Utica. It transformed the town into a crucial shipping point for goods and livestock, connecting it to a larger trading network. This brought prosperity and led to a "boom" period from 1858 to 1861. Trading and steamboat traffic on the Grand River had also begun earlier, around 1840, providing another means of transportation and trade.

Utica's history also includes instances of conflict and change. During the Civil War, the town's population was divided, and there were incidents of unrest and violence, such as the assassination of W.P. Frazer, a Union drillmaster. Businesses feared carrying much inventory due to the risk of raids.

The town also saw the establishment and evolution of its schools, with the public school system founded in 1853 and a new building erected in 1867. However, the school building was destroyed by fire in 1944. Later, the Utica school district was part of a larger consolidation, and students began attending Southwest R-I.

Utica's railroad depot also had a tumultuous history, with early buildings being burned down due to citizen dissatisfaction with their location. A later depot was destroyed by fire in 1913.

In more recent times, Utica has experienced a slight population decline. The town's economy has also seen changes, with the closing of the railroad depot and shifts in transportation methods. Despite these challenges, Utica remains a community with a rich history and a strong sense of its

past.

**Mitigation Initiatives/Capabilities**

The Village of Utica has little in the way of ordinances, none related to zoning, building codes, flood plain management, storm water, drainage or debris management.

The village does not have an Emergency Management Director (EMD), It follows the county emergency plan. The city has participated in the County Emergency Plan, County Mitigation Plan, and Mutual Aid Agreements processes.

The Village of Utica has had limited mitigation activities due to limited capabilities. The city expanding its mitigation capabilities is unlikely due to limited capabilities, both financially and in terms of staff availability.

**Table 2.10. Utica Mitigation Capabilities**

Capability	Status, Including Date of Document or Policy
<b>Planning Capabilities</b>	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	No
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	No, within Livingston County Hazard Mitigation Plan
County Mitigation Plan	Yes
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
<b>Policies/Ordinance</b>	
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
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
<b>Program</b>	
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

<b>Capability</b>	<b>Status, Including Date of Document or Policy</b>
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
<b>Studies/Reports/Maps</b>	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	Yes
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
<b>Staff/Department</b>	
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	Yes
Economic Development Department	No
Housing Department	No
Historic Preservation	No
<b>Non-Governmental Organizations (NGOs)</b>	
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, Community Betterment
<b>Local Funding Availability</b>	
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, with voter approval
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes, with voter approval
Ability to incur debt through special tax bonds	Yes, with voter approval
Ability to incur debt through private activities	Yes, with voter approval

<b>Capability</b>	<b>Status, Including Date of Document or Policy</b>
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, January 12, 2026

## 2.2.4 Summary of Jurisdictional Capabilities

**Table 2.11. Mitigation Capabilities Summary Table**

CAPABILITIES	Livingston County	Chillicothe	Utica
<b>Planning Capabilities</b>			
Comprehensive Plan	No	No	No
Builder's Plan	No	No	No
Capital Improvement Plan	No	Yes	No
Local Emergency Plan	No	Yes	No
County Emergency Plan	Yes	No	No
Local Recovery Plan	No	No	No
County Recovery Plan	Yes	No	No
Local Mitigation Plan	No	Yes	No
County Mitigation Plan	Yes	Yes	Yes
Economic Development Plan	No	Yes	No
Transportation Plan	Yes	Yes	No
Land-use Plan	Yes	No	No
Flood Mitigation Assistance (FMA) Plan	Yes	No	No
Watershed Plan	Yes	No	No
Firewise or other fire mitigation plan	No	No	No
School Mitigation Plan	No	No	No
Critical Facilities Plan (Mitigation/Response/Recovery)	Yes	No	No
<b>Policies/Ordinance</b>			
Zoning Ordinance	Yes	Yes	No
Building Code	No	Yes	No
Floodplain Ordinance	Yes	Yes	Yes
Subdivision Ordinance	Yes	Yes	No
Tree Trimming Ordinance	Yes	No	No
Nuisance Ordinance	Yes	Yes	No
Storm Water Ordinance	No	Yes	No
Drainage Ordinance	Yes	Yes	No
Seismic Construction Ordinance	Yes	No	No
Site Plan Review Requirements	No	Yes	No
Historic Preservation Ordinance	Yes	Yes	No
Landscape Ordinance	No	No	No
Debris Management Plan	No	No	No
<b>Program</b>			
Zoning/Land Use Restrictions	Yes	Yes	No
Codes Building Site/Design	No	Yes	No
National Flood Insurance Program (NFIP) Participant	Yes	Yes	Yes
NFIP Community Rating System (CRS) Participating Community	Yes	No	No
Hazard Awareness Program	No	No	No
National Weather Service (NWS) Storm Ready Building Code Effectiveness Grading (BCEGs)	Yes	Yes	No
ISO Fire Rating	Yes	Yes, 3	No
Economic Development Program	Yes	No	No
Land Use Program	Yes	No	No
Public Education/Awareness	Yes	Yes	No
Property Acquisition	No	No	No
Planning/Zoning Boards	Yes	Yes	No
Stream Maintenance Program	No	No	No
Tree Trimming Program	Yes	No	No

CAPABILITIES	Livingston County	Chillicothe	Utica
Engineering Studies for Streams (Local/County/Regional)	No	No	No
Mutual Aid Agreements	Yes	Yes	Yes
<b>Studies/Reports/Maps</b>			
Hazard Analysis/Risk Assessment (Local)	No	No	No
Hazard Analysis/Risk Assessment (County)	Yes	Yes	Yes
Flood Insurance Maps	Yes	Yes	No
FEMA Flood Insurance Study (Detailed)	Yes	Yes	No
Evacuation Route Map	Yes	No	No
Critical Facilities Inventory	Yes	Yes	No
Vulnerable Population Inventory	Yes	No	No
Land Use Map	Yes	Yes	No
<b>Staff/Department</b>			
Building Code Official	No	Yes	No
Building Inspector	No	Yes	No
Mapping Specialist (GIS)	Yes	Yes	No
Engineer	No	Yes	No
Development Planner	No	No	No
Public Works Official	No	Yes	No
Emergency Management Coordinator	Yes	Yes	No
NFIP Floodplain Administrator	Yes	Yes	Yes
Emergency Response Team	Yes	No	No
Hazardous Materials Expert	Yes	No	No
Local Emergency Planning Committee	Yes	No	No
County Emergency Management Commission	No	No	No
Sanitation Department	No	Yes	No
Transportation Department	Yes	Yes	Yes
Economic Development Department	Yes	Yes	No
Housing Department	No	No	No
Historic Preservation	Yes	Yes	No
<b>Non-Governmental Organizations (NGOs)</b>			
American Red Cross	No	No	No
Salvation Army	Yes	Yes	No
Veterans Groups	Yes	Yes	No
Environmental Organization	Yes	No	No
Homeowner Associations	No	?	No
Neighborhood Associations	No	No	No
Chamber of Commerce	Yes	Yes	No
Community Organizations (Lions, Kiwanis, etc.)	Yes	Yes.	Yes
<b>Financial Resources</b>			
Apply for Community Development Block Grants	Yes	Yes	Yes
Fund projects through Capital Improvements funding	Yes	Yes	Yes
Authority to levy taxes for specific purposes	Yes	Yes	Yes
Fees for water, sewer, gas, or electric services	No	Yes	Yes
Impact fees for new development	Yes	Yes	No
Incur debt through general obligation bonds	Yes	Yes	Yes
Incur debt through special tax bonds	Yes	Yes	Yes
Incur debt through private activities	Yes	Yes	Yes
Withhold spending in hazard prone areas	Yes	Yes	No

Source: Data Collection Questionnaire 1/2026

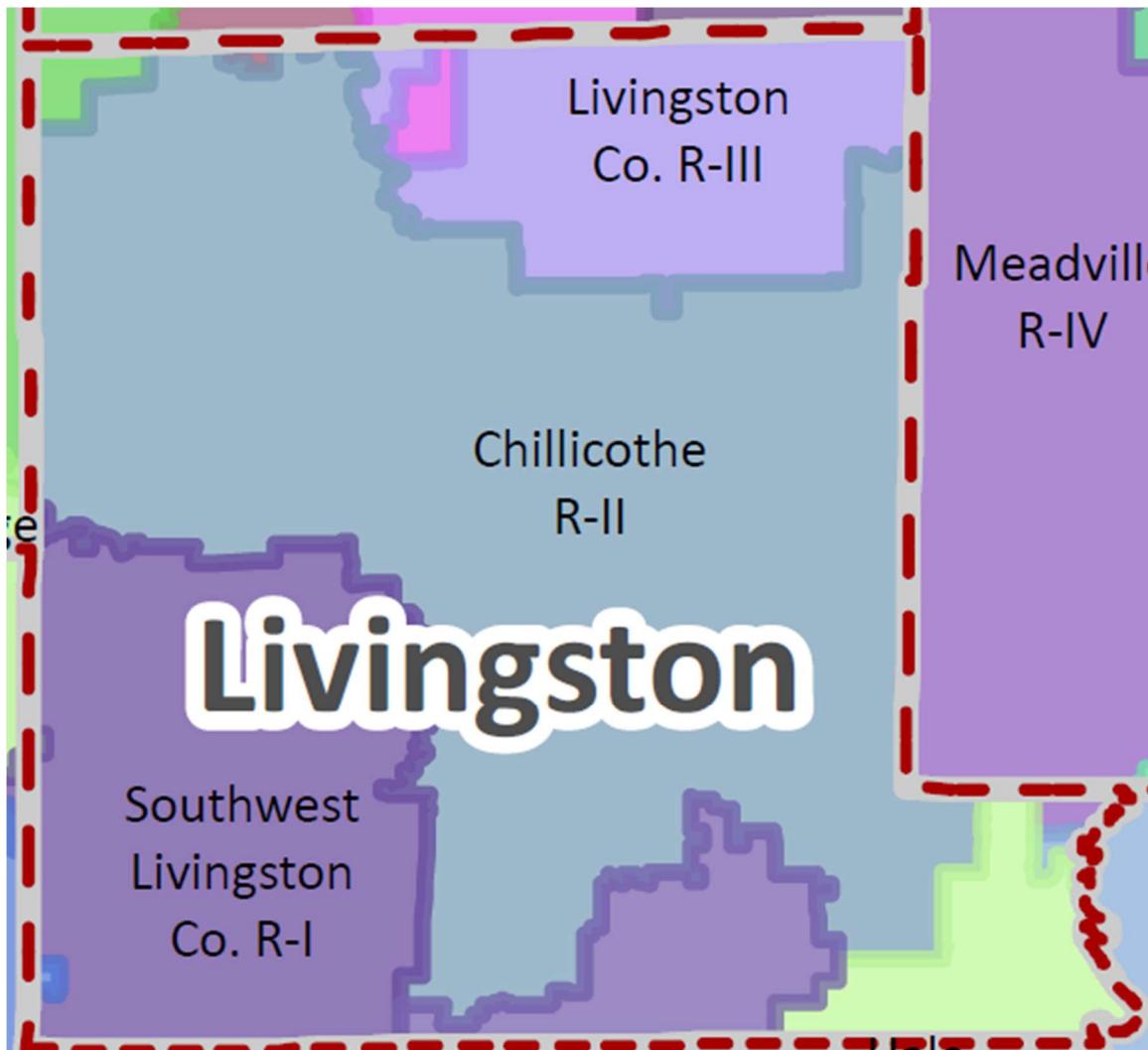
## 2.2.5 Special Districts

**Table 2.12. Chillicothe Fire Protection District #1**

Element	Yes, No, N/A Comments and/or Weblink
<b>Planning Capabilities</b>	
Critical Improvement Plan	Yes, Fall of 2025, New Track (Pumper)
Emergency Operation Plan	Yes
Continuity of Operations Plan	Yes
Community Wildfire Protection Plan	Yes
Other: Rural Fire Hydrants located at Water District Towers	2026
<b>Programs</b>	
Cross-Connection Program	N/A
Hydrant Flushing Program	N/A
Public Education/Awareness	N/A
Tree Trimming Program	N/A
Mutual Aid Agreements	N/A
Other: Mutual Aid/City of Chillicothe Contract	Yes

## 2.2.6 School District Profiles and Mitigation Capabilities

Figure 2.3 Livingston County School Districts



The previous map illustrates the various school districts within Livingston County. The school districts Chula R-III, Chillicothe R-II, and Southwest Livingston County R-I School Districts have school buildings located within the county. The school districts that were not listed have students that reside in Livingston County, but the location of the school building is outside of the county

**Chillicothe R-II School District**

The Chillicothe R-II School District has facilities located across the city of Chillicothe, The following table provides information on student enrollment as of the 2025-2026 school year.

**Table 2.13. Chillicothe R-II Enrollment**

District Name	Building Name	Building Enrollment
Chillicothe R-II	Elementary	810
	Middle School	354
	High School	564
	Grand River Technical School	NA

The school conducts severe weather and evacuation drills. Each school building is equipped with a PA system used for emergency announcements and staff also receive alerts through internal radio and phone systems. All of the buildings have a designated interior shelter area, while they do not meet FEMA standards, they do meet the state safety standards.

The school conducts regular roof inspections and maintenance to prevent wind and water damage due to natural hazards.

The district is governed by a Board of Education consisting of the Board President and six elected board members.

Chillicothe 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.

The following table shows the current mitigation capabilities of the Chillicothe R-II District.

**Table 2.14. Chillicothe R-II mitigation capabilities**

Capabilities	Status, Including Date of Document or Policy
<b>Planning Elements</b>	
Master Plan	Yes
Capital Improvement Plan	Yes
Emergency Plan	Yes
Weapons Policy	Yes
<b>Personnel Resources</b>	
Full-Time Building Official	Yes
Emergency Manager	Yes
Grant Writer	No
Public Information Officer	No
<b>Financial Resources</b>	
Capital improvements Project fund	Yes
Local Funds	Yes
General Obligation Bond	Yes
Special Tax Bonds	Yes
Private Activities/Donations	Yes
State and Federal Funds	Yes

## Livingston County R-III School District

Livingston County R-III School District is in Chula, Missouri. The following table provides enrollment information.

**Table 2.15. Livingston County R-III Buildings and Enrollment Data, 9/20/2025**

District Name	Building Name	Building Enrollment
Livingston County R-III	Elementary	400
Livingston County R-III	High School	148

Source: [https://dese.mo.gov/school-data\\_9/30/2025](https://dese.mo.gov/school-data_9/30/2025)

The school conducts severe weather and evacuation drills. Each school building is equipped with a PA system used for emergency announcements and staff also receive alerts through internal radio and phone systems. Both of the school buildings have a designated interior shelter area, while they do not meet FEMA standards, they do meet the state safety standards.

The school conducts regular roof inspections and maintenance to prevent wind and water damage due to natural hazards.

Livingston County R-III is governed by a Board of Education consisting of the Board President and six elected board members.

Livingston County R-III 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 2.16. Livingston County R-III School District**

Capabilities	Status, Including Date of Document or Policy
<b>Planning Elements</b>	
Master Plan	No
Capital Improvement Plan	No
Emergency Plan	Yes – August 2025
Weapons Policy	Yes – July 2025
<b>Personnel Resources</b>	
Full-Time Building Official	Yes - Administrator
Emergency Manager	No
Grant Writer	No
Public Information Officer	No
<b>Financial Resources</b>	
Capital improvements Project fund	Yes
Local Funds	Yes
General Obligation Bond	No
Special Tax Bonds	No
Private Activities/Donations	No
State and Federal Funds	Yes

**Table 2.17. Summary of Mitigation Capabilities of schools in Livingston County**

Capability	Chillicothe R-II	Livingston Co. R-III
<b>Planning Elements</b>		
Master Plan/ Date	Yes	No
Capital Improvement Plan/Date	Yes	No
School Emergency Plan / Date	Yes	Yes – August 2025
Weapons Policy/Date	Yes	Yes – July 2025
<b>Personnel Resources</b>		
Full-Time Building Official (Principal)	Yes	Yes - Administrator
Emergency Manager	Yes	No
Grant Writer	No	No
Public Information Officer	No	No
<b>Financial Resources</b>		
Capital Improvements Project Funding	Yes	Yes
Local Funds	Yes	Yes
General Obligation Bonds	Yes	No
Special Tax Bonds	Yes	No
Private Activities/Donations	Yes	No
State and Federal Funds/Grants	Yes	Yes
<b>Other</b>		
Public Education Programs	Unknown	Unknown
Privately or Self- Insured?	Private	Privately
Fire Evacuation Training	Yes	Yes
Tornado Sheltering Exercises	Yes	Yes
Public Address/Emergency Alert System	Yes	Yes
NOAA Weather Radios	Yes	No
Lock-Down Security Training	Yes	Yes
Mitigation Programs	No	No
Tornado Shelter/Saferoom	Yes	No
Campus Police	SRO through Sheriff	No

Source: Data Collection Questionnaire, 1/2026

# 3 RISK ASSESSMENT

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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.

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;
- 3) Problem Statement briefly summarizes the problem and develops possible solutions.

## 3.1 HAZARD IDENTIFICATION

---

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 Livingston County were:

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

In developing this plan, the planning team conducted a review of existing mitigation plans and results of previous mitigation actions in the county.

The planning team also reviewed past, current and future trends of natural hazards and developments to judge the likely impacts.

As there are no large-scale levee systems in Livingston County, the planning team excluded that hazard from consideration at this time. Additionally, the risk of a land subsidence, or sink hole was deemed to be low and therefore was not evaluated for inclusion in the plan at this time.

### 3.1.2 Review Disaster Declaration History

When the HMPC was identifying hazards that affected Livingston 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.

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

Disaster Number	Description	Declaration Date Incident Period	Individual Assistance (IA) Public Assistance (PA)
372	Heavy Rains, Tornadoes, Flooding	Apr 19, 1973	IA PA
407	Severe Storms, Flooding	Nov 1, 1973	IA PA
995	Flooding, Severe Storm	Jun 10, 1993 - Oct 25, 1993	IA PA
1253	Severe Storms, Flooding and Tornadoes	Oct 4, 1998 - Oct 11, 1998	PA
1403	Ice Storm	Jan 29, 2002 - Feb 13, 2002	IA
1412	Severe Storms and Tornadoes	Apr 24, 2002 - Jun 10, 2002	PA
1524	Severe Storms, Tornadoes, and Flooding	May 18, 2004 - May 31, 2004	IA PA
1708	Severe Storms and Flooding	May 5, 2007 - May 18, 2007	PA
1773	Severe Storms and Flooding	June 1, 2008 - August 13, 2008	PA
1934	Severe Storms, Flooding, and Tornadoes	June 12, 2010 - July 31, 2010	PA
1961	Severe Winter Storm and Snowstorm	Jan 31, 2011 – Feb. 5, 2011	PA
3017	Drought	Sep 24, 1976	PA
3232	Hurricane Katrina Evacuation	Aug 29, 2005 - Oct 1, 2005	PA
3281	Severe Winter Storms	Dec 8, 2007 - Dec 15, 2007	PA
3303	Severe Winter Storm	Jan 26, 2009 - Jan 28, 2009	PA
3317	Severe Winter Storm	Jan 31, 2011 - Feb 5, 2011	PA
4200	Severe Storms, Tornadoes, Straight-line Winds, and Flooding	Sept. 9, 2014 - Sep 10, 2014	PA
4451	Missouri Severe Storms, Tornadoes, and Flooding	April 29, 2019 - Jul 6, 2019	PA
4490	Covid-19 Pandemic	Jan 20, 2020 - May 11, 2023	IA PA

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

### 3.1.3 Research Additional Sources

Additional sources of data on locations and past impacts of hazards in the planning area:

- Missouri Hazard Mitigation Plans (2010, 2013, 2018, and 2023)
- Previously approved Livingston County Hazard Mitigation Plan (June 10, 2021)
- Federal Emergency Management Agency (FEMA)
- Missouri Department of Natural Resources
- National Drought Mitigation Center Drought Reporter
- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics
- National Agricultural Statistics Service (Agriculture production/losses)
- Data Collection Questionnaires completed by each jurisdiction
- State of Missouri GIS data
- Environmental Protection Agency
- Flood Insurance Administration
- Hazards US (Hazus)
- Missouri Department of Transportation
- Missouri Division of Fire Marshal Safety
- Missouri Public Service Commission
- National Fire Incident Reporting System (NFIRS)
- National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI);
- County and local Comprehensive Plans to the extent available
- County Emergency Management
- County Flood Insurance Rate Map, FEMA
- Flood Insurance Study, FEMA
- SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin
- U.S. Army Corps of Engineers
- U.S. Department of Transportation
- United States Geological Survey (USGS)
- Various articles and publications available on the internet

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 occur 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.

### 3.1.4 Hazards Identified

After reviewing the hazards in the 2023 Missouri State Hazard Mitigation Plan as well as the disaster declaration history, the MPC agreed on 9 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.

Levee Failure was omitted because there are no levees in the planning area and no areas of the planning area are in a levee protected location. Land Subsidence/Sinkholes were omitted because there are no known sinkholes in the planning area.

**Table 3.2. Hazards Identified for Each Jurisdiction**

Jurisdiction	Dam Failure	Drought	Earthquake	Extreme Temperatures	Flooding (River and Flash)	Severe Winter Weather	Thunderstorm/Lightning/ Hail/High Wind	Tornado	Wildfire	
Livingston County	X	X	X	X	X	X	X	X	X	
<b>Cities</b>										
City of Chillicothe	-	X	X	X	X	X	X	X	X	
City of Chula	-	X	X	X	X	X	X	X	X	
Village of Ludlow	-	X	X	X	X	X	X	X	X	
City of Utica	-	X	X	X	X	X	X	X	X	
City of Wheeling	-	X	X	X	X	X	X	X	X	
<b>School and Special Districts</b>										
Chillicothe R-II	-	-	X	X	X	X	X	X	X	
Livingston County R-III (Chula)	-	-	X	X	X	X	X	X	X	
Southwest Livingston Co. R-I (Ludlow)	-	-	X	X	X	X	X	X	X	
Livingston Co. ambulance District	x	-	x	x	x	x	x	x	x	
Chillicothe rural fire district	x	x	x	x	x	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 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 to hazards. If there have been changes in the planning area since the previously approved plan was adopted, they will be summarized and how they impact the risk. This was done on the last hazard mitigation plan update for Livingston County. There have been 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 2020 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 in the tables below. 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.

The table below 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. The table that follows provides the building value exposures for the county and each city in the planning area broken down by usage type. Finally, Table 3.5 provides the building count total for the county and each city in the planning area broken out by building usage types (residential, commercial, industrial, and agricultural).

**Table 3.3. Maximum Population and Building Exposure by Jurisdiction**

Jurisdiction	2023 Annual Population Estimate	Building Count	Building Exposure (\$)	Contents Exposure (\$)	Total Exposure (\$)
City of Chillicothe	9,129	3,614	\$363,151	\$408,587	\$1,044,738
City of Chula	150	120	\$16,657	\$10,787	\$27,444
Village of Ludlow	135	124	\$14,834	\$8,591	\$23,425
City of Utica	199	146	\$17,784	\$9,192	\$26,976
City of Wheeling	135	137	\$15,808	\$8,045	\$23,853
Unincorporated Livingston County	4,582	8229	\$339,290	\$181,300	\$520,590
<b>Totals</b>	<b>14,330</b>	<b>12,422</b>	<b>\$1,047,010</b>	<b>\$629,826</b>	<b>\$1,676,836</b>

Source: U.S. Bureau of the Census, Annual population estimates/ 5-Year American Community Survey 2023; Building Count and Building Exposure, Missouri GIS Database from SEMA Mitigation Management; Contents Exposure derived by applying multiplier to Building Exposure based on Hazus 6.0 standard contents multipliers per usage type as follows: Residential (50%), Commercial (100%), Industrial (150%), Agricultural (100%). For purposes of these calculations, government, school, and utility were calculated at the commercial contents rate.

**Table 3.4. Building Values/Exposure by Usage Type**

Jurisdiction	Agricultural	Commercial	Education	Government	Industrial	Residential	Total
City of Chillicothe	\$215	\$128,471	\$17,688	\$5,581	\$32,427	\$451,758	\$636,151
City of Chula	\$71	\$3,908	\$0	\$1,080	\$0	\$11,598	\$16,657
Village of Ludlow	\$95	\$2,442	\$0	\$0	\$0	\$12,297	\$14,834
City of Utica	\$68	\$488	\$0	\$180	\$0	\$17,047	\$17,784
City of Wheeling	\$77	\$0	\$0	\$360	\$0	\$15,371	\$15,808
Unincorporated Livingston	\$18,941	\$21,493	\$3,931	\$360	\$12,164	\$282,401	\$339,290
<b>Totals</b>	<b>\$19,486</b>	<b>\$156,803</b>	<b>\$21,619</b>	<b>\$7,742</b>	<b>\$44,601</b>	<b>\$796,759</b>	<b>\$1,047,010</b>

Source: Missouri GIS Database, SEMA Mitigation Management Section

**Table 3.5. Building Counts by Usage Type**

Jurisdiction	Agricultural Counts	Commercial Counts	Education Counts	Government Counts	Industrial Counts	Residential Counts	Total
--------------	---------------------	-------------------	------------------	-------------------	-------------------	--------------------	-------

City of Chillicothe	70	263	9	31	8	3,233	3,614
City of Chula	23	8	0	6	0	83	120
Village of Ludlow	31	5	0	0	0	88	124
City of Utica	22	1	0	1	0	122	146
City of Wheeling	25	0	0	2	0	110	137
Unincorporated Livingston	5,157	44	2	2	3	2,021	8,229
<b>Totals</b>	<b>6,334</b>	<b>321</b>	<b>11</b>	<b>43</b>	<b>11</b>	<b>5,702</b>	<b>12,422</b>

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

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

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

Public School District	Enrolment	Building Count	Building Exposure (\$)	Contents Exposure (\$)	Total Exposure (\$)
Chillicothe R-II	1,788	5	\$101,578,255	\$12,987,598	\$114,565,853
Livingston County R-III (Chula)	47	1	\$4,271,200	\$1,277,835	\$5,579,035
Southwest Livingston Co. R-I	172	2	\$9,577,654	\$2,350,744	11,928,398

Source: [MCDS Portal | Missouri Department of Elementary and Secondary Education - MCDS \(mo.gov\)](#), select the file for the most recent year called "20xx 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 3.7 includes a summary of the inventory of critical and essential facilities and infrastructure in the planning area. The list was compiled from the Data Collection Questionnaire as well as the following sources: interviews with County Emergency Management Director, interviews with City Government Employees, and HAZUS.

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

Jurisdiction	Airport Facility	Bus Facility	Childcare Facility	Communications Tower	Electric Power Facility	Emergency Operations	Fire Service	Government	Housing	Shelters	Highway Bridge	Hospital/Health Care	Military	Natural Gas Facility	Nursing Homes	Police Station	Potable Water Facility	Rail	Sanitary Pump Stations	School Facilities	Stormwater Pump Stations	Tier II Chemical Facility	Wastewater Facility	TOTAL
<b>Unincorporated County</b>																								
Livingston County	-	-	-	-	6	1	1	5	-	1	60	-	-	-	-	1	3	2	3	-	-	2	-	85
<b>Cities and Towns</b>																								
City of Chillicothe	1	1	11	4	2	1	1	37	4	4	5	23	1	2	3	1	3	1	9	43	-	35	1	193
City of Chula	-	-	1	3	1	1	-	3	-	1	1	-	-	1	-	-	1	1	1	4	-	1	1	21
Village of Ludlow	-	-	-	-	1	-	-	1	-	1	-	-	-	-	-	-	1	1	1	5	-	1	1	13
City of Utica	-	-	-	7	1	-	-	7	-	-	5	-	-	1	-	-	1	-	1	-	-	-	-	23
City of Wheeling	-	-	-	-	1	1	1	4	-	-	-	-	-	1	-	-	2	-	1	-	-	-	1	12
<b>Totals</b>	<b>1</b>	<b>1</b>	<b>12</b>	<b>14</b>	<b>13</b>	<b>4</b>	<b>4</b>	<b>57</b>	<b>4</b>	<b>7</b>	<b>71</b>	<b>23</b>	<b>1</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>12</b>	<b>5</b>	<b>17</b>	<b>52</b>	<b>0</b>	<b>39</b>	<b>4</b>	<b>351</b>

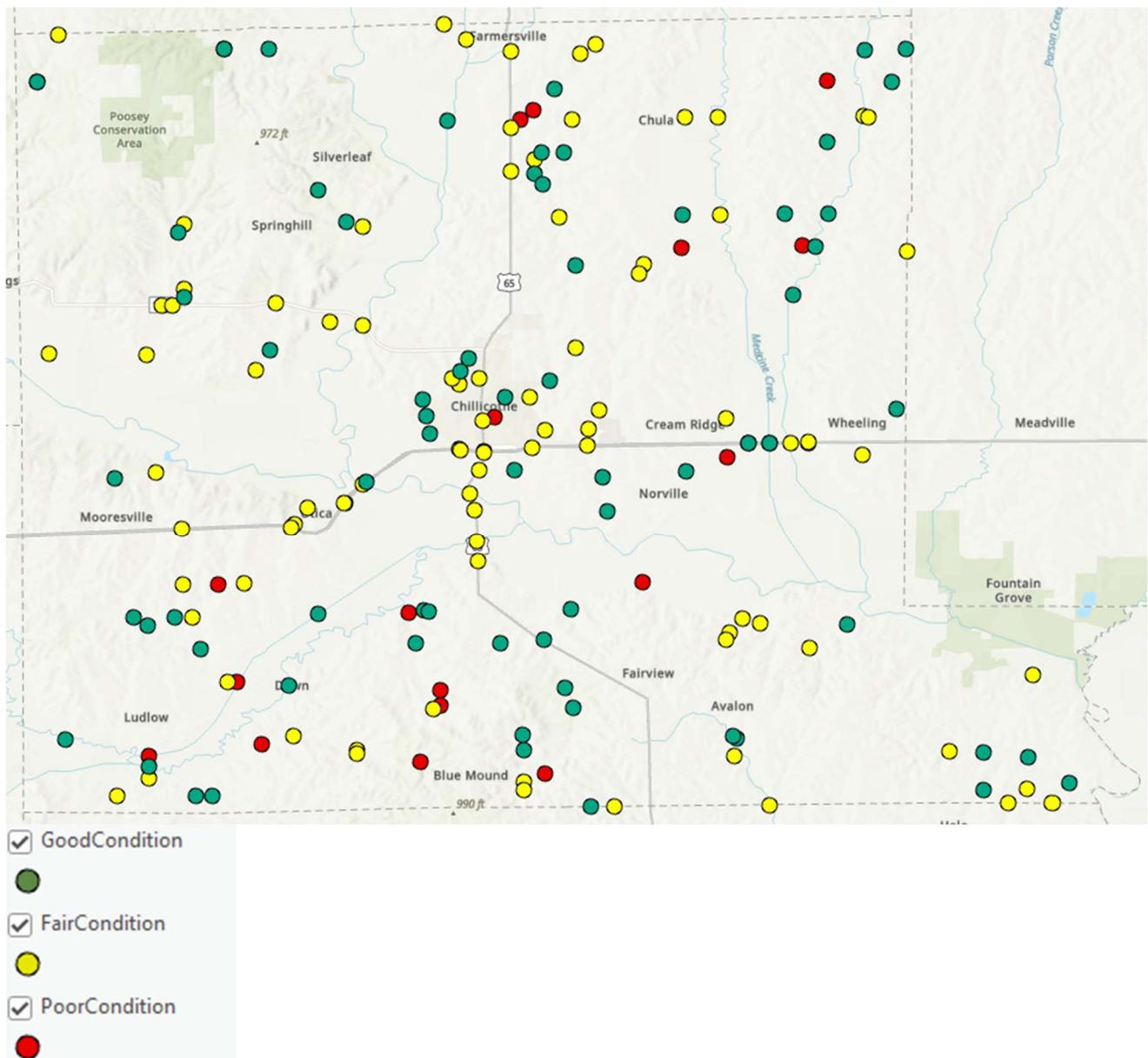
Source: Missouri 2023 State Hazard Mitigation Plan and Hazard Mitigation Viewer; Data Collection Questionnaires; Hazus, etc.

The following figures show the location and conditions of the bridges in Livingston County. Figure 3.1 shows the location of all bridges found in the National Bridge Inventory.

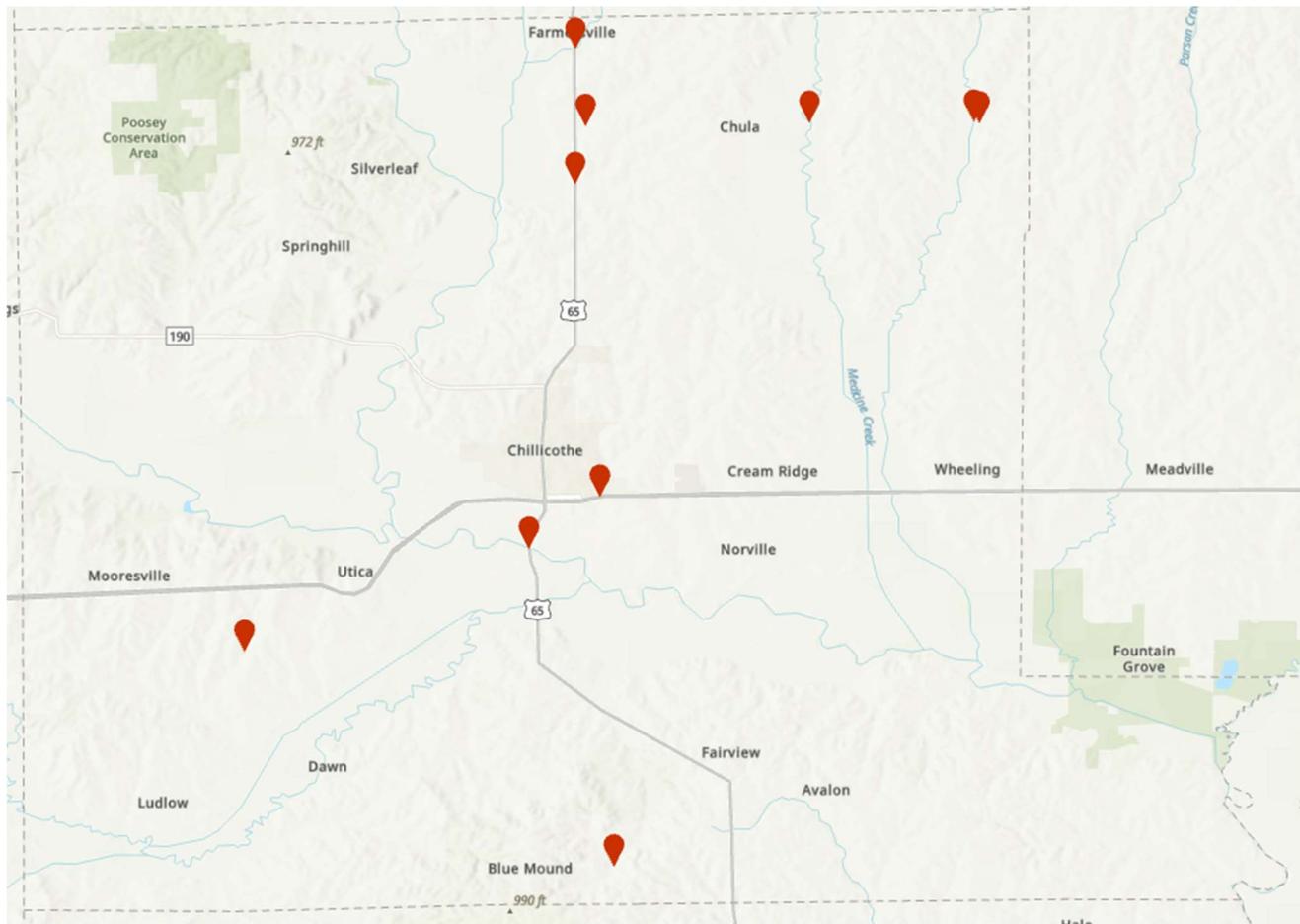
The term “scour critical” refers to one of the database elements in the National Bridge Inventory. This element is quantified using a “scour index”, which is a number indicating the vulnerability of a bridge to scour during a flood. Bridges with a scour index between 1 and 3 are considered “scour critical”,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

There are currently 10 bridges in Livingston County which have been identified as scour critical structures. Figure 3.2 shows the location of bridges that have been identified as scour critical.

**Figure 3.1. Livingston County Bridges**



**Figure 3.2. Livingston County Structurally Deficient 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 3.8. Threatened and Endangered Species in Livingston County**

Common Name	Scientific Name	Status
<b>Mammals</b>		

Gray Bat	Myotis grisescens	Endangered
Indiana Bat	Myotis sodalis	Endangered
Northern Long-eared Bat	Myotis septentrionalis	Endangered
Tricolored Bat	Perimyotis subflavus	Proposed Endangered
<b>Fishes</b>		
Pallid Sturgeon	Scaphirhynchus albus	Endangered
<b>Insects</b>		
Monarch Butterfly	Danaus plexippus	Proposed Threatened
Western Regal Fritillary	Argynnis idalia occidentalis	Proposed Threatened
<b>Flowering Plants</b>		
Eastern Prairie Fringed Orchid	Platanthera leucophaea	Threatened
Mead's Milkweed	Asclepias meadii	Threatened
Western Prairie Fringed Orchid	Platanthera praeclara	Threatened
<b>Critical habitats</b>		
There are no critical habitats at this location.		

Source: U.S. Fish and Wildlife Service, [Listed Species \(fws.gov\)](http://www.fws.gov); also <https://ecos.fws.gov/ipac/>

**Table 3.9. Parks in Livingston County**

Park / Conservation Area	Address	City
Poosey Conservation Area	NW Livingston county off route W	Chillicothe
Fountain Grove Conservation Area	SW Linn County	Meadville

Source: <http://mostateparks.com> – Missouri department of conservation

**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 3.10. Livingston County properties on the National Register of Historic Places**

Property	Address	City	Date Listed
Chillicothe Commercial Historic District	Roughly bounded Clay, Ann, Washington, and Locust Streets	Chillicothe	10/16/2002
Chillicothe Industrial Home for Girls	1500 Third St.	Chillicothe	4/19/2010
Courthouse Square Historic District	Roughly bounded by Calhoun, Jackson, Washington, and Elm Streets	Chillicothe	10/16/2002
Grace Episcopal Church and Building	421 Elm St.	Chillicothe	9/17/1980

Source: National Register of Historic Places – Spreadsheet of NRHP Listed Properties

<https://www.nps.gov/subjects/nationalregister/data-downloads.htm>

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

**Table 3.11. Major Non-Government Employers in Livingston County**

Employer Name	Main Locations	Product or Service	Employees
Chillicothe School District	Chillicothe	Education	285
Hedrick Medical Center	Chillicothe	Healthcare	260
Sonoco Plastics	Chillicothe	Manufacturing	150
Walmart	Chillicothe	Retail	250
Lowe's	Chillicothe	Retail/Home Improvement	200
Dept. of Corrections	Chillicothe	Government/Prison	150

Source: Data Collection Questionnaires; local Economic Development Commissions

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

Livingston 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 2022, Livingston County has 602 farms covering approximately 265,000 acres. The average farm size was about 440 acres, which indicates a mix of small and mid-sized operations.

As of 2024, the average value of farmland in Missouri was approximately \$4,800 per acre, with Livingston County's land values closely tracking the state average. This makes farmland a significant asset and source of wealth accumulation for local landowners.

**Table 3.12. Agriculture-Related Jobs in Livingston County**

Livingston County Farm statistics	
Total Number of Farms	1,016
Total Producers	1,607
Producers Whose Primary Occupation is Farming	774

Source: Livingston County census of agriculture

Regarding hired farm labor, the county-level profiles from the USDA NASS typically don't break down the exact number of hired workers for each specific county directly in the summary. However, they collect data for "Hired Farm Labor - Total Workers" and "Hired Farm Labor - Payroll" at a broader level (state and multi-state regions), and this data is available in the full Census of Agriculture tables.

As of the most recent census American community survey (ACS-2023) Agriculture, forestry, fishing and hunting, and mining jobs accounted for 4.0% (246 persons) of the total workforce in Livingston County (6,147 employed persons.)

Figure 3.3. 2022 Census of Agriculture Livingston County pg. 1

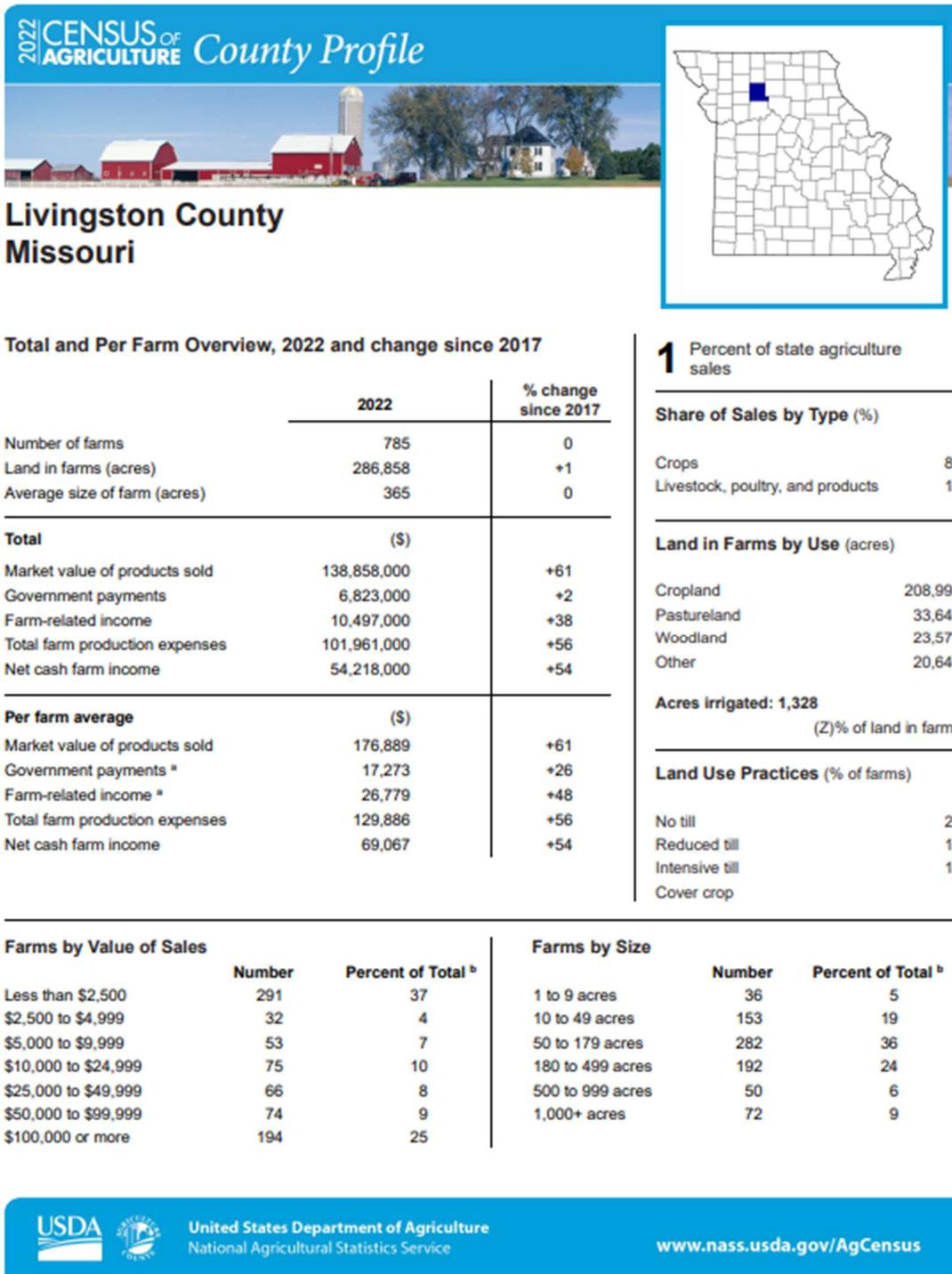


Figure 3.4. 2022 Census of Agriculture Livingston County pg. 2

**Market Value of Agricultural Products Sold**

	Sales (\$1,000)	Rank in State <sup>c</sup>	Counties Producing Item	Rank in U.S. <sup>c</sup>	Counties Producing Item
<b>Total</b>	<b>138,858</b>	<b>43</b>	<b>114</b>	<b>1,130</b>	<b>3,078</b>
<b>Crops</b>	<b>119,559</b>	<b>20</b>	<b>114</b>	<b>714</b>	<b>3,074</b>
Grains, oilseeds, dry beans, dry peas	118,003	18	109	528	2,917
Tobacco	-	-	2	-	267
Cotton and cottonseed	-	-	7	-	647
Vegetables, melons, potatoes, sweet potatoes	158	49	112	1,555	2,831
Fruits, tree nuts, berries	(D)	94	112	(D)	2,711
Nursery, greenhouse, floriculture, sod	(D)	80	104	(D)	2,660
Cultivated Christmas trees, short rotation woody crops	-	-	36	-	1,274
Other crops and hay	1,368	81	114	1,787	3,035
<b>Livestock, poultry, and products</b>	<b>19,299</b>	<b>79</b>	<b>114</b>	<b>1,766</b>	<b>3,076</b>
Poultry and eggs	9	103	113	2,116	3,027
Cattle and calves	6,378	90	114	1,552	3,047
Milk from cows	957	37	84	795	1,770
Hogs and pigs	11,419	34	111	414	2,814
Sheep, goats, wool, mohair, milk	262	38	111	740	2,967
Horses, ponies, mules, burros, donkeys	265	31	113	941	2,907
Aquaculture	-	-	36	-	1,190
Other animals and animal products	9	71	106	1,738	2,909

Producers <sup>d</sup>	1,316	Percent of farms that:	Top Crops in Acres <sup>e</sup>	
<b>Sex</b>		Have internet access	<b>78</b>	
Male	857			
Female	459			
<b>Age</b>		Farm organically	<b>1</b>	
<35	128			
35 – 64	655			
65 and older	533			
<b>Race</b>		Sell directly to consumers	<b>2</b>	
American Indian/Alaska Native	2			
Asian	2			
Black or African American	-			
Native Hawaiian/Pacific Islander	-			
White	1,309	Hire farm labor	<b>16</b>	
More than one race	3			
<b>Other characteristics</b>		Are family farms	<b>97</b>	
Hispanic, Latino, Spanish origin	10			
With military service	148			
New and beginning farmers	379			
			<b>Livestock Inventory (Dec 31, 2022)</b>	
			Broilers and other meat-type chickens	72
			Cattle and calves	11,043
			Goats	495
			Hogs and pigs	30,031
			Horses and ponies	510
			Layers	432
			Pullets	(D)
			Sheep and lambs	1,955
			Turkeys	(D)

<sup>a</sup> Average per farm receiving. <sup>b</sup> May not add to 100% due to rounding. <sup>c</sup> Among counties whose rank can be displayed. <sup>d</sup> Data collected for a maximum of four producers per farm. <sup>e</sup> Crop commodity names may be shortened; see full names at [www.nass.usda.gov/go/cropnames.pdf](http://www.nass.usda.gov/go/cropnames.pdf). <sup>f</sup> 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 the table below shows a consistent and steady loss of population in the planning area. In the cases of the Village of Ludlow and the City of Wheeling, the decline in population is markedly higher than surrounding areas.

**Table 3.13. County Population Growth, 2020-2023**

Jurisdiction	Total Population 2020	Total Population 2023	2010-2023 # Change	2010-2023 % Change
Livingston County	4,898	4,501	-397	-8.1%
City of Chillicothe	9,515	9,451	-64	-0.67%
City of Chula	210	202	-8	-3.81%
Village of Ludlow	137	109	-28	-20.44%
City of Utica	164	159	-5	-3.05%
City of Wheeling	271	135	-136	-50.25%
<b>Total:</b>	<b>15,195</b>	<b>14,557</b>	<b>-638</b>	<b>-4.19%</b>

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 provides the change in number of housing units in the planning area from 2020 to 2023. The American Community Survey 2022 5-year estimates was used as the most recent data available. This information was compared to the 2020 decennial census to show the change in both number and percent.

**Table 3.14. Change in Housing Units, 2020-2023**

Jurisdiction	Housing Units 2020	Housing Units 2023	2010-2023 # Change	2010-2023 % Change
Livingston County	1,818	2,153	335	
City of Chillicothe	4,117	3,842	-275	-6.68%
City of Chula	91	87	-4	-4.40%
Village of Ludlow	92	79	-13	-14.1%
City of Utica	121	120	-1	-0.83%
City of Wheeling	137	111	-26	-18.9%
<b>Total:</b>	<b>6,376</b>	<b>6,392</b>	<b>16</b>	<b>0.25%</b>

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

### 3.3.2 Future Land Use and Development

Livingston County and the participating jurisdictions are in a very rural area of northern Missouri, and it is very difficult to attract new development due to the inability to attract new employers to the area. The City of Chillicothe is the exception. It is the largest city in the region and does see new developments and industry.

## 3.4 HAZARD PROFILES, VULNERABILITY, AND PROBLEM STATEMENTS

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

### Hazard Profiles

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

Each hazard identified in Section 3.1.4 will be profiled individually in this section in alphabetical order. Probability of future occurrence will describe how development in hazard-prone areas has increased or decreased hazard vulnerability since the last plan update, if applicable.

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 and the impact of Climate Change” to Changing Future Conditions Considerations in all the hazard profiles. 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 a 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 percentage chance of the event happening in any given year. For events occurring more than once annually, the probability should be reported as 100% in any given year, with a statement of the average number of events annually. For hazards such as drought that may have

gradual onset and extended duration, probability can be based on the number of months in drought in a given time-period and expressed as the probability for any given month to be in drought.

- **Changing Future Conditions Considerations:**

In addition to the probability of future occurrence, changing future conditions should also be considered, including the effects of long-term changes in weather patterns and climate on the identified hazards. NOAA has a new tool that can provide useful information for this purpose. NOAA Climate Explorer, <https://toolkit.climate.gov/tools/climate-explorer>

## **Vulnerability Assessments**

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

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

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

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

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

Following the hazard profile for each hazard will be the vulnerability assessment. The vulnerability assessment further defines and quantifies populations, buildings, critical facilities, and other community assets at risk to damages from natural hazards. The vulnerability assessments should be based on the best available data. The vulnerability assessments can also be based on data that was collected for the 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 Livingston 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.

- **Vulnerability Overview:**  
The plan must provide an overall summary of each jurisdiction’s vulnerability to the identified hazards. The overall summary of vulnerability identifies structures, systems, populations or other community assets as defined by the community that are susceptible to damage and loss for hazard events.
- **Potential Losses to Existing Development:**  
For each participating jurisdiction, the plan must describe the potential impacts of the hazard. Impact means the consequences of effect of the hazard on the jurisdiction and its assets. 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. Describe how any changes in development that occurred in known hazard prone areas since the previous plan have increased or decreased the community’s vulnerability. Describe any anticipated future development in the county, and how that would impact hazard risk in the planning area.
- **Hazard Summary by Jurisdiction:**  
For hazard risks that vary by jurisdiction, this section will provide an overview of the variation and the factual basis for that variation.

## **Problem Statements**

Each hazard analysis must conclude with a brief summary of the problems created by the hazard in the planning area, and possible ways to resolve those problems. 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; relating to specific jurisdictions as well as specific assets or areas of the planning area that are problematic. This will in turn prompt development of specific mitigation actions.

### 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 failure is discussed in Section 3.4.2. 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.

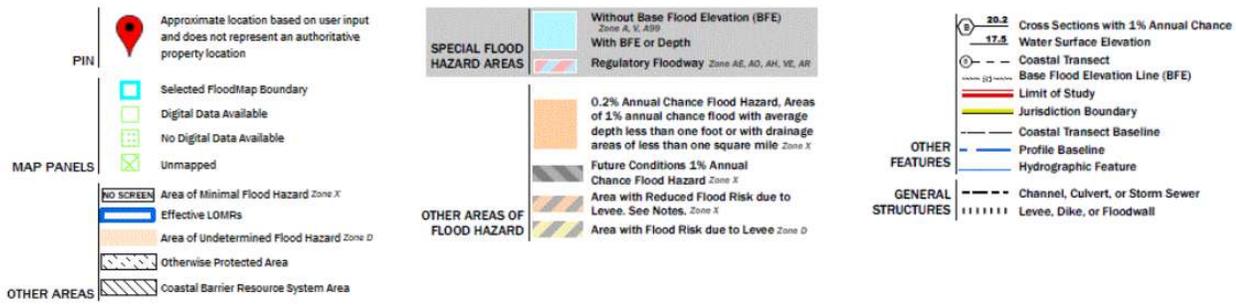
## ***Geographic Location***

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.

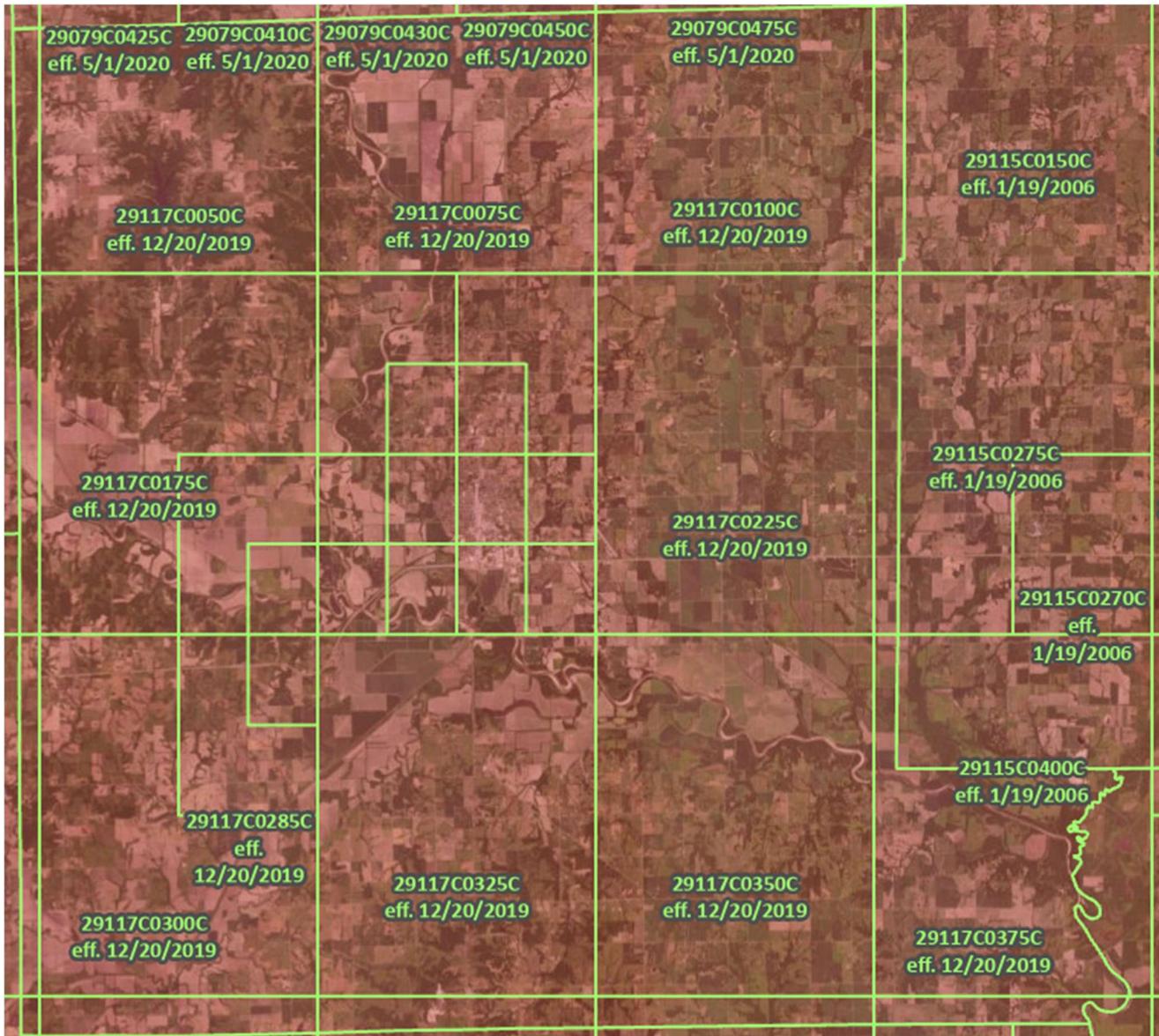
Riverine flooding is most likely to occur in SFHAs. The following maps are from the most recent information from FEMA's National Flood Layer of Daviess County. The Key in the following figure is the flood map key for all jurisdiction's flood maps.

Riverine flooding is most likely to occur in SFHAs (Special Flood Hazard Areas). The following figures show the Flooding Hazard area maps for each jurisdiction in the planning area.

**Figure 3.5. Flood Map Key**



**Figure 3.6. FIRM Map of Livingston County**



The following figures, Figure 3.7-3.10 are of the incorporated areas of Chillicothe. The Figures are in order from North to South.

**Figure 3.7. North Boundary of Chillicothe**

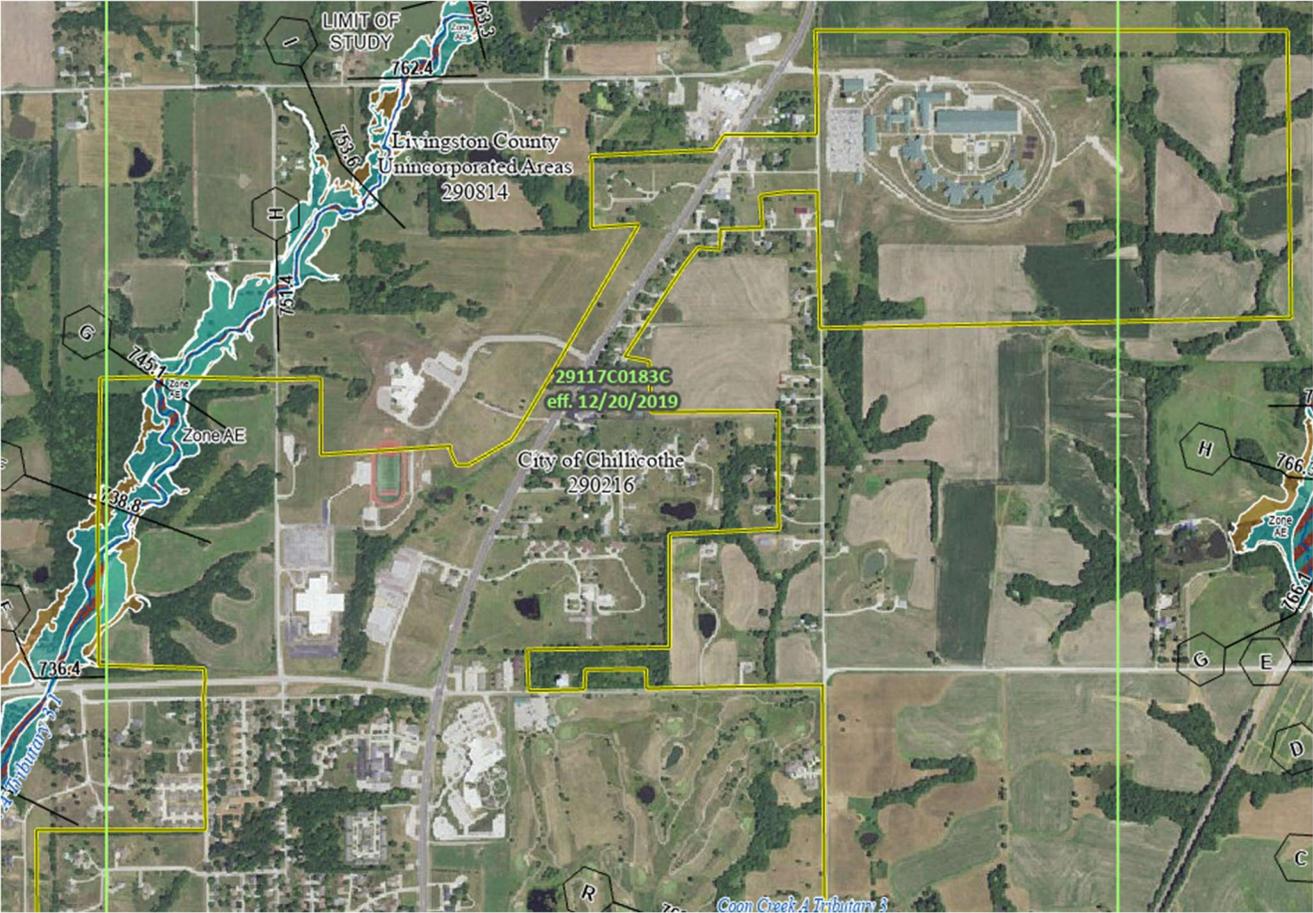


Figure 3.8. Chillicothe

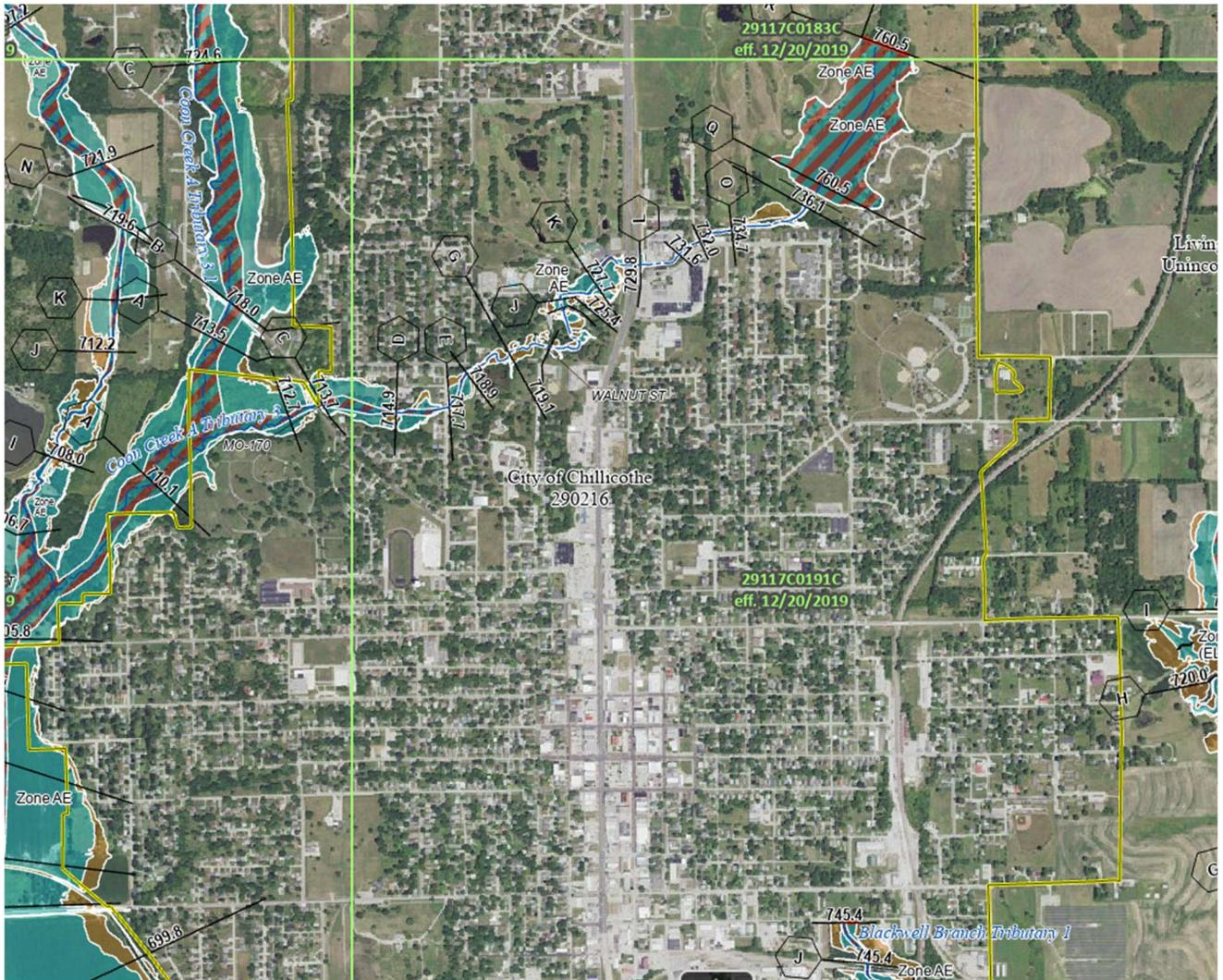


Figure 3.9. Chillicothe

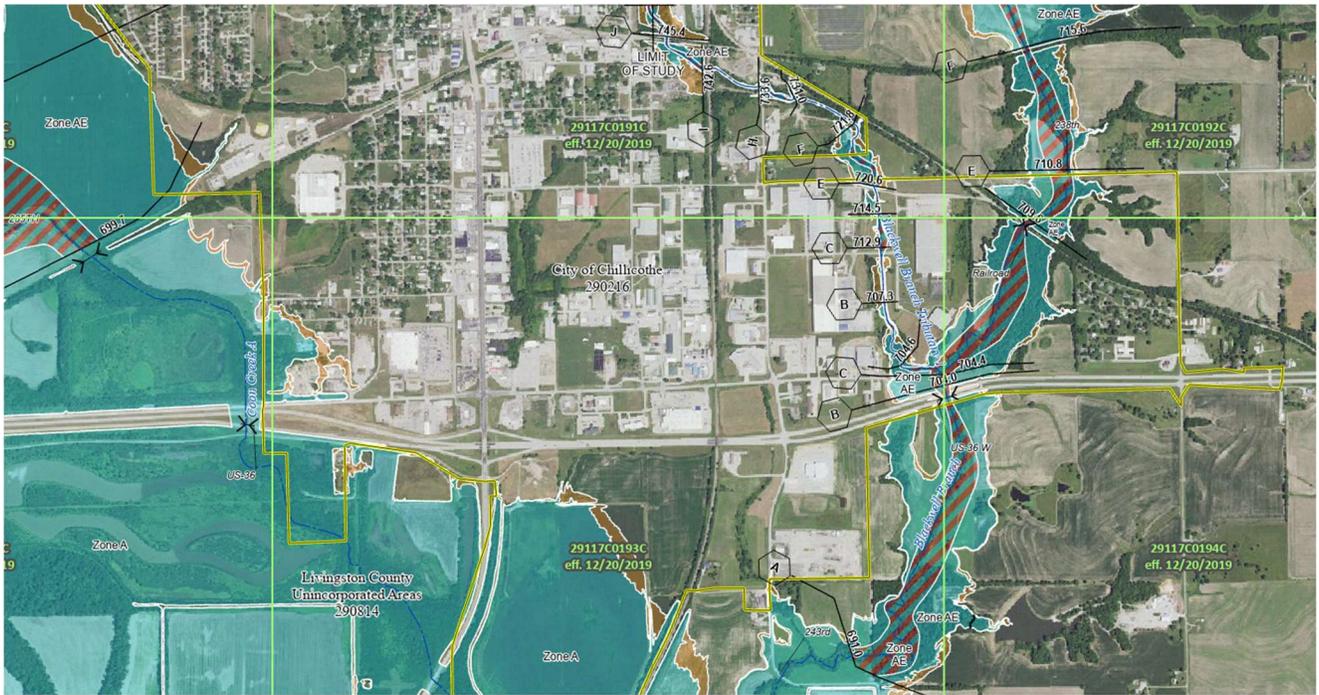


Figure 3.10. Chillicothe South Section



Figure 3.11. City of Chula

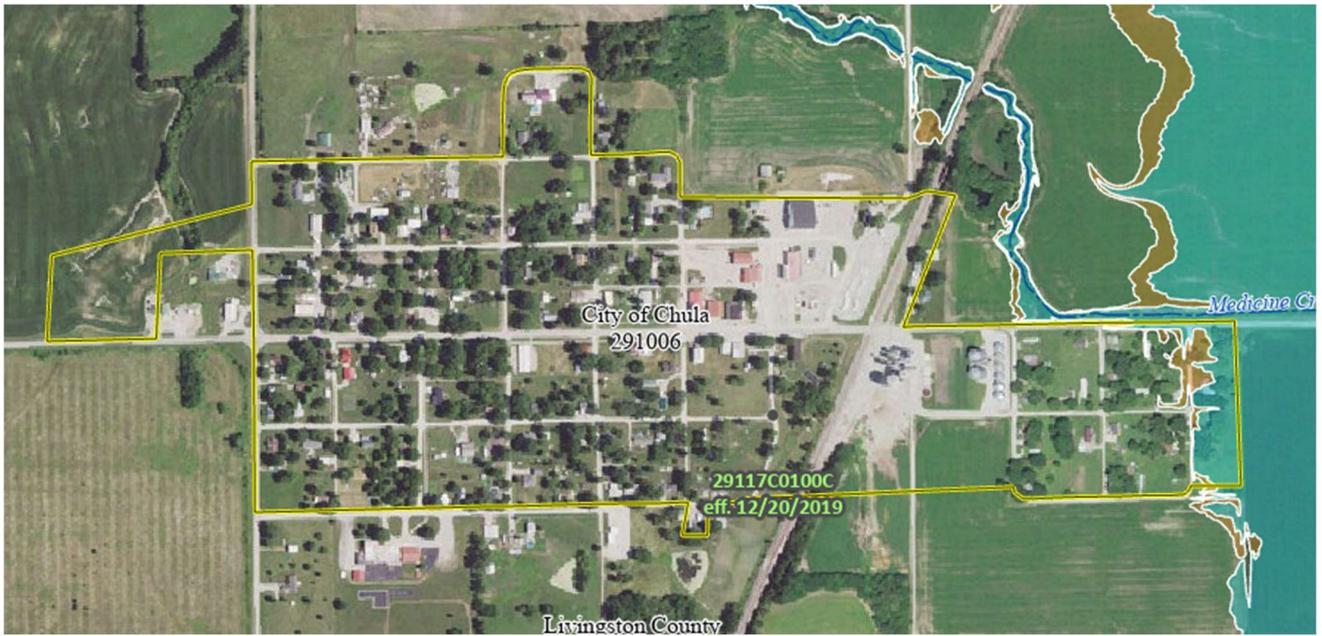


Figure 3.12. Town of Ludlow

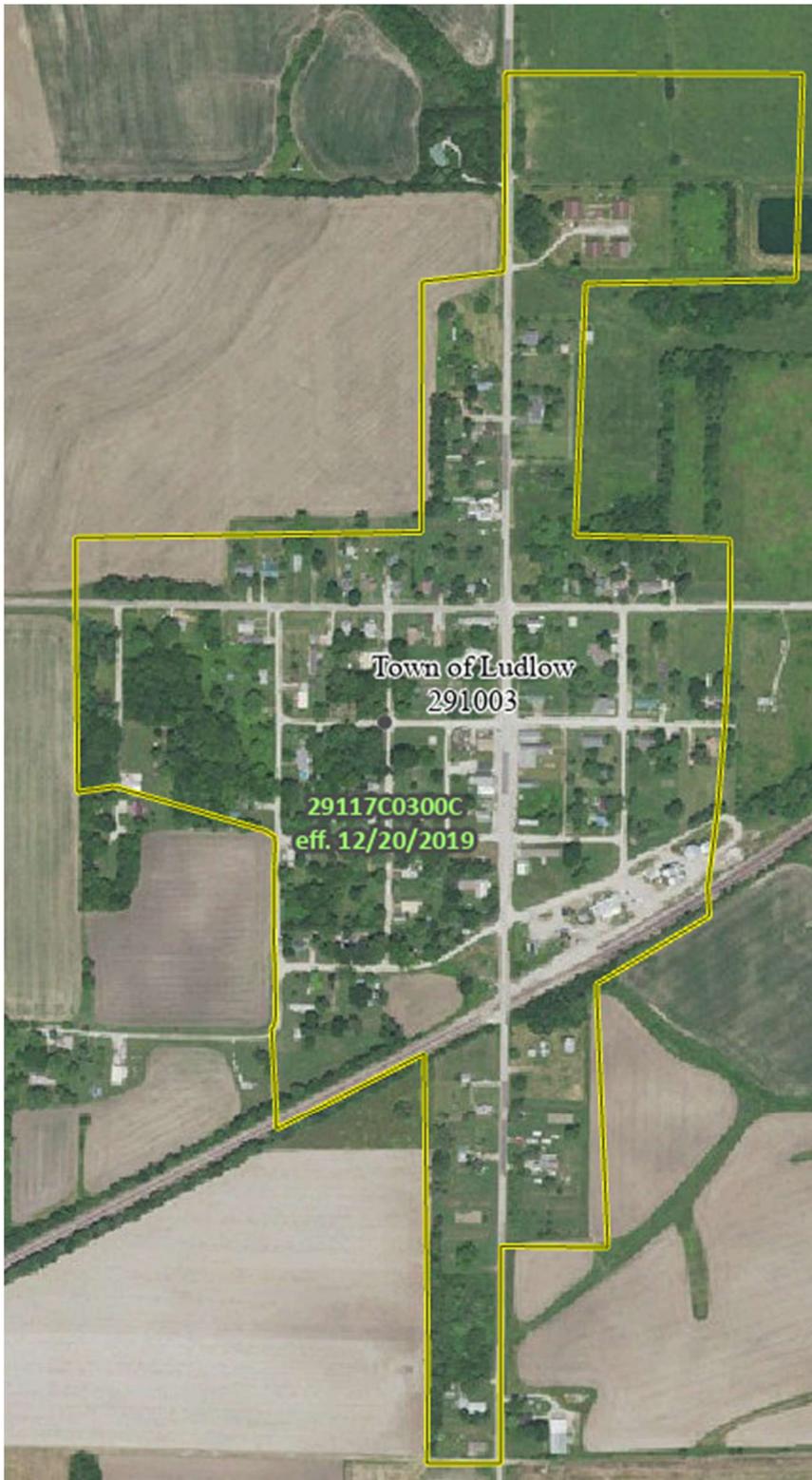


Figure 3.13. Village of Utica

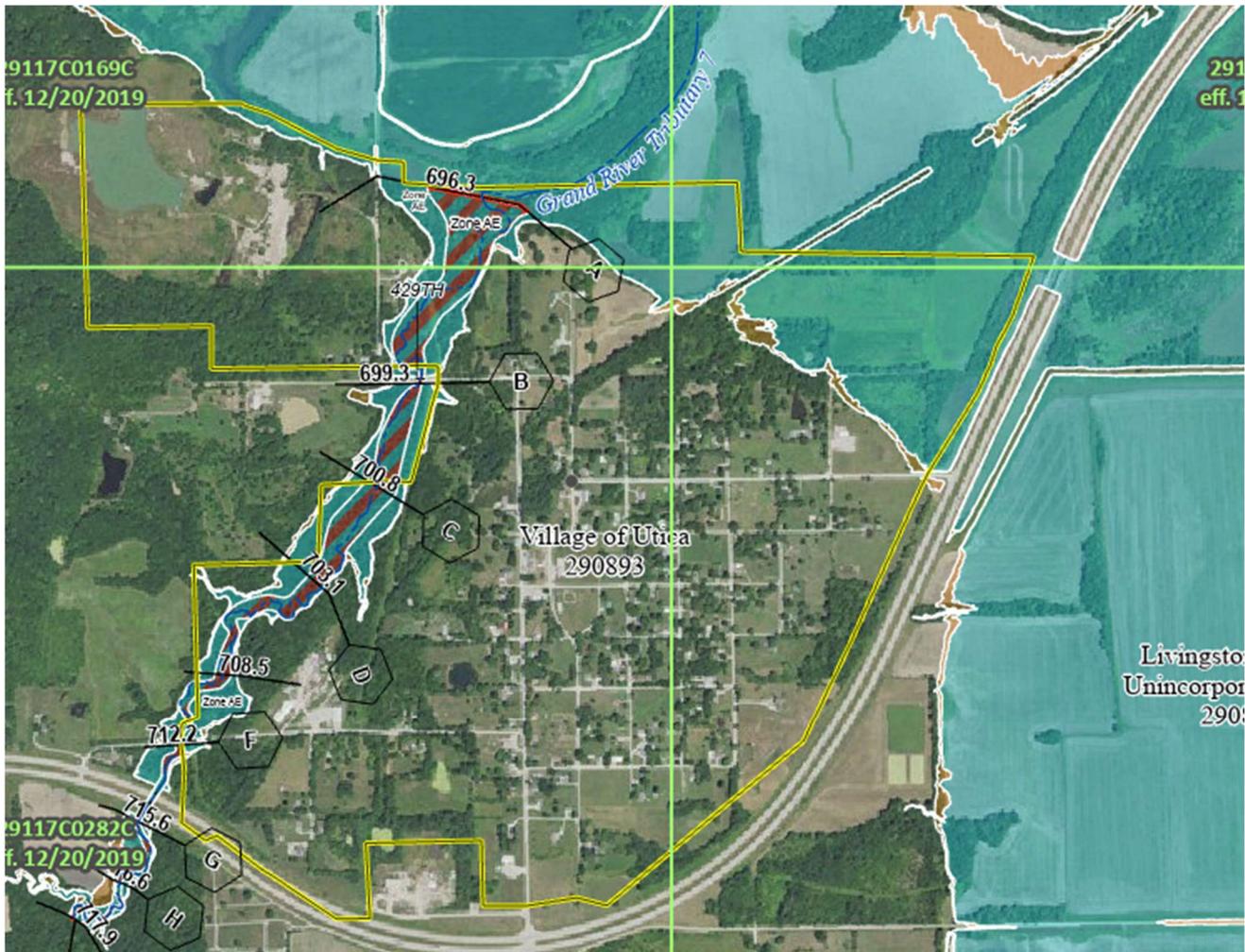


Figure 3.14. City of Wheeling



**Figure 3.15. Village of Mooresville**



**Table 3.15 and Table 3.16** show the Livingston County Flood Event and Flash Flood Event history per NCEI data. NCEI data includes events for flooding and for flash flooding. Those events without location-specific information are tabulated under “unspecified” locations in the table. These tables show a 20-year time frame for previous events within the planning area.

**Table 3.15. Livingston County NCEI Flood Events by Location, 2005-2025**

Location	# of Events
Unincorporated Livingston County	5
-Unincorporated County (Bedford)-3 flood events	
-Unincorporated County (Dawn)- 1 flood events	
-Unincorporated County (Spring Hill)- 1 flood events	
City of Chillicothe	8
-City of Chillicothe (unspecified)- 8 flood events	
City of Ludlow	3
-City of Ludlow (unspecified)- 3 flood events	
City Utica	3
-City of Utica (unspecified)- 3 flood events	
<b>Total</b>	<b>19</b>

Source: National Centers for Environmental Information, September 2025

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. The NCEI database was used to determine which jurisdictions are most prone to flash flooding during a 20-year time frame.

**Table 3.16. Livingston County NCEI Flash Flood Events by Location, 2005-2025**

Location	# of Events
Unincorporated Livingston County	1
-Unincorporated County (unspecified)- 0 flood events	
-Unincorporated County (Sampsel)- 1 flood events	
City of Chillicothe	4
-City of Chillicothe (unspecified)- 4 flood events	
City of Ludlow	2
-City B (unspecified)- 2 flood events	
City of Mooresville	1
-City of Mooresville (unspecified)- 1 flood events	
City of Wheeling	1
-City of Wheeling (unspecified)-1 flood events	
<b>Total</b>	<b>9</b>

Source: National Centers for Environmental Information, 9/2025

### ***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.

### ***National Flood Insurance Program (NFIP) Participation***

Livingston County participates in the NFIP. The jurisdictions of Chillicothe and Utica also participate in the NFIP. 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 jurisdictions that do not participate in the NFIP did not meet the minimum requirements to be participants in this update of the Livingston County hazard mitigation plan. No further information is available about possible participation in the future, and no action will be taken at this time by any of the non-participating jurisdictions.

**Table 3.17. NFIP Participation in Livingston County – Ordinance and Enforcement Information**

Community ID #	Community Name	NFIP Participant (Y/N/Sanctioned)	Adoption Date of Current Flood Damage Prevention Ordinance	Floodplain Administrator and/or Agency
290814A	Livingston County	Yes	8-13-2019	Gil Gates Livingston Co
290216A	Chillicothe	Yes	3-11-2019	Gil Gates City of Chillicothe
291006A	Chula	No	n/a	n/a
291003A	Ludlow	No	n/a	n/a
291004A	Mooreville	No	n/a	n/a
290893A	Utica	Yes	11/20/2019	Raymond Wilson City of Utica
290637A	Wheeling	No	n/a	n/a

Source: NFIP Community Status Book, 8/2025; 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 3.18. NFIP Participation in Livingston County- Mapping Information**

Community ID #	Community Name	Current Effective Map Date	Regular- Emergency Program Entry Date
290814A	Livingston County	12/20/2019	5/1/1987
290216A	Chillicothe	12/20/2019	8/5/1985
291006A	Chula	12/20/2019	n/a
291003A	Ludlow	12/20/2019	n/a
291004A	Mooreville	12/20/2019	n/a
290893A	Utica	12/20/2019	6/14/2002
290637A	Wheeling	12/20/2019	n/a

Source: NFIP Community Status Book, 8/2025; 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 3.19. NFIP Policy and Claim Statistics as of Date**

Community Name	Policies in Force	Insurance in Force	Closed Losses	Total Payments
Chillicothe	5	\$895,000	\$228,212.51	15

Livingston County	2	\$700,000	\$138,148.00	10
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Source: NFIP Community Status Book, 8/2025; PIVOT (information from STATE), [Community Status Book | FEMA.gov](#)  
 \*Closed Losses are those flood insurance claims that resulted in payment. Loss statistics are for current as of 8/2025

The jurisdictions of Livingston County and Chillicothe have both had flood insurance claims. The City of Chillicothe has had \$228,212.51 in paid losses and Livingston County has had \$138,148.00.

**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 2 repetitive loss properties. As of 8/1/2025, 0 properties have been mitigated, leaving 2 un-mitigated repetitive loss properties.

**Table 3.20. Livingston County Repetitive Loss Properties**

Jurisdiction	# of Properties	Type of Property	# Mitigated	Building Payments	Content Payments	Total Payments	Average Payment	# of Losses
Chillicothe	2	1 Commercial, 1 Residential	0	\$100,794.78	\$10,435.81	\$111,230.59	\$22,246.12	5

Source: Flood Insurance Administration as of 8/2025

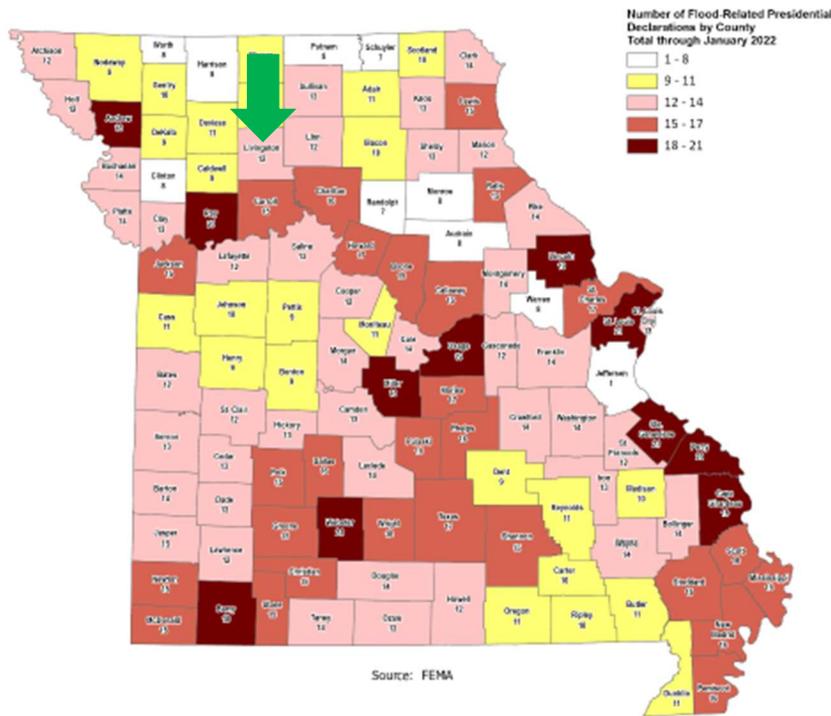
**Severe Repetitive Loss (SRL):** A SRL property is defined it as a single family property (consisting of one-to-four residences) that is covered under flood insurance by the NFIP; and has (1) incurred flood-related damage for which four or more separate claims payments have been paid under flood insurance 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 the planning area.

**Previous Occurrences**

The number of Flood-Related Presidential Declarations by County was obtained from the 2023 Missouri State Hazard Mitigation Plan. The following figure shows the number of such events per county. Livingston County is indicated by an arrow, and according to the illustration Livingston County has had 12 such events.

**Figure 3.16. Number of Flood-Related Presidential Declarations Per County**



Source: 2023 Missouri State Hazard Mitigation Plan

In addition to the Missouri State Hazard Mitigation Plan of 2023, the following table provides the previous Presidential Disaster Declarations due to flooding in Livingston County from 1965 to the present per the FEMA website.

**Table 3.21. Presidential Declarations of Flooding in Livingston County (1965-2025)**

Disaster #	Start Date	End Date	Disaster Type
372	4/19/1973	-	Severe Storms (heavy rains, tornadoes, and flooding)
407	11/1/1973	-	Severe Storms, Flooding
995	6/10/1993	10/25/1993	Flooding, Severe Storms
1253	10/4/1998	10/1/1998	Severe Storms, Tornadoes, and Flooding
1524	5/18/2004	5/31/2004	Severe Storms, Tornadoes, and Flooding
1708	5/5/2007	5/18/2007	Severe Storms and Flooding
1773	6/1/2008	8/13/2008	Severe Storms & Flooding
1934	6/12/2010	7/31/2010	Severe Storms, Flooding, and Tornadoes
4200	9/9/2014	9/10/2014	Severe Storms, Straight-line Winds, Tornadoes, and Flooding
4238	5/15/2015	7/27/2015	Severe Storms, Straight-line Winds, Tornadoes, and Flooding
4451	4/29/2019	7/6/2019	Flooding, Severe Storms, Tornadoes
4612	6/24/2021	7/1/2021	Severe Storms, Straight-line Winds, Tornadoes, and Flooding

Source: FEMA Disaster Declarations

**Table 3.22. NCEI Livingston County Flash Flood Events Summary, 2005-2025**

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2009	3	0	0	0	0
2010	2	0	0	0	0
2013	1	0	0	0	0
2016	2	0	0	0	0
2018	1	0	0	0	0

Source: NCEI, data accessed 9/2025

**Table 3.23. NCEI Livingston County Flash Flood Event Summaries (where available)**

Event Date	Event Narrative
5/15/2009	Up to 10 inches of rain caused flash flooding over Highway 65, south of Chillicothe.
8/17/2009	State Routes DD and C were reported closed, due to flooding.
8/16/2009	Up to eight inches of running water was reported on Highway 65, south of Chillicothe.
5/12/2010	Water was reported over the road, at the intersection of Clay Street and Easton Street.
7/16/2010	Flowing water was reported over the intersection of Highway 190 and Highway U.
6/15/2013	Two feet of water was reported covering Highway 36 west bound lanes, east of Chillicothe.
8/1/2016	Route D was closed near Shoal Creek due to flooding.
8/26/2016	Water was flowing over several roads in Chillicothe as a result of heavy rain.
10/8/2018	Multiple roads in the Ludlow area were closed due to flooding waters.

Source: NCEI, data accessed 9/2025

**Table 3.24. NCEI County A Riverine Flood Events Summary, 2005-2025**

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2007	6	0	0	\$0	\$850,000
2008	6	0	0	\$0	\$0
2015	2	0	0	\$0	\$0
2017	4	0	0	\$0	\$0
2019	1	0	0	\$0	\$0

Source: NCEI, 9/2025

**Table 3.25. NCEI Livingston County Riverine Flood Event Narratives (2005-2025)**

Begin Date	Event Narrative
2/25/2007	The Grand River near Chillicothe crested at 25.75 feet, or 1.75 feet above flood stage.
4/27/2007	The Grand River near Chillicothe crested at 24.44 feet, or 0.44 feet above flood stage.
5/6/2007	The Grand River near Chillicothe crested at 37.14 feet, or 13.14 feet above flood stage. This was the third highest crest ever on May 10, 2007.
5/7/2007	The Grand River near Sumner crested at 39.90 feet, or 13.90 feet above flood stage. This was its second highest crest on record and was on May 12, 2007.
8/25/2007	The Grand River near Sumner crested at 28.92 feet, or 2.92 feet above flood stage.
12/12/2007	The Grand River near Sumner crested at 27.42 feet, or 1.42 feet above flood stage.
3/2/2008	The Grand River near Chillicothe crested at 32.35 feet, or 8.35 feet above flood stage.
4/9/2008	The Grand River near Chillicothe crested at 27.43 feet, or 3.43 feet above flood stage.
4/10/2008	The Grand River near Chillicothe crested at 29.22 feet, or 5.22 feet above flood stage.
4/18/2008	The Grand River near Chillicothe crested at 31.15 feet, or 7.15 feet above flood stage.
4/25/2008	The Grand River near Chillicothe crested at 26.88 feet, or 2.88 feet above flood stage.
12/27/2008	The Grand River near Chillicothe crested at 30.56 feet, or 6.56 feet above flood stage.
6/15/2015	Flooding was reported across 190 and 155 Roads. Flooding was also reported in Chillicothe.
8/1/2015	Water was covering a low water crossing at Cedar Crest Lane and North Fair Street in Chillicothe.
4/5/2017	State Route C was closed due to flooding along Shoal Creek.
4/5/2017	State Route D was closed due to flooding along Shoal Creek.
4/5/2017	State Route DD was closed due to flooding from nearby creeks.
7/13/2017	Water over the road on 3rd Street near the old prison property caused a vehicle to stall.
5/21/2019	Route DD closed in both directions near Ludlow.

Source: NCEI, 9/2025

**Probability of Future Occurrence**

The probability of future flood events was calculated by the following formulas:

$$\text{Probability of Flash Flood} = \frac{(9 \text{ flash flood events})}{20 \text{ years}} = .45 = 45\%$$

The probability of a flash flood occurring in the planning area is 45% during any given year.

$$\text{Probability of Flood} = \frac{19 \text{ flood events}}{20 \text{ years}} = .95 = 95\%$$

The probability of a flood occurring in the planning area is 95% during any given year.

### ***Changing Future Conditions Considerations***

According to the 2023 Missouri State Hazard Mitigation Plan, if increased precipitation intensity continues, the frequency of floods in Livingston County is likely to increase as well. Over the last half century, average annual precipitation in most of the Midwest has increased by 5 to 10%. But rainfall during the four wettest days of the year has increased by approximately 3%, and the amount of water flowing in most streams during the worst flood of the year has increased by more than 20 percent.

There is a 66-100% probability that the frequency of heavy precipitation or the proportion of total rainfall from heavy falls will increase in the 21<sup>st</sup> century across the globe. More specifically, it is very likely with a 90 – 100% probability that most areas of the United States will exhibit an increase of at least 5% in the maximum 5-day precipitation by the last 21<sup>st</sup> century. As the number of heavy rain events increases, more flooding can be expected.

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

The environmental impacts of flooding include erosion, surface and groundwater contamination, and reduced water quality. The threat of more frequent flood events may thus be a concern, especially for more rural areas, which may experience increases in well contamination and road washouts.

## **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 have been identified in the planning area, and this information can be found in Table 3.2.

### ***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 shown in the following table.

**Table 3.26. HAZUS Estimates of Potential Losses for Livingston County**

Data from State Plan	Livingston County
Countywide Building Exposure	\$2,080,345,517
Structural Damage	\$14,399,699
Loss Ratio	0.69%
Contents Loss	\$22,115,039
Inventory Loss	\$1,558,630
Total Direct Loss	\$38,073,367
Total Income Loss	\$127,657
Total Direct and Income Loss	\$38,201,024
# HAZUS UDF Damaged Structures	25
# Substantially Damaged	0
# Displaced People	320
# Shelter Needs	100

Source: 2023 Missouri Hazard Mitigation Plan

The 2023 Missouri State Hazard Mitigation Plan also provides a further breakdown of potential losses categorized by type of structure. That information is summarized in the following table.

**Table 3.27 Potential Losses in Livingston County by Type of Structure**

Type of Structure	Data from State Plan
Residential	13 Structures
	\$3,075,939
Agriculture	56 Structures
	\$17,689,048
Commercial	2
	\$1,955,261
Education	0 Structures
	\$0
Government	0 Structures
	\$0
Industrial	0 Structures
	\$0
Total # Population Affected	30

Source: 2023 Missouri Hazard Mitigation Plan

The majority of the assets in the county are agricultural in nature. The following table provides crop losses experienced between 2014-2024.

**Table 3.27. Crop Insurance Claims Paid in Livingston County Due to Flood: 2014-2024**

Crop Year	Crop Name	Cause of Loss	Insurance Paid (\$)
2014	Corn	Flood	\$213,108.11
	Grain Sorghum		\$9,115.00
	Soybeans		\$1,991,351.50
2015	Corn	Flood	\$122,395.57
	Soybeans		\$119,756.20
2016	Corn	Flood	\$89,953.00
	Grain Sorghum		\$12,508.00
	Soybeans		\$304,988.00

2017	Corn	Flood	\$22,816.00
	Grain Sorghum		\$5,211.00
	Soybeans		\$474,663.00
2018	Corn	Flood	\$71,973.00
	Grain Sorghum		\$7,750.00
	Soybeans		\$447,740.40
2019	Corn	Flood	\$4,898,823.82
	Grain Sorghum		\$12,852.40
	Soybeans		\$1,375,739.00
	Wheat		\$197.00
2020	Corn	Flood	\$27,585.00
	Soybeans		\$1,308.00
2021	Corn	Flood	\$300,524.75
	Grain Sorghum		\$35,080.00
	Soybeans		\$1,461,291.00
	Wheat		\$9,763.00
2022	No Claims		\$0
2023	Soybeans	Flood	\$72,382.00
2024	No Claims		\$0
<b>Total</b>			<b>\$12,088,874.75</b>

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

### ***Impact of Previous and Future Development***

Future development could impact flash and riverine flooding in Livingston County. Development in low-lying areas near rivers and streams or where interior drainage systems are not adequate to provide drainage during heavy rainfall events will be at risk to flash flooding. Future development would also increase impervious surfaces causing additional water run-off and drainage problems during heavy rainfall events.

In planning future development, jurisdictions in the planning area should avoid development in low-lying areas near rivers and streams or where interior drainage systems are not adequate to provide drainage during heavy rainfall events. Future development should also take into consideration the impact of additional impervious surfaces to water run-off and drainage capabilities during heavy rainfall events.

### ***Hazard Summary by Jurisdiction***

Vulnerability to flooding varies by jurisdiction as each community has a different layout. The floodplain maps in the Geographic Location section depict the flood area in each jurisdiction.

### **Problem Statement**

Flooding can pose an ongoing threat along waterways due to bank erosion during high water. In recent years landowners have removed trees and native vegetation along creeks and rivers. The lack of a natural barrier to protect the waterways can lead to an increase in erosion

Flooding may also disrupt underground utilities such as water and communications.

Flooding may lead to damage to transportation infrastructure and could disrupt the ability to transport children to and from school.

## 3.4.2 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 3.28. 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, <https://dnr.mo.gov/document-search/frequently-asked-dam-reservoir-questions-pub1351/pub1351>

**Table 3.29. NID Dam Hazard Classification Definitions**

Hazard Class	Definition
Low 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
High 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

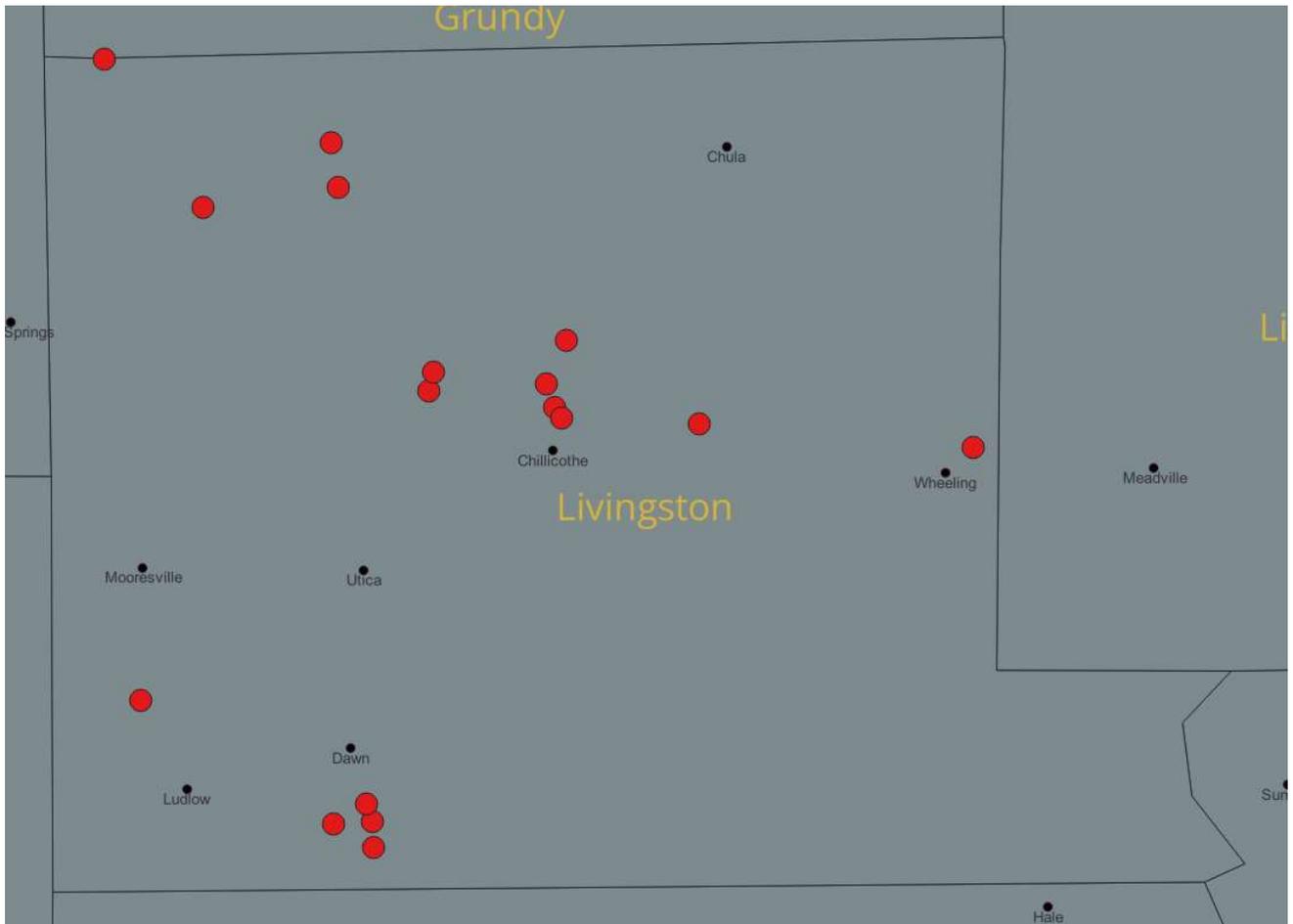
The following tables provide the names, locations, and other pertinent information for high hazard dams within the planning area.

**Table 3.30. High Hazard Dams in the Livingston County Planning Area**

Dam Name	Emergency Action Plan (EAP/AP)	Dam Height (Ft)	Normal Storage (Acres-Ft)	Last Inspection Date	River	Nearest Downstream City	Distance To Nearest City	Dam Owner
Demitt Lake Dam	Not Required	22	72	unknown	TR-LITTLE PARSON CREEK	WHEELING	2	ROBERT DIMITT, JR
Fender Farms Lake Dam North	Not Required	20	87	unknown	TR-CLEAR CREEK	TRENTON	14	FENDER FARMS
Paul Jones Lake Dam	Not Required	25	33	unknown	TR-CLEAR CREEK	DAWN	4	PAUL JONES
Johnson Lake Dam	Not Required	25	20	unknown	TR-SHOAL CREEK	DAWN	8	LEONARD JOHNSON
Gilliland Lake Dam South	Not Required	25	20	unknown		BEDFORD	21	WILLIAM D GILLILAND
Jones Lake Dam	Not Required	30	40	unknown	TR-CLEAR CREEK	DAWN	4	CHARLES D JONES
Hamilton Lake Dam East	Not Required	25	33	unknown	TR-THOMPSON RIVER	BEDFORD	20	MAX HAMILTON
Reeter Lake Dam	Not Required	25	17	unknown	TR-THOMPSON RIVER	BEDFORD	29	DOUGLAS REETER
Litton Lake Dam North	Not Required	25	17	unknown	TR-GRAND RIVER	BEDFORD	19	CHARLES O LITTON
Litton Lake Dam South	Not Required	25	33	unknown	TR-GRAND RIVER	CHILLICOTHE	1	CHARLES O LITTON
Olenhouse Lake Dam	Not Required	20	113	unknown	TR-GRAND RIVER	CHILLICOTHE	5	CLAIRE OLENHOUSE
Watkin Lake Dam	Not Required	23	105	unknown	TR-CLEAR CREEK	BEDFORD	27	MELVIN WATKINS
Trager Lake Dam East	Not Required	18	64	unknown	TR-LEEPER BR-GRAND RIVER	BEDFORD	13	FRANK TRAGER, SR
Rinehart Lake Dam	Not Required	30	70	unknown	TR-THOMPSON RIVER	BEDFORD	27	KEN RINEHART
Lake Louise Dam	Yes	56	247	10/8/20				SCOTT ROOKS
Indian Creek Community Dam	Yes	56	2860	9/23/21	INDIAN CREEK (TRIBUTARY)	FARMERSVILLE	7	MO DEPT OF CONSERVATION
Chillicothe Rc&D Flood Prevention Struct.	Yes	33	98	unknown	TR-GRAND RIVER	CHILLICOTHE		GREEN HILLS RC&D DIST & CHILLICOTHE

Sources: Missouri Department of Natural Resources GIS, <https://gis-modnr.opendata.arcgis.com/pages/dnr-missouri-geological-survey> and National Inventory of Dams, <https://nid.sec.usace.army.mil/#/>. 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 3.17. High Hazard Dam Locations in Livingston County**



Source: U.S. Army Corps of Engineers, Missouri Department of Natural Resources – June 2025

### Upstream Dams Outside the Planning Area

The Missouri department of natural resources listed no upstream dams that would pose a risk for flooding in Livingston county.

### ***Strength/Magnitude/Extent***

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

### ***Previous Occurrences***

Stanford University's National Performance of Dams Program lists no known instances of dam failures, or incidents in Livingston County.

## Probability of Future Occurrence

There is no known history of dam incidents or failures within Livingston County, while the risk of dam failure is never zero, the risk level for dam failure is very low, less than 1%

## Changing Future Conditions Considerations

According to the 2023 Missouri State hazard mitigation plan “Studies have been conducted to investigate the impact of climate change scenarios on dam safety. Dam failure is already tied to flooding and the increased pressure flooding places on dams. The impacts of changing future conditions on dam failure will most likely be those related to changes in precipitation and flood likelihood. Changing future conditions projections suggest that precipitation may increase and occur in more extreme events, which may increase risk of flooding, putting stress on dams and increasing likelihood of dam failure”

## Vulnerability

### Vulnerability Overview

According to the US Army Corps of Engineers (USACE) National Inventory of Dams (NID) there are a total of 75 dams located in the planning area. There are 17 high hazard dams, No significant hazard dams, and 58 low hazard dams in Livingston County.

The National inventory of dams lists on only 2 of the 17 high hazard dams with inspection reports, both dams; Lake Louise dam, and the Indian creek community lake dam were listed in satisfactory condition.

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 Livingston County to dam failure.

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

**Table 3.31. Number and Types of Dams in Livingston County**

Numbers and Types of Dams in Livingston 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
17	0	58	75	1	1	0	2	0	0	0	0	15	0	58	73

Source: 2023 Missouri State Hazard Mitigation Plan

**Table 3.32. 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	\$42,959,116	136	0
Commercial	\$977,631	1	0

Residential	\$7,334,931	31	74
<b>Total</b>	<b>\$51,271,677</b>	<b>168</b>	<b>74</b>

Source: 2023 Missouri State Hazard Mitigation Plan

***Impact of Previous and Future Development***

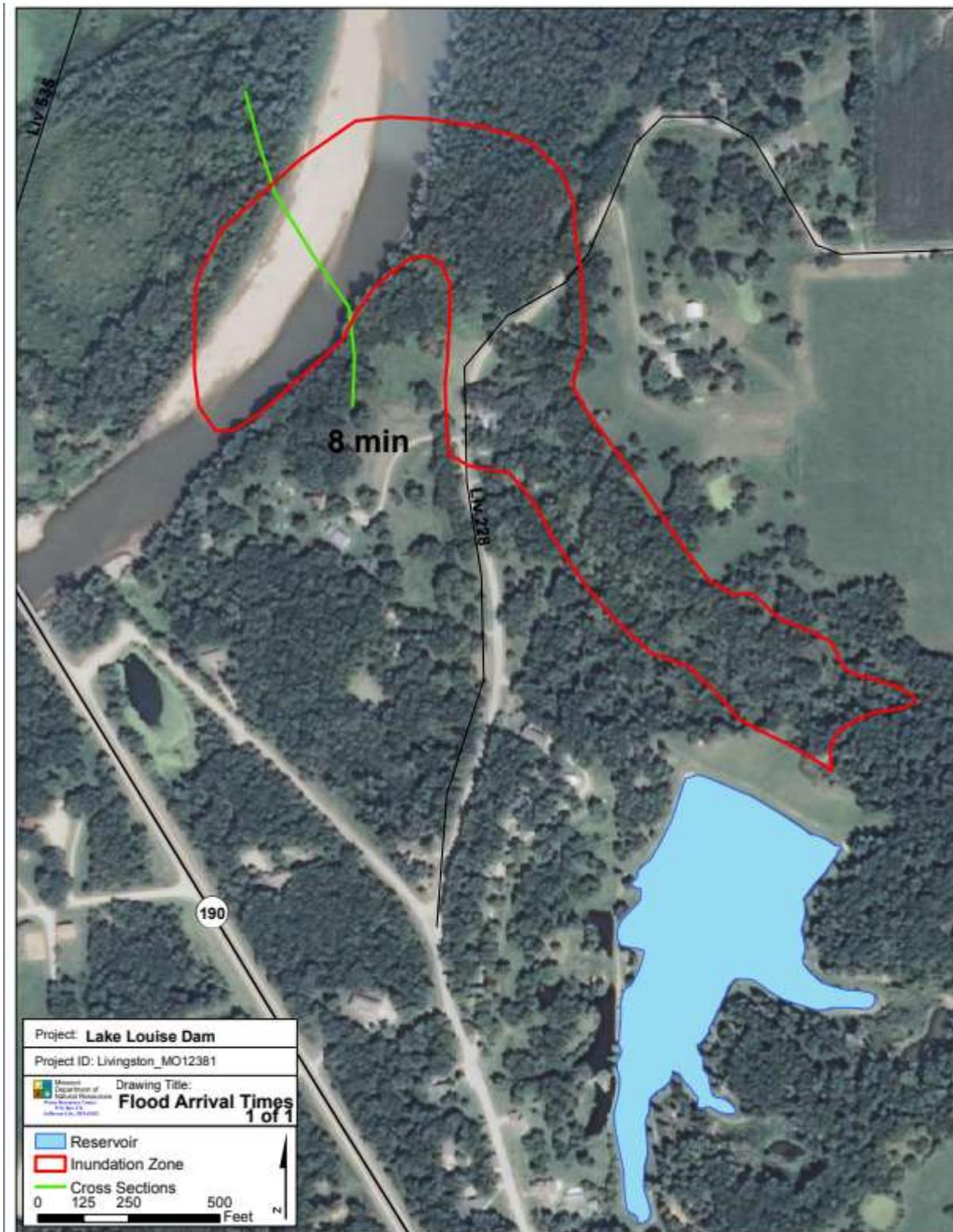
Any growth within Livingston County, downstream from a known dam, would lead to increased risks and potential losses due to an incident. There are no planned developments in the planning area and therefore no additional risk to consider for Livingston County or participating jurisdictions in this plan update.

***Hazard Summary by Jurisdiction***

The vast majority of Livingston 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. None of the incorporated towns or school districts are vulnerable to damage caused by dam failure.

The figure below shows the only dam with an inundation map for Livingston County as provided by the Missouri department of natural resources in June of 2025.

Figure 3.18. Lake Louise inundation map



Source: Missouri department of natural resources dam safety program – June 2025

## Problem Statement

Some entities in Livingston 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.

### 3.4.3 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.

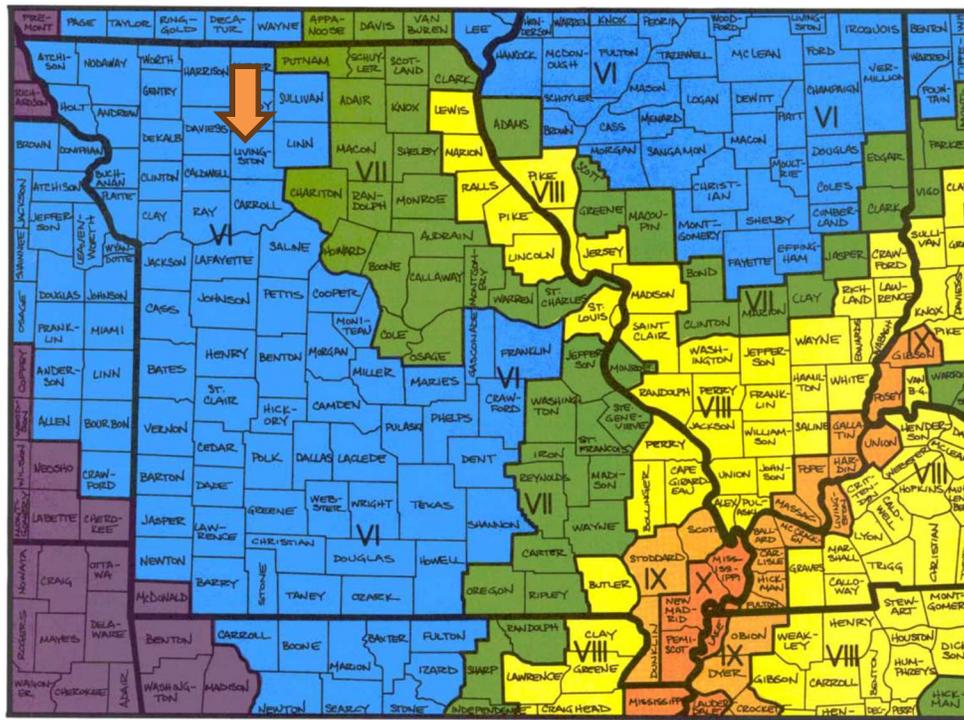
##### ***Geographic Location***

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<sup>2</sup>, 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<sup>2</sup>. 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.

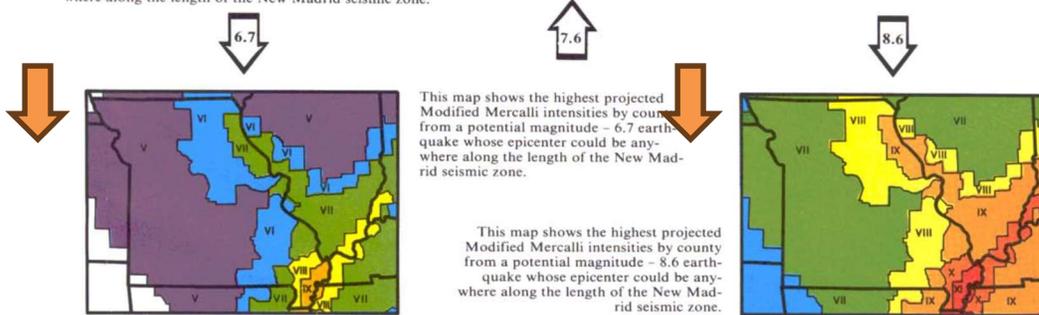
If an 1811 earthquake occurred in Livingston County the earthquake intensity would not vary across the county. The damages resulting from an earthquake would depend upon the quality of the construction of the buildings. Poorly built buildings would be damaged slightly. Considerable quantities of dishes and glassware, and some windows would be broken. People would have trouble walking. Pictures could fall off walls and objects fall from shelves. Plaster in walls might crack. Some furniture would be overturned. Small bells in churches, chapels, and schools could ring.

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

**Figure 3.19. 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](https://sema.dps.mo.gov/docs/EQ_Map.pdf)

**Figure 3.20. Projected Earthquake Intensities**

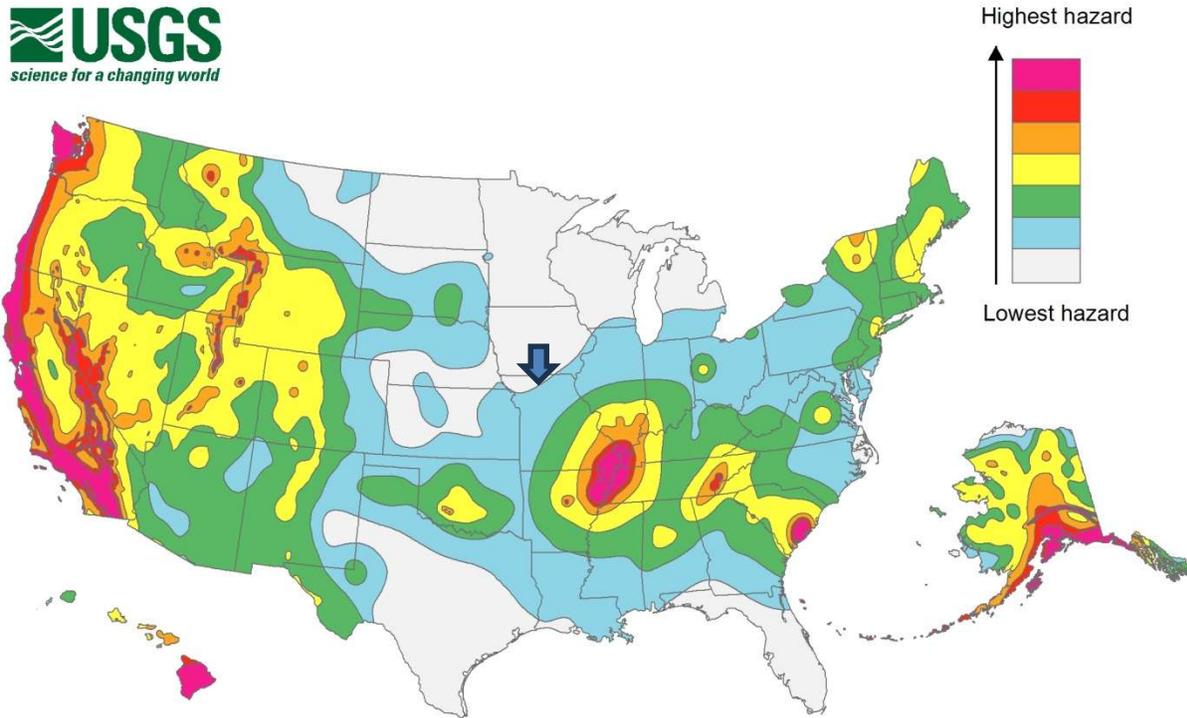
## MODIFIED MERCALLI INTENSITY SCALE

- I People do not feel any Earth movement.
- II A few people might notice movement.
- III Many people indoors feel movement. Hanging objects swing.
- IV Most people indoors feel movement. Dishes, windows, and doors rattle. Walls and frames of structures creak. Liquids in open vessels are slightly disturbed. Parked cars rock.
- V Almost everyone feels movement. Most people are awakened. Doors swing open or closed. Dishes are broken. Pictures on the wall move. Windows crack in some cases. Small objects move or are turned over. Liquids might spill out of open containers.
- VI Everyone feels movement. Poorly built buildings are damaged slightly. Considerable quantities of dishes and glassware, and some windows are broken. People have trouble walking. Pictures fall off walls. Objects fall from shelves. Plaster in walls might crack. Some furniture is overturned. Small bells in churches, chapels and schools ring.
- VII People have difficulty standing. Considerable damage in poorly built or badly designed buildings, adobe houses, old walls, spires and others. Damage is slight to moderate in well-built buildings. Numerous windows are broken. Weak chimneys break at roof lines. Cornices from towers and high buildings fall. Loose bricks fall from buildings. Heavy furniture is overturned and damaged. Some sand and gravel stream banks cave in.
- VIII Drivers have trouble steering. Poorly built structures suffer severe damage. Ordinary substantial buildings partially collapse. Damage slight in structures especially built to withstand earthquakes. Tree branches break. Houses not bolted down might shift on their foundations. Tall structures such as towers and chimneys might twist and fall. Temporary or permanent changes in springs and wells. Sand and mud is ejected in small amounts.
- IX Most buildings suffer damage. Houses that are not bolted down move off their foundations. Some underground pipes are broken. The ground cracks conspicuously. Reservoirs suffer severe damage.
- X Well-built wooden structures are severely damaged and some destroyed. Most masonry and frame structures are destroyed, including their foundations. Some bridges are destroyed. Dams are seriously damaged. Large landslides occur. Water is thrown on the banks of canals, rivers, and lakes. Railroad tracks are bent slightly. Cracks are opened in cement pavements and asphalt road surfaces.
- XI Few if any masonry structures remain standing. Large, well-built bridges are destroyed. Wood frame structures are severely damaged, especially near epicenters. Buried pipelines are rendered completely useless. Railroad tracks are badly bent. Water mixed with sand, and mud is ejected in large amounts.
- XII Damage is total, and nearly all works of construction are damaged greatly or destroyed. Objects are thrown into the air. The ground moves in waves or ripples. Large amounts of rock may move. Lakes are dammed, waterfalls formed and rivers are deflected.

Intensity is a numerical index describing the effects of an earthquake on the surface of the Earth, on man, and on structures built by man. The intensities shown in these maps are the highest likely under the most adverse geologic conditions. There will actually be a range in intensities within any small area such as a town or county, with the highest intensity generally occurring at only a few sites. Earthquakes of all three magnitudes represented in these maps occurred during the 1811 - 1812 "New Madrid earthquakes." The isoseismal patterns shown here, however, were simulated based on actual patterns of somewhat smaller but damaging earthquakes that occurred in the New Madrid seismic zone in 1843 and 1895.

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**Figure 3.21. United States Seismic Hazard Map**



Source: United States Geological Survey at [https://earthquake.usgs.gov/hazards/hazmaps/conterminous/2014/images/HazardMap2014\\_lg.jpg](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 Livingston County since 1931. This information was found at homefacts.com and was also listed in the previous Hazard Mitigation Plan for Livingston County.

### ***Probability of Future Occurrence***

According to homefacts.com there is a very low risk level for Livingston County experiencing an earthquake. The probability of this hazard occurring is 0.17% within the next 50 years.

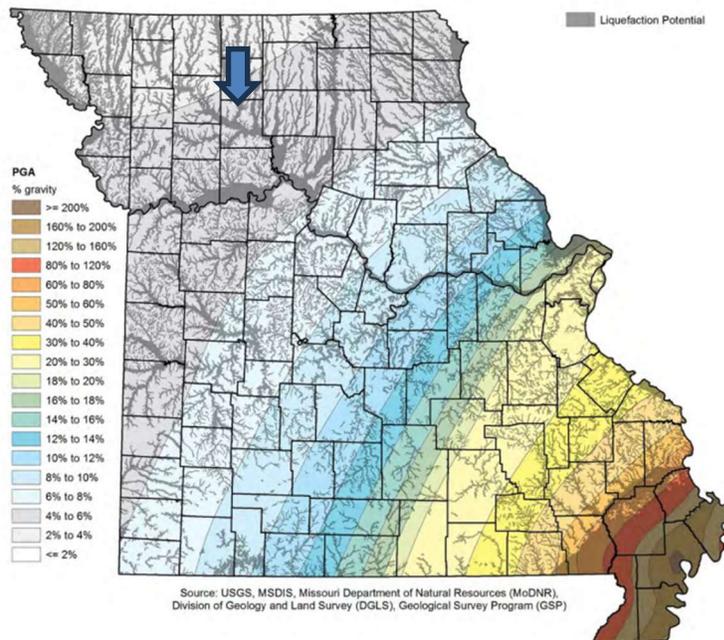
### ***2% Probability of Exceedance***

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.

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**Figure 3.22. HAZUS-MH Earthquake 2% Probability of Exceedance in 50 years – Ground**

## Shaking and Liquefaction Potential



**Table 3.33. HAZUS-MH Earthquake Loss Estimation 2% Probability of Exceedance in 50 Years Scenario Direct Economic Losses Results for Livingston 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
\$1,744	\$3,341	\$984	\$45	0.30	\$1,033	\$325	\$441	\$458	\$8,371

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 3.34. HAZUS Earthquake Loss Estimation: Annualized Loss Scenario for Livingston County**

Total Losses (in \$ Thousands)	Loss Per Capita (in \$ Thousands)	Annualized Loss Ratio (In \$ per Million)
\$14	\$0.0009	\$8

Source: 2023 Missouri State Hazard Mitigation Plan

**Table 3.35. Earthquake Coverage in Livingston County, Missouri**

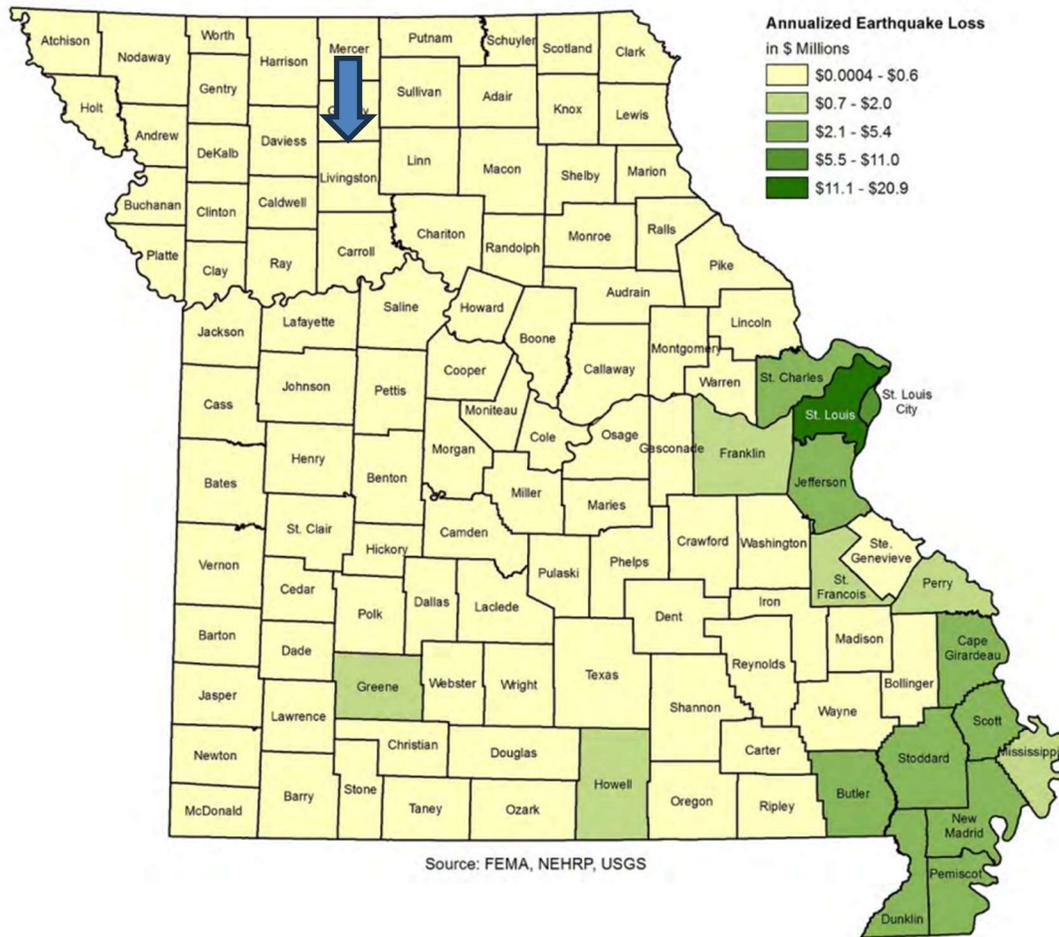
Earthquake Exposures	Homeowners, Farm, Mobile Home Exposures	% With Earthquake Endorsement	Average Premium, All Earthquake	Average Premium, \$110k-\$140k Coverage
263	3,394	7.7%	\$94	\$58

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 Livingston County with an earthquake event. The following figure and table summarize this information.

**Figure 3.23. HAZUS-MH Earthquake Loss Estimation: Annualized Loss Scenario – Direct Economic Losses to Buildings**



Source: 2023 Missouri State Hazard Mitigation Plan

**Table 3.36. FEMA National Risk Index Loss Estimation: Annualized Loss Scenario for Livingston 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
0.00031	\$14	0.00010	\$733	\$14,749	Very Low

Source: 2023 Missouri State Hazard Mitigation Plan

### ***Impact of Previous and Future Development***

Any future development in Livingston 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 3.37. Percentage of Homes Built Prior to 1939 in Livingston County**

<b>Jurisdiction</b>	<b>% of Mobile Homes</b>	<b>% of Homes Built Prior to 1939</b>
Livingston County		

Source: Census Bureau; 2022 Community Survey

### **Problem Statement**

Although Livingston 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.

## 3.4.4 Drought

### **Hazard Profile**

#### ***Hazard Description***

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

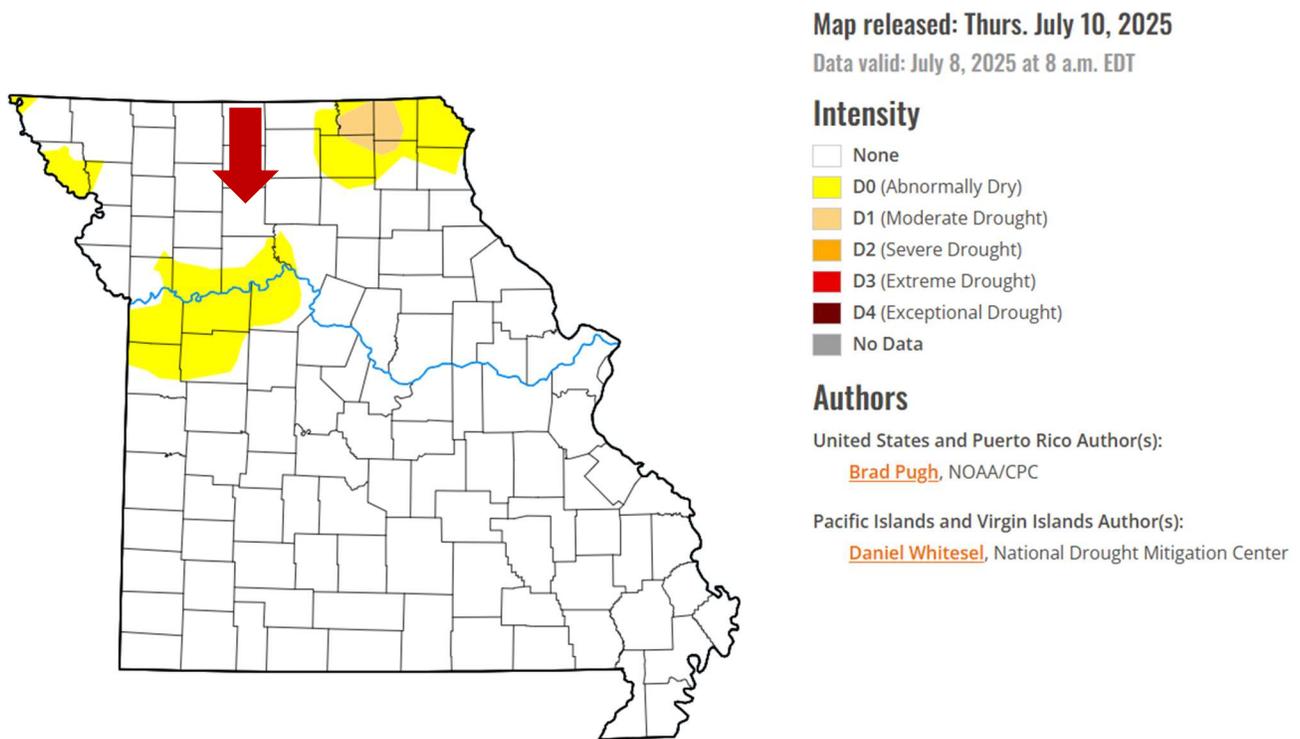
- Meteorological drought is defined in terms of the basis of the degree of dryness (in comparison to some “normal” or average amount) and the duration of the dry period. A meteorological drought must be considered as region-specific since the atmospheric conditions that result in deficiencies of precipitation are highly variable from region to region.
- Hydrological drought is associated with the effects of periods of precipitation (including snowfall) shortfalls on surface or subsurface water supply (e.g., streamflow, reservoir and lake levels, ground water). The frequency and severity of hydrological drought is often defined on a watershed or river basin scale. Although all droughts originate with a deficiency of precipitation, hydrologists are more concerned with how this deficiency plays out through the hydrologic system. Hydrological droughts are usually out of phase with or lag the occurrence of meteorological and agricultural droughts. It takes longer for precipitation deficiencies to show up in components of the hydrological system such as soil moisture, streamflow, and ground water and reservoir levels. As a result, these impacts also are out of phase with impacts in other economic sectors.
- Agricultural drought focus is on soil moisture deficiencies, differences between actual and potential evaporation, reduced ground water or reservoir levels, etc. Plant demand for water depends on prevailing weather conditions, biological characteristics of the specific plant, its stage of growth, and the physical and biological properties of the soil.
- Socioeconomic drought refers to when physical water shortage begins to affect people.

#### ***Geographic Location***

Because of the broad scope of drought, all of Livingston 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 85.6% of Livingston County is made up of farmland, making the impacts of drought one that is acutely felt by residents of Livingston County.

The following map shows the drought conditions for Missouri for July 10, 2025. Livingston County is indicated by an arrow. While the map shows there is currently no drought in Livingston County it should be noted that this is a snapshot of a moment in time, and less than normal amounts of precipitation lead to an increase in drought conditions.

**Figure 3.24. U.S. Drought Monitor Map of Missouri on July 10, 2025**



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.

**Figure 3.25. 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**

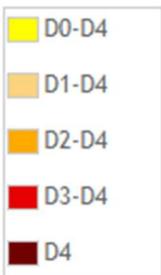
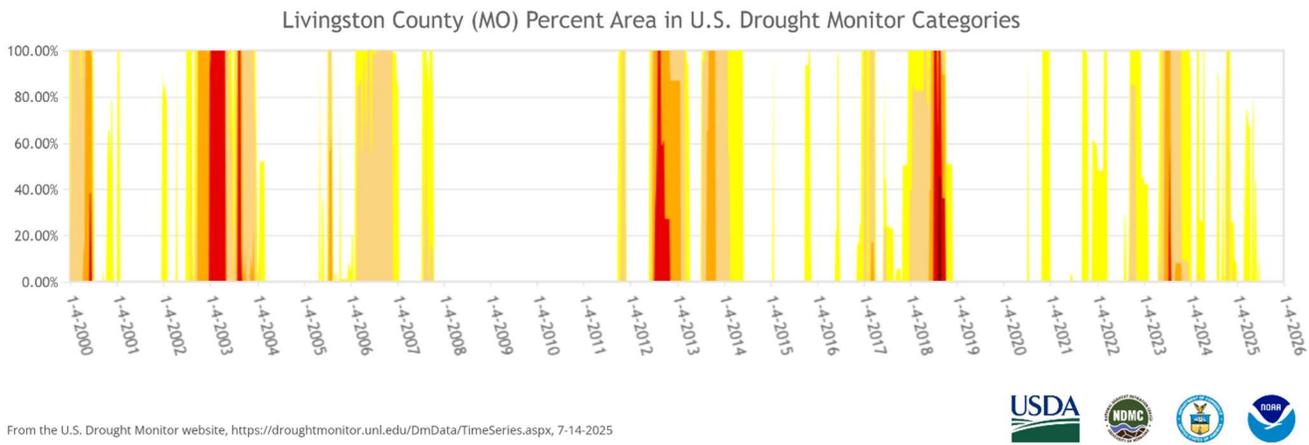
According to the NCEI database, Chariton County has experienced drought conditions on numerous occasions. The following information provides the date the individual drought conditions were declared or continued, and a narrative about the event.

**Table 3.38. Previous Occurrences of Drought in Livingston County 2004-2025**

Begin Date	Episode Narrative
7/1/2012	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.
8/1/2012	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.
9/1/2012	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.
10/1/2012	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.
11/1/2012	The drought continued across the area during the month of November. Slight improvement was noted, with D1 to D2 conditions prevailing. Rainfall deficits were generally in the 10-to-16-inch range for the year.

12/1/2012	Slight improvements in the drought conditions were observed across northwest and west central Missouri. However, D1 to D2 conditions, moderate to severe drought conditions, still prevailed across the area.
1/1/2013	There have been several storm systems that have impacted the region in the last half of January. Most of the precipitation from these systems has fallen along and southeast of a Kansas City to Kirksville line. This has resulted in some improvement to the drought across portions of central to northern and northeastern Missouri. However, western and far northwestern Missouri remain in a severe drought (D2).
8/27/2013	A persistent upper-level ridge of high pressure centered over the lower Missouri Valley, in late August, caused D2 drought conditions to redevelop across portions of north central Missouri. Several locations, including Kirksville, reported only a trace of rainfall for the month of August.
9/1/2013	Severe drought D2 conditions persisted across most of northern Missouri during the month of September.
10/1/2013	Severe D2 drought conditions continued in the month of October across north central Missouri.
6/1/2018	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.
7/1/2018	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.
8/1/2018	Precipitation picked up during August, especially in some of the hardest hit drought areas, but in a lot of cases the damage had already been done, and while the rain did pick back up the ground soil was so parched that it made hardly a dent in the drought across northern Missouri.
9/1/2018	While much of the area saw some relief from the drought, many counties remained in D2-D4 status through the month of September. While the full scope of drought impacts is unknown, many farmers took losses on their hay and corn, opting to bale it for livestock or knock it down.
10/1/2018	After a very dry summer, exceptional drought (D4) conditions were experienced area-wide, resulting in heavy losses for local farmers. Things changed in October when widespread heavy rain effectively ended that drought. Widespread 6 to 9 inches of rain fell, with some locations receiving over a foot of rain over the 4-day stretch from October 6 through October 9. By October 9th, the drought was effectively ended by the UNL drought monitor.
6/20/2023	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.
7/1/2023	After another month of below normal precipitation the severe drought across eastern Kansas persisted through the month of July.
8/1/2023	Several counties in Missouri began August within severe (D2) to extreme (D3) drought but improved to D1 or better by early to mid-August thanks to well targeted rains.

**Figure 3.26. Percent of Livingston County in Drought 2000-2024**



Source: US Drought Monitor; [www.droughtmonitor.unl.edu](http://www.droughtmonitor.unl.edu)

**Probability of Future Occurrence**

To determine the frequency of previous droughts in Livingston County the data was taken from droughtmonitor.unl.edu. A search was conducted on the frequency and drought classifications that Livingston County has had for the time frame of 7/2004 to 7/2025. This time frame encompasses 252 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 Livingston County.

**Table 3.39. Livingston County and Weeks Spent by Drought Classification 2004-2025**

Livingston County	D0	D1	D2	D3	D4
Weeks at this Designation	438	225	86	32	3
Months at this Designation	109.5	56.25	21.5	8	0.75

Source: US Drought Monitor, Statistics by Threshold, Livingston County, Missouri 7/14/2025

The probability of Livingston County experiencing drought, by severity, is calculated by dividing the number of months in drought at that designation by the total number of months and multiplied by 100 for the average percentage probability of drought in the planning area in any given month.

$$Probability\ of\ D0\ Drought = \frac{109.5}{252} = 0.435 = 43.5\% \text{ Probability}$$

$$\text{Probability of D1 Drought} = \frac{56.25}{252} = 0.223 = 22.3\% \text{ Probability}$$

$$\text{Probability of D2 Drought} = \frac{21.5}{252} = 0.085 = 8.5\% \text{ Probability}$$

$$\text{Probability of D3 Drought} = \frac{8}{252} = 0.032 = 3.2\% \text{ Probability}$$

$$\text{Probability of D4 Drought} = \frac{0.75}{252} = 0.003 = 0.3\% \text{ Probability}$$

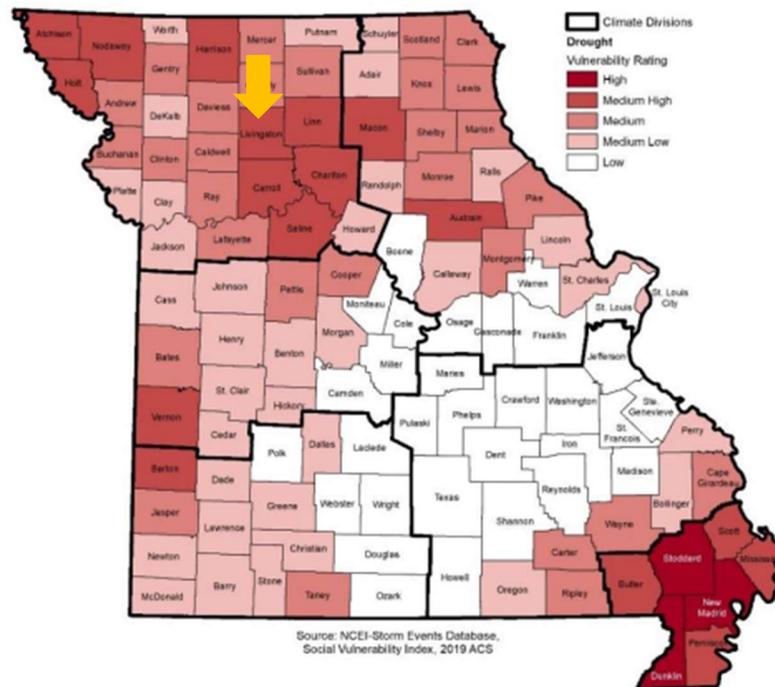
While the severity of the drought will vary, Livingston County is likely to experience drought and should take steps to lessen the severity of the occurrence with measures intended to conserve water usage.

## Vulnerability

### *Vulnerability Overview*

The following figure from the 2023 Missouri State Hazard Mitigation Plan shows the drought vulnerability by county in Missouri

**Figure 3.27. Drought Vulnerability in Missouri by County**



Source: 2023 Missouri State Hazard Mitigation Plan

As per the previous figure, Livingston County in Missouri has a Medium-High Drought Vulnerability Rating per the 2023 Missouri 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 Carolina, 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 Livingston County to drought, according to the 2023 Missouri Hazard Mitigation Plan.

**Table 3.40. Vulnerability of Livingston 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	\$70,727,015	\$7,072,702	5	\$75,761,000	3	0.62	3	15	Medium-High

Source: 2023 Missouri State Hazard Mitigation Plan

The following table contains the data for crop loss claims due to drought that have been paid in Livingston County from 2014-2024,

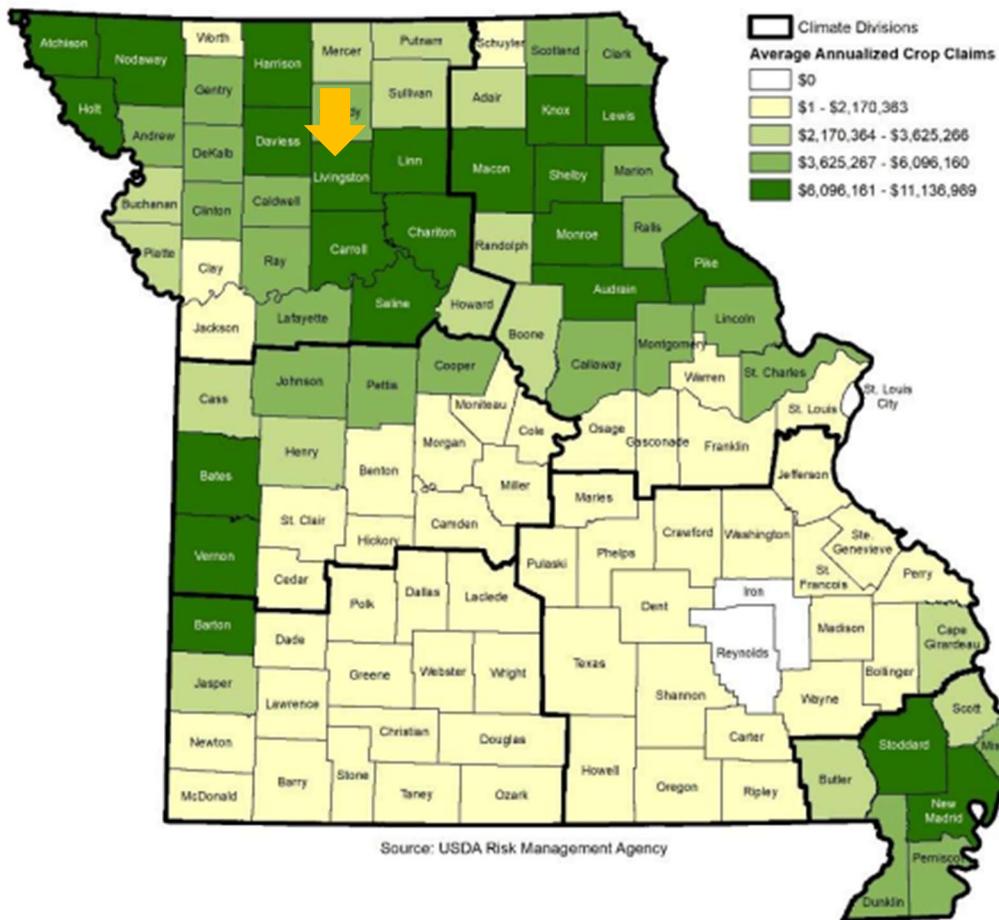
**Table 3.41. Crop Loss Payments**

Year	Crop Name	Cause of Loss	Insurance Paid (\$)
2014	Corn	Drought	\$99.00
	Soybeans		\$25,701.00
	Wheat		\$37,066.00
2015	Soybeans	Drought	\$18,260.55
2016	Soybeans	Drought	\$12,344.00
2017	Grain Sorghum	Drought	\$6,427.00
	Soybeans		\$17,327.00
2018	Corn	Drought	\$3,733,571.85
	Grain Sorghum		\$11,816.00
	Soybeans		\$2,608,488.62
	Wheat		\$10,731.50
2019	Soybeans	Drought	\$38,339.00

2020	Corn	Drought	\$81,302.00
	Grain Sorghum		\$7,743.00
	Soybeans		\$390,529.02
2021	Corn	Drought	\$193,994.30
	Soybeans		\$179,776.00
2022	Corn	Drought	\$212,138.00
	Soybeans		\$398,132.60
2023	Corn	Drought	\$425,385.00
	Grain Sorghum		\$3,443.00
	Soybeans		\$292,350.50
	Wheat		\$13,696.00
2024	Corn	Drought	\$214,560.00
	Grain Sorghum		\$5,367.00
	Soybeans		\$72,416.00
<b>Total</b>			<b>\$9,011,003.94</b>

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

**Figure 3.28. Annualized Drought Crop Insurance Claims Paid 2013-2021**



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. Livingston County's crop exposure is high, with approximately 85.6% of the county's total land area in use for agriculture. Over the past 11 years Livingston County has experienced an average of \$819,182.18 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.

### ***Changing Future Conditions Considerations***

Future drought conditions in Livingston County are expected to be shaped by several key trends and regional vulnerabilities. Missouri is already experiencing more erratic precipitation patterns, with longer dry spells and more intense rainfall events. Future droughts in Livingston County, Missouri, are expected to become more frequent and intense, stressing both crops and livestock. Corn and soybeans may suffer from heat and water stress, while forage shortages and heat will challenge livestock health and productivity. These changes could lead to higher farming costs, reduced yields, and increased economic uncertainty for local producers.

### ***Hazard Summary by Jurisdiction***

Drought has the potential to impact all of Livingston County, except for the school districts. 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 due to drought in Livingston County affects 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 because of drought. If drought conditions are severe and prolonged, water supplies could also be affected.

### **Problem Statement**

- Drought could lead to issues with water supply issues, economic downturn and fire suppression.
- Drought may also lead to breaks in underground infrastructure as the dry ground shifts.

## 3.4.5 Extreme Temperatures

### **Hazard Profile**

#### ***Hazard Description***

Extreme temperature events, both hot and cold, can have an impact on human health and mortality, natural ecosystems, agriculture and other economic sectors. According to information provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Ambient air temperature is one component of heat conditions, with relative humidity being the other. The relationship of these factors creates what is known as the apparent temperature. The Heat Index chart shown in Figure 3.29 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.

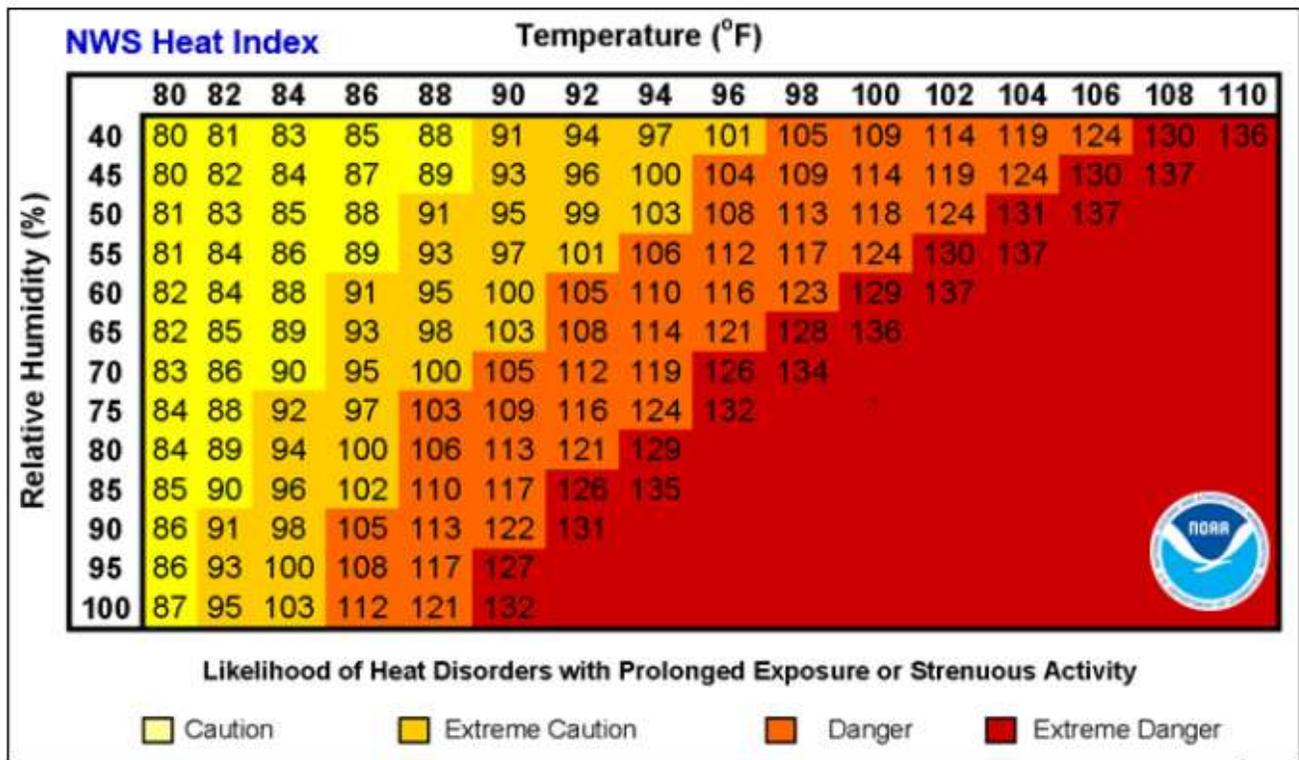
However, there are additional factors to consider when there is an extreme heat event. Specific climatic factors, such as temperature and humidity, along with wind and sun/shade determine the effects of this hazard. An individual's physical condition has a profound effect on their ability to deal with 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 nighttime 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. For the previous weather events in Livingston County, the typical

heat advisory falls into the “extreme caution” category, rarely is the event categorized in the “danger” category. More information is available in the previous occurrences section of this chapter.

**Figure 3.29. 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.

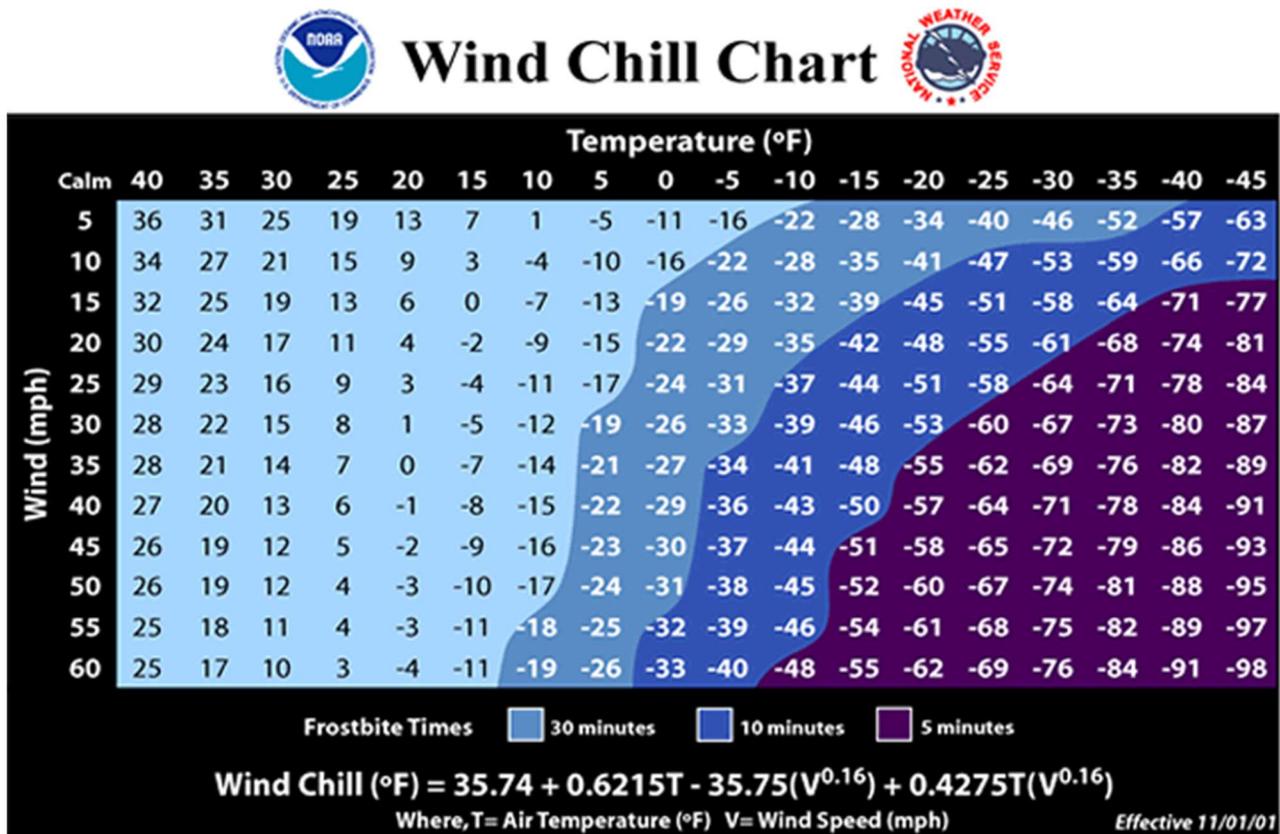
- Wind Chill Warning: NWS issues a wind chill warning when dangerously cold wind chill values are expected or occurring. If you are in an area with a wind chill warning, avoid going outside during the coldest parts of the day. If you do go outside, dress in layers, cover exposed skin, and make sure at 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.

Previous occurrences of extreme cold temperatures in the region typically indicate that frostbite could occur within 30 minutes, rarely temperatures and wind speeds could cause frostbite within 10 minutes of exposure. More information is available in the previous occurrence section of this chapter.

**Figure 3.30. Wind Chill Chart**



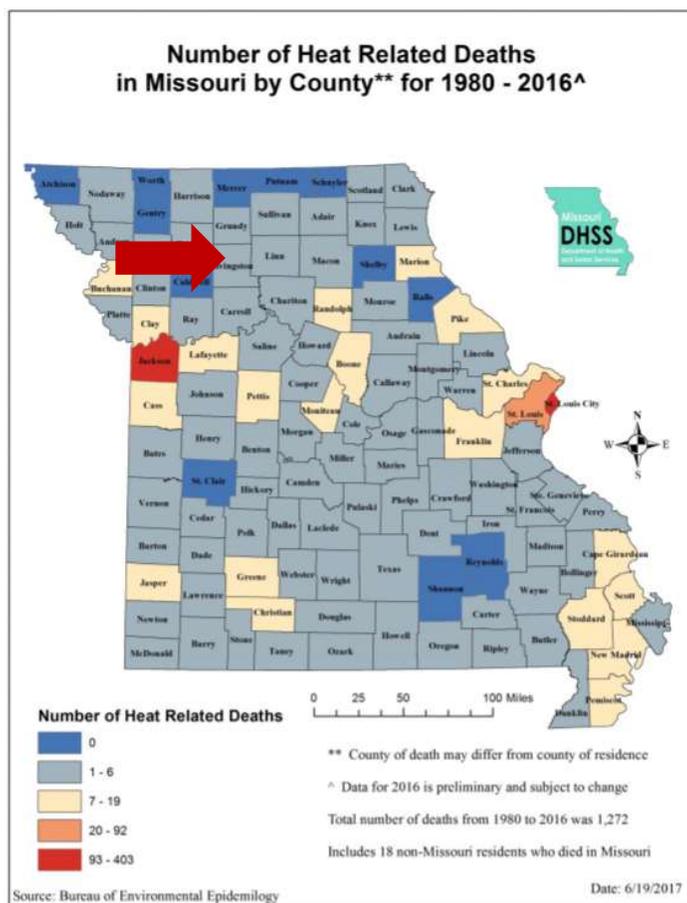
Source: <https://www.weather.gov/safety/cold-wind-chill-chart>

**Previous Occurrences**

## Extreme Heat

There are 6 reported incidents of extreme heat reported over the last 20 years from the county.

**Figure 3.31. Heat Related Deaths in Missouri 2000-2013**



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

There have been 6 reported incidents of extreme heat reported over the last 20 years from the county.

## Excessive Heat event summaries

### 2005

#### 7-21-2005 Excessive Heat

Oppressive heat and humidity prevailed across the area from July 21st to July 25th. Afternoon heat indices reached from 105 to 110 degrees. Kansas City International heat index reached 114 degrees on July 22nd and St. Joseph topped out at 113 degrees on July 22nd.

### 2006

#### Excessive Heat 7-16-2006 through 7-20-2006

Oppressive heat and humidity combined to produce afternoon and early evening heat indices from 105 to 115 degrees, from July 16th through July 20th. The highest computed heat index reached 121 degrees at Amity Missouri. Three males and one female died of heat related causes in Jackson County.

#### Excessive Heat 7-29-2006 through 8-1-2006

Oppressive heat and humidity combined to produce heat indices from 105 to 115 degrees, from July 29th through July 31st.

**2007**

**Excessive Heat 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.

**2012**

**Excessive Heat 7-18-2012**

High temperatures in the 100-to-110-degree range, combined with humidity, produced afternoon and early evening heat indices in the 100-to-110-degree range. Overnight low temperatures were in the 70s to lower 80s.

**2023**

**Excessive Heat 8-25-2023**

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. The hottest heat index in the area occurred in Lawrence, Kansas on the 20th and 21st, when it rose to 134 degrees.

**Table 3.42. Extreme Heat Reports 2004-2025**

Year	Reports	Deaths	Injuries
2005	1	0	0
2006	2	0	0
2007	1	0	0
2012	1	0	0
2023	1	0	0
<b>Total</b>	<b>6</b>		

**Extreme Cold**

There have been 5 reported incidents of extreme cold over the last 20 years.

**Table 3.43. Extreme Cold reports from NCEI 2004-2024**

Year	Reports	Deaths	Injuries
2014	1	0	0
2021	3	0	0
2022	1	0	0
<b>Total</b>	<b>5</b>	<b>0</b>	<b>0</b>

Source: NCEI Storm reports data – June 2025

**Probability of Future Occurrence**

**Probability of Extreme Heat/Heat Event**

$$Probability = \frac{\# \text{ of events}}{\text{Years}} = \frac{6}{20} = .30 = 30\% \text{ Probability}$$

**Probability of Extreme Cold Event**

$$Probability = \frac{\# \text{ of events}}{\text{Years}} = \frac{5}{20} = .25 = 25\% \text{ Probability}$$

Livingston County has a 30% chance of experiencing an extreme heat/heat event in any given year and has a 25% chance of experiencing an extreme cold event in any given year.

**Changing Future Conditions Considerations**

Livingston County, Missouri, is expected to face more extreme heat days and fewer cold nights, increasing health risks and straining infrastructure. Agriculture will be challenged by heat stress, drought, and flooding, threatening crop yields and livestock. Heavier rainfall and more intense storms will raise the risk of flooding and water quality issues. Ecosystems will shift, with longer growing seasons, more allergens, and expanded habitats for pests like ticks and mosquitoes.

**Vulnerability**

**Vulnerability Overview**

Those at greatest risk for heat-related illnesses 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 table below lists typical symptoms and health impacts due to exposure to extreme heat. Exposures to extreme cold can result in frostbite and hypothermia.

**Table 3.44. 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](http://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.

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 3.45. 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
15	0.58	1	9	Medium	6	0.24	2	10	Medium High

Source: 2023 Missouri State Hazard Mitigation Plan

The following table provides historical data on crop losses in the planning area to both extreme heat and cold winter.

**Table 3.46. Crop Insurance Claims Paid in Livingston County Due to Heat 2014-2024**

Heat			
Year	Crop Name	Cause of Loss	Insurance Paid (\$)
2014		No Claim	\$0
2015		No Claim	\$0
2016		No Claim	\$0
2017		No Claim	\$0
2018	Soybeans	Heat	\$914.00
2019		No Claim	\$0
2020	Corn	Heat	\$4,210.50
2021		No Claim	\$0
2022	Soybeans	Heat	\$3,169.00
2023	Corn	Heat	\$6,567.00
2024		No Claim	\$0
<b>Total</b>			<b>\$14,860.50</b>
Extreme Cold			
Year	Crop Name	Cause of Loss	Insurance Paid (\$)
2014	Wheat	Cold Winter	\$79,382.92
2015	Wheat	Cold Winter	\$30,852.34

<b>2016</b>	No Claim		\$0
<b>2017</b>	No Claim		\$0
<b>2018</b>	Wheat	Cold Winter	\$607.00
<b>2019</b>	Wheat	Cold Winter	\$23,340.00
<b>2020</b>	No Claim		\$0
<b>2021</b>	No Claim		\$0
<b>2022</b>	Wheat	Cold Winter	\$3,279.00
<b>2023</b>	No Claim		\$0
<b>2024</b>	No Claim		\$0
<b>Total</b>			<b>\$137,461.26</b>

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

### ***Potential Losses to Existing Development***

Over the past 10 years extreme temperatures have led to \$152,321.76 in documented claims for crop losses, on average this would yield \$15,232.18 in losses annually.

Additionally, during extreme heat events structural, road, and electrical infrastructure are vulnerable to damage. 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.

### ***Impact of Previous and Future Development***

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

### ***Hazard Summary by Jurisdiction***

Those at greatest risk for heat-related illnesses and deaths include children up to five years of age, people 65 years of age and older, people who are overweight, and people who are ill or on certain medications. To determine jurisdictions within the planning area with populations more vulnerable to extreme heat, demographic data was obtained from the 2010 census on population percentages in each jurisdiction comprised of those under age 5 and over age 65. Data was not available for overweight individuals and those on medications vulnerable to extreme heat. 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.

**Table 3.47. Livingston County Population Under Age 5 and Over Age 65, 2010 Census Data**

Jurisdiction	Population Under 5	% Population Under 5	Population 65 and over	% Population 65 and over
Livingston County	780	5.4%	3066	21.1%
City of Chillicothe	489	5.4%	1826	20.1%
City of Chula	13	6.7%	37	19.0%
Village of Ludlow	10	9.0%	13	11.7%
City of Utica	9	4.1%	46	20.7%

City of Wheeling	20	9.1%	39	17.7%
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Source: U.S. Census Bureau, Profile of General Population and Housing Characteristics (DP1)

**Problem Statement**

Extreme heat could lead to increased use of water increasing stress on the public water supply systems, as well as increasing the risk to the health of residents who lack proper cooling systems. Heat will also increase demand for electricity and could lead to possible power outages.

Extreme cold could cause schools to alter class times and, in some instances, suspend classes all together. Extreme cold could also lead to frozen pipes and increases in electric demand.

### **3.4.6 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 3.41**) and tornadoes (discussed separately in **Section 3.48**).

##### ***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***

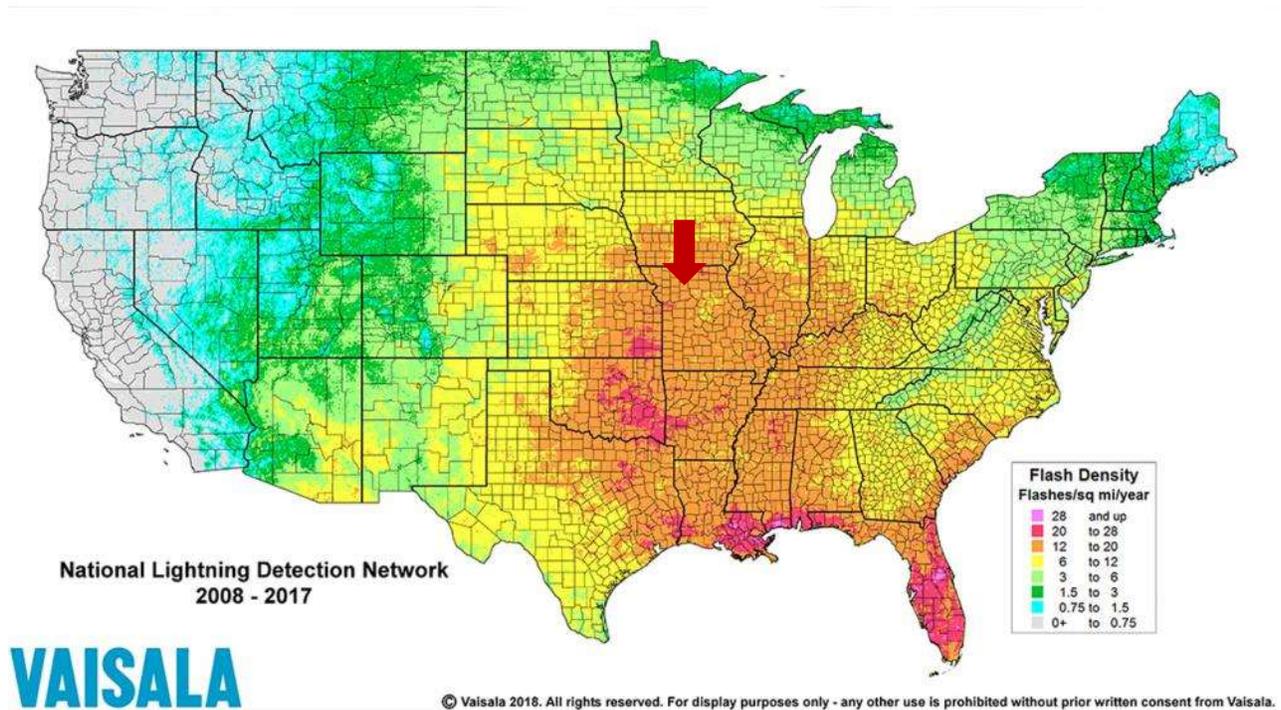
According to the National Oceanic and Atmospheric Administration (NOAA), hail is precipitation that is formed when thunderstorm updrafts carry raindrops upward into extremely cold atmosphere causing them to freeze. The raindrops form into small frozen droplets. They continue to grow as they come into 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 1/4" diameter or pea sized hail requires updrafts of 24 miles per hour, while a 2 3/4" 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

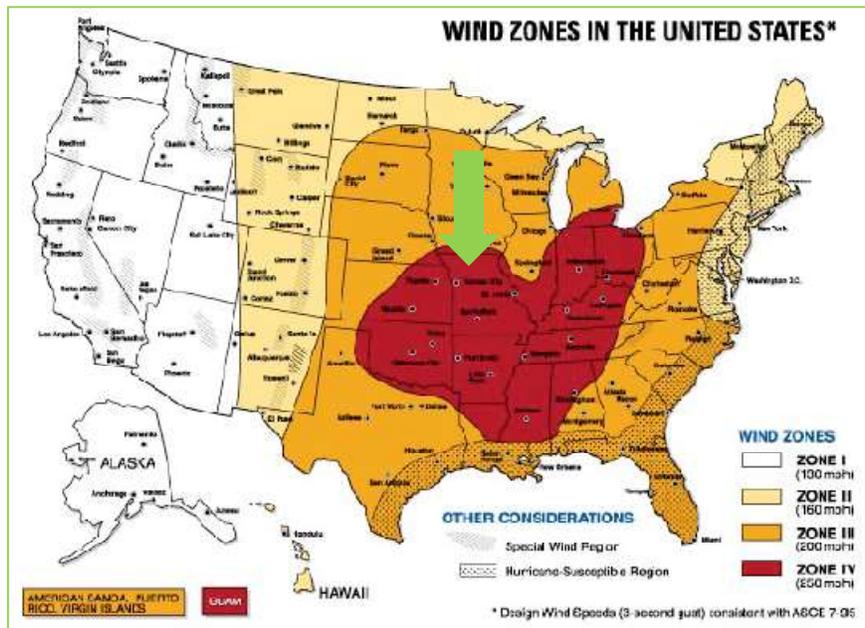
Thunderstorms/high winds/hail/lightning events are an area-wide hazard that can happen anywhere in the county. Although these events occur similarly throughout the planning area, they are more frequently reported in more urbanized areas. In addition, damages are more likely to occur in more densely developed urban areas. The majority of Livingston County is rural. According to the following table, the flash density of lightning in Livingston County is categorized as 12 to 20 flashes/square mile/year.

**Figure 3.32. 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.

**Figure 3.33. 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](https://www.fema.gov/pdf/library/ism2_s1.pdf)

Livingston County, indicated by the green arrow in the preceding figure, is entirely within Zone 4. This information indicated that Livingston County could sustain wind speeds of up to 250 miles per hour.

**Strength/Magnitude/Extent**

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

**Table 3.48. 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/hyscale.php>

Straight-line winds are defined as any thunderstorm wind that is not associated with rotation (i.e., is not a tornado). It is these winds, which can exceed 100 miles per hour, which represent the most common type of severe weather. They are responsible for most wind damage related to thunderstorms. Since thunderstorms do not have narrow tracks like tornadoes, the associated wind damage can be extensive and affect entire (and multiple) counties. Objects like trees, barns, outbuildings, high-profile vehicles, and power lines/poles can be toppled or destroyed, and roofs, windows, and homes can be damaged as wind speeds increase.

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

**Previous Occurrences**

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

The tables below (**Table 3.4949 through Table 3.52**) summarize past crop damages as indicated by crop insurance claims. The tables illustrate the magnitude of the impact on the planning area’s agricultural economy.

**Table 3.49. Crop Insurance Claims Paid in Livingston County from Thunderstorms, 2014-2024.**

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
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	
<b>Total</b>			<b>\$0</b>

Source: USDA Risk Management Agency, Insurance Claims, <https://www.rma.usda.gov/tools-reports/summary-business/cause-loss>

**Table 3.50. Crop Insurance Claims Paid in Livingston County from High Winds, 2014-2024**

Year	Crop Name	Cause of Loss	Insurance Paid (\$)
2014	Soybeans	Wind	\$175.00
2015		No Claim	\$0
2016		No Claim	\$0
2017		No Claim	\$0
2018		No Claim	\$0
2019		No Claim	\$0
2020		No Claim	\$0
2021		No Claim	\$0
2022		No Claim	\$0

2023	No Claim	\$0
2024	No Claim	\$0
<b>Total</b>		<b>\$175.00</b>

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

**Table 3.51. Crop Insurance Claims Paid in Livingston County 2014-2024**

Year	Crop Name	Cause of Loss	Insurance Paid (\$)
2014		No Claim	\$0
2015		No Claim	\$0
2016	Wheat	Lightning	\$6,206.00
2017		No Claim	\$0
2018		No Claim	\$0
2019		No Claim	\$0
2020		No Claim	\$0
2021	Soybeans	Lightning	\$2,331.00
2022		No Claim	\$0
2023		No Claim	\$0
2024		No Claim	\$0
<b>Total</b>			<b>\$8,537.00</b>

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

**Table 3.52. Crop Insurance Claims Paid in Livingston County 2014-2024**

Year	Crop Name	Cause of Loss	Insurance Paid (\$)
2014		No Claim	\$0
2015		No Claim	\$0
2016		No Claim	\$0
2017		No Claim	\$0
2018	Soybeans	Hail	\$2,409.00
2019		No Claim	\$0
2020		No Claim	\$0
2021		No Claim	\$0
2022	Soybeans	Hail	\$2,698.00
2023		No Claim	\$0
2024		No Claim	\$0
<b>Total</b>			<b>\$5,107.00</b>

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

The following table includes NCEI reported events and damages for the past 20 years for all four included hazards when information is available. Some dates have more than one line, which indicates that the events occurred in more than one jurisdiction within the county. All information was retained in this table to ensure inclusion of different magnitudes, number of deaths and injuries, amount in property damage, and amount in crop damage.

**Table 3.53. NCEI Reported Thunderstorm Events and Damages in Livingston County (2005-2025)**

Begin Date	Event Type	Magnitude	Deaths/Injuries	Property Damage (\$)	Crop Damage (\$)
5/11/2005	Hail	0.88	0	0	0
5/11/2005	Hail	1	0	0	0
6/7/2005	Thunderstorm Wind	52	0	5000	0
6/7/2005	Hail	0.75	0	0	0
6/7/2005	Thunderstorm Wind	52	0	0	0
6/7/2005	Hail	1	0	0	0

6/8/2005	Hail	0.88	0	0	0
6/8/2005	Hail	0.75	0	0	0
6/8/2005	Hail	1	0	0	0
8/28/2005	Hail	1	0	0	0
3/12/2006	Hail	0.88	0	0	0
4/18/2006	Hail	2	0	0	0
4/18/2006	Hail	1.5	0	0	0
4/18/2006	Hail	2.75	0	50000	0
4/18/2006	Hail	1.75	0	0	0
4/18/2006	Hail	1.75	0	0	0
4/18/2006	Hail	1.75	0	0	0
4/18/2006	Thunderstorm Wind	52	0	0	0
4/18/2006	Hail	3	0	250000	0
4/18/2006	Hail	1.75	0	0	0
4/18/2006	Hail	0.88	0	0	0
4/18/2006	Hail	1	0	0	0
6/6/2006	Hail	1.75	0	0	0
8/6/2006	Thunderstorm Wind	52	0	0	0
3/22/2007	Hail	0.75	0	0	0
5/6/2007	Hail	1.25	0	0	0
5/6/2007	Hail	0.88	0	0	0
7/14/2007	Thunderstorm Wind	56	0	0	0
7/14/2007	Hail	1	0	0	0
8/12/2007	Thunderstorm Wind	61	0	0	0
11/12/2007	Hail	0.88	0	0	0
6/15/2008	Hail	1.25	0	0	0
7/2/2008	Hail	0.88	0	0	0
7/2/2008	Hail	1	0	0	0
4/26/2009	Thunderstorm Wind	52	0	500	0
4/26/2009	Thunderstorm Wind	52	0	1000	0
5/7/2009	Hail	0.75	0	0	0
5/13/2009	Hail	0.75	0	0	0
6/7/2009	Hail	2.5	0	0	0
6/7/2009	Thunderstorm Wind	65	0	0	0
8/16/2009	Hail	0.75	0	0	0
4/4/2010	Hail	1	0	0	0
4/30/2010	Hail	1.75	0	0	0
4/30/2010	Thunderstorm Wind	52	0	2000	0
5/12/2010	Heavy Rain		0	0	0

6/19/2010	Thunderstorm Wind	52	0	500	0
6/23/2010	Hail	0.88	0	0	0
6/23/2010	Hail	0.75	0	0	0
6/23/2010	Thunderstorm Wind	52	0	500	0
7/18/2010	Thunderstorm Wind	52	0	200	0
8/13/2010	Thunderstorm Wind	52	0	100	0
8/13/2010	Thunderstorm Wind	52	0	1000	0
3/22/2011	Hail	1	0	0	0
3/22/2011	Hail	1.25	0	0	0
5/21/2011	Hail	0.75	0	0	0
5/22/2011	Hail	0.75	0	0	0
6/13/2011	Hail	0.88	0	0	0
6/14/2011	Hail	0.88	0	0	0
6/26/2011	Thunderstorm Wind	52	0	4000	0
6/26/2011	Thunderstorm Wind	52	0	0	0
2/28/2012	Thunderstorm Wind	52	0	0	0
3/19/2012	Thunderstorm Wind	52	0	750	0
3/19/2012	Thunderstorm Wind	52	0	3000	0
6/16/2012	Hail	0.88	0	0	0
6/16/2012	Hail	1.75	0	0	0
6/16/2012	Thunderstorm Wind	52	0	0	0
6/16/2012	Hail	1.75	0	0	0
5/19/2013	Thunderstorm Wind	61	0	2000	0
5/19/2013	Hail	1.75	0	0	0
6/15/2013	Thunderstorm Wind	52	0	0	0
6/15/2013	Thunderstorm Wind	56	0	0	0
6/15/2013	Thunderstorm Wind	65	0	0	0
10/30/2013	Hail	1	0	0	0
4/27/2014	Thunderstorm Wind	54	0	0	0
4/27/2014	Hail	0.75	0	0	0
4/27/2014	Hail	1	0	0	0
4/27/2014	Thunderstorm Wind	61	0	0	0
4/27/2014	Hail	1	0	0	0
6/3/2014	Thunderstorm Wind	52	0	0	0
7/6/2014	Hail	1.25	0	0	0
7/7/2014	Thunderstorm Wind	52	0	0	0

4/7/2015	Hail	1	0	0	0
6/25/2015	Hail	1	0	0	0
6/25/2015	Hail	1.75	0	0	0
8/2/2015	Thunderstorm Wind	52	0	0	0
11/11/2015	Thunderstorm Wind	56	0	0	0
7/7/2016	Thunderstorm Wind	56	0	0	0
3/6/2017	Thunderstorm Wind	56	0	0	0
3/6/2017	Hail	1	0	0	0
3/6/2017	Hail	1	0	0	0
7/12/2017	Thunderstorm Wind	56	0	0	0
9/16/2017	Thunderstorm Wind	56	0	0	0
5/26/2018	Hail	1	0	0	0
5/28/2018	Thunderstorm Wind	65	0	0	0
5/28/2018	Hail	1	0	0	0
5/14/2019	Hail	1.25	0	0	0
5/14/2019	Hail	2	0	0	0
5/14/2019	Hail	2	0	0	0
5/14/2019	Hail	2	0	0	0
6/21/2019	Thunderstorm Wind	52	0	0	0
8/21/2019	Thunderstorm Wind	52	0	0	0
8/12/2021	Thunderstorm Wind	52	0	0	0
8/12/2021	Hail	1	0	0	0
10/24/2021	Thunderstorm Wind	65	0	0	0
3/5/2022	Hail	1	0	0	0
6/29/2023	Thunderstorm Wind	52	0	0	0
7/29/2023	Thunderstorm Wind	52	0	0	0
7/29/2023	Thunderstorm Wind	52	0	0	0
9/23/2023	Hail	1	0	0	0
9/23/2023	Hail	1.25	0	0	0
9/23/2023	Hail	1	0	0	0
6/25/2024	Thunderstorm Wind	52	0	0	0
10/30/2024	Thunderstorm Wind	52	0	0	0
10/30/2024	Thunderstorm Wind	61	0	0	0
10/30/2024	Thunderstorm Wind	61	0	0	0
6/3/2025	Thunderstorm Wind	52	0	0	0
7/8/2025	Thunderstorm Wind	52	0	0	0

<b>Total</b>			<b>0</b>	<b>\$320,550</b>	<b>\$0</b>
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Source: NCEI database/Livingston County(Magnitude if Thunderstorm/Wind reflects MPH, if Hail reflects size in inches)

**Table 3.54. NCEI Event Narratives for Thunderstorm Events (2005-2025)**

<b>Begin Date</b>	<b>Event Narrative</b>
6/7/2005	Roof off of barn and upstairs house window blown out.
6/7/2005	Large tree limbs down.
11/12/2007	Hail with a diameter 0.75 to 0.88 inches was reported.
4/26/2009	A billboard was blown over at the intersection of Highway 65 and Highway 190.
4/26/2009	A roof was blown off a 50X80 foot building onto a road.
6/7/2009	Thunderstorm winds were estimated to gust to 75 mph.
4/30/2010	A large oak tree fell on an outbuilding, crushing everything inside.
5/12/2010	Spotter measured 2.10 inches of rain in 70 minutes.
6/19/2010	Shingle damage was reported to two homes. A small outbuilding was also blown over.
6/23/2010	Tree limbs and power lines were reported down, with cable and phone service out.
7/18/2010	A large tree and power line were reported down in Chillicothe. Thunderstorm wind gusts were estimated up to 60 mph.
8/13/2010	Thunderstorm wind gusts were estimated up to 60 mph, with roof shingles blown off a home.
8/13/2010	Powerlines were reported down across the town. Thunderstorm wind gusts were estimated up to 60 mph.
6/26/2011	Numerous power lines were reported down. Thunderstorm wind gusts were estimated up to 60 mph.
6/26/2011	Thunderstorm wind gusts were estimated up to 60 mph.
2/28/2012	Thunderstorm wind gusts were estimated up to 60 mph. Pea sized hail was also reported.
3/19/2012	Thunderstorm wind gusts were estimated up to 60 mph. A few strips of siding were blown off a house. A privacy fence was partially blown down. A six-inch diameter tree was blown over.
3/19/2012	Two billboards were reported blown over. A sign for a Caterpillar dealer was blown off. A metal barn roof was peeled back. Thunderstorm wind gusts were estimated up to 60 mph.
6/16/2012	Several 4-to-6-inch diameter tree limbs were reported down. Thunderstorm wind gusts were estimated up to 60 mph.
5/19/2013	Power poles were reported down, with thunderstorm wind gusts estimated up to 70 mph.
6/15/2013	Thunderstorm wind gusts were estimated up to 60 mph.
6/15/2013	Thunderstorm wind gusts were estimated up to 65 mph.
6/15/2013	Thunderstorm wind gusts were estimated up to 75 mph.
4/27/2014	Strong winds were also reported.
4/27/2014	Tree limbs blown down with quarter sized hail also reported.
6/3/2014	A spotter estimated 60 mph winds.
7/7/2014	A large tree limb was reported snapped on Locust Street in Chillicothe, Missouri.
4/7/2015	This report was gained via social media.
8/2/2015	An emergency manager reported 60 mph winds 1 mile west of Route U and 4 miles north of Highway 190 near Lock Springs.
11/11/2015	Winds of 65 mph were estimated to have caused 4-inch tree limbs to break.
7/7/2016	Media reports a few large tree limbs, around 3 to 4 inches in diameter, were down.
3/6/2017	The public called in a report of 60 to 70 mph winds near Chillicothe.
7/12/2017	A tree of unknown size and condition was blown onto a box trailer.
9/16/2017	A chicken coop was blown over, and a section of fence was blown 100 yards in the neighbor's yard.
5/28/2018	Numerous trees were down and structures were damaged in Chillicothe. It is unknown the exact breadth of the damage or costs of the damage.

5/14/2019	This stone measured and reported by the PSU field project.
6/21/2019	ASOS measured 60 mph wind.
8/21/2019	Public reported 60 mph wind.
8/12/2021	Several large tree limbs around 4 to 6 inches in diameter broke. Power outages were also reported with this storm.
10/24/2021	On a survey of a large tornado a manufactured home was seen outside of the tornado path slide off its blocks. This damage was consistent with the location and behavior of strong RFD winds south of the track of the tornado off to the northeast.
3/5/2022	This report came in via social media.
6/29/2023	Healthy crop was knocked over by the wind. Estimated winds around 60 mph.
7/29/2023	Large tree limbs downed across Chillicothe.
7/29/2023	Estimated 60 mph winds near Chula.
9/23/2023	Quarter sized hail in Utica.
9/23/2023	Half dollar sized hail near Utica.
9/23/2023	Quarter sized hail reported in Chillicothe.
6/25/2024	Estimated gusts up to 60 mph in Chillicothe.
10/30/2024	Social media report of 60 mph wind gusts in Utica.
10/30/2024	Report of semi tipped over at Hwy 36 and Liv 255.
10/30/2024	Downed trees in Wheeling.
6/3/2025	Social media report of downed tree limbs near Utica.
7/8/2025	Report of downed tree limbs in the Utica area.

Source: NCEI Storm Database

### **Probability of Future Occurrence**

#### **Probability of Thunderstorm**

$$Probability = \frac{\# \text{ of events}}{Years} = \frac{117}{20} = 5.85$$

According to the above calculation, the planning area of Livingston County should experience an average of 5.85 Thunderstorms annually.

#### **Probability of Thunderstorm with High or Excessive Winds**

$$Probability = \frac{\# \text{ of events}}{Years} = \frac{49}{20} = 2.45$$

According to the above calculation, the planning area of Livingston County should experience a thunderstorm accompanied by high or excessive winds (60 mph or greater) approximately 2.45 times annually.

#### **Probability of Thunderstorm with Hail**

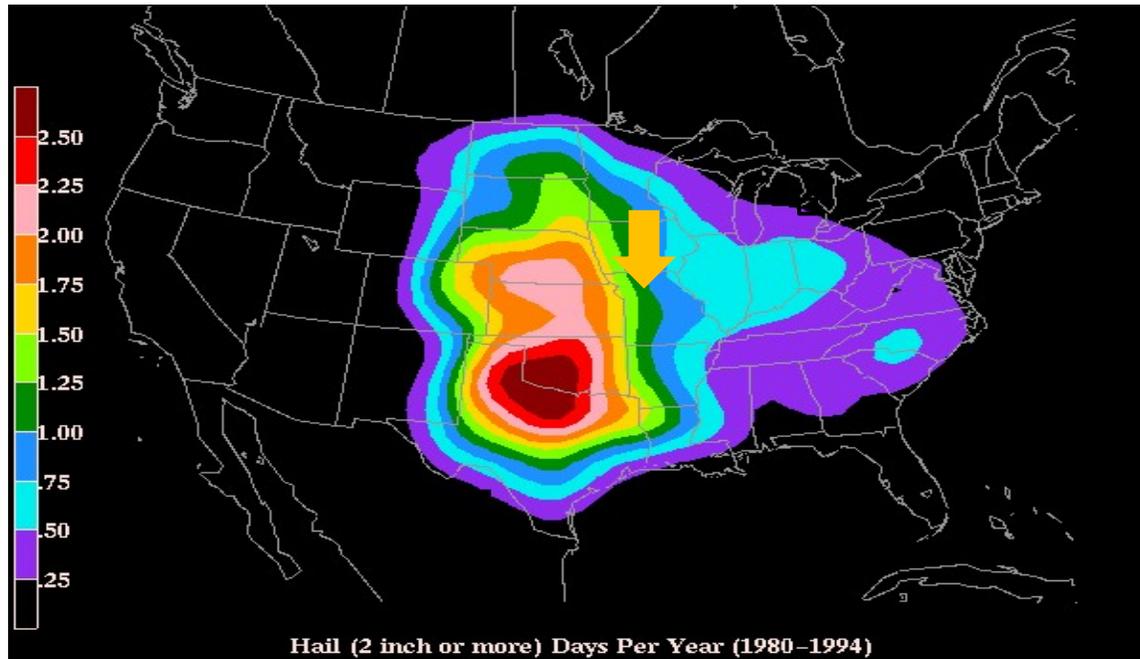
$$Probability = \frac{\# \text{ of events}}{Years} = \frac{67}{20} = 3.35$$

According to the above calculation, the planning area of Livingston County should experience a

thunderstorm accompanied by hail approximately 3.35 times annually.

The figure below shows the annual hailstorm probability in Livingston County for hail stones larger than 2 inches in diameter from 1980 through 1994. Livingston County, indicated by an arrow, experienced 1 day per year where the size of the hailstones were 2 inches in diameter between the period of 1980 through 1994.

**Figure 3.34. Annual Hailstorm Probability (2" diameter or larger), U 1980- 1994**



Source: NSSL, [http://www.nssl.noaa.gov/users/brooks/public\\_html/big\\_hail.gif](http://www.nssl.noaa.gov/users/brooks/public_html/big_hail.gif) Note:

### ***Changing Future Conditions Considerations***

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

<http://www.vaisala.com/en/products/thunderstormandlightningdetectionsystems/Pages/NLDN.aspx> and <http://www.lightningsafety.noaa.gov/>

**Potential Losses to Existing Development**

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 3.55. Housing Density, Building Exposure, SOVI, and Mobile Home Data for Livingston 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
\$1,789,759,000	1	12.90	1	Medium High	4	6.7	2

Source: 2023 Missouri State Hazard Mitigation Plan

**Table 3.56. High Wind, Hail, and Lightning Events, Likelihood of Occurrence, and Associated Ratings for Livingston County**

High Wind	Hail	Lightning
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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
63	2.42	1	87	3.35	2	0	0.00	1

Source: 2023 Missouri State Hazard Mitigation Plan

**Table 3.57. Annualized Property Loss and Associated Ratings for Livingston County**

High Wind		Hail		Lightning	
Total Annualized Property Loss	Total Annualized Property Loss Rating	Total Annualized Property Loss	Total Annualized Property Loss Rating	Total Annualized Property Loss	Total Annualized Property Loss Rating
\$24,752	1	\$11,538	1	\$0	1

Source: 2023 Missouri State Hazard Mitigation Plan

### Previous and Future Development

According to historical loss data reported for thunderstorm wind, high wind, hail, and lightning by NCEI, from 2005-2025, the severe weather events that impacted Livingston County caused an estimated \$320,550 in property damage with no reported crop damage. Based on this estimate Livingston County experiences an average annual property loss of approximately \$16,027.50.

The USDA reported crop losses due to high winds, lightning, and hail. According to the USDA there were \$13,819 in crop insurance claims recorded from 2014 to 2024. Based on these figures, Livingston County can expect to experience an average annual crop loss of \$1,381.90.

### 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.

**Table 3.58. Livingston County Housing Characteristics**

Jurisdiction	Mobile Home	% Mobile Home	Homes Built Before 1939	% Homes Built Before 1939
Livingston County	248	4.5%	741	13.4%
City of Chillicothe	101	2.9%	462	13.3%
City of Chula	5	8.5%	26	44.1%
Village of Ludlow	6	12.0%	13	26.0%
City of Utica	18	17.6%	18	17.6%
City of Wheeling	19	29.7%	8	12.5%

Source: U.S. Census Bureau, Physical Housing Characteristics for Occupied Housing Units (S2501)

## **Problem Statement**

Severe thunderstorms and associated hazards such as lightning can result in power outages and damage to equipment resulting in operational capacity, such as at water treatment plants. Severe storms may also knock out communications system to critical facilities such as schools, strong winds may lead to structural damage and loss of residents and facilities.

### 3.4.7 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.

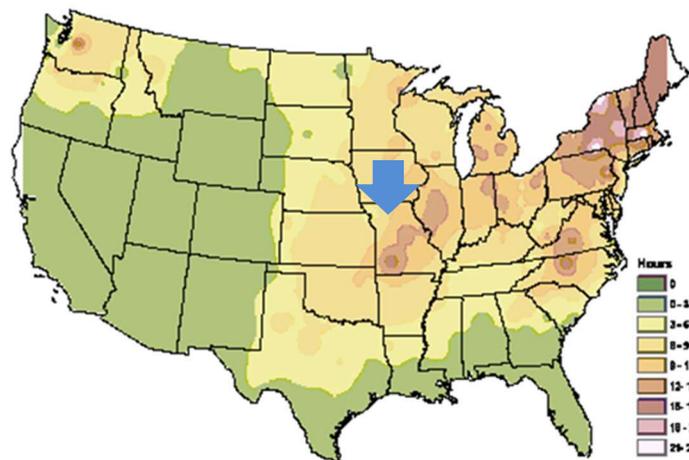
##### *Geographic Location*

A major winter storm usually affects a large area uniformly. While there might be slight variations in impact across a county, the effects are generally consistent throughout the region.

The figure below shows the NWS estimated hours of freezing rain across the United States.

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**Figure 3.35. NWS Statewide Average Number of Hours per Year with Freezing Rain**



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

**Strength/Magnitude/Extent**

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

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

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

**Previous Occurrences**

**Table 3.59. NCEI Winter storm reports 1994-2024**

Begin Date	Event Type	Property Damage (\$)	Crop Damage (\$)	Deaths/Injuries
1/5/2005	Ice Storm	0	0	0
1/20/2006	Winter Weather	0	0	0
11/29/2006	Ice Storm	0	0	0
11/30/2006	Heavy Snow	0	0	0
12/1/2006	Heavy Snow	0	0	0
1/12/2007	Winter Storm	0	0	0
1/20/2007	Heavy Snow	0	0	0
12/1/2007	Ice Storm	0	0	0
12/10/2007	Ice Storm	10000	0	0
12/18/2008	Ice Storm	0	0	0
2/21/2010	Winter Storm	0	0	0
1/10/2011	Winter Weather	0	0	0
1/19/2011	Winter Storm	0	0	0
2/1/2011	Blizzard	0	0	0
2/24/2011	Winter Storm	0	0	0
2/13/2012	Winter Weather	0	0	0

2/21/2013	Winter Storm	0	0	0
2/25/2013	Winter Storm	0	0	0
3/23/2013	Winter Storm	0	0	0
5/2/2013	Winter Weather	0	0	0
12/21/2013	Heavy Snow	0	0	0
2/4/2014	Heavy Snow	0	0	0
12/27/2015	Winter Storm	0	0	0
11/25/2018	Blizzard	0	0	0
1/11/2019	Winter Storm	0	0	0
2/7/2019	Ice Storm	0	0	0
1/10/2020	Winter Storm	0	0	0
1/1/2021	Winter Storm	0	0	0
2/14/2021	Extreme Cold/Wind Chill	0	0	0
2/15/2021	Extreme Cold/Wind Chill	0	0	0
2/16/2021	Extreme Cold/Wind Chill	0	0	0
12/22/2022	Extreme Cold/Wind Chill	0	0	0
2/18/2025	Extreme Cold/Wind Chill	0	0	0

Source: NWS NCEI Data accessed July 2025

**Table 3.60. NCEI Winter storm event summaries 1994-2024**

Start Date	Event Type	Event Narrative
11/23/2004	Heavy Snow	-
1/5/2005	Ice Storm	-
1/20/2006	Winter Weather	-
11/29/2006	Ice Storm	One quarter to one half inch of ice reported across the county.
11/30/2006	Heavy Snow	The extreme northwest corner of the county had no snow, while the snow measured up to 6 inches in the southeast corner.
12/1/2006	Heavy Snow	See November 2006 Storm Data.
1/12/2007	Winter Storm	Up to an inch of freezing rain and sleet across the county.
1/20/2007	Heavy Snow	Four to six inches of snow, reported across the county.
12/1/2007	Ice Storm	One quarter of an inch of ice was reported across the county.
12/10/2007	Ice Storm	One quarter to three quarters of an inch of ice was reported across the county. Many trees and power lines were reported down.
12/18/2008	Ice Storm	One quarter of an inch of ice was reported.
2/21/2010	Winter Storm	Twelve inches of snow was measured seven miles northwest of Chillicothe. Blowing and drifting snow caused hazardous driving conditions.
1/10/2011	Winter Weather	Four to five inches of snow was reported across the county.
1/19/2011	Winter Storm	Up to six inches of snow was reported in the southern portion of the county.
2/1/2011	Blizzard	Blizzard conditions were observed across the county, with frequent wind gusts up to 45 mph, visibilities less than 1/4 of a mile, and heavy snow of up to 13 inches, reported in Chillicothe. Travel was nearly impossible, with the blowing and drifting snow, and the very low visibilities.

2/24/2011	Winter Storm	The combination of up to 6 inches of snow, and blowing and drifting snow, led to hazardous driving conditions across the county.
2/13/2012	Winter Weather	The observer in Chillicothe measured 2.2 inches of snow.
2/21/2013	Winter Storm	Chillicothe measured 6.8 inches of snow.
2/25/2013	Winter Storm	Ten inches of snow was measured near Chillicothe.
3/23/2013	Winter Storm	Three to six inches of snow fell across the county.
5/2/2013	Winter Weather	Chillicothe measured 4.8 inches of snow.
12/21/2013	Heavy Snow	Light to moderate snow picked up during the afternoon hours on December 21. Preceding the snow freezing rain produced some minor icing in and around the area. Once the snow began it quickly accumulated between 5 and 7 inches across the area. The highest amount received came from Chillicothe, Missouri where 6 to 7 inches of snow fell. While there were several vehicle spin-outs across the area, and despite the ice accumulation the widespread effects were rather minimal.
2/4/2014	Heavy Snow	A major winter storm trekked through Kansas and Missouri on February 4 and 5. By the time the storm finished it dropped around a foot of snow across the entire area.
12/27/2015	Winter Storm	Several areas across northeast Kansas and northwest Missouri saw ice accumulations approaching a quarter inch as well as sleet ranging from a quarter to a half inch in most locations, with some locations reporting over an inch of sleet. Once the sleet ended another 3 to 4 inches of snow fell before the system moved out.
11/25/2018	Blizzard	Blizzard conditions started after a few hours of lightly to moderately falling snow. Once the heavy snow arrived winds gusted up to 45 mph for nearly 4 hours, creating whiteout conditions, officially measured by the ASOS at KIRK as sub-quarter mile for that duration. Despite the heavy impacts from this system affecting Thanksgiving weekend return traffic, no serious injuries occurred from this event.
1/11/2019	Winter Storm	Between 10 and 12 inches of snow fell across Livingston County, with most of it falling over the course of the first 12 hours. Light snow continued into the next day (January 12), but was fairly light, and only accounted for 1 to 2 inches.
2/7/2019	Ice Storm	While light freezing drizzle occurred off and on February 5, the bulk of the freezing rain fell during the overnight period on February 6 into February 7. Over the course of the event Livingston County received approximately a quarter inch of ice accumulation. Numerous vehicle accidents occurred area-wide and minor tree damage occurred.
1/10/2020	Winter Storm	Freezing rain occurred through much of the night going into January 11, and caused around a quarter to one-third inch accumulation. This occurred prior to about 2 to 3 inches of snow falling. This resulted in several auto accidents.
1/1/2021	Winter Storm	Light to moderate freezing rain formed early morning on New Year's Day. This freezing rain quickly accreted between around a quarter inch before sunrise. Shortly after sunrise the freezing rain switched to light snow, which persisted for the bulk of the remaining day time hours. The snow did not accumulate more than 1 to 3 inches, but on top of the ice accretion created winter storm conditions. Mostly scattered power outages and vehicle accidents were the impacts, but being a holiday, road traffic was likely light.
2/14/2021	Extreme Cold/Wind Chill	In the first night of bitter cold across the area, temperatures dropped well below zero and with winds around 10-20 mph wind chills overnight going into Sunday morning dropped to around 20 to 30 below.
2/15/2021	Extreme Cold/Wind Chill	In the second night of bitter cold across the area, temperatures dropped well below zero and with winds around 10-20 mph wind chills overnight going into Monday morning dropped to around 20 to 30 below.
2/16/2021	Extreme Cold/Wind Chill	In the third night of bitter cold across the area, temperatures dropped well below zero and with winds around 10-20 mph wind chills overnight going into Sunday morning dropped to around 20 to 30 below.
12/22/2022	Extreme Cold/Wind Chill	An arctic air mass sent temperatures below zero along with strong winds. Minimum wind chills across the region generally ranged from -30 to -40 degrees between roughly 10 am on 12/22 to noon on 12/23.
2/18/2025	Extreme Cold/Wind Chill	The ASOS at Chillicothe reported wind chills between -15 and -20 between 1 am and 11 am on Feb 18th, with temperatures between 0 and -1 degrees.  Wind chills once again dropped to between -14 and -20 degrees between 11 pm on Feb 19 and 9 am on Feb 20th, with temperatures dropping to -7.  Wind chills were below zero the entire time between midnight at Feb 18th around noon on Feb 20th.

Source: NCEI Storm Data (Rows highlighted in blue are different dates but part of a singular event)

**Table 3.61. Crop Insurance Claims Paid in Livingston County 2014-2024**

Year	Crop Name	Cause of Loss	Insurance Paid (\$)
2014	Wheat	Cold Winter	\$79,382.92
		Freeze	\$20,604.00
2015	Wheat	Cold Winter	\$30,852.34
		Freeze	\$58,348.06
2016	No Claim		\$0
2017	No Claim		\$0
2018	Wheat	Cold Winter	\$607.00
2019	Wheat	Cold Winter	\$23,340.00
2020	No Claim		\$0
2021	No Claim		\$0
2022	Wheat	Cold Winter	\$3,279.00
2023	Wheat	Freeze	\$9,045.00
2024	No Claim		\$0
<b>Total</b>			<b>\$225,458.32</b>

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

### ***Probability of Future Occurrence***

There is a high likelihood of a winter storm event impacting Livingston County, over the past 30 Years (1994-2024) 22 years have had a winter storm impacting the county., This yields a 73% chance of a winter storm impacting the county in a given year.

### ***Changing Future Conditions Considerations***

Changes in long term climate will lead to varying impacts of winter storms on the county and its infrastructure and residents.

## **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 3.62. 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

**Table 3.63. Housing Density, Building Exposure, and SOVI Data for Livingston County**

	Total Building Exposure (HAZUS)	Building Exposure Rating	Housing Density	Housing Density Rating	SOVI Ranking	SOVI Rating
Livingston	\$1,789,759,000	1	12.90	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 also occur to lines and equipment from falling trees and tree limbs weighted down by ice. Potential losses could include cost of repair or replacement of damaged facilities, and lost economic opportunities for businesses.

Secondary effects from loss of power could include burst water pipes in homes without electricity during winter storms. Public safety hazards include risk of electrocution from downed power lines. Specific amounts of estimated losses are not available due to the complexity and multiple variables associated with this hazard. Standard values for loss of service for utilities reported in FEMA's BCA Toolkit 6.0 Release Notes, the economic impact as a result of loss of power is \$174 per person per day of lost service.

The following tables contain information from the 2023 Missouri State Hazard Mitigation Plan. These tables were included in the plan to provide additional data obtained from the NCEI and

utilized to complete the overall vulnerability analysis and the total overall vulnerability rating for severe winter weather in Livingston County. The total number of winter weather events includes “blizzard”, “heavy snow”, “ice-storm”, “winter-storm”, and “winter weather events.”

**Table 3.64 Annualized Severe Winter Weather Damages in Livingston 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	\$385	\$3,846	\$0	\$4,231

Source: 2023 Missouri State Hazard Mitigation Plan

**Table 3.65 Additional Statistical Data for Severe Winter Weather Vulnerability in Livingston County**

Type of Data	Amount
Total # of Winter Weather Events	41
Likelihood of Occurrence	1.58
Likelihood of Occurrence Rating	2
Total Annualized Property Loss	\$4,231
Total Annualized Property Loss Rating	1
Overall Vulnerability Rating	9
Overall Vulnerability Rating Description	Medium Low

Source: 2023 Missouri State Hazard Mitigation Plan

***Potential Losses to Existing Development***

Some winter storms, most notably ice storms, can and do cause significant damage and disruption to infrastructure, often leading to hundreds of thousands, if not millions of damages.

The most significant damage occurred in 2002 when an ice storm caused over \$100,000 in damage, Major ice storms in the past have led to long duration power outages and costly repairs.

Crop losses have totaled \$225,458.32 due to winter storm conditions over the last 10 years, calculated to a annualized basis the estimated cost would be \$22,545.83.

***Previous and Future Development***

Any growth and development within the county would lead to increased risks and impacts to infrastructure.

***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 that the hazard does not substantially vary by jurisdiction.

**Problem Statement**

Livingston 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 severe weather hazards. If jurisdictions monitor winter weather, they can dispatch road crews to prepare for the hazard.

County and city crews can also trim trees along power lines to minimize the potential for outages due to snow and ice. Citizens should also be educated about the benefits of being proactive to alleviate property damage as well as preparing for power outages. Education needs to occur to ensure all residents are aware of the shelters in the County, residents are educated on emergency supplies to have and the utilization of social media and texting increases.

Extreme temperatures can lead to a disruption in services to the county, such as schools and private commerce. Additional strains on the electric grid could potentially cause interruptions to power. During extreme-cold events water lines could freeze or burst.

## 3.4.8 Tornado

### **Hazard Profile**

#### ***Hazard Description***

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

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

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

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

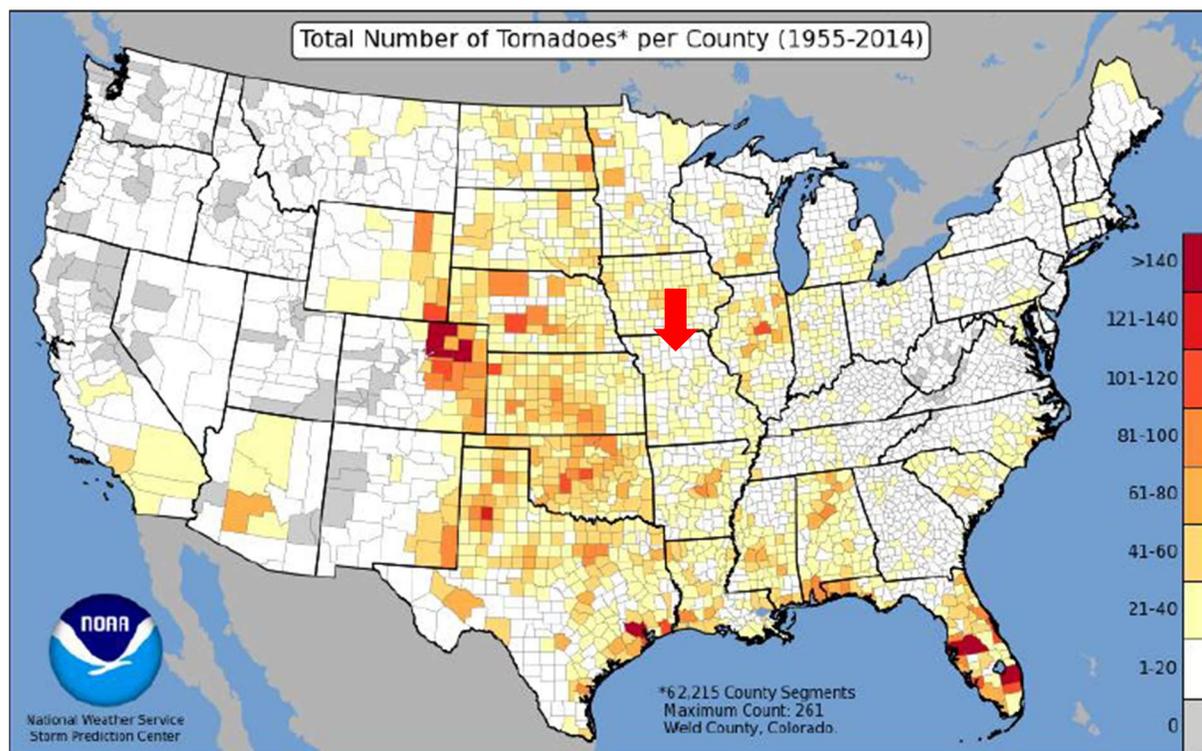
The average forward speed of a tornado is 30 miles per hour but may vary from nearly stationary to 70 miles per hour. The average tornado moves from southwest to northeast, but tornadoes have been known to move in any direction. Tornadoes are most likely to occur in the afternoon and evening, but have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

#### ***Geographic Location***

Tornadoes in Livingston County, Missouri, have shown a geographic extent that covers both its major population centers and surrounding rural farmlands. Historically, the most devastating events, like the 1883 tornado, impacted a broad swath from the Caldwell County line near Braymer, moving northeast through agricultural areas south of Dawn, striking Utica, and causing damage on the outskirts and southeast of Chillicothe. More recent, though less severe, tornadoes have been

noted northwest of Chillicothe. This pattern suggests that while specific communities like Chillicothe, Dawn, and Utica have been directly hit, the threat of tornadoes extends across the county, particularly impacting its numerous farms and open lands.

**Figure 3.36. 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 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 3.64. Enhanced F Scale for Tornado Damage**

F Number	Fujita Scale		Derived EF Scale		Operational EF Scale	
	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](http://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 the following table. 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 of damage is located online at [www.spc.noaa.gov/efscale/ef-scale.html](http://www.spc.noaa.gov/efscale/ef-scale.html).

**Table 3.65. 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

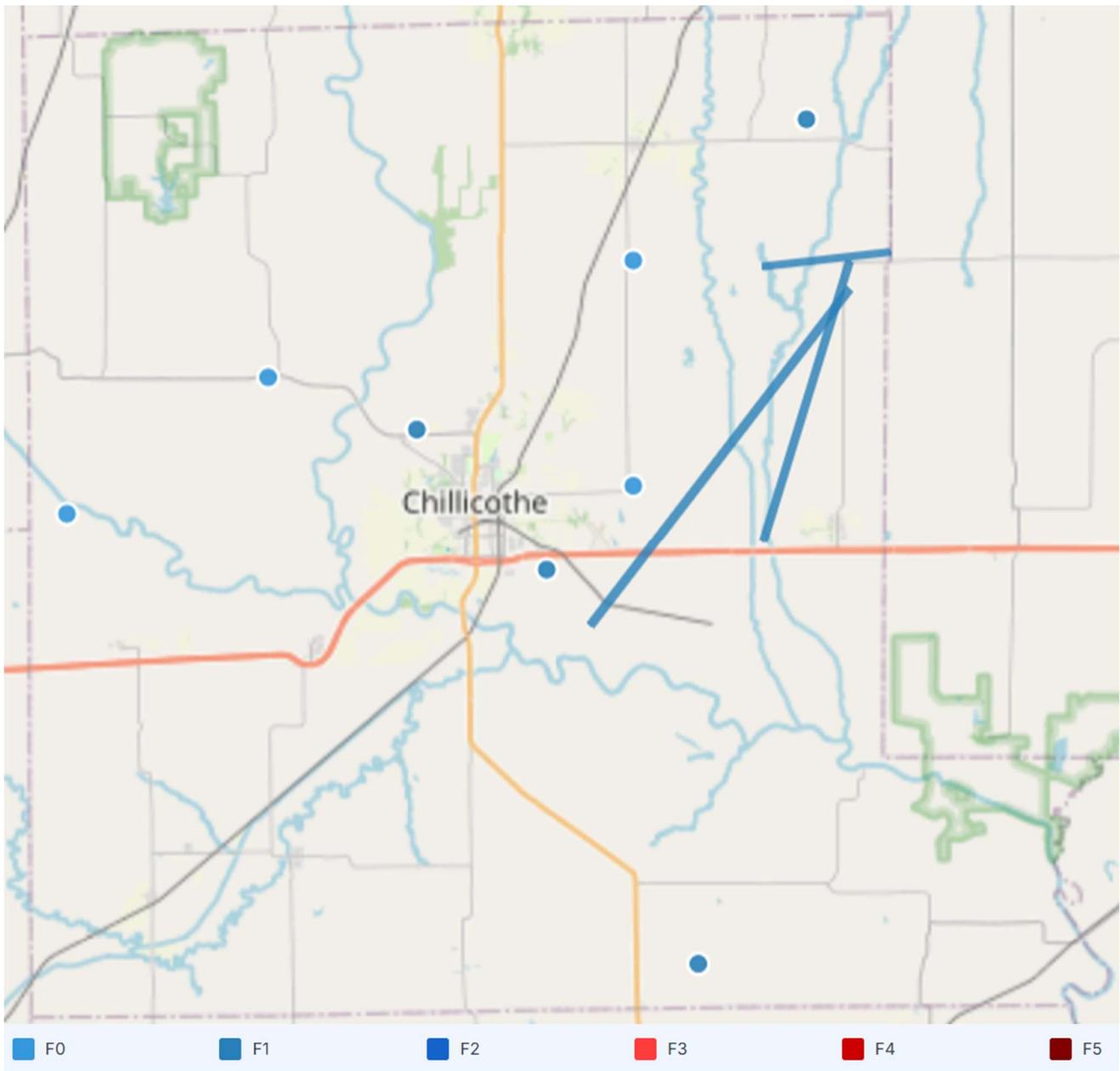
**Table 3.66. Recorded Tornadoes in Livingston County, 1993 – Present**

Date	Beginning Location	Ending Location	Length (miles)	Width (yards)	F/EF Rating	Death	Injury	Property Damage	Crop Damages
4-8-99	7E CHILLICOTHE	7N WHEELING	7	75	F1	0	0	250,000	150,000
5-24-04	2S CHILLICOTHE	2S CHILLICOTHE	9.5	200	F1	0	0	1,700,000	0
11-29-10	3NNW MOORESVILLE	2SSW SAMPSEL	0.33	25	EF0	0	0	0	0

10-24-21	2S SPRING HILL	2S SPRING HILL	0.15	50	EF0	0	0	0	0
10-24-21	4SW EVERSONVILLE	3S EVERSONVILLE	3.18	150	EF1	0	0	0	0
<b>Total</b>		<b>5</b>						<b>1,950,00</b>	<b>150,000</b>

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

**Figure 3.37. Livingston County Map of Historic Tornado Events**



Source: www.tornadopath.com

## **Probability of Future Occurrence**

There is a low likelihood of tornadoes in Livingston County each year. Over the last 32 years, there have been 5 recorded tornadoes. This results in a 15.6% chance of a tornado annually.

$$\text{Probability of Tornado} = \frac{5}{32} = 0.156 = 15.6\%$$

## **Changing Future Conditions Considerations**

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 Daviess 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 3.67. Likelihood of Occurrence, Annual Property Loss, and Overall Vulnerability Rating for Livingston County by Tornadoes**

<b>Total Number of Tornadoes</b>	12
<b>Likelihood of Occurrence</b>	0.167
<b>Likelihood of Occurrence Rating</b>	1
<b>Total Annualized Property Loss</b>	\$28,612
<b>Total Annualized Property Loss Rating</b>	1
<b>Overall Vulnerability Rating</b>	10
<b>Overall Vulnerability Rating Description</b>	Low

Source: 2023 Missouri State Hazard Mitigation Plan

**Table 3.68. Tornado Vulnerability Rating for Livingston County**

<b>Vulnerability</b>	<b>Data for Livingston County</b>
Total Building Exposure	\$1,789,759,000
Exposure Rating	1
Population Density	28.60
Population Density Rating	1
SOVI Index Ranking	Medium High
SOVI Rating	4
Percent of Mobile Homes	6.7
Mobile Home Rating	2

Source: 2023 Missouri State Hazard Mitigation Plan

Livingston County, Missouri, like much of the state, is situated within the broader region often referred to as "Tornado Alley," making it inherently vulnerable to tornado activity. The county has a history of significant tornado events, including a particularly destructive one in 1883 that caused widespread damage and fatalities. While no specific official "Tornado Alley" boundaries exist, Missouri's geographical location places it in an area where warm, moist air from the Gulf of Mexico frequently clashes with cooler air masses, creating atmospheric conditions conducive to severe thunderstorms and tornadoes, thus posing an ongoing risk to the residents and infrastructure of Livingston County.

**Figure 3.38. Tornado Alley in the U.S.**



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

### ***Potential Losses to Existing Development***

Tornadoes reported in the county since 1993 have resulted in \$1,950,000 in damages to property, this yields an annualized loss of \$60,937.50.

### ***Previous and Future Development***

New building development and community growth can significantly heighten vulnerability to tornadoes in several ways, even in areas historically prone to them. Primarily, as urban and suburban areas expand, they often sprawl into previously undeveloped or sparsely populated regions. This "urban sprawl" directly increases the number of people and properties within a tornado's potential path. A tornado passing through an open field causes minimal damage, but the same tornado traversing a newly developed subdivision with hundreds of homes will result in far greater economic loss and risk to human life, regardless of its intensity.

### ***Hazard Summary by Jurisdiction***

While the physical hazards of a tornado remain consistent throughout the county, the scale of its impact—measured by potential casualties and property damage—varies significantly depending on the population density of the affected community.

### ***Problem Statement***

A tornado could lead to damage to critical facilities or disrupt the utility systems to critical facilities. A significant tornado would lead to a loss of life and may overwhelm resources.

### **3.4.9 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.

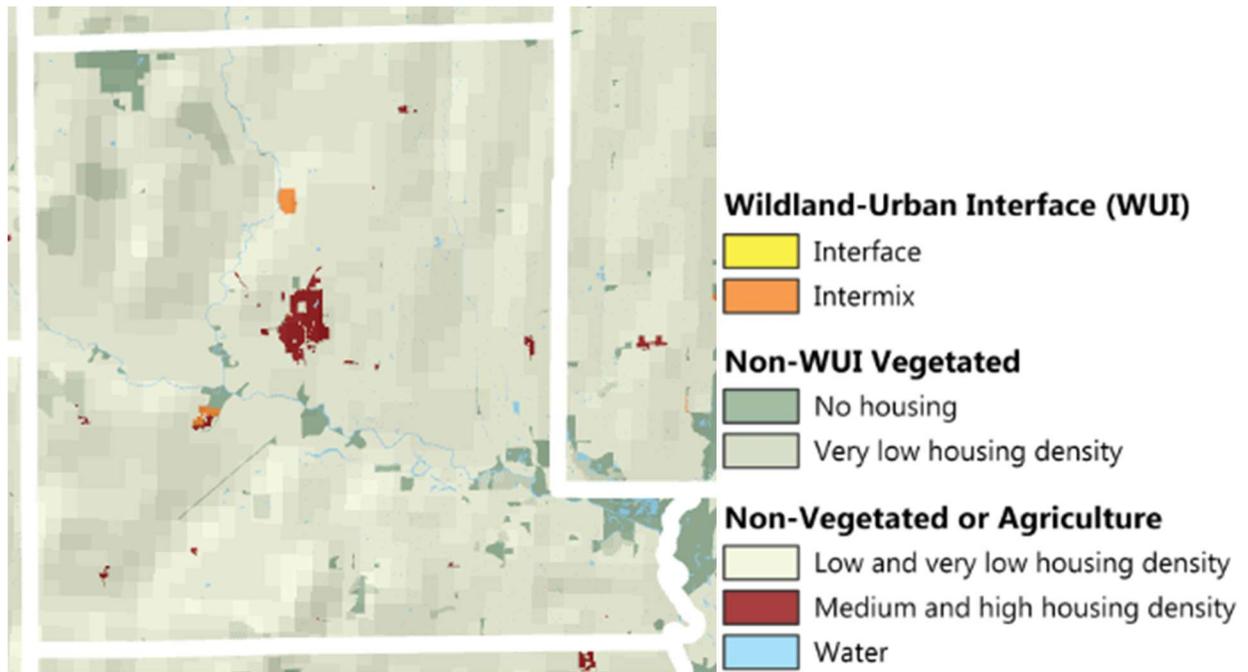
The Forestry Division of the Missouri Department of Conservation (MDC) is responsible for protecting privately owned and state-owned forests and grasslands from wildfires. To accomplish this task, eight forestry regions have been established in Missouri for fire suppression. The Forestry Division works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

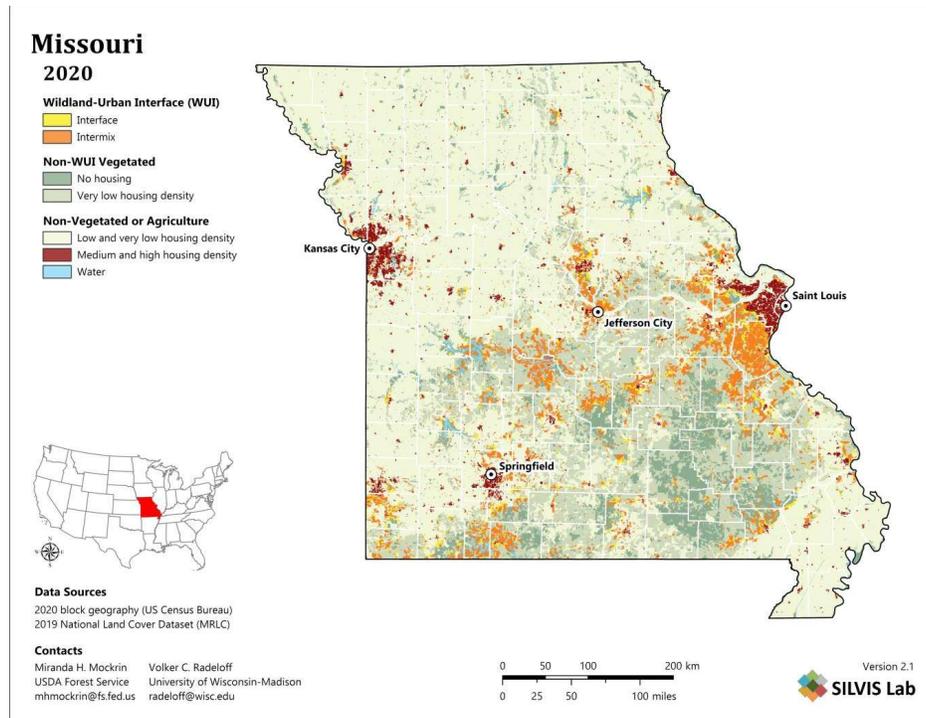
While all of Livingston County is at risk for the possibility of wildfires, areas with a higher Wildland Urban interface (WUI) are more susceptible to losses from a wildfire situation.

Figure 3.39. University of Wisconsin Wildland Urban Map showing Livingston County



Source: University of Wisconsin Global Wildland-Urban Interface (WUI) – 2020 accessed June 2025

**Figure 3.40. Wildfire Urban Interface (WUI) Areas, 2020**



Source: University of Wisconsin Global Wildland-Urban Interface (WUI) – 2020 accessed June 2025

### **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.

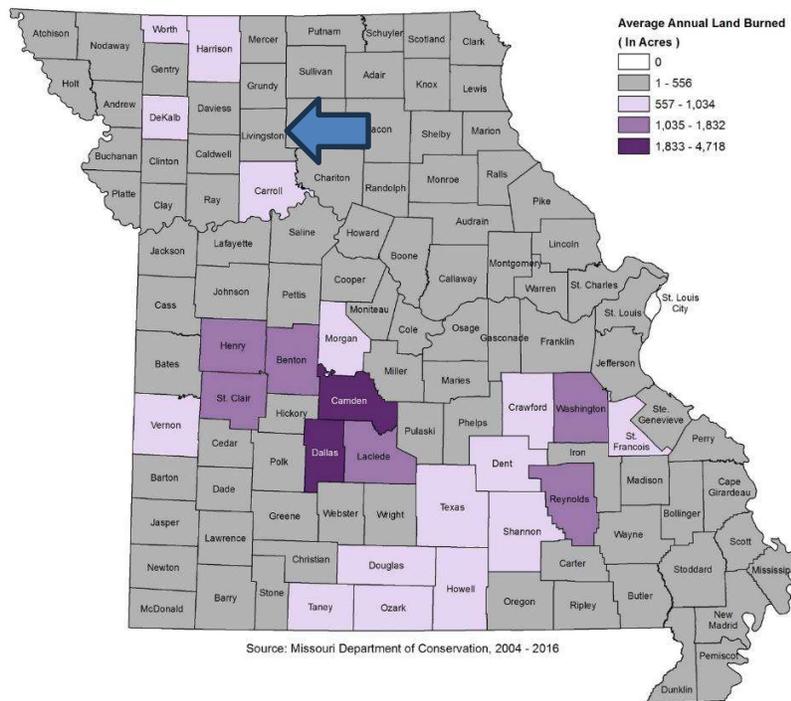
Previous Occurrences

**Table 3.69. Fires Reported and Acres Burned in Livingston County Annually (2015-2024)**

Year	Number of fires reported	Acres burned
2015	8	64
2016	9	118
2017	27	434
2018	22	547.637
2019	13	60.577
2020	5	180.285
2021	16	106.946
2022	11	124.379
2023	18	863.264
2024	13	1,156.10
<b>Total</b>	<b>142</b>	<b>366</b>
<b>Average</b>	<b>14</b>	<b>3,655.19</b>

Source: Missouri department of conservation wildfire reporting system

**Figure 3.41. Average Annual Acreage Burned**



**Table 3.70. Causes of Fire by type and count**

Cause	Number of fires
Debris	73
Unknown	52
Miscellaneous	15
Arson	8
Equipment	7
Lightning	2
Smoking	2
Structure	2
Power line	1

Source: Missouri department of conservation wildfire reporting system.

## Probability of Future Occurrence

There have been 142 wildfires reported in the last 10 years.

$$\text{Probability of wildland fire Incident} = \frac{142}{10} = 1.42$$

Per this calculation, Livingston County could expect to experience approximately 1.42 wildfires annually.

## Changing Future Conditions Considerations

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.

## Vulnerability

### Vulnerability Overview

#### Potential Losses to Existing Development

**Table 3.71. Estimated numbers and Values of Structures and Population Vulnerable to Wildfire in Livingston County**

Type of Property	Number of Structures	Value of Structures	Population
Residential	49	\$10,802,790	114
Agriculture	14	\$48,061	0
Commercial	1	\$999,539	0
<b>Total</b>	<b>64</b>	<b>\$11,850,390.00</b>	<b>114</b>

Source: 2023 Missouri state hazard mitigation plan

**Table 3.72. Statistical Data for Wildfire Hazard in Livingston County**

Number of Wildfires 2015-2025	Likelihood of Occurrence (#/year)	Total Acres Burned	Average Annual Acreage Burned
142	14	3,655.188	366

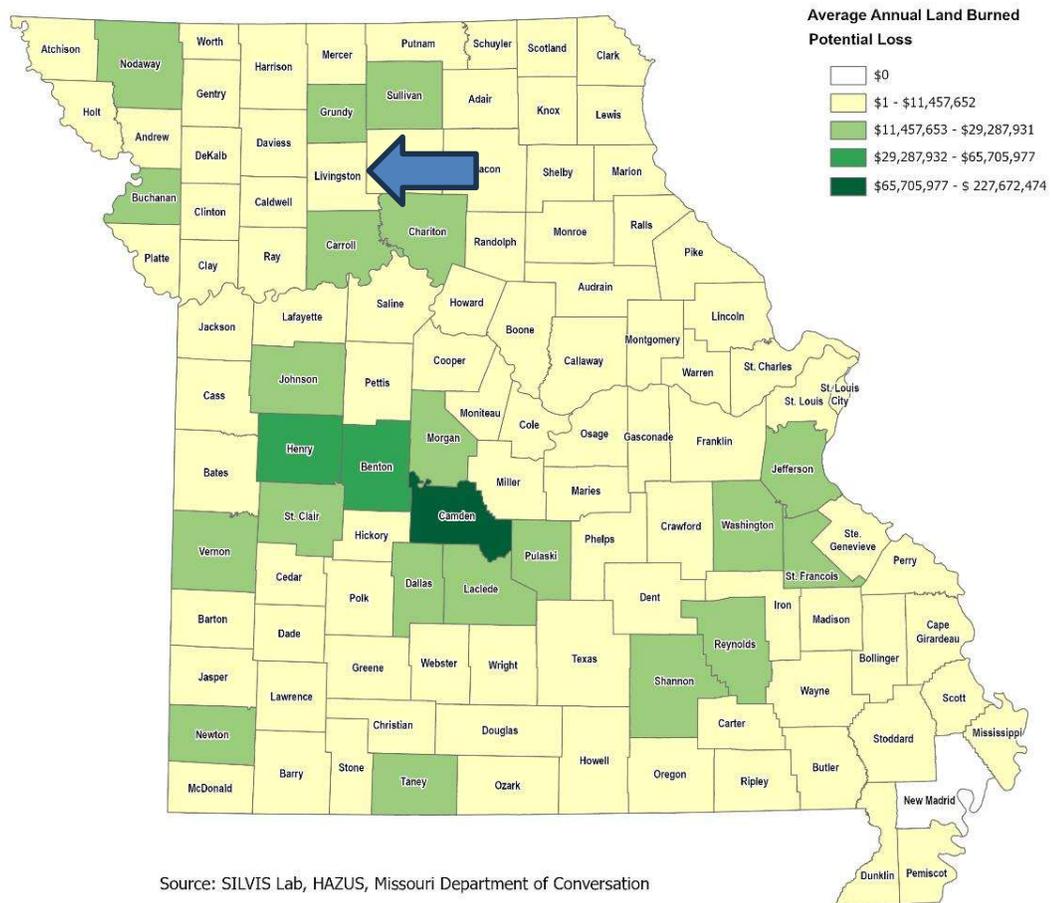
Source: 2023 Missouri State Hazard Mitigation Plan

**Table 3.73. Wildfire Potential Loss Estimates in Livingston County**

Total WUI Acreage	Total Structure Value Within WUI	Average Value/Acre within WUI	Average Annual Acreage Burned	Potential Loss
700.04	\$11,850,389	\$16,928	366	\$5,289,016

Source: 2023 Missouri State Hazard Mitigation Plan

**Figure 3.42. Wildfire Potential Loss Estimate**



Source: SILVIS Lab, HAZUS, Missouri Department of Conversation

**Impact of Previous and Future Development**

Future and previous development in the wildland-urban interface would increase vulnerability to the hazard. There are no known 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 mostly located in a rural area and do not face danger of wildfire due to barriers in place around the schools. Future wildfires in Livingston 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 the regions high drought risk, they may be more susceptible to fires. The plan could address this potential for high crop losses during drought and lessen the risk of wildfires during drought

# 4 MITIGATION STRATEGY

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4.2 Identification and Analysis of Mitigation Actions..... 4.1

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**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 Livingston County’s existing hazard mitigation plan approved by FEMA on June 10, 2021. Therefore, the goals from the 2021 Livingston 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.

## 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 Livingston 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.
- A Public Opinion Survey was created using Survey Monkey. Links and QR codes to this public survey were emailed to attendees, posted on social media, and printed on flyers to display throughout the county.

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

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

The focus of Meeting #3 was 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 approved plans in surrounding counties,
- Key issues from the risk assessments, including the problem statements concluding each hazard profile and vulnerability analysis,
- State priorities established for HMA grants, and
- Public input during meetings, responses to data collection questionnaires, and other efforts to involve the public in the plan development process.

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

The MPC reviewed the actions from the previously approved plan for progress made since the plan had been adopted, using worksheets included in Appendix 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 were 19 completed actions, 37 continuing actions (either ongoing or modified), and 23 deleted actions, 19 actions in the previous plan were deleted from jurisdictions that did not participate in this update.

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

**Table 4.1. Action Status Summary**

Jurisdiction	Completed Actions	Continuing Actions (ongoing or modify)	Deleted Actions
Livingston County	4	17	3
City of Chillicothe	4	7	4
Village of Utica	4	6	3
Chillicothe R-II	4	3	0
Livingston Co. Ambulance District	3	4	9
Chillicothe fire protection district	New	New	New
Total	19	37	19

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

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

Completed Actions	Completion Details (date, amount, funding source)
County v2020.2 Accessible contact information	Information on file at courthouse and online
County 2020.3 Hazard mitigation plan reassessment	Completed during the 2026 plan update
County 2020.10 Mutual aid agreements	Agreements in place with various agencies
County 2020.18 Weather spotter training	Not a mitigation action; action covered by other agencies.
CC 2020.4 Accessible contact information	Information posted online and in various publications
CC 2020.7 Mutual aid agreements	Agreements in place with other cities and agencies.
CC 2020.9 Weather spotter training	Training is completed every 2 years.
CC 2020.10 Representative for county hazard mitigation steering committee	Completed during the 2026 plan update cycle
VU 2020.3 Accessible contact information	Information on file at village hall
VU 2020.6 Mutual aid agreements	Agreements in place with contractors and rural water.

VU 2020.10 Representative for county hazard mitigation steering committee	Completed during the 2026 plan update
VU 2020.13 Participation in nfip (national floodplain insurance program)	Completed annually using local funds
CSD 2020.1 Emergency action and disaster plan	Filed as required by state
CSD 2020.3 Mutual aid agreements	Agreements in place with other districts and contractors
CSD 2020.4 Plan reassessment	Completed as part of the 2026 plan update
CSD 2020.5 Representative for hazard mitigation committee	Completed as part of the 2026 plan update
LCAD 2021.3 Vulnerable population identification	Coordinate with electric utilities for list of residents
LCAD 2021.9 Mutual aid agreements	Agreements in place with local and regional partners
LCAD 2021.10 Representative for county hazard mitigation steering committee	Completed during the 2026 plan update
<b>Deleted Actions</b>	<b>Reason for Deletion</b>
County 2020.20 Pandemic response / disease prevention and management	Hazard no longer covered by plan
County 2020.21 Economic stabilization during pandemic	Hazard no longer covered by plan
County 2020.22 Pandemic personal protective equipment (ppe)	Hazard no longer covered by plan
CC 2020.11 Pandemic response / disease prevention and management	Hazard no longer covered in the plan
CC 2020.12 Economic stabilization during pandemic	Hazard no longer covered in the plan
CC 2020.13 Pandemic personal protective equipment (ppe)	Hazard no longer covered in plan.
CC 2020.14 Vulnerable population identification	Unable to complete project due to limited resources, project not socially or politically popular.
CCH 2020.1 Mitigation education	Jurisdiction did not participate
CCH 2020.2 Generator	Jurisdiction did not participate
CCH 2020.3 Weather alerts	Jurisdiction did not participate
CCH 2020.4 Accessible contact information	Jurisdiction did not participate
CCH 2020.5 Critical facilities back-up	Jurisdiction did not participate
CCH 2020.6 Debris removal	Jurisdiction did not participate
CCH 2020.7 Mutual aid agreements	Jurisdiction did not participate
CCH 2020.8 Storm shelters	Jurisdiction did not participate
CCH 2020.9 Weather spotter training	Jurisdiction did not participate
CCH 2020.10 Representative for county hazard mitigation steering committee	Jurisdiction did not participate
CCH 2020.11 Pandemic personal protective equipment (ppe)	Jurisdiction did not participate
CCH 2020.12 Pandemic response / disease prevention and	Jurisdiction did not participate

management	
CCH 2020.13 Economic stabilization during pandemic	Jurisdiction did not participate
CCH 2020.14 Vulnerable population identification	Jurisdiction did not participate
VU 2020.8 Weather spotter training	Not a village function
VU 2020.9 Vulnerable population identification	Unable to complete due to limited resources and staffing
VU 2020.11 Pandemic personal protective equipment (ppe)	Hazard no longer covered in the plan
LCAD 2021.4 Public education event for early warning systems	Covered by another action, LCAD 2025.1
LCAD 2021.5 County-wide disaster drills and exercises	Handled by fire districts and emergency management
LCAD 2021.6 Weather spotter training	Not a function of the district
LCAD 2021.8 Public officials education on hazard mitigation	Covered under other action, LCAD 2025.1
LCAD 2021.11 Warning siren coverage	Not a function of the district, covered under other actions, LCAD 2025.2
LCAD 2021.12 Storm shelters	Not a function of the district, covered by other agencies actions within the plan
LCAD 2021.13 Pandemic response / disease prevention and management	Hazard no longer covered in the plan.
LCAD 2021.14 Pandemic personal protective equipment (ppe)	Hazard no longer covered in the plan.

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

**Table 4.3. Summary of actions from 2021 plan**

Status	Action from Previous Plan	
Continued	County 2020.1	Public officials education on hazard mitigation
Completed	County 2020.2	Accessible contact information
Completed	County 2020.3	Hazard mitigation plan reassessment
Continued	County 2020.4	Committee development to assess stormwater management
Continued	County 2020.5	Critical facilities back-up
Continued	County 2020.6	Mitigation education
Continued	County 2020.7	Flood warning system
Continued	County 2020.8	Hazard education for those involved in land development
Continued	County 2020.9	Monitor repetitive flood loss properties
Completed	County 2020.10	Mutual aid agreements

Continued	County 2020.11	Snow removal
Continued	County 2020.12	Storm drain system
Continued	County 2020.13	Storm shelters
Continued	County 2020.14	Survey flood plain areas
Continued	County 2020.15	Tree trimming maintenance
Continued	County 2020.16	Warning siren coverage
Continued	County 2020.17	Weather alerts
Completed	County 2020.18	Weather spotter training
Continued	County 2020.19	Creation of a county-level municipality steering committee
Deleted	County 2020.20	Pandemic response / disease prevention and management
Deleted	County 2020.21	Economic stabilization during pandemic
Deleted	County 2020.22	Pandemic personal protective equipment (ppe)
Completed	County 2020.23	Public participation and review of hazard mitigation plans
Continued	County 2020.24	Debris removal
Continued	County 2020.25	Participation in nfip (national floodplain insurance program)
Continued	CC 2020.1	Hazard education for those involved in land development
Continued	CC 2020.2	Mitigation education
Continued	CC 2020.3	Weather alerts
Completed	CC 2020.4	Accessible contact information
Continued	CC 2020.5	Critical facilities back-up/ generators
Continued	CC 2020.6	Debris removal
Completed	CC 2020.7	Mutual aid agreements
Continued	CC 2020.8	Storm shelters / safe rooms
Completed	CC 2020.9	Weather spotter training
Completed	CC 2020.10	Representative for county hazard mitigation steering committee
Deleted	CC 2020.11	Pandemic response / disease prevention and management
Deleted	CC 2020.12	Economic stabilization during pandemic
Deleted	CC 2020.13	Pandemic personal protective equipment (ppe)
Deleted	CC 2020.14	Vulnerable population identification
Continued	CC 2020.15	Participation in nfip (national floodplain insurance program)
Deleted	CCH 2020.1	Mitigation education

Deleted	CCH 2020.2	Generator
Deleted	CCH 2020.3	Weather alerts
Deleted	CCH 2020.4	Accessible contact information
Deleted	CCH 2020.5	Critical facilities back-up
Deleted	CCH 2020.6	Debris removal
Deleted	CCH 2020.7	Mutual aid agreements
Deleted	CCH 2020.8	Storm shelters
Deleted	CCH 2020.9	Weather spotter training
Deleted	CCH 2020.10	Representative for county hazard mitigation steering committee
Deleted	CCH 2020.11	Pandemic personal protective equipment (ppe)
Deleted	CCH 2020.12	Pandemic response / disease prevention and management
Deleted	CCH 2020.13	Economic stabilization during pandemic
Deleted	CCH 2020.14	Vulnerable population identification
Continued	VU 2020.1	Mitigation education
Continued	VU 2020.2	Weather alerts
Completed	VU 2020.3	Accessible contact information
Continued	VU 2020.4	Critical facilities back-up
Continued	VU 2020.5	Debris removal
Completed	VU 2020.6	Mutual aid agreements
Continued	VU 2020.7	Storm shelters
Deleted	VU 2020.8	Weather spotter training
Deleted	VU 2020.9	Vulnerable population identification
Completed	VU 2020.10	Representative for county hazard mitigation steering committee
Deleted	VU 2020.11	Pandemic personal protective equipment (ppe)
Continued	VU 2020.12	Generator
Completed	VU 2020.13	Participation in nfp (national floodplain insurance program)
Completed	CSD 2020.1	Emergency action and disaster plan
Continued	CSD 2020.2	Mitigation education
Completed	CSD 2020.3	Mutual aid agreements
Completed	CSD 2020.4	Plan reassessment
Completed	CSD 2020.5	Representative for county hazard mitigation steering committee

Continued	CSD 2020.6	Storm shelters / safe rooms
Continued	CSD 2020.7	Generator
Continued	LCAD 2020.1	Mitigation education
Continued	LCAD 2021.2	Weather alerts
Completed	LCAD 2021.3	Vulnerable population identification
Deleted	LCAD 2021.4	Public education event for early warning systems
Deleted	LCAD 2021.5	County-wide disaster drills and exercises
Deleted	LCAD 2021.6	Weather spotter training
Continued	LCAD 2021.7	Critical facilities back-up
Deleted	LCAD 2021.8	Public officials education on hazard mitigation
Completed	LCAD 2021.9	Mutual aid agreements
Completed	LCAD 2021.10	Representative for county hazard mitigation steering committee
Deleted	LCAD 2021.11	Warning siren coverage
Deleted	LCAD 2021.12	Storm shelters
Deleted	LCAD 2021.13	Pandemic response / disease prevention and management
Deleted	LCAD 2021.14	Pandemic personal protective equipment (ppe)
Continued	LCAD 2020.15	Generator

### 4.3 Implementation of Mitigation Actions

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

Jurisdictional MPC members were encouraged to meet with others in their community to finalize the actions to be submitted for the updated mitigation strategy. Throughout the MPC consideration and discussion, emphasis was placed on the importance of a benefit-cost analysis in determining project priority. The Disaster Mitigation Act requires benefit-cost review as the primary method by which mitigation projects should be prioritized. The MPC decided to pursue implementation according to when and where damage occurs, available funding, political will, jurisdictional priority, and priorities identified in the 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 as Appendix C. The STAPLEE final score for each action, absent other considerations, such as a localized need for a project, determined the priority. Low priority action items were those that had a total score of between 0 and 24. Moderate priority actions were those scoring between 25 and 29. High priority actions scored 30 or above. A blank STAPLEE worksheet is shown in Figure 4.1

**Figure 4.1. Blank STAPLEE Worksheet**

<b>STAPLEE Worksheet</b>		
<b>Name of Jurisdiction:</b>		
<b>Action or Project</b>		
<b>Action/Project Number:</b>	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)	
<b>Name of Action or Project:</b>		
<b>Mitigation Category:</b>	Prevention; Structure and Infrastructure Projects; Natural Systems Protection; Education and Outreach; Emergency Services	
<b>STAPLEE Criteria</b>		<b>Score</b>
<b>Evaluation Rating</b> Definitely YES = 3      Maybe YES = 2 Probably NO = 1      Definitely NO = 0		
<b>S:</b> Is it <b>Socially</b> Acceptable		
<b>T:</b> Is it <b>Technically</b> feasible and potentially successful?		
<b>A:</b> Does the jurisdiction have the <b>Administrative</b> capacity to execute this action?		
<b>P:</b> Is it <b>Politically</b> acceptable?		
<b>L:</b> Is there <b>Legal</b> authority to implement?		
<b>E:</b> Is it <b>Economically</b> beneficial?		
<b>E:</b> Will the project have either a neutral or positive impact on the natural <b>Environment</b> ?		
Will historic structures be saved or protected?		
Could it be implemented quickly?		
<b>STAPLEE SCORE</b>		
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
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.	
<b>MITIGATION EFFECTIVENESS SCORE</b>		
<b>TOTAL SCORE (STAPLEE + Mitigation Effectiveness)</b>		
<input type="checkbox"/> <b>High Priority</b> (30+ points)	<input type="checkbox"/> <b>Medium Priority</b> (25 - 29 points)	<input type="checkbox"/> <b>Low Priority</b> (<25 points)

Completed by  
(Name, Title, Phone Number) \_\_\_\_\_

## ACTION WORKSHEET

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	List the hazard or hazards that will be addressed by this action
<b>Problem being Mitigated:</b>	Provide a brief description of the problem that the action will address. Utilize the problem statement developed in the risk assessment.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Choose the goal statement that applies to this action
<b>Action/Project Number:</b>	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)
<b>Name of Action or Project:</b>	
<b>Mitigation Category:</b>	Prevention; Structure and Infrastructure Projects; Natural Systems Protection; Education and Outreach; Emergency Services
<b>Action or Project Description:</b>	Describe the action or project.
<b>Estimated Cost:</b>	Provide an estimate of the cost to implement this action. This can be accomplished with a range of estimated costs.
<b>Benefits:</b>	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.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Which organization will be responsible for tracking this action? Be specific to include the specific department or position within a department.
<b>Supporting Organization/Department:</b>	Which organization/department will assist in implementation of this action?
<b>Action/Project Priority:</b>	Include the STAPLEE score and Priority (H, M, L)
<b>Timeline for Completion:</b>	How many months/years to complete.
<b>Potential Fund Sources:</b>	List specific funding sources that may be used to pay for the implementation of the action.
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	
<b>Progress Report</b>	
<b>Action Status:</b>	Indicate status as New, Continuing Not Started, or Continuing in Progress)
<b>Report of Progress:</b>	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.

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
<b>Problem being Mitigated:</b>	Lack of knowledge about natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	County 2025.1
<b>Name of Action or Project:</b>	<b>Elected officials' mitigation education</b>
<b>Mitigation Category:</b>	Education and Outreach
<b>Action or Project Description:</b>	Using various publications provided by FEMA and SEMA, the committee will provide education and outreach to elected officials on what is mitigation and what actions can be taken to reduce long term risks to the county.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	Elected officials will have a better understanding of how to reduce long term risk and may use limited resources in a more effective manor.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County Emergency Management
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue, Emergency management
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued/Modified
<b>Report of Progress:</b>	Will continue to conduct mitigation education yearly

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Severe thunderstorms
<b>Problem being Mitigated:</b>	Flood due to poor drainage systems
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.
<b>Action/Project Number:</b>	County 2025.2
<b>Name of Action or Project:</b>	<b>Committee to study storm water drainage issues</b>
<b>Mitigation Category:</b>	Structure and infrastructure, Planning and regulation
<b>Action or Project Description:</b>	Collect reports of flooding, study the root cause of the flooding as related to storm water issues and recommend upgrades to drainage systems to reduce the risk of long-term flooding impacts.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	The county will reduce the amount of resources it spends on repairing the same flooded areas over and over.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County Commission
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue, Road and Bridge fund
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Implementation in progress

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston county
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	Facilities with auxiliary power supplies should be available to residents affected by power outages.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	<p>Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.</p> <p>Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.</p> <p>Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire</p> <p>Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather</p> <p>Goal 5: Minimize injuries and property damage due to seismic and/or geological events.</p>
<b>Action/Project Number:</b>	County 2025.3
<b>Name of Action or Project:</b>	<b>Critical facilities back-up</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Equip critical facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
<b>Estimated Cost:</b>	\$50,000-\$5,000,000
<b>Benefits:</b>	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County Commission, County EMD
<b>Supporting Organization/Department:</b>	n/a
<b>Action/Project Priority:</b>	HIGH
<b>Timeline for Completion:</b>	1 year
<b>Potential Fund Sources:</b>	General Revenue, Capital projects, HMGP
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	<b>Livingston County</b>
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
<b>Problem being Mitigated:</b>	Lack of public knowledge about natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	County 2025.4
<b>Name of Action or Project:</b>	<b>Public mitigation education</b>
<b>Mitigation Category:</b>	Education and Outreach
<b>Action or Project Description:</b>	Provide education to the citizens of the Livingston 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.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	The general population will increase understanding of natural disasters and how to prepare for natural disasters potentially affecting the County.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County Emergency Management
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued/Modified
<b>Report of Progress:</b>	Will continue to conduct mitigation education yearly

Action Worksheet	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	, Flooding
<b>Problem being Mitigated:</b>	All citizens should have sufficient access to advance and emergency weather information in times of severe weather.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.
<b>Action/Project Number:</b>	County 2025.5
<b>Name of Action or Project:</b>	<b>Flood warning systems</b>
<b>Mitigation Category:</b>	Structure and infrastructure
<b>Action or Project Description:</b>	Install, or upgrade water level monitoring systems on area creeks and streams to provide advance warning to residents of Livingston county that flooding may begin soon to allow residents to take advance actions to save life and property.
<b>Estimated Cost:</b>	\$1,000
<b>Benefits:</b>	Residents will have more time to react and take actions to reduce loss of life and property.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County Officials
<b>Supporting Organization/Department:</b>	County EMD, Fire Departments
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1 – 5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	On-going

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
<b>Problem being Mitigated:</b>	Lack of public knowledge about natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	County 2025.6
<b>Name of Action or Project:</b>	<b>Mitigation education for developers</b>
<b>Mitigation Category:</b>	Education and Outreach
<b>Action or Project Description:</b>	Provide mitigation education, information and resources related to all natural disasters to the developers by including information in the permitting process pertaining to hazards impacting the area of development.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	The general population will increase understanding of how to prepare for natural disasters potentially affecting the community.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County commission, Emergency management
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Will continue to conduct mitigation education yearly

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding
<b>Problem being Mitigated:</b>	Efficiency, Timing, and Effectiveness of Warning, Response, and Recovery Efforts
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.
<b>Action/Project Number:</b>	County 2025.7
<b>Name of Action or Project:</b>	<b>Monitor repetitive loss properties</b>
<b>Mitigation Category:</b>	Planning and Regulation
<b>Action or Project Description:</b>	Monitor current, and watch for future repetitive loss properties as a result of flooding
<b>Estimated Cost:</b>	\$100
<b>Benefits:</b>	Improve efficiency, timing and effectiveness of the disaster preparedness programming in the county
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County Emergency Management
<b>Supporting Organization/Department:</b>	Emergency Management/Floodplain Administrator
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	Emergency management funding
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Under review

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Severe Winter Weather
<b>Problem being Mitigated:</b>	The electrical grid and transportation system are most affected by severe winter weather, including heavy amounts of snow.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather
<b>Action/Project Number:</b>	County 2025.8
<b>Name of Action or Project:</b>	<b>Snow removal</b>
<b>Mitigation Category:</b>	Structure and infrastructure
<b>Action or Project Description:</b>	Annually assess the previous year's snow removal efforts and develop a mitigation strategy to address gaps in staffing and equipment.
<b>Estimated Cost:</b>	\$1,000 - \$5,000
<b>Benefits:</b>	Providing for more staffing and upgraded equipment will result in quicker response to a snow event reducing the overall risk to life and property due to adverse winter weather conditions.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County Officials
<b>Supporting Organization/Department:</b>	County Maintenance Crews, Utility Crews
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Completed as needed to ensure public safety

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding
<b>Problem being Mitigated:</b>	Inadequate ability to handle storm water during heavy rain events
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.
<b>Action/Project Number:</b>	County 2025.9
<b>Name of Action or Project:</b>	<b>Storm Drain system</b>
<b>Mitigation Category:</b>	Structure and infrastructure, Planning and regulation, Natural systems protection,
<b>Action or Project Description:</b>	Work with land developers, townships, and other partners to ensure growth and development address storm water drainage issues.
<b>Estimated Cost:</b>	\$50,000
<b>Benefits:</b>	Reduce future costs by managing storm water run off
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County road and bridge
<b>Supporting Organization/Department:</b>	
<b>Action/Project Priority:</b>	Low
<b>Timeline for Completion:</b>	1 to 5 years
<b>Potential Fund Sources:</b>	General revenue, HMGP, MODot, CDBG
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	On-Going

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Severe Thunderstorms, Tornadoes
<b>Problem being Mitigated:</b>	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornadoes. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
<b>Action/Project Number:</b>	County 2025.10
<b>Name of Action or Project:</b>	<b>Storm shelters/safe room</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
<b>Estimated Cost:</b>	\$2M
<b>Benefits:</b>	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County Commission
<b>Supporting Organization/Department:</b>	County Commissioners, Local Police Departments, GHRPC, County EMD
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	HMGP, Capital projects budget
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding
<b>Problem being Mitigated:</b>	Unregulated development within the flood plain
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.
<b>Action/Project Number:</b>	County 2025.11
<b>Name of Action or Project:</b>	<b>Survey of flood plain areas</b>
<b>Mitigation Category:</b>	Planning and regulation
<b>Action or Project Description:</b>	Work with county officials to determine new development within the regulated flood plain to ensure compliance with the NFIP ordinance
<b>Estimated Cost:</b>	\$100
<b>Benefits:</b>	Reduce future costs by managing unregulated development within the flood plain
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Flood plain administrator
<b>Supporting Organization/Department:</b>	n/a
<b>Action/Project Priority:</b>	Low
<b>Timeline for Completion:</b>	2025
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	On-Going

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	The electrical grid and transportation system are most affected by severe weather and reduce the risk of wildfire.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather
<b>Action/Project Number:</b>	County 2025.12
<b>Name of Action or Project:</b>	<b>Tree trimming</b>
<b>Mitigation Category:</b>	Structure and Infrastructure, Natural systems protection
<b>Action or Project Description:</b>	Prioritize tree trimming and maintenance along utility lines.
<b>Estimated Cost:</b>	\$5,000
<b>Benefits:</b>	Frequent maintenance of trees will help keep access clear along roadways and electrical lines. Emergency services can response quicker to emergencies. Regular clearing of brush mitigates the risk of wildfire.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County road and bridge
<b>Supporting Organization/Department:</b>	County Maintenance Crews
<b>Action/Project Priority:</b>	Low
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	Road and bridge budget
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	As needed

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Severe thunderstorm, Tornado
<b>Problem being Mitigated:</b>	Early Warning Sirens
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
<b>Action/Project Number:</b>	County 2025.13
<b>Name of Action or Project:</b>	Installation of warning siren
<b>Mitigation Category:</b>	Structure and Infrastructure Projects, Emergency Services
<b>Action or Project Description:</b>	Installation of early warning sirens
<b>Estimated Cost:</b>	\$500,000
<b>Benefits:</b>	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County Commission
<b>Supporting Organization/Department:</b>	City Council's and Boards of alderman
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	Hazard Mitigation Grant Funds, Capital projects
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	<b>Livingston County</b>
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	, Flooding, Dam failure, Extreme temperatures, Severe Thunderstorm, Severe Winter Weather, Tornadoes, Wildfires
<b>Problem being Mitigated:</b>	All citizens should have sufficient access to advance and emergency weather information in times of severe weather.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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
<b>Action/Project Number:</b>	County 2025.14
<b>Name of Action or Project:</b>	<b>Weather alerts</b>
<b>Mitigation Category:</b>	Education and outreach
<b>Action or Project Description:</b>	Maintain or expand as needed or able, the distribution methods of severe weather alerts to the general public. Local governments should encourage residents to purchase weather radios or receive mobile phone alerts to ensure that everyone has sufficient access to information in times of severe weather.
<b>Estimated Cost:</b>	\$1,000
<b>Benefits:</b>	Reach more residents during severe weather, increasing potential to save lives and property.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County Officials
<b>Supporting Organization/Department:</b>	County EMD, Fire Departments
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1 – 5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	On-going

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	<b>Livingston County</b>
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
<b>Problem being Mitigated:</b>	Lack of an ongoing county-wide committee to coordinate emergency preparedness and hazard mitigation planning with active representatives from each jurisdiction in the County.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	County 2025.15
<b>Name of Action or Project:</b>	<b>Creation of a county-level municipality steering committee</b>
<b>Mitigation Category:</b>	Education and Outreach, Planning and regulation
<b>Action or Project Description:</b>	This Steering Committee will meet quarterly to assist the County to: <ol style="list-style-type: none"> <li>1. Forecast County emergency preparedness needs for: <ol style="list-style-type: none"> <li>a. Protection of Life, Health and Safety</li> <li>b. Protection of Continuity of Government and Essential Services</li> <li>c. Protection of Public and Private Property, and</li> <li>d. Protection of Community Tranquility.</li> </ol> </li> <li>2. Inform County officials of potential problematic areas.</li> <li>3. Educate the public on emergency preparedness and hazard mitigation.</li> <li>4. Review existing planning documents during annual review.</li> <li>5. Identify funding sources and partner agencies for emergency preparedness and mitigation projects.</li> </ol>
<b>Estimated Cost:</b>	\$0
<b>Benefits:</b>	The County will benefit from proactive identification and planning for potential problems as well as increased coordination with partner agencies and potential grant sources to identify assistance and funding to address identified problems in advance of a natural hazard event.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County Commission, County EMD
<b>Supporting Organization/Department:</b>	Hazard Mitigation Planning Committees
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	General Revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	None
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	In development

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	Transportation routes can be disrupted by debris caused by natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	County 2025.16
<b>Name of Action or Project:</b>	Debris removal
<b>Mitigation Category:</b>	Structure and Infrastructure Projects, Natural systems protection
<b>Action or Project Description:</b>	Mitigate the risk to life and property by ensuring that debris does not interfere with draining systems thus increasing the risk for losses due to flooding.
<b>Estimated Cost:</b>	\$500,000
<b>Benefits:</b>	Frequent removal of debris will help clear roadways and drainage systems. Reducing the likelihood of future flooding events..
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Road and Bridge Department, EMD
<b>Supporting Organization/Department:</b>	
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	Transportation budget, FEMA Recovery funds, Emergency budget
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	On going as needed

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Drought, Wildfire
<b>Problem being Mitigated:</b>	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
<b>Action/Project Number:</b>	County 2025.17
<b>Name of Action or Project:</b>	<b>Educate on best practices during drought</b>
<b>Mitigation Category:</b>	Education and Outreach, Natural systems protection
<b>Action or Project Description:</b>	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational 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.
<b>Estimated Cost:</b>	\$100
<b>Benefits:</b>	Citizens would have the best information about best practices of water usage during periods of drought.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	County commission
<b>Supporting Organization/Department:</b>	Hazard Mitigation Planning Committees
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	None
<b>Progress Report</b>	
<b>Action Status:</b>	New
<b>Report of Progress:</b>	New Project

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	City of Chillicothe
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Severe thunderstorms
<b>Problem being Mitigated:</b>	Flood due to poor drainage systems
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.
<b>Action/Project Number:</b>	CC 2025.1
<b>Name of Action or Project:</b>	<b>Committee to study storm water drainage issues</b>
<b>Mitigation Category:</b>	Structure and infrastructure, Planning and regulation
<b>Action or Project Description:</b>	Collect reports of flooding, study the root cause of the flooding as related to storm water issues and recommend upgrades to drainage systems to reduce the risk of long-term flooding impacts.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	The county will reduce the amount of resources it spends on repairing the same flooded areas over and over.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	City Council, Planning and zoning department
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	New
<b>Report of Progress:</b>	Implementation in progress

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	City of Chillicothe
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Severe thunderstorms
<b>Problem being Mitigated:</b>	Flood due to poor drainage systems
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.
<b>Action/Project Number:</b>	CC 2025.2
<b>Name of Action or Project:</b>	<b>Upgrade culverts and other drainage systems</b>
<b>Mitigation Category:</b>	Structure and infrastructure
<b>Action or Project Description:</b>	Upgrade culverts and drainage systems to handle increased storm water flows due to increased development in the community.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	The city will reduce the amount of resources it spends on repairing the same flooded areas over and over.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	City Council, Planning and zoning department
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue, Capital projects
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	New
<b>Report of Progress:</b>	Implementation in progress

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	City of Chillicothe
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
<b>Problem being Mitigated:</b>	Lack of public knowledge about natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	CC 2025.3
<b>Name of Action or Project:</b>	<b>Mitigation education for developers</b>
<b>Mitigation Category:</b>	Education and Outreach
<b>Action or Project Description:</b>	Provide mitigation education, information and resources related to all natural disasters to the developers by including information in the permitting process pertaining to hazards impacting the area of development.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	Developers will have a better understanding of hazards and how to reduce long term risk
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	City planning and zoning
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Will continue to conduct mitigation education yearly

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	City of Chillicothe
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
<b>Problem being Mitigated:</b>	Lack of public knowledge about natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	CC 2025.4
<b>Name of Action or Project:</b>	Public mitigation education
<b>Mitigation Category:</b>	Education and Outreach
<b>Action or Project Description:</b>	Provide education to the citizens of Chillicothe 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 city's social media page and included in utility bills or other regular mailings.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	The general population will increase understanding of natural disasters and how to prepare for natural disasters potentially affecting the County.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	City Emergency Management
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued/Modified
<b>Report of Progress:</b>	Will continue to conduct mitigation education yearly

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	<b>City of Chillicothe</b>
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	, Flooding, Dam failure, Extreme temperatures, Severe Thunderstorm, Severe Winter Weather, Tornadoes, Wildfires
<b>Problem being Mitigated:</b>	All citizens should have sufficient access to advance and emergency weather information in times of severe weather.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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
<b>Action/Project Number:</b>	CC 2025.5
<b>Name of Action or Project:</b>	<b>Weather alerts</b>
<b>Mitigation Category:</b>	Education and outreach
<b>Action or Project Description:</b>	Maintain or expand as needed or able, the distribution methods of severe weather alerts to the general public. Local governments should encourage residents to purchase weather radios or receive mobile phone alerts to ensure that everyone has sufficient access to information in times of severe weather.
<b>Estimated Cost:</b>	\$1,000
<b>Benefits:</b>	Reach more residents during severe weather, increasing potential to save lives and property.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	City emergency management
<b>Supporting Organization/Department:</b>	County EMD, Fire Departments
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1 – 5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	On-going

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	City of Chillicothe
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	Facilities with auxiliary power supplies should be available to residents affected by power outages.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	<p>Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.</p> <p>Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.</p> <p>Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire</p> <p>Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather</p> <p>Goal 5: Minimize injuries and property damage due to seismic and/or geological events.</p>
<b>Action/Project Number:</b>	CC 2025.6
<b>Name of Action or Project:</b>	<b>Critical facilities back-up</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Equip critical facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
<b>Estimated Cost:</b>	\$50,000-\$5,000,000
<b>Benefits:</b>	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	City Council
<b>Supporting Organization/Department:</b>	n/a
<b>Action/Project Priority:</b>	HIGH
<b>Timeline for Completion:</b>	1 year
<b>Potential Fund Sources:</b>	General Revenue, Capital projects, HMGP
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

Action Worksheet	
<b>Name of Jurisdiction:</b>	City of Chillicothe
Risk / Vulnerability	
<b>Hazard(s) Addressed:</b>	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	Transportation routes can be disrupted by debris caused by natural disasters.
Action or Project	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	CC 2025.7
<b>Name of Action or Project:</b>	Debris removal
<b>Mitigation Category:</b>	Structure and Infrastructure Projects, Natural systems protection
<b>Action or Project Description:</b>	Mitigate the risk to life and property by ensuring that debris does not interfere with draining systems thus increasing the risk for losses due to flooding.
<b>Estimated Cost:</b>	\$500,000
<b>Benefits:</b>	Frequent removal of debris will help clear roadways and drainage systems. Reducing the likelihood of future flooding events..
Plan for Implementation	
<b>Responsible Organization/Department:</b>	Street department
<b>Supporting Organization/Department:</b>	Municipal utilities
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	Transportation budget, FEMA Recovery funds, Emergency budget, CMU Budget
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
Progress Report	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	On going as needed

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	City of Chillicothe
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Severe Thunderstorms, Tornadoes
<b>Problem being Mitigated:</b>	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornadoes. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
<b>Action/Project Number:</b>	CC 2025.8
<b>Name of Action or Project:</b>	Storm shelters/safe room
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
<b>Estimated Cost:</b>	\$2M
<b>Benefits:</b>	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	City council
<b>Supporting Organization/Department:</b>	County Commissioners, GHRPC, County EMD
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	HMGP, Capital projects budget
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	City of Chillicothe
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Drought, Wildfire
<b>Problem being Mitigated:</b>	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
<b>Action/Project Number:</b>	CC 2025.9
<b>Name of Action or Project:</b>	<b>Educate on best practices during drought</b>
<b>Mitigation Category:</b>	Education and Outreach, Natural systems protection
<b>Action or Project Description:</b>	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational 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.
<b>Estimated Cost:</b>	\$100
<b>Benefits:</b>	Citizens would have the best information about best practices of water usage during periods of drought.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	City Council, Mayor, Water department
<b>Supporting Organization/Department:</b>	Hazard Mitigation Planning Committees
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	None
<b>Progress Report</b>	
<b>Action Status:</b>	New
<b>Report of Progress:</b>	New Project

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Village of Utica

<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
<b>Problem being Mitigated:</b>	Lack of public knowledge about natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	VU 2025.1
<b>Name of Action or Project:</b>	<b>Public mitigation education</b>
<b>Mitigation Category:</b>	Education and Outreach
<b>Action or Project Description:</b>	Provide education to the citizens of Utica 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 city's social media page and included in utility bills or other regular mailings.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	The general population will increase understanding of natural disasters and how to prepare for natural disasters potentially affecting the County.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Mayor and board
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Will continue to conduct mitigation education yearly

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	<b>Village of Utica</b>
<b>Risk / Vulnerability</b>	

<b>Hazard(s) Addressed:</b>	, Flooding, Dam failure, Extreme temperatures, Severe Thunderstorm, Severe Winter Weather, Tornadoes, Wildfires
<b>Problem being Mitigated:</b>	All citizens should have sufficient access to advance and emergency weather information in times of severe weather.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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
<b>Action/Project Number:</b>	VU 2025.2
<b>Name of Action or Project:</b>	<b>Weather alerts</b>
<b>Mitigation Category:</b>	Education and outreach
<b>Action or Project Description:</b>	Maintain or expand as needed or able, the distribution methods of severe weather alerts to the general public. Local governments should encourage residents to purchase weather radios or receive mobile phone alerts to ensure that everyone has sufficient access to information in times of severe weather.
<b>Estimated Cost:</b>	\$1,000
<b>Benefits:</b>	Reach more residents during severe weather, increasing potential to save lives and property.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Mayor and board
<b>Supporting Organization/Department:</b>	County EMD, Fire Departments
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1 – 5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	On-going

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	<b>Village of Utica</b>
<b>Risk / Vulnerability</b>	

<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	Facilities with auxiliary power supplies should be available to residents affected by power outages.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	<p>Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.</p> <p>Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.</p> <p>Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire</p> <p>Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather</p> <p>Goal 5: Minimize injuries and property damage due to seismic and/or geological events.</p>
<b>Action/Project Number:</b>	VU 2025.3
<b>Name of Action or Project:</b>	<b>Critical facilities back-up</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Equip critical facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
<b>Estimated Cost:</b>	\$50,000-\$5,000,000
<b>Benefits:</b>	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Village board
<b>Supporting Organization/Department:</b>	n/a
<b>Action/Project Priority:</b>	HIGH
<b>Timeline for Completion:</b>	1 year
<b>Potential Fund Sources:</b>	General Revenue, Capital projects, HMGP
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Village of Utica
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado

<b>Problem being Mitigated:</b>	Transportation routes can be disrupted by debris caused by natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	VU 2025.4
<b>Name of Action or Project:</b>	<b>Debris removal</b>
<b>Mitigation Category:</b>	Structure and Infrastructure Projects, Natural systems protection
<b>Action or Project Description:</b>	Mitigate the risk to life and property by ensuring that debris does not interfere with draining systems thus increasing the risk for losses due to flooding.
<b>Estimated Cost:</b>	\$500,000
<b>Benefits:</b>	Frequent removal of debris will help clear roadways and drainage systems. Reducing the likelihood of future flooding events..
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Village maintenance staff
<b>Supporting Organization/Department:</b>	
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	Transportation budget, FEMA Recovery funds, Emergency budget, CMU Budget
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	On going as needed

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	<b>Village of Utica</b>
<b>Risk / Vulnerability</b>	

<b>Hazard(s) Addressed:</b>	Severe Thunderstorms, Tornados
<b>Problem being Mitigated:</b>	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornados. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
<b>Action/Project Number:</b>	VU 2025.5
<b>Name of Action or Project:</b>	<b>Storm shelters/safe room</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
<b>Estimated Cost:</b>	\$2M
<b>Benefits:</b>	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Village board
<b>Supporting Organization/Department:</b>	County Commissioners, GHRPC, County EMD
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	HMGP, Capital projects budget
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	<b>Village of Utica</b>
<b>Risk / Vulnerability</b>	

<b>Hazard(s) Addressed:</b>	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	Loss of power threatening student safety and property during an extreme event.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	<p>Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.</p> <p>Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire</p> <p>Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather</p> <p>Goal 5: Minimize injuries and property damage due to seismic and/or geological events.</p>
<b>Action/Project Number:</b>	VU 2025.6
<b>Name of Action or Project:</b>	<b>Generators</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Install backup generators or transfer switch to allow for the safe use of backup power ensuring public safety and property during power outages due to extreme events
<b>Estimated Cost:</b>	\$1,000,000
<b>Benefits:</b>	Critical facilities, such as schools, can continue to operate in the event of a disaster.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Mayor and Village board
<b>Supporting Organization/Department:</b>	
<b>Action/Project Priority:</b>	HIGH
<b>Timeline for Completion:</b>	1 to 5 years
<b>Potential Fund Sources:</b>	General Revenue, Capital projects, HMGP
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Village of Utica
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Drought, Wildfire
<b>Problem being Mitigated:</b>	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
<b>Action/Project Number:</b>	VU 2025.7
<b>Name of Action or Project:</b>	<b>Educate on best practices during drought</b>
<b>Mitigation Category:</b>	Education and Outreach, Natural systems protection
<b>Action or Project Description:</b>	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational 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.
<b>Estimated Cost:</b>	\$100
<b>Benefits:</b>	Citizens would have the best information about best practices of water usage during periods of drought.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Village board, Mayor
<b>Supporting Organization/Department:</b>	Hazard Mitigation Planning Committees
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	None
<b>Progress Report</b>	
<b>Action Status:</b>	New
<b>Report of Progress:</b>	New Project

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Chillicothe R-II School District
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
<b>Problem being Mitigated:</b>	Lack of public knowledge about natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	CSD 2025.1
<b>Name of Action or Project:</b>	Public mitigation education
<b>Mitigation Category:</b>	Education and Outreach
<b>Action or Project Description:</b>	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 district social media page.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	The general population will increase understanding of natural disasters and how to prepare for natural disasters potentially affecting the County.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	School board
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Will continue to conduct mitigation education yearly

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Chillicothe R-II School District
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Severe Thunderstorms, Tornadoes
<b>Problem being Mitigated:</b>	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornadoes. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
<b>Action/Project Number:</b>	CSD 2025.2
<b>Name of Action or Project:</b>	<b>Storm shelters/safe room</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
<b>Estimated Cost:</b>	\$2M
<b>Benefits:</b>	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	School board
<b>Supporting Organization/Department:</b>	County Commissioners, GHRPC, County EMD
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	HMGP, Capital projects budget
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	<b>Chillicothe R-II School District</b>
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	Loss of power threatening student safety and property during an extreme event.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	<p>Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.</p> <p>Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire</p> <p>Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather</p> <p>Goal 5: Minimize injuries and property damage due to seismic and/or geological events.</p>
<b>Action/Project Number:</b>	CSD 2025.3
<b>Name of Action or Project:</b>	<b>Generators</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Install backup generators or transfer switch to allow for the safe use of backup power ensuring public safety and property during power outages due to extreme events
<b>Estimated Cost:</b>	\$1,000,000
<b>Benefits:</b>	Critical facilities, such as schools, can continue to operate in the event of a disaster.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	School Board
<b>Supporting Organization/Department:</b>	
<b>Action/Project Priority:</b>	HIGH
<b>Timeline for Completion:</b>	1 to 5 years
<b>Potential Fund Sources:</b>	General Revenue, Capital projects, HMGP
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Chillicothe R-II School district
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Drought, Wildfire
<b>Problem being Mitigated:</b>	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
<b>Action/Project Number:</b>	CSD 2025.4
<b>Name of Action or Project:</b>	<b>Educate on best practices during drought</b>
<b>Mitigation Category:</b>	Education and Outreach, Natural systems protection
<b>Action or Project Description:</b>	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational 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.
<b>Estimated Cost:</b>	\$100
<b>Benefits:</b>	Citizens would have the best information about best practices of water usage during periods of drought.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	School board, School Staff
<b>Supporting Organization/Department:</b>	Hazard Mitigation Planning Committees
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	None
<b>Progress Report</b>	
<b>Action Status:</b>	New
<b>Report of Progress:</b>	New Project

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County R-III R-II School District
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
<b>Problem being Mitigated:</b>	Lack of public knowledge about natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	LCSD 2025.1
<b>Name of Action or Project:</b>	Public mitigation education
<b>Mitigation Category:</b>	Education and Outreach
<b>Action or Project Description:</b>	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 district social media page.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	The general population will increase understanding of natural disasters and how to prepare for natural disasters potentially affecting the County.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	School board
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Will continue to conduct mitigation education yearly

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County R-III R-II School District
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Severe Thunderstorms, Tornadoes
<b>Problem being Mitigated:</b>	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornadoes. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
<b>Action/Project Number:</b>	LCSD 2025.2
<b>Name of Action or Project:</b>	<b>Storm shelters/safe room</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
<b>Estimated Cost:</b>	\$2M
<b>Benefits:</b>	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	School board
<b>Supporting Organization/Department:</b>	County Commissioners, GHRPC, County EMD
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	HMGP, Capital projects budget
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County R-III R-II School District
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	Loss of power threatening student safety and property during an extreme event.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	<p>Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.</p> <p>Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire</p> <p>Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather</p> <p>Goal 5: Minimize injuries and property damage due to seismic and/or geological events.</p>
<b>Action/Project Number:</b>	LCSD 2025.3
<b>Name of Action or Project:</b>	<b>Generators</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Install backup generators or transfer switch to allow for the safe use of backup power ensuring public safety and property during power outages due to extreme events
<b>Estimated Cost:</b>	\$1,000,000
<b>Benefits:</b>	Critical facilities, such as schools, can continue to operate in the event of a disaster.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	School Board
<b>Supporting Organization/Department:</b>	
<b>Action/Project Priority:</b>	HIGH
<b>Timeline for Completion:</b>	1 to 5 years
<b>Potential Fund Sources:</b>	General Revenue, Capital projects, HMGP
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County R-III R-II School District
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Drought, Wildfire
<b>Problem being Mitigated:</b>	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
<b>Action/Project Number:</b>	LCSD 2025.4
<b>Name of Action or Project:</b>	<b>Educate on best practices during drought</b>
<b>Mitigation Category:</b>	Education and Outreach, Natural systems protection
<b>Action or Project Description:</b>	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational 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.
<b>Estimated Cost:</b>	\$100
<b>Benefits:</b>	Citizens would have the best information about best practices of water usage during periods of drought.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	School board, School Staff
<b>Supporting Organization/Department:</b>	Hazard Mitigation Planning Committees
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	None
<b>Progress Report</b>	
<b>Action Status:</b>	New
<b>Report of Progress:</b>	New Project

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County ambulance district
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
<b>Problem being Mitigated:</b>	Lack of public knowledge about natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	LCAD 2025.1
<b>Name of Action or Project:</b>	Public mitigation education
<b>Mitigation Category:</b>	Education and Outreach
<b>Action or Project Description:</b>	Provide education to the citizens of the district 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 district's social media page, included in regular mailings, and shared with local media outlets.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	The general population will increase understanding of natural disasters and how to prepare for natural disasters potentially affecting the County.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Board of directors
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Will continue to conduct mitigation education yearly

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County ambulance district
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	, Flooding, Dam failure, Extreme temperatures, Severe Thunderstorm, Severe Winter Weather, Tornadoes, Wildfires
<b>Problem being Mitigated:</b>	All citizens should have sufficient access to advance and emergency weather information in times of severe weather.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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
<b>Action/Project Number:</b>	LCAD 2025.2
<b>Name of Action or Project:</b>	<b>Weather alerts</b>
<b>Mitigation Category:</b>	Education and outreach
<b>Action or Project Description:</b>	Maintain or expand as needed or able, the distribution methods of severe weather alerts to the general public. Local governments should encourage residents to purchase weather radios or receive mobile phone alerts to ensure that everyone has sufficient access to information in times of severe weather.
<b>Estimated Cost:</b>	\$1,000
<b>Benefits:</b>	Reach more residents during severe weather, increasing potential to save lives and property.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Board of directors
<b>Supporting Organization/Department:</b>	County EMD, Fire Departments
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1 – 5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	On-going

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County ambulance district
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	Facilities with auxiliary power supplies should be available to residents affected by power outages.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	<p>Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.</p> <p>Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.</p> <p>Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire</p> <p>Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather</p> <p>Goal 5: Minimize injuries and property damage due to seismic and/or geological events.</p>
<b>Action/Project Number:</b>	LCAD 2025.3
<b>Name of Action or Project:</b>	<b>Critical facilities back-up</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Equip critical facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
<b>Estimated Cost:</b>	\$50,000-\$5,000,000
<b>Benefits:</b>	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Board of directors
<b>Supporting Organization/Department:</b>	n/a
<b>Action/Project Priority:</b>	HIGH
<b>Timeline for Completion:</b>	1 year
<b>Potential Fund Sources:</b>	General Revenue, Capital projects, HMGP
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County ambulance district
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	Loss of power threatening student safety and property during an extreme event.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	<p>Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.</p> <p>Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire</p> <p>Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather</p> <p>Goal 5: Minimize injuries and property damage due to seismic and/or geological events.</p>
<b>Action/Project Number:</b>	LCAD 2025.4
<b>Name of Action or Project:</b>	<b>Generators</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Install backup generators or transfer switch to allow for the safe use of backup power ensuring public safety and property during power outages due to extreme events
<b>Estimated Cost:</b>	\$1,000,000
<b>Benefits:</b>	Critical facilities, such as schools, can continue to operate in the event of a disaster.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Board of directors
<b>Supporting Organization/Department:</b>	
<b>Action/Project Priority:</b>	HIGH
<b>Timeline for Completion:</b>	1 to 5 years
<b>Potential Fund Sources:</b>	General Revenue, Capital projects, HMGP
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	Continued
<b>Report of Progress:</b>	Awaiting funding

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Livingston County ambulance district
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Drought, Wildfire
<b>Problem being Mitigated:</b>	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
<b>Action/Project Number:</b>	LCAD 2025.5
<b>Name of Action or Project:</b>	<b>Educate on best practices during drought</b>
<b>Mitigation Category:</b>	Education and Outreach, Natural systems protection
<b>Action or Project Description:</b>	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational 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.
<b>Estimated Cost:</b>	\$100
<b>Benefits:</b>	Citizens would have the best information about best practices of water usage during periods of drought.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	District board, District Staff
<b>Supporting Organization/Department:</b>	Hazard Mitigation Planning Committees
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	None
<b>Progress Report</b>	
<b>Action Status:</b>	New
<b>Report of Progress:</b>	New Project

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Chillicothe fire protection district
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
<b>Problem being Mitigated:</b>	Lack of public knowledge about natural disasters.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. 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.
<b>Action/Project Number:</b>	CFPD 2025.1
<b>Name of Action or Project:</b>	Public mitigation education
<b>Mitigation Category:</b>	Education and Outreach
<b>Action or Project Description:</b>	Provide education to the citizens of the district 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 district's social media page, included in regular mailings, and shared with local media outlets.
<b>Estimated Cost:</b>	\$500
<b>Benefits:</b>	The general population will increase understanding of natural disasters and how to prepare for natural disasters potentially affecting the County.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Board of directors
<b>Supporting Organization/Department:</b>	FEMA, SEMA, NWS, USGS
<b>Action/Project Priority:</b>	High
<b>Timeline for Completion:</b>	1-5 years
<b>Potential Fund Sources:</b>	General Revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	New
<b>Report of Progress:</b>	In development

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	<b>Chillicothe fire protection district</b>
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
<b>Problem being Mitigated:</b>	Loss of power threatening student safety and property during an extreme event.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	<p>Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.</p> <p>Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire</p> <p>Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather</p> <p>Goal 5: Minimize injuries and property damage due to seismic and/or geological events.</p>
<b>Action/Project Number:</b>	CFPD 2025.2
<b>Name of Action or Project:</b>	<b>Generators</b>
<b>Mitigation Category:</b>	Structure and Infrastructure
<b>Action or Project Description:</b>	Install backup generators or transfer switch to allow for the safe use of backup power ensuring public safety and property during power outages due to extreme events
<b>Estimated Cost:</b>	\$1,000,000
<b>Benefits:</b>	Critical facilities, such as schools, can continue to operate in the event of a disaster.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	Board of directors
<b>Supporting Organization/Department:</b>	
<b>Action/Project Priority:</b>	HIGH
<b>Timeline for Completion:</b>	1 to 5 years
<b>Potential Fund Sources:</b>	General Revenue, Capital projects, HMGP
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	NA
<b>Progress Report</b>	
<b>Action Status:</b>	New
<b>Report of Progress:</b>	In development

<b>Action Worksheet</b>	
<b>Name of Jurisdiction:</b>	Chillicothe fire protection district
<b>Risk / Vulnerability</b>	
<b>Hazard(s) Addressed:</b>	Drought, Wildfire
<b>Problem being Mitigated:</b>	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
<b>Action or Project</b>	
<b>Applicable Goal Statement:</b>	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
<b>Action/Project Number:</b>	CFPD 2025.3
<b>Name of Action or Project:</b>	<b>Educate on best practices during drought</b>
<b>Mitigation Category:</b>	Education and Outreach, Natural systems protection
<b>Action or Project Description:</b>	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational 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.
<b>Estimated Cost:</b>	\$100
<b>Benefits:</b>	Citizens would have the best information about best practices of water usage during periods of drought.
<b>Plan for Implementation</b>	
<b>Responsible Organization/Department:</b>	School board, School Staff
<b>Supporting Organization/Department:</b>	Hazard Mitigation Planning Committees
<b>Action/Project Priority:</b>	Medium
<b>Timeline for Completion:</b>	5 years
<b>Potential Fund Sources:</b>	General revenue
<b>Local Planning Mechanisms to be Used in Implementation, if any:</b>	None
<b>Progress Report</b>	
<b>Action Status:</b>	New
<b>Report of Progress:</b>	New Project

**Table 4.4. Mitigation Action Matrix**

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
<b>Structure and Infrastructure Projects</b>								
County 2025.2	Committee for storm water improvements	Livingston Co.	High	1,2	Flooding, Severe thunderstorms	X	X	
County 2025.3	Critical facilities backup	Livingston Co	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
County 2025.5	Flood warning system	Livingston Co	Low	1	Flooding	x	x	
County 2025.8	Snow removal	Livingston Co.	High	4	Severe winter weather	X	X	
County 2025.9	Storm drain system	Livingston Co	Medium	2	Flooding	x	x	
County 2025.10	Storm shelters/Safe rooms	Livingston Co	High	1	Severe thunderstorms, tornado		X	
County 2025.12	Tree trimming maintenance	Livingston Co	High	1,4	Severe thunderstorms, Severe winter weather, Tornado	X	X	
County 2025.13	Installation of warning siren	Livingston Co	High	1	Severe thunderstorms, Tornado,	x	X	
County 2025.16	Debris removal	Livingston Co	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
CC 2025.1	Committee for storm water improvements	Chillicothe.	High	1,2	Flooding, Severe thunderstorms	X	X	
CC 2025.2	Upgraded culverts and storm drains	Chillicothe.	High	1,2	Flooding, Severe thunderstorms	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CC 2025.6	Critical facilities backup	Chillicothe	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
CC 2025.7	Debris removal	Chillicothe	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
CC 2025.8	Storm shelters/Safe rooms	Chillicothe	High	1	Severe thunderstorms, tornado		X	
VU 2025.3	Critical facilities backup	Utica	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
VU 2025.4	Debris removal	Utica	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
VU 2025.5	Storm shelters/Safe rooms	Utica	High	1	Severe thunderstorms, tornado		X	
VU 2025.6	Generator	Utica	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
CSD 2025.2	Storm shelters/Safe rooms	Chillicothe R-II	High	1	Severe thunderstorms, tornado		X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CSD 2025.3	Generator	Chillicothe R-II	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
LCSD 2025.2	Storm shelters/Safe rooms	Livingston Co R-III	High	1	Severe thunderstorms, tornado		X	
LCSD 2025.3	Generator	Livingston Co R-III	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
LCAD 2025.3	Critical facilities backup	Livingston Co Ambulance District	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
LCAD 2025.4	Generator	Livingston Co Ambulance District	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
CFPD 2025.4	Generator	Chillicothe fire Protection district	High	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	x	x	
<b>Natural Systems Protection</b>								
County 2025.9	Storm drain system	Livingston Co	Medium	2	Flooding	x	x	
County 2025.12	Tree trimming maintenance	Livingston Co	High	1,4	Severe thunderstorms, Severe winter weather, Tornado	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
County 2025.16	Debris removal	Livingston Co	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
County 2025.17	Drought and wildfire education	Livingston Co	Medium	3	Drought, Wildfire	x	x	
CC 2025.7	Debris removal	Chillicothe	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
CC 2025.9	Drought and wildfire education	Chillicothe	Medium	3	Drought, Wildfire	x	x	
VU 2025.4	Debris removal	Utica	High	1,2,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
VU 2025.7	Drought and wildfire education	Utica	Medium	3	Drought, Wildfire	x	x	
CSD 2025.4	Drought and wildfire education	Chillicothe R-II	Medium	3	Drought, Wildfire	x	x	
LCSO 2025.4	Drought and wildfire education	Livingston Co R-III	Medium	3	Drought, Wildfire	x	x	
LCAD 2025.5	Drought and wildfire education	Livingston Co Ambulance Dist.	Medium	3	Drought, Wildfire	x	x	
CFPD 2025.3	Drought and wildfire education	Chillicothe Fire protection district	Medium	3	Drought, Wildfire	x	x	
<b>Planning and Regulation</b>								
County 2025.2	Committee for storm water improvements	Livingston Co.	High	1,2	Flooding, Severe thunderstorms	X	X	
County 2025.7	Monitor repetitive loss properties	Livingston Co.	High	2	Flooding			x
County 2025.9	Storm drain system	Livingston Co	Medium	2	Flooding	x	x	
County 2025.11	Survey of flood plain areas	Livingston Co	Low	2	Flooding	x	x	x

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
County 2025.15	Creation of a county-level municipality steering committee	Livingston Co	High	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
CC 2025.1	Committee for storm water improvements	Chillicothe.	High	1,2	Flooding, Severe thunderstorms	X	X	
<b>Education and Outreach</b>								
County 2025.1	Elected officials' mitigation education	Livingston Co.	High	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
County 2025.4	Mitigation education	Livingston Co	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	x
County 2025.6	Mitigation education for developers	Livingston Co	Medium	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
County 2025.14	Weather Alerts	Livingston Co	High	1,2,3,4	Flooding, Dam Failure, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	
County 2025.15	Creation of a county-level municipality steering committee	Livingston Co	High	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
County 2025.17	Drought and wildfire education	Livingston Co	Medium	3	Drought, Wildfire	x	x	
CC 2025.3	Mitigation education for developers	Chillicothe	Medium	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
CC 2025.4	Mitigation education	Chillicothe	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CC 2025.5	Weather Alerts	Chillicothe	High	1,2,3,4	Flooding, Dam Failure, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	
CC 2025.9	Drought and wildfire education	Chillicothe	Medium	3	Drought, Wildfire	x	x	
VU 2025.1	Mitigation education	Utica	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X
VU 2025.2	Weather Alerts	Utica	High	1,2,3,4	Flooding, Dam Failure, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	
VU 2025.7	Drought and wildfire education	Utica	Medium	3	Drought, Wildfire	x	x	
CSD 2025.1	Mitigation education	Chillicothe R-II	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X
CSD 2025.4	Drought and wildfire education	Chillicothe R-II	Medium	3	Drought, Wildfire	x	x	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
LCSD 2025.1	Mitigation education	Livingston Co R-III	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X
LCSD 2025.4	Drought and wildfire education	Livingston Co R-III	Medium	3	Drought, Wildfire	x	x	
LCAD 2025.1	Mitigation education	Livingston Co. Ambulance District	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X
LCAD 2025.2	Weather Alerts	Livingston Co Ambulance District	High	1,2,3,4	Flooding, Dam Failure, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	
LCAD 2025.5	Drought and wildfire education	Livingston Co Ambulance District	Medium	3	Drought, Wildfire	x	x	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CFPD 2025.1	Mitigation education	Chillicothe fire protection district	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Levee Failure, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	x	x	X
CFPD 2025.3	Drought and wildfire education	Chillicothe fire protection district	Medium	3	Drought, Wildfire	x	x	

# 5 PLAN MAINTENANCE PROCESS

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<b>5 PLAN MAINTENANCE PROCESS .....</b>	<b>5.1</b>
<i>5.1 Monitoring, Evaluating, and Updating the Plan.....</i>	<i>5.1</i>
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
<i>5.2 Incorporation into Existing Planning Mechanisms .....</i>	<i>5.3</i>
<i>5.3 Continued Public Involvement.....</i>	<i>5.5</i>

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

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**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 Livingston 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 Commissioners and governing bodies of participating jurisdictions; and
- Inform and solicit input from the public.

The Livingston 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. Other duties include reviewing and promoting mitigation proposals, hearing stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information in areas accessible to the public.

### **5.1.2 Plan Maintenance Schedule**

The MPC and the County Emergency Management Committee agree to meet annually and after a state or federally declared hazard event as appropriate to monitor progress and update the mitigation strategy. The Livingston County Emergency Management Director and GHRPC will be responsible for initiating the plan reviews and will invite members of the MPC and other interested parties 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 Livingston County Emergency Management 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 basis to the jurisdictional MPC 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 member will determine necessary remedial action, making any required modifications to the plan.
- If new actions are identified to implement mitigation activities, the jurisdictional MPC member will take necessary actions to amend the plan. GHRPC staff currently handles such requests.

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 Livingston County Emergency Committee deems appropriate and necessary. Changes will be approved by the Livingston County Commissioners and the governing boards of the other participating jurisdictions.

## 5.2 Incorporation into Existing Planning Mechanisms

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**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.**

Prior to the development of this plan, the participating jurisdictions did not integrate information from the previous hazard mitigation plan into other planning mechanisms. The participating jurisdictions will attempt to remedy this lack of integration moving forward by applying the identified hazard mitigation actions into updates of other planning mechanisms.

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 Livingston 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;
- Livingston 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 Livingston County Emergency Management Director will provide the updated Mitigation Strategy with current status of each mitigation action to the County Commissioners 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
Livingston County	Transportation Advisory Committee (TAC)	Member of TAC 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, and the Regional Transportation Plan	Member of TAC attended all planning meetings and identified actions relating to transportation infrastructure were included in annual update to unfunded needs list, the State Transportation Improvement Plan, and the Regional Transportation Plan
	Livingston County Emergency Plan	The Commissioners attended all planning meetings and identified actions relating to infrastructure were included in annual update to Comprehensive Plan	The Commissioners and EMD attended all planning meetings. Identified new actions or ongoing actions relating to infrastructure will be included in annual update to Comprehensive Plan
	CEDS, LEPC, Council Budgeting Session	Annual review, county emergency plan review	Annual CEDS review, County Emergency Plan Review
City of Chillicothe	Local Budget, CEDS, Emergency Plan, City Ordinances	Annual review	Annual CEDS review, Emergency Plan Review, Regional Transportation Plan
City of Utica	Local Budget, CEDS, Emergency Plan, City Ordinances, Floodplain Ordinance	Annual Review	Annual CEDS review, Emergency Plan Review, Regional Transportation Plan
Livingston County R-III	Emergency Plan, Weapons Policy	Annual Review	Annual Emergency Plan Review, Weapons

			Policy Review
Chillicothe R-II	Master Plan, Capital Improvement Plan, Emergency Plan, Weapons Policy	Annual Review	Review of Master Plan, Capital Improvement Plan, Emergency Plan, Weapons Policy
Chillicothe Fire Protection District #1	Critical Improvement Plan, Emergency Operation Plan, Continuity of Operations Plan, Community Wildfire Protection Plan	Annual Review	Annual Review of Critical Improvement Plan, Emergency Operation Plan, Continuity of Operations Plan, Community Wildfire Protection Plan

### 5.3 Continued Public Involvement

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**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 Livingston County website following each annual review of the mitigation plan and will solicit comments from the public based on the annual review.

The Livingston County emergency management director and the MPC will be responsible for publicizing success stories if mitigation activities are completed by issuing press releases and publicizing information on the Livingston County and/or Jurisdiction’s website.

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
- Carroll 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 Livingston 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, 2023
- 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](http://www.tornadochaser.net)
- [www.weather.gov](http://www.weather.gov)

- Neighboring Communities:
  - City of Hale
  - City of Breckenridge
- Local and regional agencies involved in hazard mitigation activities:
  - Chillicothe Fire Department
  - Chula Rural Fire District
  - Dawn Firefighters Association, LLC
  - Green Township Fire Protection District
  - Mooresville Township Fire Protection District
  - Wheeling Rural Fire Department
  - Livingston County Sheriff's Department
  - Livingston County Ambulance
  - Urgent Care Chillicothe
  - Livingston County Health
  - Hedrick Family Care
  - Northwest Health
  - Chillicothe Medical Clinic
  - Grand River Health Care
  - Chillicothe Women's Clinic
- Agencies with the authority to regulate development:
  - Chillicothe Emergency Coordinators
  - Chillicothe Floodplain Admin
  - Livingston County Floodplain Admin
  - Utica Floodplain Admin
  - City of Chillicothe
  - City of Chula
  - Village of Ludlow
  - City of Utica
  - City of Wheeling
- Business & Academia
  - Chillicothe R-II
  - Livingston County R-III
  - Southwest Livingston County R-I
  - Donaldson Co.
  - Midwest Quality Gloves
  - Chillicothe Iron & Steel Inc
  - Roberts Tool & Die
  - Wal-Mart
  - Tractor Supply Co
  - Lowes
  - Chillicothe Correctional Center
  - B&B Theatres Grand 6
- Other private and non-profit interests, including underserved/vulnerable populations
  - Senior Center
  - Livingston Manor
  - Morningside Center
  - Chillicothe Manor
  - StoneBridge RCF
  - Grand River Health Care
  - Saint Luke's Home Care & Hospice
  - Cornerstone Church
  - Turning Point Church
  - Lifepoint Church
  - New Life Church
  - Church of Jesus Christ of Latter-Day Saints
  - House of Prayer Rescue Mission
  - Soul's Harbor Church of God

# HAZARD MITIGATION PLANNING EVENT

IS YOUR COMMUNITY  
PREPARED FOR DISASTER?

**WE WANT TO HEAR FROM YOU!**

THE LIVINGSTON COUNTY HAZARD MITIGATION PLAN IS BEING UPDATED. PLEASE ATTEND ONE OF THE FOLLOWING MEETINGS IF YOU WOULD LIKE TO PARTICIPATE!

**MEETING #1**  
**AUGUST 27, 2025**  
**3-4:30**  
**700 WEBSTER ST.**  
**CHILlicothe, MO**

**MEETING #2**  
**SEPT. 11, 2025**  
**700 WEBSTER ST.**  
**CHILlicothe, MO**

**MEETING #3**  
**OCTOBER 14, 2025**  
**3-4:30**  
**700 WEBSTER ST.**  
**CHILlicothe, MO**

ZOOM LINK AVAILABLE ON GHRPC.ORG WEBSITE FOR THE FOLLOWING MEETINGS

VIRTUAL MEETING #1: AUGUST 28 10AM-12PM

VIRTUAL MEETING #2: SEPTEMBER 12 10AM-12PM

VIRTUAL MEETING #3: OCTOBER 15 10AM-12PM

**Link to Public Survey**



Contact Green Hills Regional Planning Commission for more information. (660) 359-5636 ext 11  
or amanda@ghrpc.org for more information.



# Green Hills

## Regional Planning Commission

810 Washington Street, Trenton, Missouri 64683

August 19<sup>th</sup>, 2025

On behalf of the County, you are invited to participate in updating the Livingston 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.**

### Livingston County Multi-Jurisdictional Hazard Mitigation Plan Update

**Meeting #1**  
August 27<sup>th</sup> 3pm-4:30pm  
700 Webster Street  
Chillicothe, MO 64601

**Meeting #2**  
September 11<sup>th</sup> 3pm-4:30pm  
700 Webster Street  
Chillicothe, MO 64601

**Meeting #3**  
October 14<sup>th</sup> 3pm-4:30pm  
700 Webster Street  
Chillicothe, MO 64601

A Zoom Link is available on GHRPC.ORG website for the following Meetings:

**Virtual Meeting #1 August 28<sup>th</sup> 10am-12pm**

**Virtual Meeting #2 September 12<sup>th</sup> 10am-12pm**

**Virtual Meeting #3 October 15<sup>th</sup> 10am-12pm**

Your County Commissioners have contracted with Green Hills Regional Planning Commission to update the **Livingston 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 on June 10, 2021. 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 Livingston County Multi-Jurisdictional Hazard Mitigation Plan Update will address a comprehensive list of natural hazards likely to impact your 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 Specialist. 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, at minimum:

- Contribute to the informational planning meeting and/or planning process; you must attend at least one meeting either in person or virtually.
- Providing requested data (as available); the Jurisdictional Questionnaire must be completed to the best of your ability.
- Formal adoption of the plan.

By participating in the plan your jurisdiction will be eligible for Hazard Mitigation Grants. We routinely work with counties and cities to develop projects that will mitigate against costly natural hazards.

### **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,
- 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>

Thank you,

*Amanda George*

Amanda George  
Transportation Planner & Hazard Mitigation Specialist  
Green Hills Regional Planning Commission  
Office: (660) 359-5636 Ext. 11, Text: (660) 953-0815  
email: [amanda@ghrpc.org](mailto:amanda@ghrpc.org)

3:00 - 3:35 PM

HMP Meeting # for Livingston County 8/27/2025

Printed Name	Jurisdiction	Commute Time	Email or Mobile number (text)
Perrick Allen	Livingston <sup>Chilllicothe</sup> AMB DIST 1	10 min	dallen@chillicothe.city.ohio.gov
Eric Reeter	Livingston <sup>Chilllicothe Fire</sup> EM	5 min	ereter@chillicothe.city.ohio.gov
Todd Harn	Livingston City Nursing Home	5 min	THarn@morningsidecenter.com
Liv Corbin	Livingston C. Nursing Home	5 min	lcorbin@livingstoncounty.ohio.gov
Gil Gates	Chillicothe	5 min	cgates@chillicothe.city.ohio.gov
" "	Livingston County	5 min	Zoning@LivingstonCounty.ohio.gov
Jordan Ralls	Livingston County	5 min	Ralls@Bridge
Tim Hein	Ludlow, Liv. Cty MO	20 min	ludlowville@yahoo.com
Bryce Anderson	Liv. County Commissioner	15 min	
Dustin Woelfle	Livingston County	1 min	dwoelfle@lvco.ohio.gov
E. O. Woelfle	COORD. COMMISSIONER	2 min	lvco@lvco.ohio.gov
Dennis Nicks	County Commission	5 min	dennisnicks1008@yahoo.com
Michael Booth	MO SEMA		michael.booth@sema.dps.mo.gov
Kyle B. Gramenz	City of Chula	12 min	piscansecourt@gmail.com (660) 973-1030
Ann Hamilton	Chula Rural Fire Department	15 min	ann@ghrc.org 660-247-1356
Brigg	ghrc		660-247-1356













## Agenda – Livingston County Meeting #1

August 27 & 28, 2025

- Start Meeting
- Introductions (complete sign-in sheet)
- What is Hazard Mitigation Planning?
- Any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards
  - Existing Plan
  - Update every 5 years
  - Requirement for HMGP grants
- Planning process
  - 3 meetings
    - Outreach and Hazard Identification (This meeting)
    - Risk Assessment & Mitigation Strategies – What are the vulnerabilities within our jurisdiction and Mitigation Strategies that could reduce risk from these hazards
    - Action Prioritization; Reviewing and Adopting the Plan; and Plan Upkeep
- To be a participating jurisdiction, you must do the following:
  - Complete jurisdictional questionnaire (County, School Districts, Cities & Villages, and Special Districts)
  - Attend at least one meeting
  - Provide suggestions about the plan, develop actions that address every hazard your jurisdiction faces, and participate in the planning process
  - Review and Adopt the plan
- Outreach
  - We (GHRPC) have sent letters, emails, and made phone calls to potential stakeholders county wide
  - Public Survey – Please complete and Share on social media
    - Share with Members of the public
    - Share with Employees of the school, city, village, etc.
- Identify Hazards
  - Email – “Hazard Identification for Livingston County”
  - Go through this worksheet
- Questions?



# HAZARD MITIGATION PLANNING EVENT

IS YOUR COMMUNITY PREPARED FOR DISASTER?

WE WANT TO HEAR FROM YOU!

THE GRUNDY COUNTY HAZARD MITIGATION PLAN IS BEING UPDATED. PLEASE ATTEND ONE OF THE FOLLOWING MEETINGS IF YOU WOULD LIKE TO PARTICIPATE!

MEETING #1	MEETING #2	MEETING #3
AUGUST 27, 2025	SEPT. 11, 2025	OCTOBER 14, 2025
3-4:30	700 WEBSTER ST.	3-4:30
700 WEBSTER ST.	CHILLICOTHE, MO	700 WEBSTER ST.
CHILLICOTHE, MO		CHILLICOTHE, MO

ZOOM LINK AVAILABLE ON GHRPC.ORG WEBSITE FOR THE FOLLOWING MEETINGS  
VIRTUAL MEETING #1: AUGUST 28 10AM-12PM  
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Contact Green Hills Regional Planning Commission for more information. (660) 359-5636 ext 11 or amanda@ghrpc.org for more information.



Green Hills Regional Planning Commission

Published by Brandy Stretch Jones · October 7 at 11:04 AM · 📍

It's not too late to participate in Livingston County's Hazard Mitigation Planning. The final meeting is taking place next week!!! Tuesday, October 14th, at Livingston County Courthouse 2nd floor associate courtroom, 700 Webster Street, Chillicothe. If you have any questions, call Green Hills Regional Planning for more information or a one-on-one meeting.

#livingstoncountymo #ChillicotheMO #chulammo #iudlowmo #uticamo #wheelingmo #chillicotherri #ghrpc #hmp

Edit Boost post

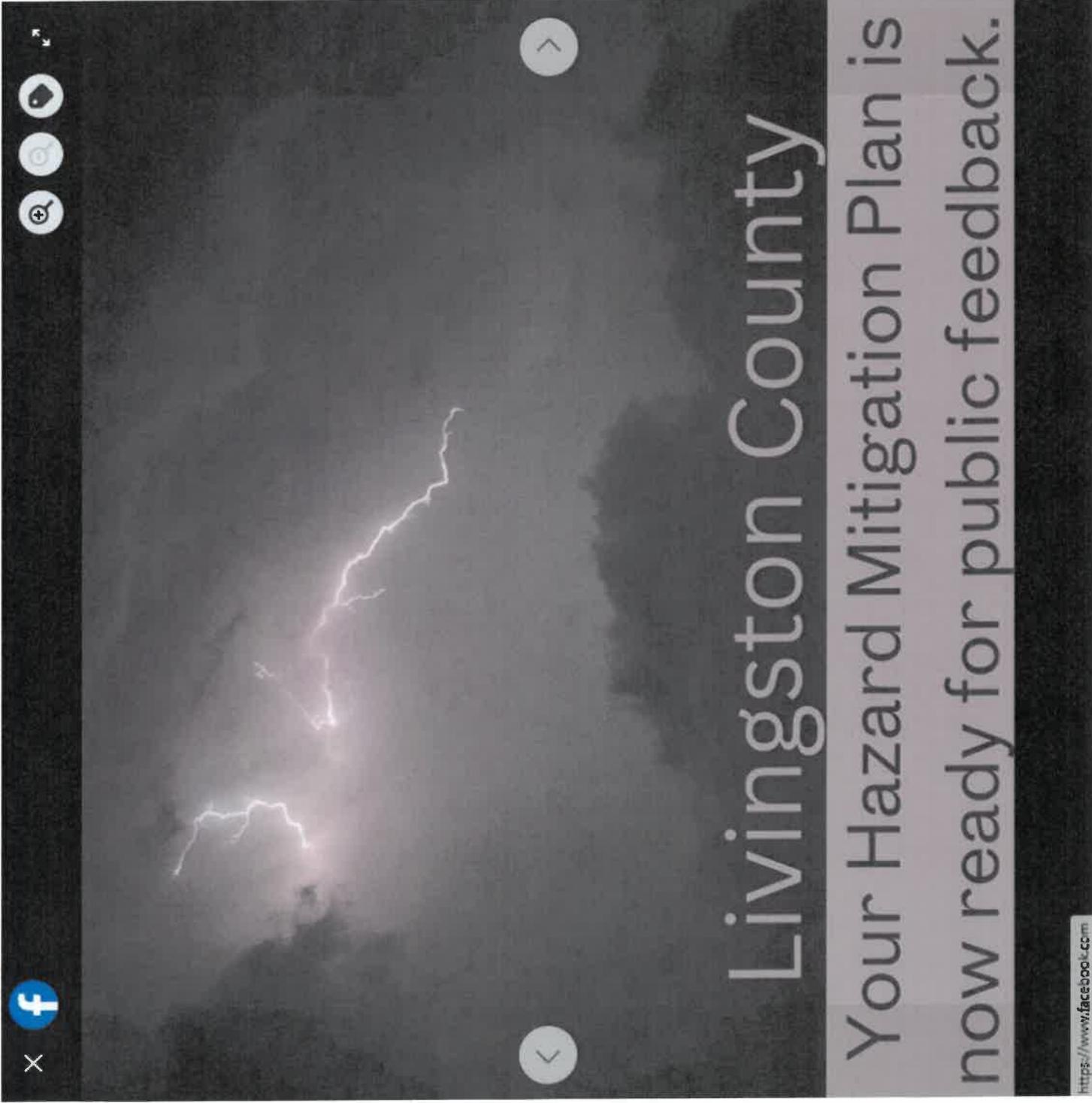
Like Comment Share



No comments yet Be the first to comment.

Comment as Green Hills Regional Plan...





**Green Hills Regional Planning Commission**  
Published by Brandy Stretch Jones · 1m · 🌐

Livingston County your Hazard Mitigation Plan is now ready for public feedback. Please review the plan and let us know what you think. Click Here to review the plan and leave feedback. [#https://ghrpc.org/about-us/ghrpc/programs/hazard-mitigation/#livingstoncountymo](https://ghrpc.org/about-us/ghrpc/programs/hazard-mitigation/#livingstoncountymo) #hmp #ghrpc

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Like Comment Share



**No comments yet**  
Be the first to comment

Comment as Green Hills Regional Plan...  
👤 📷 📺 🗨️ ▶

# Identifying Vulnerable Assets for \_\_\_\_\_ County

Jurisdiction: \_\_\_\_\_

Refer to 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?
<b>People</b> (Residents, workers, visiting populations, and socially vulnerable populations like seniors, individuals with disabilities, lower-income individuals, etc.)	
prison	vulnerable to hazards
hospital	ice - wrecks / loss income
Assisted living	lack of supplies.
Center Apts.	disabled / concern w/ power outages
<b>Structures</b> (Community centers, historic places, planned capital improvement)	
<b>Economic Assets</b> (Major employers, primary economic sectors, key infrastructure like telecommunications networks)	
Green Hills	
Industrial Park	working
(? Wastewater Treatment	- in flooding
	have future plans

# The Livingston County Hazard Mitigation Planning Meeting Will Begin at 10:00AM

Amanda George, Transportation Planner & Hazard Mitigation Specialist

Glen Briggs, Emergency Planner

**Livingston County**

	<b>Minor Impact</b>	<b>Major Impact</b>
<b>Not Likely</b>	<p>Minor impact - minor damage to property, minor injuries, minor economic loss.</p>	<p>Major impact - moderate damage to property, moderate injuries, moderate economic loss.</p>
<b>Very Likely</b>	<p>Minor impact - minor damage to property, minor injuries, minor economic loss.</p>	<p>Major impact - severe damage to property, severe injuries, severe economic loss.</p>

Thought - no surface vehicle vehicle

Identifying Hazard risks associated for Livingston County when under the government order due to the hazards

People

Kills - child school

Size of emergency - child school

Original location and at the property

Person - Child school

Emergency

emergency - person - child school

person - child school

Emergency - child school

Person - child school

Other

Other - child school

# Livingston County

Flooding  
Tornado  
Drought  
Wildfire

Earthquake  
Dam Failure  
Severe Thunderstorm  
Severe Winter Weather  
Extreme Temp.

Major Impact	Dam Failure Tornado	Drought	Flooding Extreme Thunderstorm Winter Weather
			Wildfire
	Earthquake	Extreme Temp.	

Not Likely

Very Likely

---

# Appendix C

- Questionnaires
- Surveys
- STAPLEE Worksheets

<b>Action Title:</b> Public mitigation education		<b>Jurisdiction:</b> Chillicothe fire protection district
<b>Action ID:</b> VU 2025.1		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		3
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		27
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		20

Total Score (STAPLEE + Mitigation Effectiveness score): 47

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Generators		<b>Jurisdiction:</b> Chillicothe fire protection district
<b>Action ID:</b> VU 2025.6		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 35

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Public mitigation education		<b>Jurisdiction:</b> Chillicothe R-II School District
<b>Action ID:</b> CSD 2025.1		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		3
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		27
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		20

Total Score (STAPLEE + Mitigation Effectiveness score): 47

Priority level: High (30+ Points) Medium (25-29 Points) Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Storm shelters		<b>Jurisdiction:</b> Chillicothe R-II School District
<b>Action ID:</b> VU 2025.5		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		3
Can it be implemented quickly?		1
<b>STAPLEE Score:</b>		25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		20

Total Score (STAPLEE + Mitigation Effectiveness score): 45

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Generators		<b>Jurisdiction:</b> Chillicothe R-II School District
<b>Action ID:</b> VU 2025.6		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 35

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Committee development to assess stormwater management		<b>Jurisdiction:</b> City of Chillicothe
<b>Action ID:</b> CC 2025.1		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		2
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		2
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		23
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		15

Total Score (STAPLEE + Mitigation Effectiveness score): 38

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Upgrade culverts and other drainage systems		<b>Jurisdiction:</b> City of Chillicothe
<b>Action ID:</b> CC 2025.2		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		2
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		2
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		23
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		15

Total Score (STAPLEE + Mitigation Effectiveness score): 38

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Mitigation education for developers		<b>Jurisdiction:</b> City of Chillicothe
<b>Action ID:</b> CC 2025.3		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		1
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		0
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		19
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 29

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Public mitigation education		<b>Jurisdiction:</b> City of Chillicothe
<b>Action ID:</b> CC 2025.4		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		3
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		27
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		20

Total Score (STAPLEE + Mitigation Effectiveness score): 47

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Weather Alerts		<b>Jurisdiction:</b> City of Chillicothe
<b>Action ID:</b> CC 2025.5		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		23
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 33

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Critical facilities back-up		<b>Jurisdiction:</b> City of Chillicothe
<b>Action ID:</b> CC 2025.6		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 35

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Debris Removal		<b>Jurisdiction:</b> City of Chillicothe
<b>Action ID:</b> CC 2025.7		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		2
<b>STAPLEE Score:</b>		22
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 32

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Storm shelters		<b>Jurisdiction:</b> City of Chillicothe
<b>Action ID:</b> CC 2025.8		
<b>STAPLEE Criteria</b>	<b>Evaluation Rating</b> Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	<b>Score</b>
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		3
Can it be implemented quickly?		1
<b>STAPLEE Score:</b>		25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		20

Total Score (STAPLEE + Mitigation Effectiveness score): 45

Priority level: High (30+ Points) Medium (25-29 Points) Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> NFIP		<b>Jurisdiction:</b> City of Chillicothe
<b>Action ID:</b> CC 2025.9		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		1
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		1
<b>L:</b> Is there Legal authority to implement?		2
<b>E:</b> Is Economically beneficial?		2
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		2
<b>STAPLEE Score:</b>		19
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 29

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Public mitigation education		<b>Jurisdiction:</b> Livingston county ambulance district
<b>Action ID:</b> VU 2025.1		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		3
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		27
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		20

Total Score (STAPLEE + Mitigation Effectiveness score): 47

Priority level: High (30+ Points) Medium (25-29 Points) Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Weather Alerts		<b>Jurisdiction:</b> Livingston county ambulance district
<b>Action ID:</b> VU 2025.2		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		23
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 33

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Critical facilities back-up		<b>Jurisdiction:</b> Livingston county ambulance district
<b>Action ID:</b> VU 2025.3		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 35

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Generators		<b>Jurisdiction:</b> Livingston county ambulance district
<b>Action ID:</b> VU 2025.6		Score
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 35

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Public officials education on hazard mitigation		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.1		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		1
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		0
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		22
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		15

Total Score (STAPLEE + Mitigation Effectiveness score): 37

Priority level: High (30+ Points) Medium (25-29 Points) Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Committee development to assess stormwater management		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.2		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		2
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		2
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		23
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		15

Total Score (STAPLEE + Mitigation Effectiveness score): 38

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Critical facilities back-up		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.3		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 35

Priority level: High (30+ Points) Medium (25-29 Points) Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Public mitigation education		<b>Jurisdiction:</b> Livingston County	
<b>Action ID:</b> County 2025.4			
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score	
<b>S:</b> Is it socially acceptable?		3	
<b>T:</b> Is it Technically feasible and potentially successful?		3	
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3	
<b>P:</b> Is it politically acceptable?		3	
<b>L:</b> Is there Legal authority to implement?		3	
<b>E:</b> Is Economically beneficial?		3	
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3	
Will historic structures be saved or protected?		3	
Can it be implemented quickly?		3	
<b>STAPLEE Score:</b>		27	
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>	
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10	
<b>Mitigation Effectiveness Score</b>		20	

Total Score (STAPLEE + Mitigation Effectiveness score): 47

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Flood Warning System		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.4		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		2
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		3
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		26
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		20

Total Score (STAPLEE + Mitigation Effectiveness score): 46

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Mitigation education for developers		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.5		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		1
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		0
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		22
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		15

Total Score (STAPLEE + Mitigation Effectiveness score): 37

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Monitor repetitive flood loss properties		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.7		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		2
<b>P:</b> Is it politically acceptable?		1
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		1
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		0
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		17
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 27

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Snow removal		<b>Jurisdiction:</b> Livingston County	
<b>Action ID:</b> County 2025.8			
<b>STAPLEE Criteria</b>		<b>Evaluation Rating</b> Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	<b>Score</b>
<b>S:</b> Is it socially acceptable?			3
<b>T:</b> Is it Technically feasible and potentially successful?			3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?			3
<b>P:</b> Is it politically acceptable?			3
<b>L:</b> Is there Legal authority to implement?			3
<b>E:</b> Is Economically beneficial?			3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)			3
Will historic structures be saved or protected?			3
Can it be implemented quickly?			3
<b>STAPLEE Score:</b>			27
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>	
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10	
<b>Mitigation Effectiveness Score</b>		20	

Total Score (STAPLEE + Mitigation Effectiveness score): 47

Priority level:     High (30+ Points)             Medium (25-29 Points)             Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Storm Drain System		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.9		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		1
<b>T:</b> Is it Technically feasible and potentially successful?		2
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		2
<b>P:</b> Is it politically acceptable?		1
<b>L:</b> Is there Legal authority to implement?		2
<b>E:</b> Is Economically beneficial?		1
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		1
Will historic structures be saved or protected?		0
Can it be implemented quickly?		0
<b>STAPLEE Score:</b>		10
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 20

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Storm shelters		<b>Jurisdiction:</b> Livingston County	
<b>Action ID:</b> County 2025.10			
<b>STAPLEE Criteria</b>		<b>Evaluation Rating</b> Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	<b>Score</b>
<b>S:</b> Is it socially acceptable?			3
<b>T:</b> Is it Technically feasible and potentially successful?			3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?			3
<b>P:</b> Is it politically acceptable?			3
<b>L:</b> Is there Legal authority to implement?			3
<b>E:</b> Is Economically beneficial?			3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)			3
Will historic structures be saved or protected?			3
Can it be implemented quickly?			1
<b>STAPLEE Score:</b>			25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>		<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.		10
<b>Mitigation Effectiveness Score</b>			20

Total Score (STAPLEE + Mitigation Effectiveness score): 45

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Survey flood plainarea		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.11		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		1
<b>T:</b> Is it Technically feasible and potentially successful?		2
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		2
<b>P:</b> Is it politically acceptable?		1
<b>L:</b> Is there Legal authority to implement?		2
<b>E:</b> Is Economically beneficial?		1
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		1
Will historic structures be saved or protected?		0
Can it be implemented quickly?		0
<b>STAPLEE Score:</b>		10
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 20

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Tree trimming		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.12		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		1
<b>T:</b> Is it Technically feasible and potentially successful?		2
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		2
<b>E:</b> Is Economically beneficial?		0
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		1
Will historic structures be saved or protected?		0
Can it be implemented quickly?		2
<b>STAPLEE Score:</b>		12
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 22

Priority level: High (30+ Points) Medium (25-29 Points) Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Sirens		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.13		
<b>STAPLEE Criteria</b>	<b>Evaluation Rating</b> Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	<b>Score</b>
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		2
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		2
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		1
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		0
Will historic structures be saved or protected?		0
Can it be implemented quickly?		1
<b>STAPLEE Score:</b>		16
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 based on the likelihood that lives would be saved	6
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		11

Total Score (STAPLEE + Mitigation Effectiveness score): 27

Priority level:     High (30+ Points)             Medium (25-29 Points)             Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Weather Alerts		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.14		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		23
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 33

Priority level: High (30+ Points) Medium (25-29 Points) Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Steering committee		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.15		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		2
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		2
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		2
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		2
<b>STAPLEE Score:</b>		19
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 29

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Debris Removal		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.16		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		23
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 33

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> NFIP		<b>Jurisdiction:</b> Livingston County
<b>Action ID:</b> County 2025.17		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		1
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		1
<b>L:</b> Is there Legal authority to implement?		2
<b>E:</b> Is Economically beneficial?		2
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		2
<b>STAPLEE Score:</b>		19
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 29

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Public mitigation education		<b>Jurisdiction:</b> Village of Utica
<b>Action ID:</b> VU 2025.1		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		3
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		27
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		20

Total Score (STAPLEE + Mitigation Effectiveness score): 47

Priority level:     High (30+ Points)            Medium (25-29 Points)     Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Weather Alerts		<b>Jurisdiction:</b> Village of Utica
<b>Action ID:</b> VU 2025.2		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		23
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 33

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Critical facilities back-up		<b>Jurisdiction:</b> Village of Utica
<b>Action ID:</b> VU 2025.3		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
E: Is Economically beneficial?		3
E: Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 35

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Debris Removal		<b>Jurisdiction:</b> Village of Utica
<b>Action ID:</b> VU 2025.4		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		2
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		2
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		2
<b>STAPLEE Score:</b>		22
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 32

Priority level:     High (30+ Points)            Medium (25-29 Points)     Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> Storm shelters		<b>Jurisdiction:</b> Village of Utica
<b>Action ID:</b> VU 2025.5		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		3
Will historic structures be saved or protected?		3
Can it be implemented quickly?		1
<b>STAPLEE Score:</b>		25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	10
<b>Mitigation Effectiveness Score</b>		20

Total Score (STAPLEE + Mitigation Effectiveness score): 45

Priority level:    High (30+ Points)            Medium (25-29 Points)            Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title: Generators</b>		<b>Jurisdiction: Village of Utica</b>
<b>Action ID:</b> VU 2025.6		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		3
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		3
<b>L:</b> Is there Legal authority to implement?		3
<b>E:</b> Is Economically beneficial?		3
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		3
<b>STAPLEE Score:</b>		25
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		10

Total Score (STAPLEE + Mitigation Effectiveness score): 35

Priority level:     High (30+ Points)             Medium (25-29 Points)             Low (Less than 25 points)

Completed by: (name/title/phone #):

<b>Action Title:</b> NFIP		<b>Jurisdiction:</b> Village of Utica
<b>Action ID:</b> VU 2025.7		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
<b>S:</b> Is it socially acceptable?		1
<b>T:</b> Is it Technically feasible and potentially successful?		3
<b>A:</b> Does the jurisdiction have the administrative capability to execute this action?		3
<b>P:</b> Is it politically acceptable?		1
<b>L:</b> Is there Legal authority to implement?		2
<b>E:</b> Is Economically beneficial?		2
<b>E:</b> Will the project have a neutral or positive impact on the environment? (score 3 if positive, 2 if neutral)		2
Will historic structures be saved or protected?		2
Can it be implemented quickly?		2
<b>STAPLEE Score:</b>		19
<b>Mitigation Effectiveness Criteria</b>	<b>Evaluation Rating</b>	<b>Score</b>
Will the implemented action save lives?	Assign from 5-10 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 based on the relative reduction of disaster damages.	5
<b>Mitigation Effectiveness Score</b>		<b>10</b>

Total Score (STAPLEE + Mitigation Effectiveness score): 29

Priority level:     High (30+ Points)             Medium (25-29 Points)             Low (Less than 25 points)

Completed by: (name/title/phone #):



# Multi-Jurisdictional Hazard Mitigation Plan Data Collection Questionnaire for Local Governments

COUNTY: Livingston

JURISDICTION: Livingston

RETURN BY: \_\_\_\_\_

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. ***A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan.*** According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process ***will not*** be eligible applicants for FEMA mitigation funding programs.

PREPARED BY: Sherry Parks

PHONE: 660-646-8000 ext 3

EMAIL: countyclerk@livingstoncountymo.com      DATE: \_\_\_\_\_

*Please return questionnaires by mail, email, or fax to:*

Name: Amanda George – Transportation Planner & Hazard Mitigation Specialist

Address: Green Hills Regional Planning Commission, 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 bold* elements, please provide a copy of the document to the contact listed on the front.

CAPABILITIES	Status, Including Date of Document or Policy
<b>PLANNING CAPABILITIES</b>	
<i>Comprehensive Plan</i>	
Builder's Plan	No
Capital Improvement Plan	No
City Emergency Operations Plan	No
County Emergency Operations Plan	Yes
Local Recovery Plan	No
County Recovery Plan	Yes
City Mitigation Plan	No
County Mitigation Plan	Yes , (Oct 25)
Debris Management Plan	No
<i>Economic Development Plan</i>	
Transportation Plan	Yes
Land-use Plan	Yes

Flood Mitigation Assistance (FMA) Plan	Yes
<i>Watershed Plan</i>	Yes, Hurricane Creek WS
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan	Yes, through EOP
<b>POLICIES/ORDINANCE</b>	
Zoning Ordinance	Yes
Building Code	No
Floodplain Ordinance	Yes
Subdivision Ordinance	Yes
Tree Trimming Ordinance	Yes
Nuisance Ordinance	Yes
Stormwater Ordinance	No
Drainage Ordinance	Yes
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	No
Landscape Ordinance	Yes
Seismic Construction Ordinance	No
<b>PROGRAM</b>	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	No
Hazard Awareness Program	Yes
National Flood Insurance Program (NFIP)	Yes
NFIP Community Rating System (CRS) program If so, what is your current level rating?	No
National Weather Service (NWS) Storm Ready	Yes

Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	Yes, 3
Economic Development Program	Yes
Land Use Program	Yes, bonded
Public Education/Awareness	Yes
Property Acquisition	No
Planning/Zoning Boards	Yes
Stream Maintenance Program	No
Tree Trimming Program	Yes
<i>Engineering Studies for Streams (Local/County/Regional)</i>	No
Mutual Aid Agreements	Yes
<b>STUDIES/REPORTS/MAPS</b>	
<i>Hazard Analysis/Risk Assessment (Local)</i>	No
<i>Hazard Analysis/Risk Assessment (County)</i>	Yes
Flood Insurance Maps	Yes
FEMA Flood Insurance Study (Detailed)	Yes
Evacuation Route Map	Yes
<i>Critical Facilities Inventory</i>	Yes, Courthouse, Sheriff's office
<i>Vulnerable Population Inventory</i>	Yes, EOP
<i>Land Use Map</i>	Yes, Planning & Zoning
<b>STAFF/DEPARTMENT</b>	
<i>Full Time or Part Time, if applicable?</i>	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	Yes, contracted

Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Director	Yes
NFIP Floodplain Administrator	Yes
Emergency Response Team	Yes
Hazardous Materials Expert	Yes
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	Yes
Economic Development Department	Yes
Housing Department	No
Historic Preservation	Yes
<b>NON-GOVERNMENTAL ORGANIZATIONS (NGOS)</b>	
<i>Is there a local chapter? Yes or No</i>	
American Red Cross	No - office not local
Salvation Army	Yes
Veterans Groups	Yes
Local Environmental Organization	Yes, Water Quality Group at Poo See Conserv. A
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes
<b>LOCAL FUNDING AVAILABILITY</b>	
<i>Answer Yes or No</i>	

Apply for Community Development Block Grants	Yes, through GHRPC
Fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	No
Impact fees for new development	Yes
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	Yes
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 into existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	NA
Builder's Plan	NA
Capital Improvement Plan	NA

Local Recovery Plan	
County Recovery Plan	Green hills backs up our computers regularly
Debris Management Plan	
Economic Development Plan	County & city has hired an economic developer. They are working
Transportation Plan	
Land-use Plan	County has a planning 70
Watershed Plan	
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	

## Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

Commission, 3 members

2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.

Distributed brochures regarding emergency preparedness  
Articles in newspaper & radio on county business regularly

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.

Emergency preparedness regular meetings and disaster simulations  
Done on a regular basis

4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers.

Handing homeless and battered women is a concern  
we are keeping them a new shelter for this purpose

5. How many outdoor warning sirens are in your community?

Fire Dept has three

How are they activated (indicate responsible department/personnel)?

6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.

## Civic Ready

7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?

Yes - Courthouse, Calvary Baptist, Fire Dept

Please provide address locations:

700 Webster - Courthouse  
200 Locust - Church  
700 2nd St - Fire station

8. List residential, commercial and industrial development in your jurisdiction since last plan update.

City has acquired through a grant from the state  
and CDC over 300 acres for a new industrial park

9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas.

No expected development in flood areas

10. Are any new facilities or infrastructure planned for construction during the next five years? If so, please provide facility name and purpose along with proposed locations, if known.

City build in a new police station

11. Please list major employers in your jurisdiction with an estimated number of employees.

Chillicothe PEI Schools 300

12. Please list Mitigation Planning Committee members who served during the development of the previously approved plan. Was the process set forth for monitoring the implementation of the previously approved mitigation plan adhered to? Did the Committee meet as was specified in the previously approved plan? Why or why not?

13. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

We update our flood maps periodically  
by participations in flood survey

# 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 which of the following hazards the asset is vulnerable to. Use the following abbreviations.

Natural Hazards	
Flooding (Major & Flash) – RF	Drought – D
Levee Failure – LF	Extreme Temperature – ET
Dam Failure – DF	Severe Thunderstorm (incl. wind, hail, lightning) – ST
Earthquake – EQ	Severe Winter Weather (incl. snow, ice, severe cold) – SWW
Land Subsidence /Sinkholes – LSS	Tornadoes – T
Wildfire - W	

## 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	High Potential Loss Facilities	Transportation and Lifeline
Hospitals and other medical facilities Police stations Fire station Emergency Operations Centers	Power plants Dams/levees Military installations Hazardous material sites Schools Shelters Day care centers Nursing homes Main government buildings	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 to the contact listed on the first page.

## Critical Facilities

Name of Asset	Address	Natural Hazards
Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers		
Heinic Medical	2999 Washington Circle	T ST
Calliope Arts Center	2807 Howard Ave	T ST
Courthouse	700 Washington Circle	T ST
City Hall	715 Washington Circle	T ST
Cherokee Municipal Center	1425 Washington Circle	T ST PF
C Mill Building	920 Washington Circle	T ST
Cherokee Municipal Station	1611 Lawrence Ave	T ST
Harrison Street	939 Birch	T ST
Morningside Center	1700 Morningside	T ST
Stone Bridge Center	2601 N Fair	

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)

Chelliston Fire Station	200 2nd St
Chelliston Police Station	613 Walnut
Chelliston City School Office	9th Street
Chelliston City School	1st St

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 and pipelines, communications facilities

Chelliston Power Plant	Hillman St
Chelliston Police Station	
Chelliston Water Plant	

Chillicothe, MO

September 30, 2024

Chart	Name	Type	Employees
Major Employers	Missouri Dept. of Corrections	Correctional center	6
Major Employers	Hedrick Medicdal (St. Lukes)	Health services	2
Major Employers	Sonoco	Plastic food tray mfg.	1
Major Employers	Donaldson Co., Inc.	Machinery & vehicle air cleaning systems mfg.	1
Major Employers	Southern Bank	Banking	
Major Employers	Midwest Quality Gloves, Inc.	Glove mfg.	
Major Employers	Cloverleaf Cold Storage	Storage	
Major Employers	Roberts Tool & Die Co.	Industrial products mfg.	
Major Employers	DeLaval	Dairy industry rubber products mfg.	
Major Employers	Wire Rope Corp.	Wire rope mfg.	
Major Employers	Dickerson Tool & Die	Tool and die mfg.	
Major Employers	Mauser	Manufacturing	
Major Employers	Chillicothe Iron & Steel, Inc.	Steel products mfg.	
Major Employers	CPKC Rail	Railroad	
Major Employers	Lowe's	Building/Home supplies	
Major Employers	Chillicothe School District	School District	200+
Major Employers	Walmart	Retail	1
Major Employers	Trans OVA	Agriculture services/transplants	



## 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 them 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.

<b>Jurisdiction</b>	
<b>Type of event</b>	
<b>Nature and magnitude of event</b>	
<b>Location</b>	
<b>Date of event</b>	
<b>Injuries</b>	
<b>Deaths</b>	
<b>Property damage</b>	
<b>Infrastructure damage</b>	
<b>Crop damage</b>	
<b>Business/economic impacts</b>	
<b>Road/school/other closures</b>	
<b>Other damage</b>	
<b>Insured losses</b>	
<b>Federal/state disaster relief funding</b>	
<b>Source of information</b>	
<b>Comments</b>	

## Assessment of Previously Proposed Actions

---

Jurisdiction: \_\_\_\_\_

Green Hills RPC 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:

- *Completed Actions*: provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- *Ongoing Actions*: 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.
- *No Progress*: 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)*.



# Multi-Jurisdictional Hazard Mitigation Plan Data Collection Questionnaire for Local Governments

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COUNTY: LIVINGSTON COUNTY

JURISDICTION: CITY OF UTICA

RETURN BY:

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. ***A data collection questionnaire must be completed for each “jurisdiction” that wishes to be included in the plan.*** According to FEMA’s definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process ***will not*** be eligible applicants for FEMA mitigation funding programs.

PREPARED BY: \_\_\_\_\_

PHONE: \_\_\_\_\_

EMAIL: \_\_\_\_\_ DATE: \_\_\_\_\_

***Please return questionnaires by mail, email, or fax to:***

Name: Amanda George – Transportation Planner & Hazard Mitigation Specialist

Address: Green Hills Regional Planning Commission, 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 bold*** elements, ***please provide a copy of the document*** to the contact listed on the front.

CAPABILITIES	Status, Including Date of Document or Policy
<b>PLANNING CAPABILITIES</b>	
<b><i>Comprehensive Plan</i></b>	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Operations Plan	No
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	No, within Livingston County Hazard Mitigation Plan
County Mitigation Plan	Yes
Debris Management Plan	No
<b><i>Economic Development Plan</i></b>	No
Transportation Plan	No
Land-use Plan	No

Flood Mitigation Assistance (FMA) Plan	No
<i>Watershed Plan</i>	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan	No
<b>POLICIES/ORDINANCE</b>	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	Yes
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
<b>PROGRAM</b>	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
Hazard Awareness Program	No
National Flood Insurance Program (NFIP)	Yes
NFIP Community Rating System (CRS) program If so, what is your current level rating?	No
National Weather Service (NWS) Storm Ready	No

Firewise Community Certification	
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
<i>Engineering Studies for Streams (Local/County/Regional)</i>	No
Mutual Aid Agreements	Yes
<b>STUDIES/REPORTS/MAPS</b>	
<i>Hazard Analysis/Risk Assessment (Local)</i>	No
<i>Hazard Analysis/Risk Assessment (County)</i>	Yes
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
<i>Critical Facilities Inventory</i>	No
<i>Vulnerable Population Inventory</i>	No
<i>Land Use Map</i>	No
<b>STAFF/DEPARTMENT</b>	
<i>Full Time or Part Time, if applicable?</i>	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No

Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Director	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	Yes
Economic Development Department	No
Housing Department	No
Historic Preservation	No
<b>NON-GOVERNMENTAL ORGANIZATIONS (NGOS)</b>	
<i>Is there a local chapter? Yes or No</i>	
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, Community Betterment
<b>LOCAL FUNDING AVAILABILITY</b>	
<i>Answer Yes or No</i>	

Apply for Community Development Block Grants	Yes
Fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes, with voter approval
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes, with voter approval
Ability to incur debt through special tax bonds	Yes, with voter approval
Ability to incur debt through private activities	Yes, with voter approval
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 into 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.

<b>Planning Capabilities</b>	<b>Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation</b>
Comprehensive Plan	
Builder's Plan	
Capital Improvement Plan	

# Multi-Jurisdictional Hazard Mitigation Plan Data Collection Questionnaire for Schools Districts and Educational Institutions

---

COUNTY: LIVINGSTON

SCHOOL DISTRICT: LIVINGSTON COUNTY RIII

RETURN BY:

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. ***A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan.*** According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process ***will not*** be eligible applicants for FEMA mitigation funding programs.

PREPARED BY: CRAIG RAILSBACK

PHONE: 660-639-3135

EMAIL: CRAILSBACK@CHULASCHOOL.ORG DATE: 1/10/26

***Please return questionnaires by mail, email, or fax to:***

Name: Amanda George – Transportation Planner & Hazard Mitigation Specialist

Address: Green Hills Regional Planning Commission, 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.

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 bold*** elements, ***please provide a copy of the document to the contact indicated on the front*** to the contact listed on page 1.

PLANNING ELEMENTS	YES/NO	DATE OF LATEST VERSION	COMMENTS
Master Plan			
Capital Improvement Plan			
<b><i>School Emergency Plan</i></b> <ul style="list-style-type: none"> <li>• Shelter in Place Protocols</li> <li>• Evacuation Protocols</li> </ul>	YES	AUGUST 2025	
Weapons Policy	YES	JULY 2025	
Personnel Resources	YES/NO	DEPARTMENT/ POSITION	COMMENTS
Full-Time Building Official	YES	ADMINISTRATOR	
Emergency Manager			
Grant Writer	NO		
Public Information Officer			

Financial Resources	YES/NO	COMMENTS
Capital Improvements Project Funding	Y	
Local Funds	Y	
General Obligation Bonds		
Special Tax Bonds		
Private Activities/Donations		
State and Federal Funds	Y	

## Additional Capabilities Questions

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1. Are your buildings equipped with a public address (PA) system or other emergency alert system? Please describe.  
 The school building has a PA system. The building is also equipped with emergency alerts (fire, tornado, etc.)
2. Does your school buildings' have NOAA Weather Radios? No.
3. List any past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect facilities or provide education regarding hazards that could occur.  
 The school participates in drills for emergencies. No projects at this time.
4. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities.  
 No projects at this time.

5. Do any of your buildings have designated tornado shelters or “saferooms”? If so, are they constructed in accordance with FEMA standards? No
  
6. Did your school district / institution make any additions to buildings or construction new buildings since the last plan update? Please list the buildings and the improvement.  
NO
  
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?  
Possible improvements could be roofs. Possible new building for a gym.
  
8. What percentage is your projected enrollment expected to increase or decrease in the next five years? Decrease by 10-15%
  
9. Do you have your own campus police? Please explain your police department or who you rely on for security needs. Livingston County School Resource Officer
  
10. What is your total exposure:
  - a. Buildings- all elements
  - b. Contents-playgrounds



# 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 which of the following hazards the asset is vulnerable to. Use the following abbreviations.

Natural Hazards	
Flooding (Major & Flash) – RF	Drought – D
Levee Failure – LF	Extreme Temperature – ET
Dam Failure – DF	Severe Thunderstorm (incl. wind, hail, lightning) – ST
Earthquake – EQ	Severe Winter Weather (incl. snow, ice, severe cold) – SWW
Land Subsidence /Sinkholes – LSS	Tornadoes – T
Wildfire - W	

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	Natural Hazards
Main school building	205 waite st. Chula, MO 64635	LF, DF, EQ, W, ET, ST, SWW, T
Garage, storage shed, greenhouse	205 waite st. Chula, MO 64635	LF, DF, EQ, W, ET, ST, SWW
Property without buildings. Approximately 1 acre	205 waite st. Chula, MO 64635	W, D, ET, ST, SWW

# 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 them 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.

<b>Jurisdiction</b>	Livingston County RIII
<b>Type of event</b>	
<b>Nature and magnitude of event</b>	
<b>Location</b>	
<b>Date of event</b>	
<b>Injuries</b>	
<b>Deaths</b>	
<b>Property damage</b>	
<b>Infrastructure damage</b>	
<b>Crop damage</b>	
<b>Business/economic impacts</b>	
<b>Road/school/other closures</b>	
<b>Other damage</b>	
<b>Insured losses</b>	
<b>Federal/state disaster relief funding</b>	
<b>Source of information</b>	
<b>Comments</b>	We do not have any events to record that have not previously been recorded.

# Assessment of Previously Proposed Actions

## Jurisdiction:

Green Hills RPC 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:

- **Completed Actions:** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- **Ongoing Actions:** 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.
- **No Progress:** 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)*.





# Multi-Jurisdictional Hazard Mitigation Plan

## Data Collection Questionnaire for Special Districts

---

County: Livingston County

Special District Name: Livingston County Ambulance District

Return by: \_\_\_\_\_

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. ***A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan.*** According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process ***will not*** be eligible applicants for FEMA mitigation funding programs.

Prepared by: Eva Danner Horton

Phone: 660-247-1646

Email: evadanner@sbcglobal.net

Date: 8/29/25

***Please return questionnaires by mail, email, or fax to:***

Name: Amanda George – Transportation Planner & Hazard Mitigation Specialist

Address: Green Hills Regional Planning Commission, 810 Washington St., Trenton, MO 64683

Email: amanda@ghrpc.org

Fax: (660) 776-3900 Attn: Amanda

ELEMENT	YES, NO, N/A	COMMENTS AND/OR WEBLINK
Mutual Aid Agreements	yes	
Other:		
<b>STUDIES/REPORTS/MAPS</b>		
Evacuation Route Map	yes	
Critical Facilities Inventory	yes	
<b>STAFF/DEPARTMENT</b>		<b>FULL TIME OR PART TIME?</b>
<b>FINANCIAL RESOURCES</b>		<b>IS YOUR JURISDICTION ABLE TO? YES OR NO</b>
Fund projects thru Capital Improvements funding		no
Fees for water, sewer, gas, or electric services		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

## Additional Questions

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1. How is your Special District structure organized? (Board of Directors, Commission, how many members)

Our district is organized by a Board of Directors comprised of six members, one from each of the respective election districts on Livingston County.

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.
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?



## 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 them 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.

<b>Jurisdiction</b>	
<b>Type of event</b>	
<b>Nature and magnitude of event</b>	
<b>Location</b>	
<b>Date of event</b>	
<b>Injuries</b>	
<b>Deaths</b>	
<b>Property damage</b>	
<b>Infrastructure damage</b>	
<b>Crop damage</b>	
<b>Business/economic impacts</b>	
<b>Road/school/other closures</b>	
<b>Other damage</b>	

# ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

## Jurisdiction:

Green Hills RPC 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:

- **Completed Actions:** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- **Ongoing Actions:** 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.
- **No Progress:** 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		

# Multi-Jurisdictional Hazard Mitigation Plan

## Data Collection Questionnaire for Special Districts

---

County: Livingston

Special District Name: Chillicothe Fire Protection District #1

Return by: \_\_\_\_\_

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. **A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan.** According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Prepared by: Ed Daugherty (President)

Phone: 660-752-6222

Email: daughertyfixit@gmail.com

Date: 9-13-25

**Please return questionnaires by mail, email, or fax to:**

Name: Amanda George – Transportation Planner & Hazard Mitigation Specialist

Address: Green Hills Regional Planning Commission, 810 Washington St., Trenton, MO 64683

Email: amanda@ghrpc.org

Fax: (660) 776-3900 Attn: Amanda

ELEMENT	YES, NO, N/A	COMMENTS AND/OR WEBLINK
Mutual Aid Agreements	N/A	
Other: <i>Mutual Aid/City of Chillicothe Contract</i>	Y	
<b>STUDIES/REPORTS/MAPS</b>		
Evacuation Route Map	N/A	
Critical Facilities Inventory	N/A	
<b>STAFF/DEPARTMENT</b>	<b>FULL TIME OR PART TIME?</b>	
<b>FINANCIAL RESOURCES</b>	<b>IS YOUR JURISDICTION ABLE TO? YES OR NO</b>	
Fund projects thru Capital Improvements funding		N
Fees for water, sewer, gas, or electric services		N
Incur debt through general obligation bonds		N
Incur debt through special tax bonds		N
Incur debt through private activities		N
Withhold spending in hazard prone areas		N

# Additional Questions

---

1. How is your Special District structure organized? (Board of Directors, Commission, how many members)
2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.
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.
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?



## 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 them 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.

<b>Jurisdiction</b>	
<b>Type of event</b>	
<b>Nature and magnitude of event</b>	
<b>Location</b>	
<b>Date of event</b>	
<b>Injuries</b>	
<b>Deaths</b>	
<b>Property damage</b>	
<b>Infrastructure damage</b>	
<b>Crop damage</b>	
<b>Business/economic impacts</b>	
<b>Road/school/other closures</b>	
<b>Other damage</b>	

# ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

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## Jurisdiction:

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Green Hills RPC 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:

- **Completed Actions:** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- **Ongoing Actions:** 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.
- **No Progress:** 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 - C
		Complete	Ongoing	No Progress		
CB - 2020.1	HAZARD EDUCATION FOR THOSE INVOLVED IN LAND DEVELOPMENT					
CB - 2020.2	Mitigation Education				Will be changed to mitigation education	M
CB - 2020.3	WEATHER ALERTS					
CB - 2020.4	ACCESSIBLE CONTACT INFORMATION					
CB - 2020.5	CRITICAL FACILITIES BACK-UP					
CB - 2020.6	DEBRIS REMOVAL					
CB - 2020.7	MUTUAL AID AGREEMENTS					
CB - 2020.8	REPRESENTATIVE FOR COUNTY HAZARD MITIGATION STEERING COMMITTEE	x			Completed as part of the 2026 plan update	C
CB - 2020.9	STORM SHELTERS					
CB - 2020.10	WEATHER SPOTTER TRAINING					
CB - 2020.11	PANDEMIC RESPONSE / DISEASE PREVENTION AND MANAGEMENT				No longer covered in plan	X
CB - 2020.12	ECONOMIC STABILIZATION DURING PANDEMIC				No longer covered in plan	X

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M Complete - C
		Complete	Ongoing	No Progress		
CME - 2020.1	HAZARD EDUCATION FOR THOSE INVOLVED IN LAND DEVELOPMENT					
CME - 2020.2	Mitigation Education				Will be changed to mitigation education	M
CME - 2020.3	WEATHER ALERTS					
CME - 2020.4	ACCESSIBLE CONTACT INFORMATION					
CME - 2020.5	CRITICAL FACILITIES BACK-UP					
CME - 2020.6	DEBRIS REMOVAL					
CME - 2020.7	MUTUAL AID AGREEMENTS					
CME - 2020.8	WEATHER SPOTTER TRAINING					
CME - 2020.9	REPRESENTATIVE FOR COUNTY HAZARD MITIGATION STEERING COMMITTEE	X			Completed as part of the 2026 plan update	C
CME - 2020.10	STORM SHELTERS					
CME - 2020.11	PANDEMIC PERSONAL PROTECTIVE EQUIPMENT (PPE)				No longer covered in plan	X
CME - 2020.12	PANDEMIC RESPONSE / DISEASE PREVENTION AND MANAGEMENT				No longer covered in plan	X

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep -- ✓ Delete - X Modify - M Complete - C
		Complete	Ongoing	No Progress		
CM - 2020.1	HAZARD EDUCATION FOR THOSE INVOLVED IN LAND DEVELOPMENT					
CM - 2021.2	Mitigation Education				Will be changed to mitigation education	M
CM - 2020.3	WEATHER ALERTS					
CM - 2020.4	ACCESSIBLE CONTACT INFORMATION					
CM - 2020.5	CRITICAL FACILITIES BACK-UP					
CM - 2020.6	DEBRIS REMOVAL					
CM - 2020.7	MUTUAL AID AGREEMENTS					
CM - 2020.8	PANDEMIC PERSONAL PROTECTIVE EQUIPMENT (PPE)				No longer covered in plan	X
CM - 2020.9	REPRESENTATIVE FOR COUNTY HAZARD MITIGATION STEERING COMMITTEE	X			Completed as part of the 2026 plan update	C
CM - 2020.10	STORM SHELTERS					
CM - 2020.11	PANDEMIC RESPONSE / DISEASE PREVENTION AND MANAGEMENT				No longer covered in plan	X
CM - 2020.12	ECONOMIC STABILIZATION DURING PANDEMIC				No longer covered in plan	X

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M Complete - C
		Complete	Ongoing	No Progress		
CLI - 2020.1	Mitigation Education				Will be changed to mitigation education	M
CLI - 2020.2	WEATHER ALERTS					
CLI - 2020.3	ACCESSIBLE CONTACT INFORMATION					
CLI - 2020.4	CRITICAL FACILITIES BACK-UP					
CLI - 2020.5	DEBRIS REMOVAL					
CLI - 2020.6	MUTUAL AID AGREEMENTS					
CLI - 2020.7	PANDEMIC PERSONAL PROTECTIVE EQUIPMENT (PPE)				No longer covered in plan	X
CLI - 2020.8	REPRESENTATIVE FOR COUNTY HAZARD MITIGATION STEERING COMMITTEE	x			Completed as part of the 2026 plan update	C
CLI - 2020.9	STORM SHELTERS					
CLI - 2020.10	WEATHER SPOTTER TRAINING					
CLI - 2020.11	PANDEMIC RESPONSE / DISEASE PREVENTION AND MANAGEMENT				No longer covered in plan	X
CLI - 2020.12	ECONOMIC STABILIZATION DURING PANDEMIC				No longer covered in plan	X

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M Complete - C
		Complete	Ongoing	No Progress		
CB - 2020.1	HAZARD EDUCATION FOR THOSE INVOLVED IN LAND DEVELOPMENT					
CB - 2020.2	Mitigation Education				Will be changed to mitigation education	M
CB - 2020.3	WEATHER ALERTS					
CB - 2020.4	ACCESSIBLE CONTACT INFORMATION					
CB - 2020.5	CRITICAL FACILITIES BACK-UP					
CB - 2020.6	DEBRIS REMOVAL					
CB - 2020.7	MUTUAL AID AGREEMENTS					
CB - 2020.8	REPRESENTATIVE FOR COUNTY HAZARD MITIGATION STEERING COMMITTEE	x			Completed as part of the 2026 plan update	C
CB - 2020.9	STORM SHELTERS					
CB - 2020.10	WEATHER SPOTTER TRAINING					
CB - 2020.11	PANDEMIC RESPONSE / DISEASE PREVENTION AND MANAGEMENT				No longer covered in plan	X
CB - 2020.12	ECONOMIC STABILIZATION DURING PANDEMIC				No longer covered in plan	X

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M Complete - C
		Complete	Ongoing	No Progress		
CBU - 2020.1	Mitigation Education				Will be changed to mitigation education	M
CBU - 2020.2	WEATHER ALERTS					
CBU - 2020.3	ACCESSIBLE CONTACT INFORMATION					
CBU - 2020.4	CRITICAL FACILITIES BACK-UP					
CBU - 2020.5	DEBRIS REMOVAL					
CBU - 2021.6	MUTUAL AID AGREEMENTS					
CBU - 2020.7	PANDEMIC PERSONAL PROTECTIVE EQUIPMENT (PPE)				No longer covered in plan	X
CBU - 2020.8	REPRESENTATIVE FOR COUNTY HAZARD MITIGATION STEERING COMMITTEE	x			Completed as part of the 2026 plan update	C
CBU - 2020.9	STORM SHELTERS					
CBU - 2020.10	WEATHER SPOTTER TRAINING					
CBU - 2020.11	VULNERABLE POPULATION IDENTIFICATION					
CBU - 2020.12	ECONOMIC STABILIZATION DURING PANDEMIC				No longer covered in plan	X

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M Complete - C
		Complete	Ongoing	No Progress		
CL - 2020.1	Mitigation Education				Will be changed to mitigation education	M
CL - 2020.2	WEATHER ALERTS					
CL - 2020.3	ACCESSIBLE CONTACT INFORMATION					
CL - 2020.4	CRITICAL FACILITIES BACK-UP					
CL - 2020.5	DEBRIS REMOVAL					
CL - 2020.6	MUTUAL AID AGREEMENTS					
CL - 2020.7	VULNERABLE POPULATION IDENTIFICATION					
CL - 2020.8	REPRESENTATIVE FOR COUNTY HAZARD MITIGATION STEERING COMMITTEE	x			Completed as part of the 2026 plan update	C
CL - 2020.9	STORM SHELTERS					
CL - 2020.10	WEATHER SPOTTER TRAINING					
CL - 2020.11	PANDEMIC PERSONAL PROTECTIVE EQUIPMENT (PPE)				No longer covered in plan	X
CL - 2020.12	ECONOMIC STABILIZATION DURING PANDEMIC				No longer covered in plan	X

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep - ✓ Delete - X Modify - M Complete - C
		Complete	Ongoing	No Progress		
2020.1	HAZARD EDUCATION FOR THOSE INVOLVED IN LAND DEVELOPMENT		✓			
2020.2	Mitigation Education		✓		Modified from preparedness education to mitigation	M
2020.3	WEATHER ALERTS	✓				
2020.4	ACCESSIBLE CONTACT INFORMATION	✓				
2020.5	CRITICAL FACILITIES BACK-UP/ GENERATORS	✓				
2020.6	DEBRIS REMOVAL	City		Has stopped		
2020.7	MUTUAL AID AGREEMENTS		✓			
2020.8	STORM SHELTERS / SAFE ROOMS			✓		
2020.9	WEATHER SPOTTER TRAINING		✓			
2020.10	REPRESENTATIVE FOR COUNTY HAZARD MITIGATION STEERING COMMITTEE	X			Part of 2026 plan update	C
2020.11	PANDEMIC RESPONSE / DISEASE PREVENTION AND MANAGEMENT	C			No longer included in plan	X
2020.12	ECONOMIC STABILIZATION DURING PANDEMIC	C			No longer included in plan	X
2020.13	PANDEMIC PERSONAL PROTECTIVE EQUIPMENT (PPE)	C			No longer include in plan	X

# Multi-Jurisdictional Hazard Mitigation Plan Data Collection Questionnaire for Local Governments

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COUNTY: Livingston

JURISDICTION: City of Chillicothe

RETURN BY: \_\_\_\_\_

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. **A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan.** According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

PREPARED BY: Amy Hess - City Clerk

PHONE: 660-646-1877

EMAIL: cityclerk@chillicothe-city.org DATE: \_\_\_\_\_

**Please return questionnaires by mail, email, or fax to:**

Name: Amanda George – Transportation Planner & Hazard Mitigation Specialist

Address: Green Hills Regional Planning Commission, 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 bold*** elements, ***please provide a copy of the document*** to the contact listed on the front.

CAPABILITIES	Status, including Date of Document or Policy
<b>PLANNING CAPABILITIES</b>	
<b><i>Comprehensive Plan</i></b>	No
Builder's Plan	No
Capital Improvement Plan	Yes
City Emergency Operations Plan	Yes
County Emergency Operations Plan	No
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	Yes, Livingston HMP
County Mitigation Plan	Yes
Debris Management Plan	
<b><i>Economic Development Plan</i></b>	Yes - Contracted
Transportation Plan	Yes
Land-use Plan	No

Flood Mitigation Assistance (FMA) Plan	No
<i>Watershed Plan</i>	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan	No
<b>POLICIES/ORDINANCE</b>	
Zoning Ordinance	Yes - online
Building Code	Yes - online
Floodplain Ordinance	Yes - online
Subdivision Ordinance	Yes - online
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes - online
Stormwater Ordinance	Yes - online
Drainage Ordinance	Yes - online
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	Yes - online
Landscape Ordinance	No
Seismic Construction Ordinance	No
<b>PROGRAM</b>	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
Hazard Awareness Program	No
National Flood Insurance Program (NFIP)	Yes
NFIP Community Rating System (CRS) program If so, what is your current level rating?	NO
National Weather Service (NWS) Storm Ready	Yes

Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	Yes, 3
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	Yes, Weather spotter, Fire Prevention Week + Knox Day
Property Acquisition	No
Planning/Zoning Boards	Yes
Stream Maintenance Program	No
Tree Trimming Program	No
<i>Engineering Studies for Streams (Local/County/Regional)</i>	No
Mutual Aid Agreements	Yes
<b>STUDIES/REPORTS/MAPS</b>	
<i>Hazard Analysis/Risk Assessment (Local)</i>	No
<i>Hazard Analysis/Risk Assessment (County)</i>	Yes
Flood Insurance Maps	Yes
FEMA Flood Insurance Study (Detailed)	Yes
Evacuation Route Map	No
<i>Critical Facilities Inventory</i>	Yes
<i>Vulnerable Population Inventory</i>	No
<i>Land Use Map</i>	Yes
<b>STAFF/DEPARTMENT</b>	
<i>Full Time or Part Time, if applicable?</i>	
Building Code Official	Yes - Full time
Building Inspector	Yes - Full time
Mapping Specialist (GIS)	Yes - GIS - contracted

Engineer	Yes - Contracted
Development Planner	No
Public Works Official	Yes
Emergency Management Director	Yes
NFIP Floodplain Administrator	Yes - Code officer full-time
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
County Emergency Management Commission	No
Sanitation Department	Yes
Transportation Department	Yes
Economic Development Department	Yes - contracted mutual aid agreements
Housing Department	No
Historic Preservation	Yes
<b>NON-GOVERNMENTAL ORGANIZATIONS (NGOS)</b>	
<i>Is there a local chapter? Yes or No</i>	
American Red Cross	No
Salvation Army	Yes
Veterans Groups	Yes
Local Environmental Organization	No
Homeowner Associations	?
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes - Elks, Kiwanis, Eagles, Lions, Mums,
<b>LOCAL FUNDING AVAILABILITY</b>	KofC, 4-H, Boy + Girl Scouts, Ducks Unlimited, Quails Unlimited, Main Street Chillicothe, Ministerial Alliance, Chillicothe Car Club, Gardening Club, Festival of Lights
<i>Answer Yes or No</i>	IAFF Local 2060, Livingston County Cancer Assistance.

Apply for Community Development Block Grants	Yes
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	Yes
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	Yes
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 into existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	
Builder's Plan	
Capital Improvement Plan	

Local Recovery Plan	
County Recovery Plan	
Debris Management Plan	
Economic Development Plan	
Transportation Plan	
Land-use Plan	
Watershed Plan	
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	

## Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members) Mayor & City Council (Councilman-AT-LARGE, 1<sup>st</sup> ward, 2<sup>nd</sup> ward, 3<sup>rd</sup> ward + 4<sup>th</sup> ward)
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.

4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers.

5. How many outdoor warning sirens are in your community? 11 (eleven)

How are they activated (indicate responsible department/personnel)?

PD dispatch

6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe. Code Red = Mass Text. Soon to

be changed to Civic Plus

7. Does your community have designated public tornado shelters/~~saferooms~~? If so, are they constructed in accordance with FEMA standards?

Please provide address locations:

City Fire Station, Livingston County Courthouse,  
Chillicothe City Hall + First Baptist Church.

8. List residential, commercial and industrial development in your jurisdiction since last plan update.

Expanding a new Industrial Park on the east side of city.

9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas.

10. Are any new facilities or infrastructure planned for construction during the next five years? If so, please provide facility name and purpose along with proposed locations, if known.

Unknown

11. Please list major employers in your jurisdiction with an estimated number of employees.

City of Chillicothe, RFE School System, Hedrick Medical Center,  
Mo Dept of Corrections, Donaldsonville Field, Mansura,  
Wine Rope, Wal-Mart, Lewis, + Toppan

12. Please list Mitigation Planning Committee members who served during the development of the previously approved plan. Was the process set forth for monitoring the implementation of the previously approved mitigation plan adhered to? Did the Committee meet as was specified in the previously approved plan? Why or why not?

13. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

\* Our Fire Dept now consists of these

Changes:

2 captains to 3 captains

Delete Battalion Chief + Billing Clerk

# 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 which of the following hazards the asset is vulnerable to. Use the following abbreviations.

Natural Hazards	
Flooding (Major & Flash) – RF	Drought – D
Levee Failure – LF	Extreme Temperature – ET
Dam Failure – DF	Severe Thunderstorm (incl. wind, hail, lightning) – ST
Earthquake – EQ	Severe Winter Weather (incl. snow, ice, severe cold) – SWW
Land Subsidence /Sinkholes – LSS	Tornadoes – T
Wildfire - W	

## 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	High Potential Loss Facilities	Transportation and Lifeline
Hospitals and other medical facilities Police stations Fire station Emergency Operations Centers	Power plants Dams/levees Military installations Hazardous material sites Schools Shelters Day care centers Nursing homes Main government buildings	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 to the contact listed on the first page.

### Critical Facilities

Name of Asset	Address	Natural Hazards
<i>Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers</i>		
Hedrick Medical Center	2799 N. Washington	
Chillicothe Fire Station	700 2nd Street	
Chillicothe Police Station	613 Walnut (April 2026 will be at 604 Cherry)	
Hedrick Family Care	2791 N. Washington	
Urgent Care Chillicothe	245 S. Washington	
Northwest Health Chillicothe	300 Business US-36	

Bella - Brock Adult Day Care 1115 2nd St.

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)

Chillicothe Armory	1500 Washington St
Legacy Dining	500 Legacy Lane
MorningSide Center	1700 MorningSide Drive
Indian Hills (Stone Bridge Senior living)	2601 N. Fair
Lumpham Manor	939 Birch Dr.
Grand River Health	118 Trenton RD
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 and pipelines, communications facilities	
CATS	607 US-36 Business
Chillicothe Municipal Airport	13804 Liv 253
CPKC	



## 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 them 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.

<b>Jurisdiction</b>	
<b>Type of event</b>	
<b>Nature and magnitude of event</b>	
<b>Location</b>	
<b>Date of event</b>	
<b>Injuries</b>	
<b>Deaths</b>	
<b>Property damage</b>	
<b>Infrastructure damage</b>	
<b>Crop damage</b>	
<b>Business/economic impacts</b>	
<b>Road/school/other closures</b>	
<b>Other damage</b>	
<b>Insured losses</b>	
<b>Federal/state disaster relief funding</b>	
<b>Source of information</b>	
<b>Comments</b>	

## Assessment of Previously Proposed Actions

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### Jurisdiction:

---

Green Hills RPC 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:

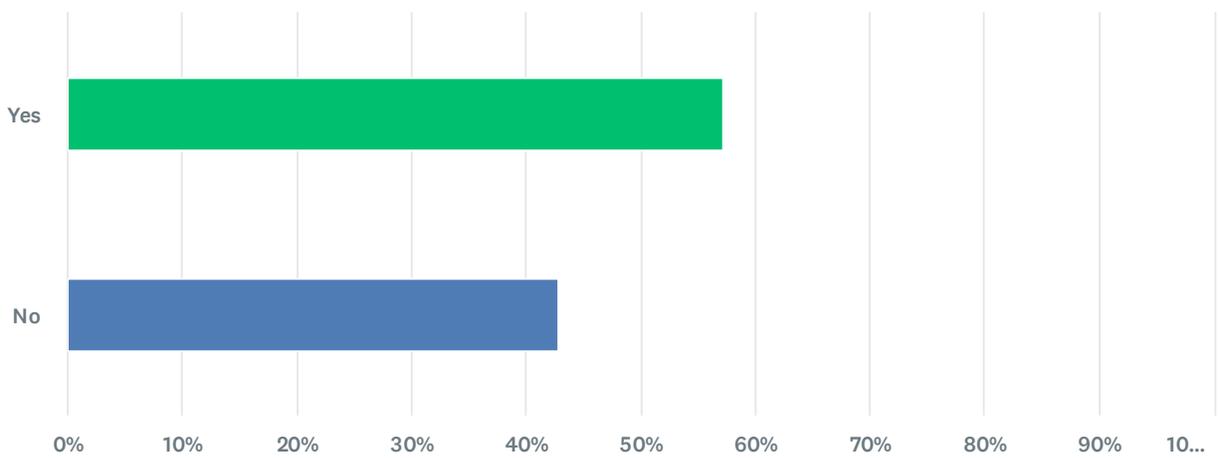
- **Completed Actions:** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- **Ongoing Actions:** indicate what activity has occurred during the previous five years and indicate if this program is still viable enough that it should be carried on into the future.
- **No Progress:** 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 \(January 2013\)](#).



## Q1 During the past five years have you experienced a natural disaster?

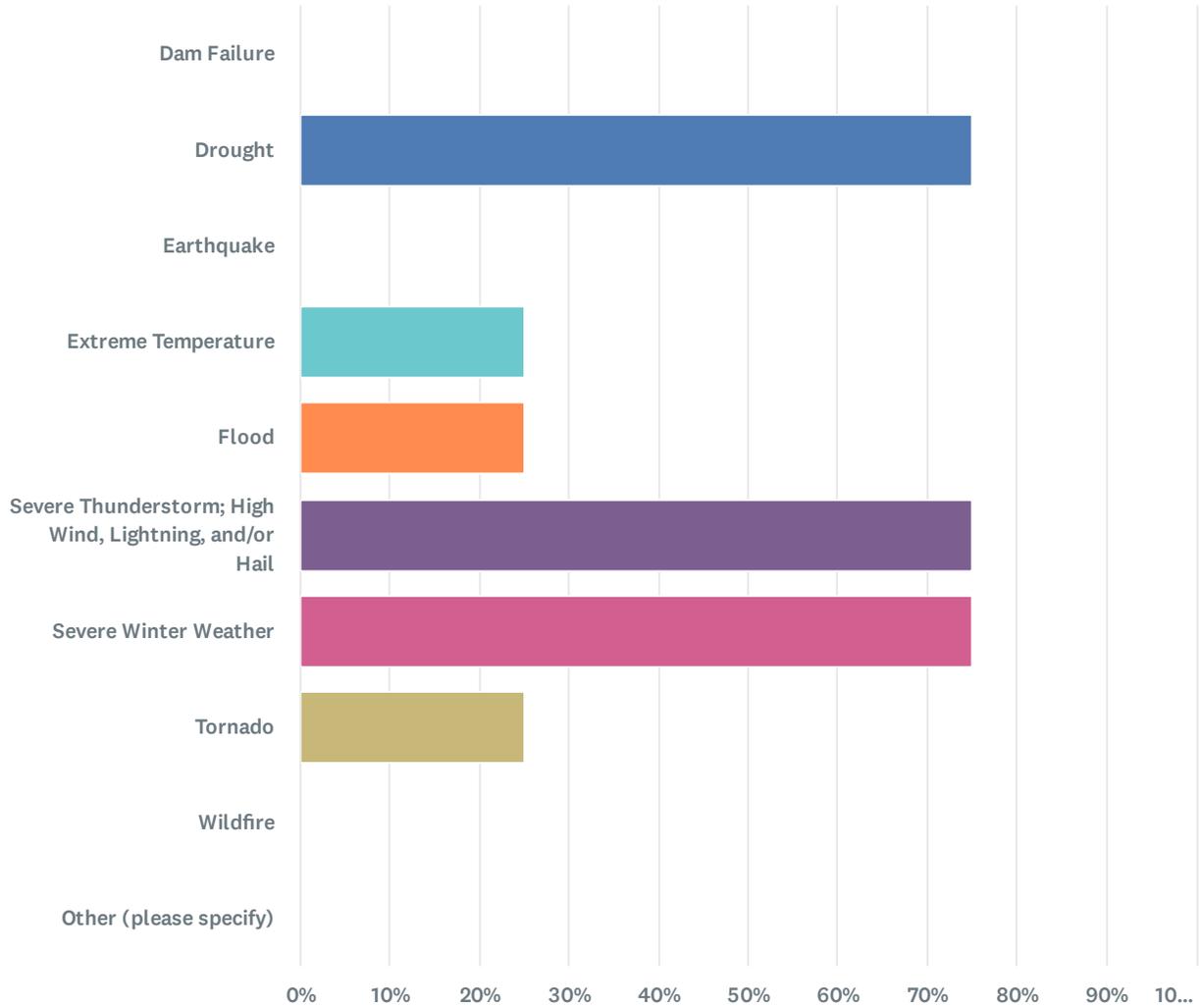
Answered: 7 Skipped: 0



Answer Choices ↓	Percentage ↓	Responses ↓	
<span style="color: green;">●</span> Yes	57.14%	4	...
<span style="color: blue;">●</span> No	42.86%	3	...
<b>Total</b>		<b>7</b>	

## Q2 If "YES" which of the following natural disasters have you experienced?

Answered: 4 Skipped: 3



^ Collapse

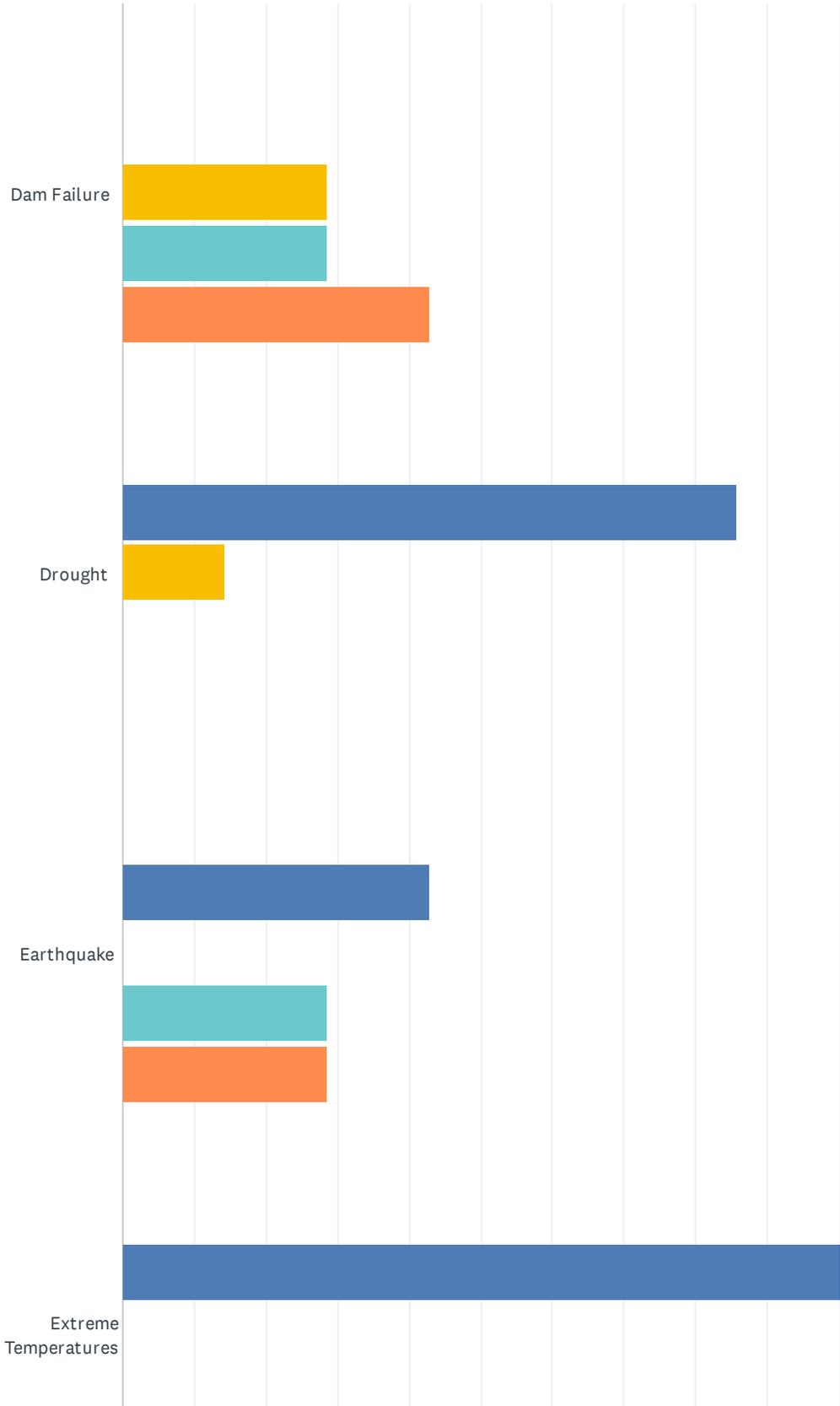
Answer Choices ↓	Percentage ↓	Responses ↓	
● Dam Failure	0%	0	...
● Drought	75.00%	3	...
<b>Total</b>		<b>4</b>	

Livingston County Natural Hazard Questionnaire

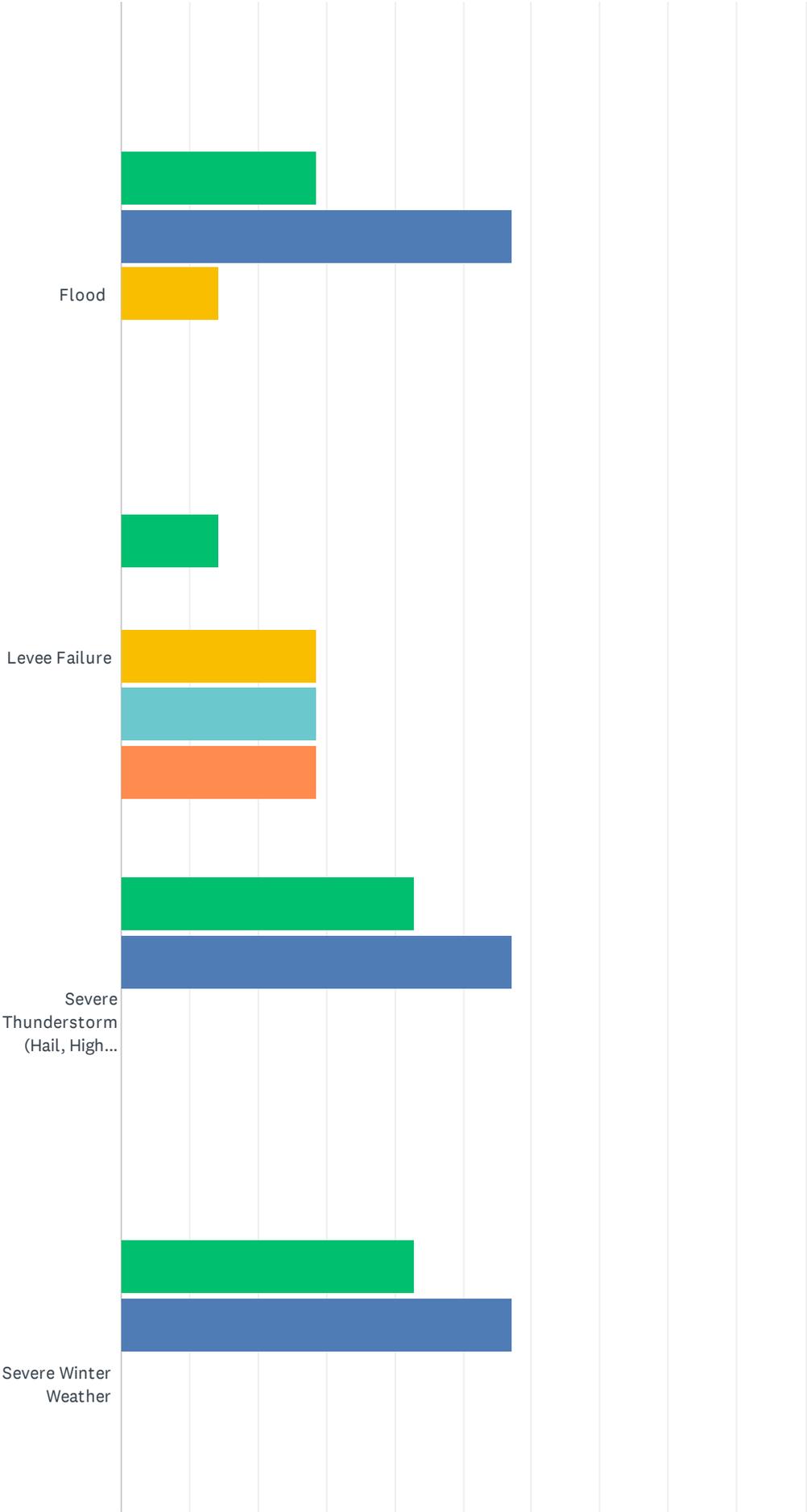
Answer Choices ↓	Percentage ↓	Responses ↓	
 Earthquake	0%	0	...
 Extreme Temperature	25.00%	1	...
 Flood	25.00%	1	...
 Severe Thunderstorm; High Wind, Lightning, and/or Hail	75.00%	3	...
 Severe Winter Weather	75.00%	3	...
 Tornado	25.00%	1	...
 Wildfire	0%	0	...
 Other (please specify) <a href="#">Show responses</a>	0%	0	...
<b>Total</b>		<b>4</b>	

### Q3 How concerned are you about the following natural disasters?

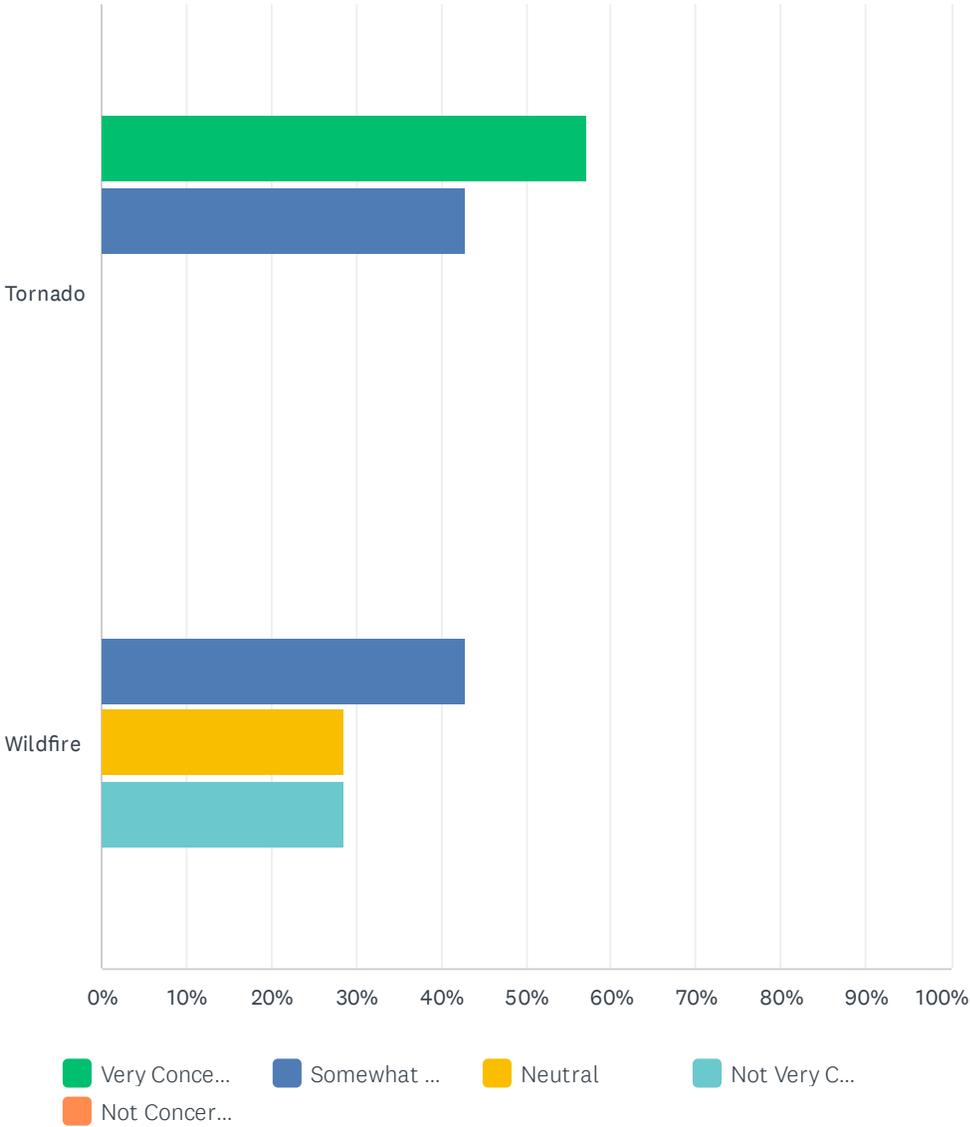
Answered: 7 Skipped: 0



Livingston County Natural Hazard Questionnaire



Livingston County Natural Hazard Questionnaire

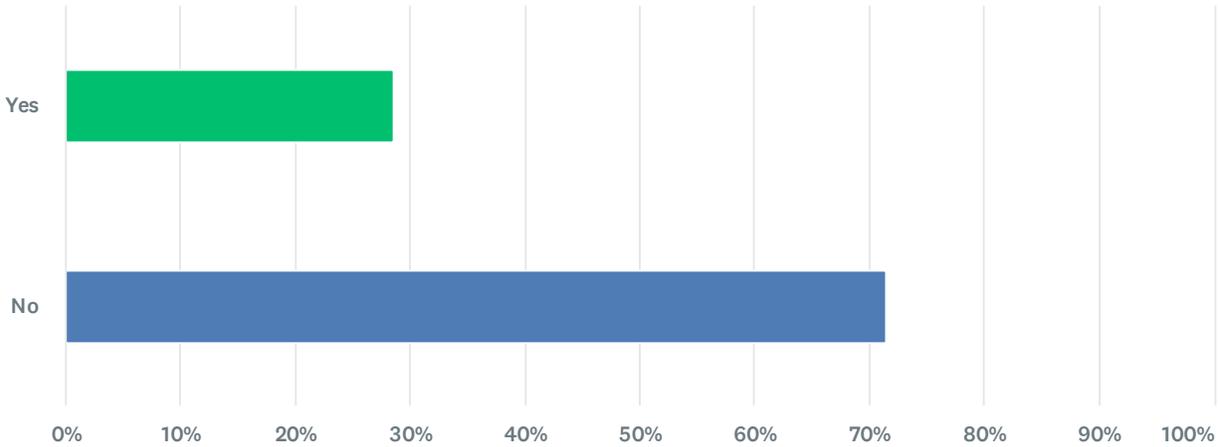


Livingston County Natural Hazard Questionnaire

	VERY CONCERNED	SOMEWHAT CONCERNED	NEUTRAL	NOT VERY CONCERNED	NOT CONCERNED	TOTAL
Dam Failure	0.00% 0	0.00% 0	28.57% 2	28.57% 2	42.86% 3	7
Drought	0.00% 0	85.71% 6	14.29% 1	0.00% 0	0.00% 0	7
Earthquake	0.00% 0	42.86% 3	0.00% 0	28.57% 2	28.57% 2	7
Extreme Temperatures	0.00% 0	100.00% 7	0.00% 0	0.00% 0	0.00% 0	7
Flood	28.57% 2	57.14% 4	14.29% 1	0.00% 0	0.00% 0	7
Levee Failure	14.29% 1	0.00% 0	28.57% 2	28.57% 2	28.57% 2	7
Severe Thunderstorm (Hail, High Winds, & Lightning)	42.86% 3	57.14% 4	0.00% 0	0.00% 0	0.00% 0	7
Severe Winter Weather	42.86% 3	57.14% 4	0.00% 0	0.00% 0	0.00% 0	7
Tornado	57.14% 4	42.86% 3	0.00% 0	0.00% 0	0.00% 0	7
Wildfire	0.00% 0	42.86% 3	28.57% 2	28.57% 2	0.00% 0	7

### Q4 Have you ever received information about how to make members of your household and your home safer from natural disasters?

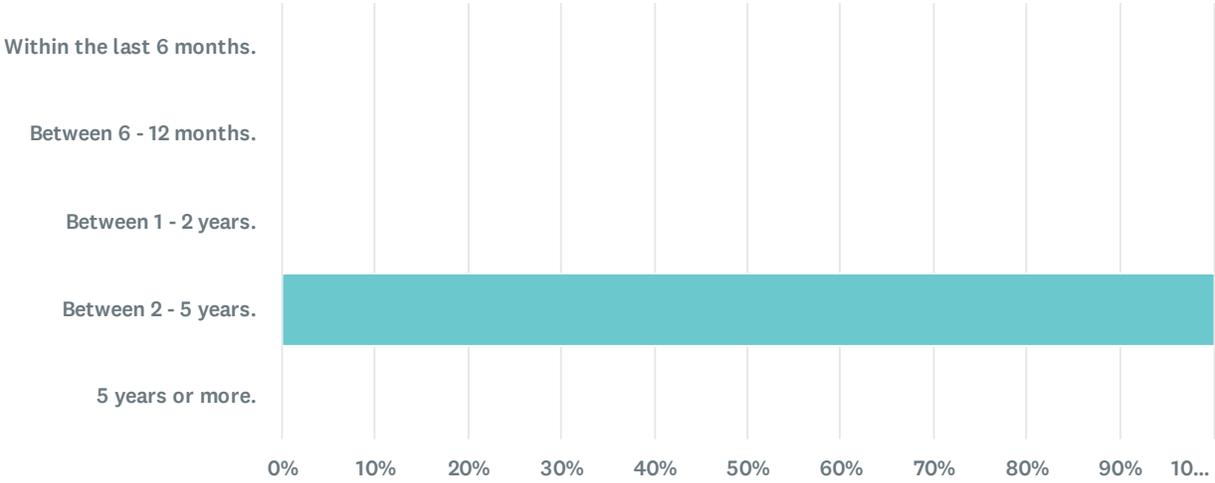
Answered: 7 Skipped: 0



Answer Choices ↓	Percentage ↓	Responses ↓	
<span style="color: green;">●</span> Yes	28.57%	2	...
<span style="color: blue;">●</span> No	71.43%	5	...
<b>Total</b>		<b>7</b>	

### Q5 If "Yes", how recently?

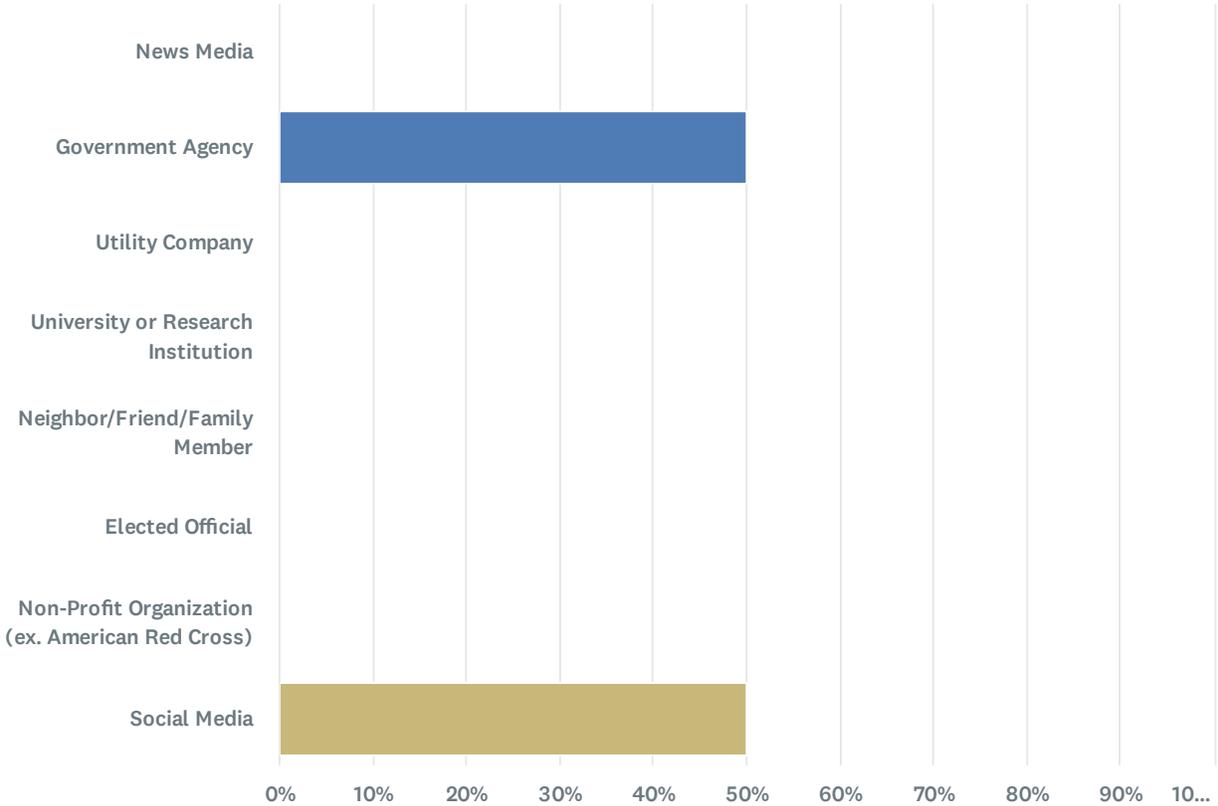
Answered: 2 Skipped: 5



Answer Choices ↓	Percentage ↓	Responses ↓	
● Within the last 6 months.	0%	0	...
● Between 6 - 12 months.	0%	0	...
● Between 1 - 2 years.	0%	0	...
● Between 2 - 5 years.	100.00%	2	...
● 5 years or more.	0%	0	...
<b>Total</b>		<b>2</b>	

## Q6 From whom did you last receive information about how to make members of your household and your home safer from natural disasters?

Answered: 4 Skipped: 3



^ Collapse

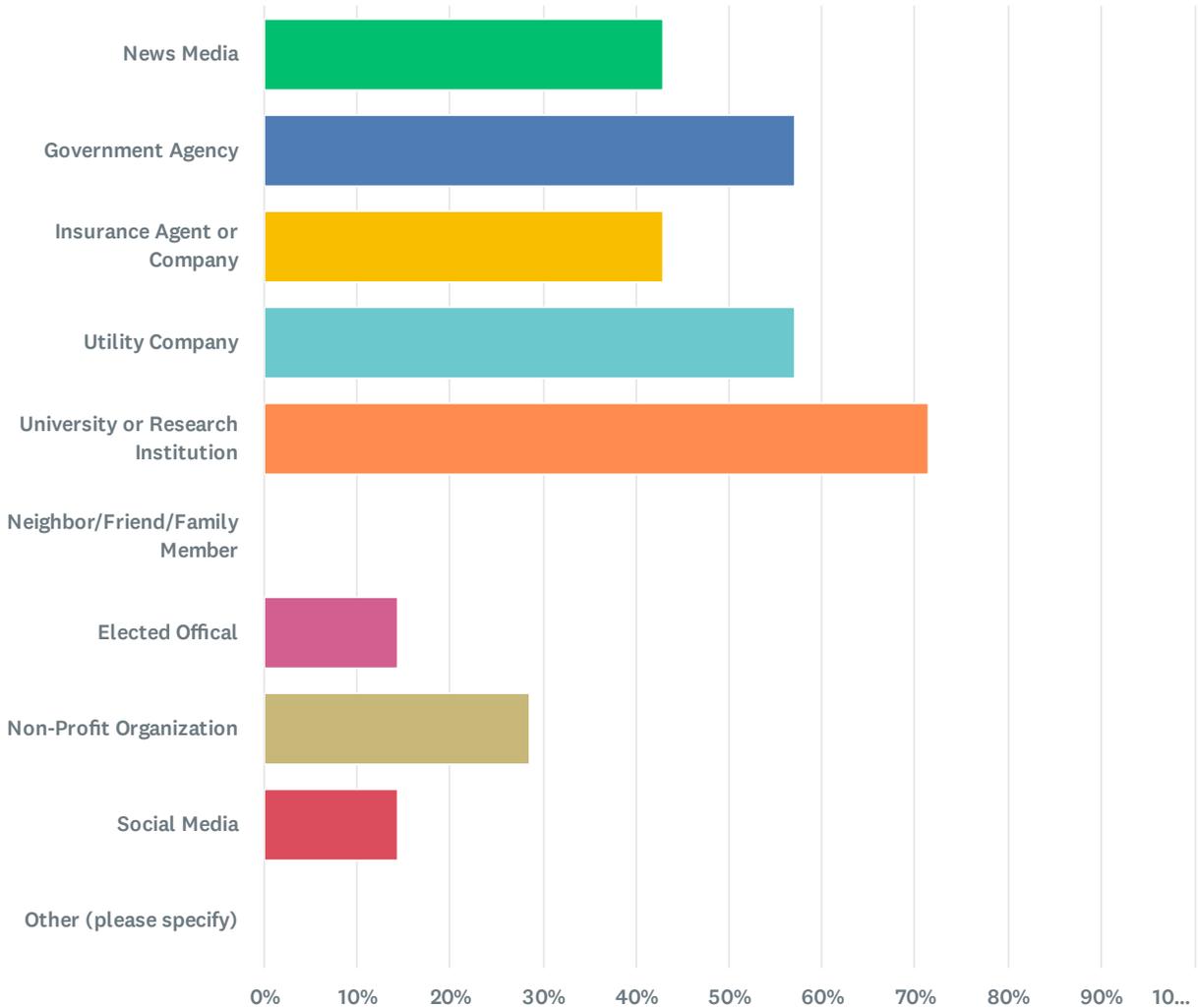
Answer Choices ↓	Percentage ↓	Responses ↓	
● News Media	0%	0	...
● Government Agency	50.00%	2	...
● Utility Company	0%	0	...
● University or Research Institution	0%	0	...
● Neighbor/Friend/Family Member	0%	0	...
<b>Total</b>		<b>4</b>	

## Livingston County Natural Hazard Questionnaire

Answer Choices ↓	Percentage ↓	Responses ↓	
<span style="color: purple;">●</span> Elected Official	0%	0	...
<span style="color: pink;">●</span> Non-Profit Organization (ex. American Red Cross)	0%	0	...
<span style="color: gold;">●</span> Social Media	50.00%	2	...
<a href="#"><span style="color: blue;">🗨️ Show comments</span></a>			
<b>Total</b>		<b>4</b>	

## Q7 Whom would you most trust to provide you with information about how to make your household and home safer from natural disasters?

Answered: 7 Skipped: 0



^ Collapse

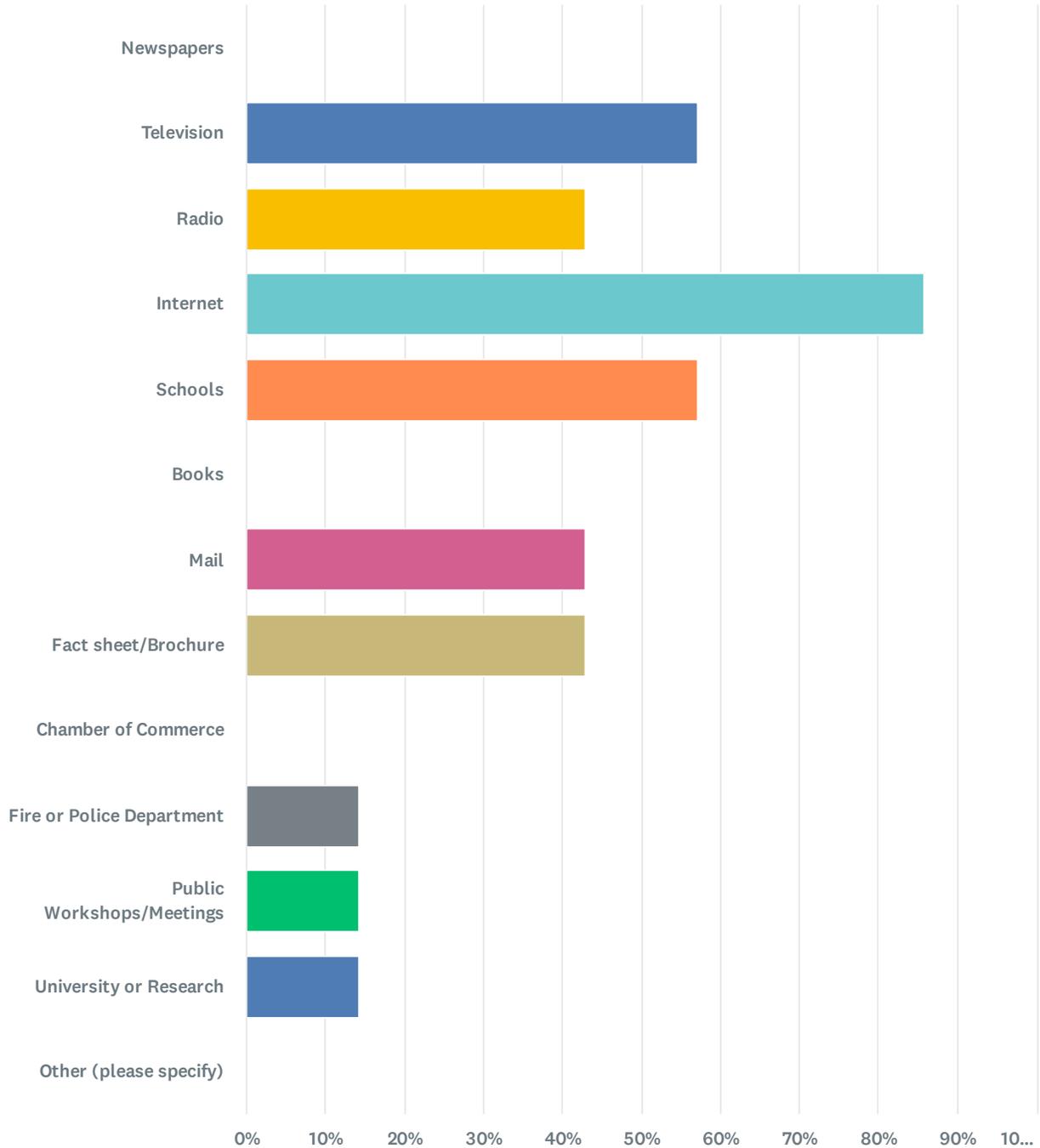
Answer Choices ↓	Percentage ↓	Responses ↓	
<span style="color: green;">●</span> News Media	42.86%	3	...
<span style="color: blue;">●</span> Government Agency	57.14%	4	...
<b>Total</b>		<b>7</b>	

Livingston County Natural Hazard Questionnaire

Answer Choices ↓	Percentage ↓	Responses ↓	
 Insurance Agent or Company	42.86%	3	...
 Utility Company	57.14%	4	...
 University or Research Institution	71.43%	5	...
 Neighbor/Friend/Family Member	0%	0	...
 Elected Official	14.29%	1	...
 Non-Profit Organization	28.57%	2	...
 Social Media	14.29%	1	...
 Other (please specify) <a href="#">Show responses</a>	0%	0	...
<b>Total</b>		<b>7</b>	

### Q8 What is the most effective way for you to receive information about how to make your household and home safer from natural disasters?

Answered: 7 Skipped: 0



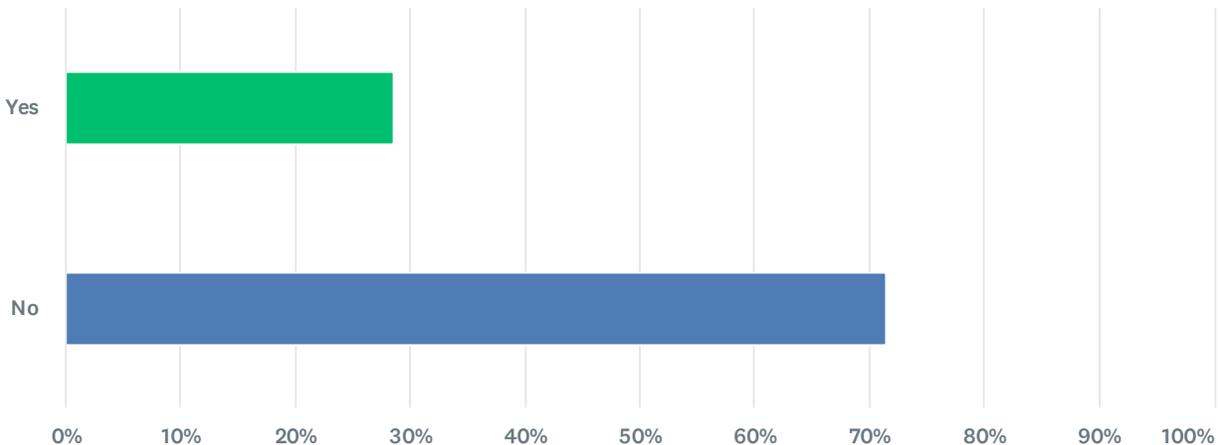
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## Livingston County Natural Hazard Questionnaire

Answer Choices ↓	Percentage ↓	Responses ↓	
<span style="color: green;">●</span> Newspapers	0%	0	...
<span style="color: blue;">●</span> Television	57.14%	4	...
<span style="color: yellow;">●</span> Radio	42.86%	3	...
<span style="color: teal;">●</span> Internet	85.71%	6	...
<span style="color: orange;">●</span> Schools	57.14%	4	...
<span style="color: purple;">●</span> Books	0%	0	...
<span style="color: pink;">●</span> Mail	42.86%	3	...
<span style="color: olive;">●</span> Fact sheet/Brochure	42.86%	3	...
<span style="color: red;">●</span> Chamber of Commerce	0%	0	...
<span style="color: grey;">●</span> Fire or Police Department	14.29%	1	...
<span style="color: green;">●</span> Public Workshops/Meetings	14.29%	1	...
<span style="color: blue;">●</span> University or Research	14.29%	1	...
<span style="color: yellow;">●</span> Other (please specify) <a href="#">Show responses</a>	0%	0	...
<b>Total</b>		<b>7</b>	

## Q9 Prior to completing this survey, were you aware of your county's Hazard Mitigation Plan?

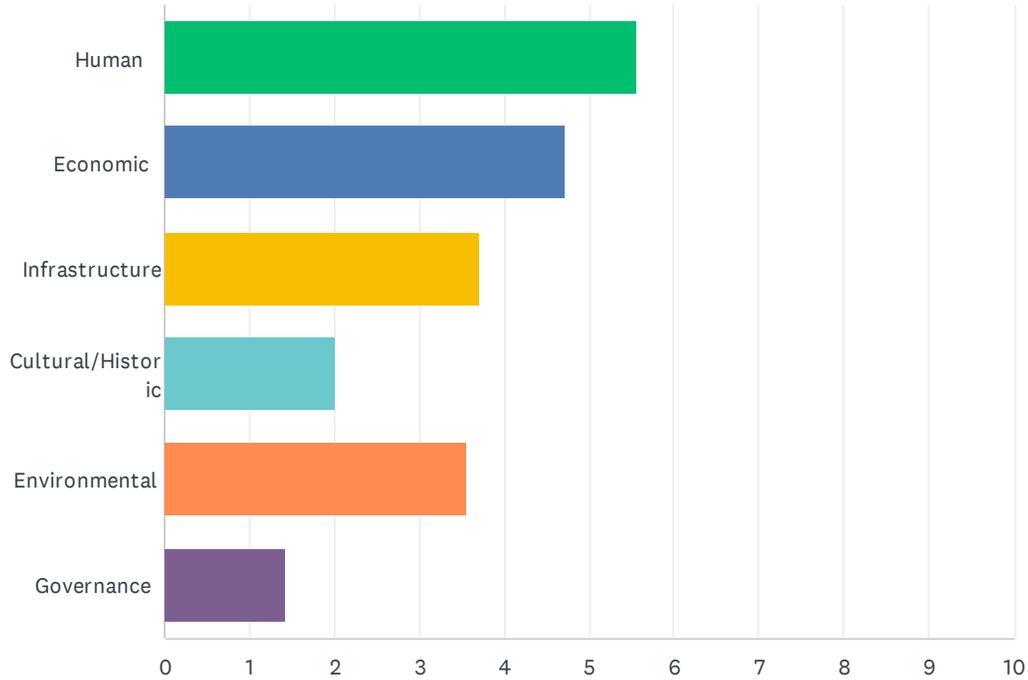
Answered: 7 Skipped: 0



Answer Choices ↓	Percentage ↓	Responses ↓	
● Yes	28.57%	2	...
● No	71.43%	5	...
<b>Total</b>		<b>7</b>	

**Q10 Community assets are features, characteristics, or resources that either make a community unique or allow the community to function. Which of the following categories are most susceptible to the impacts caused by natural hazards in your community?**

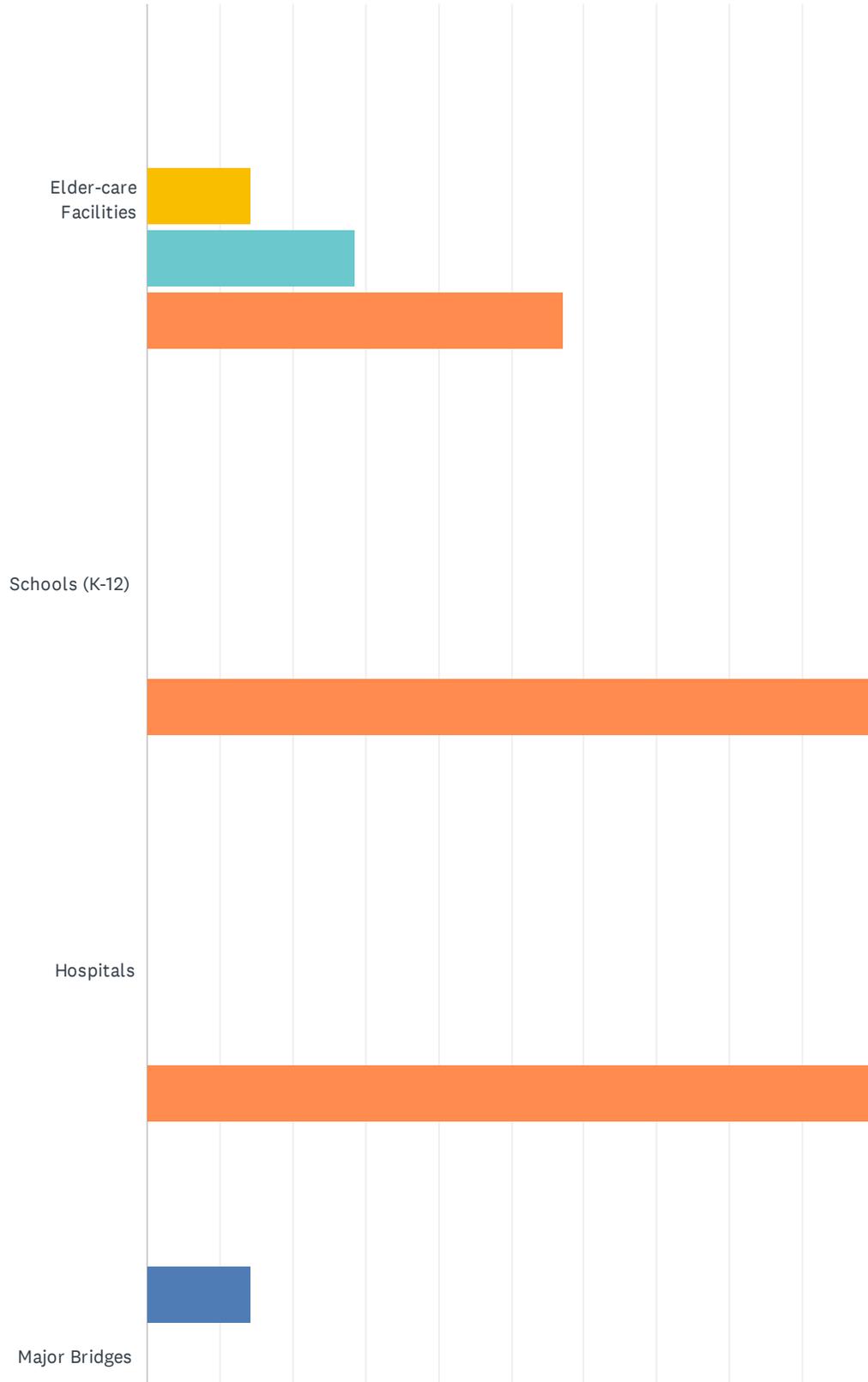
Answered: 7 Skipped: 0



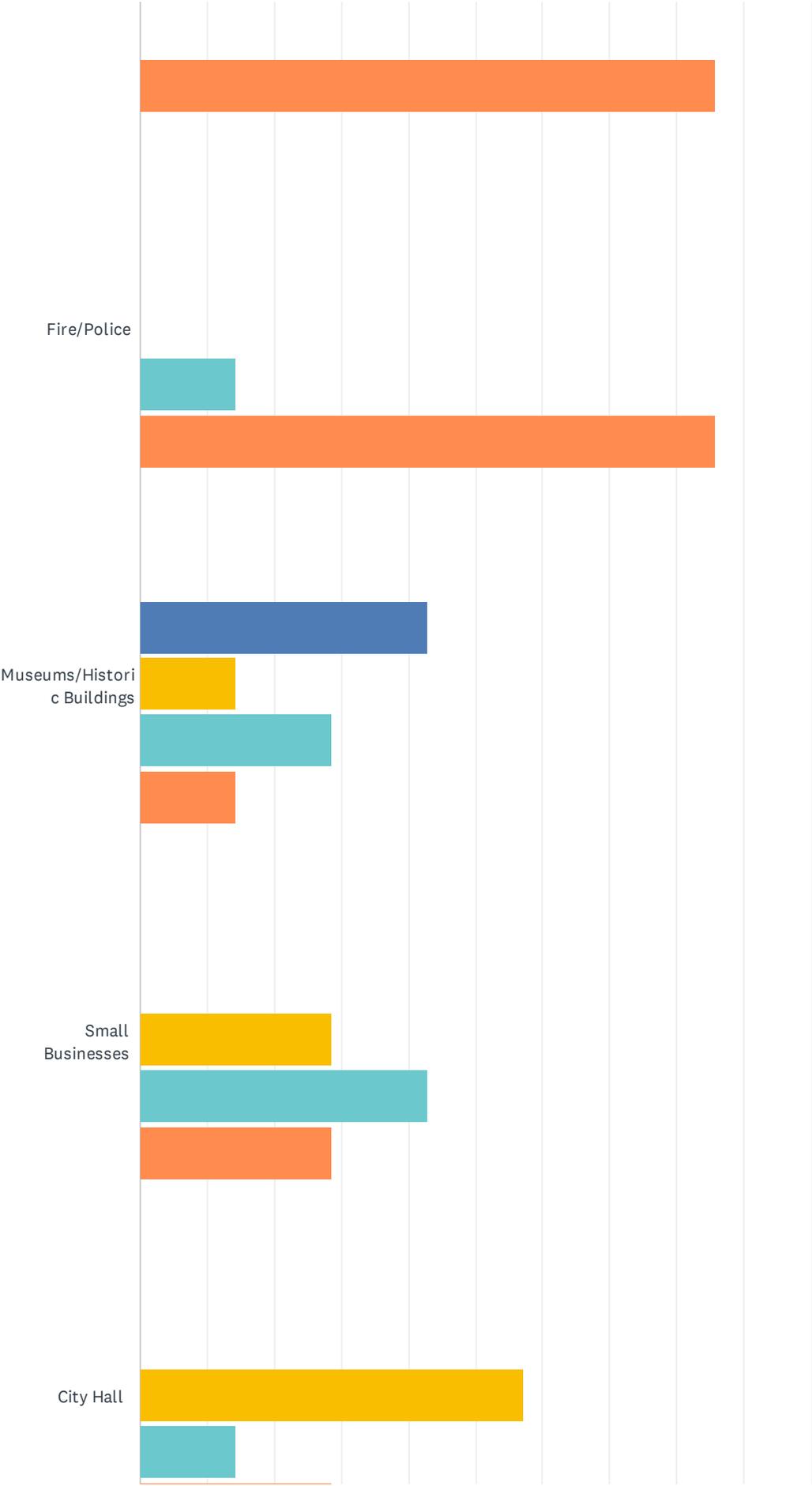
	1	2	3	4	5	6	TOTAL	SCORE
Human	71.43% 5	14.29% 1	14.29% 1	0.00% 0	0.00% 0	0.00% 0	7	5.57
Economic	28.57% 2	28.57% 2	28.57% 2	14.29% 1	0.00% 0	0.00% 0	7	4.71
Infrastructure	0.00% 0	28.57% 2	28.57% 2	28.57% 2	14.29% 1	0.00% 0	7	3.71
Cultural/Historic	0.00% 0	0.00% 0	0.00% 0	28.57% 2	42.86% 3	28.57% 2	7	2.00
Environmental	0.00% 0	28.57% 2	28.57% 2	14.29% 1	28.57% 2	0.00% 0	7	3.57
Governance	0.00% 0	0.00% 0	0.00% 0	14.29% 1	14.29% 1	71.43% 5	7	1.43

# Q11 Next, we would like to know what specific types of community assets are most important to you.

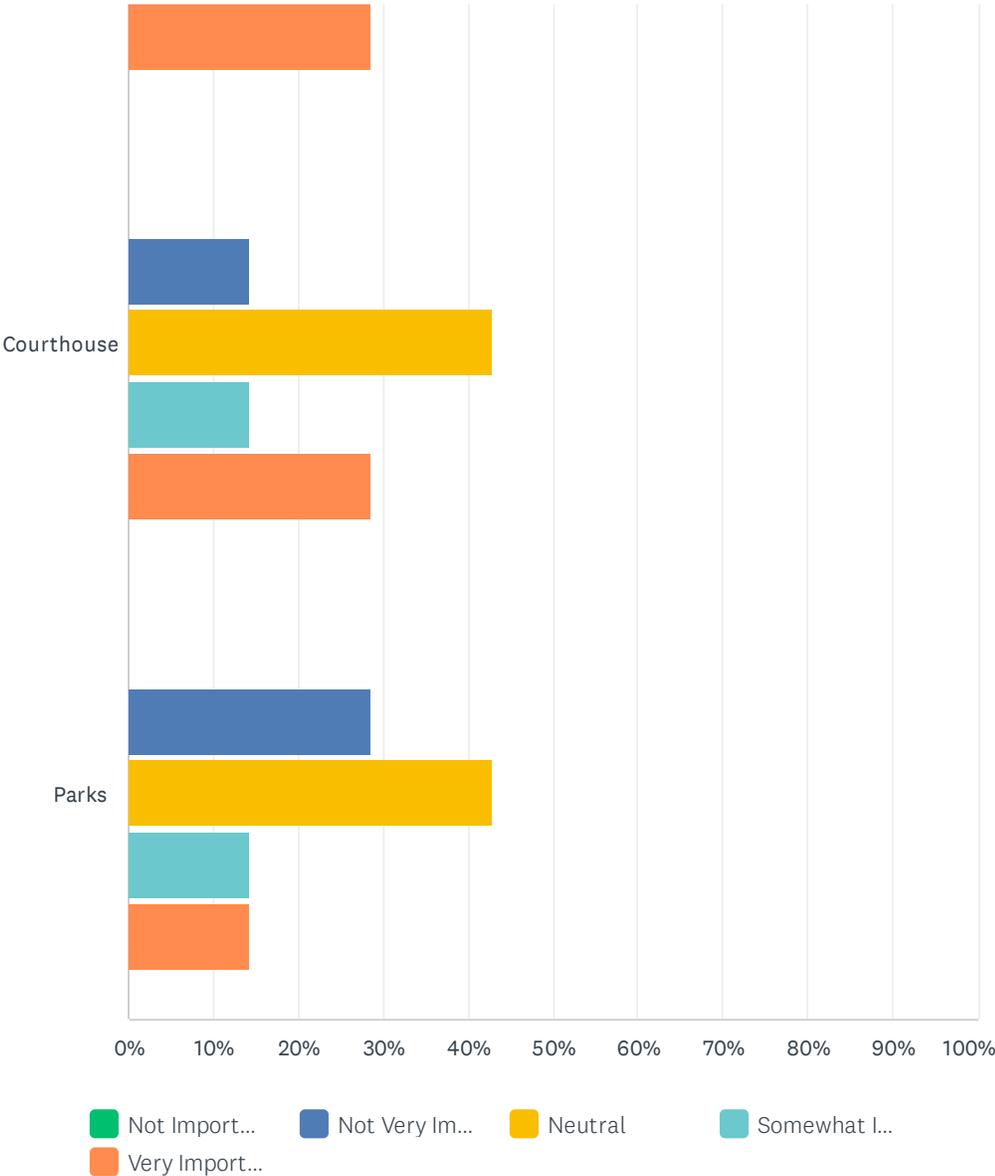
Answered: 7 Skipped: 0



Livingston County Natural Hazard Questionnaire



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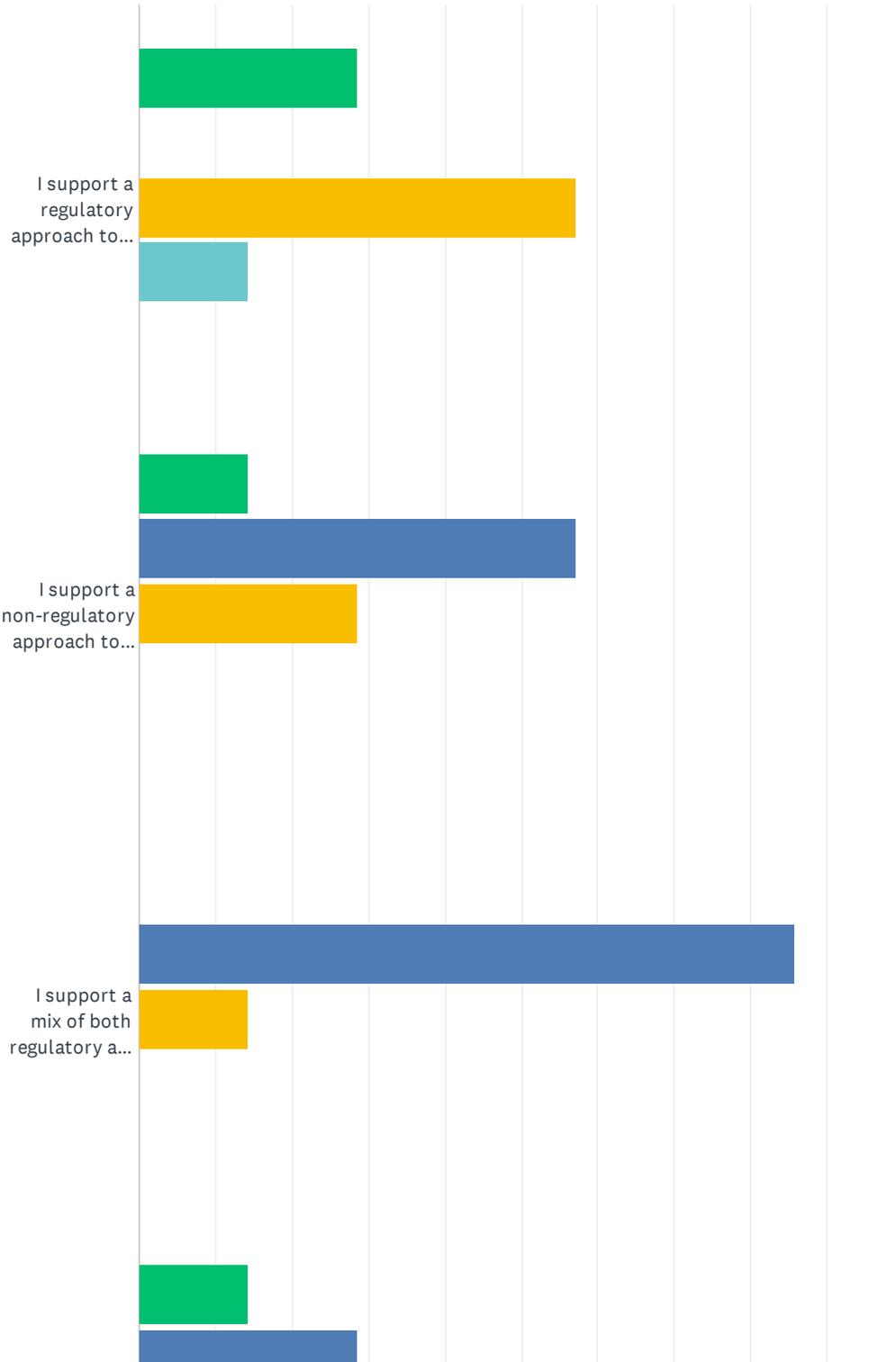


Livingston County Natural Hazard Questionnaire

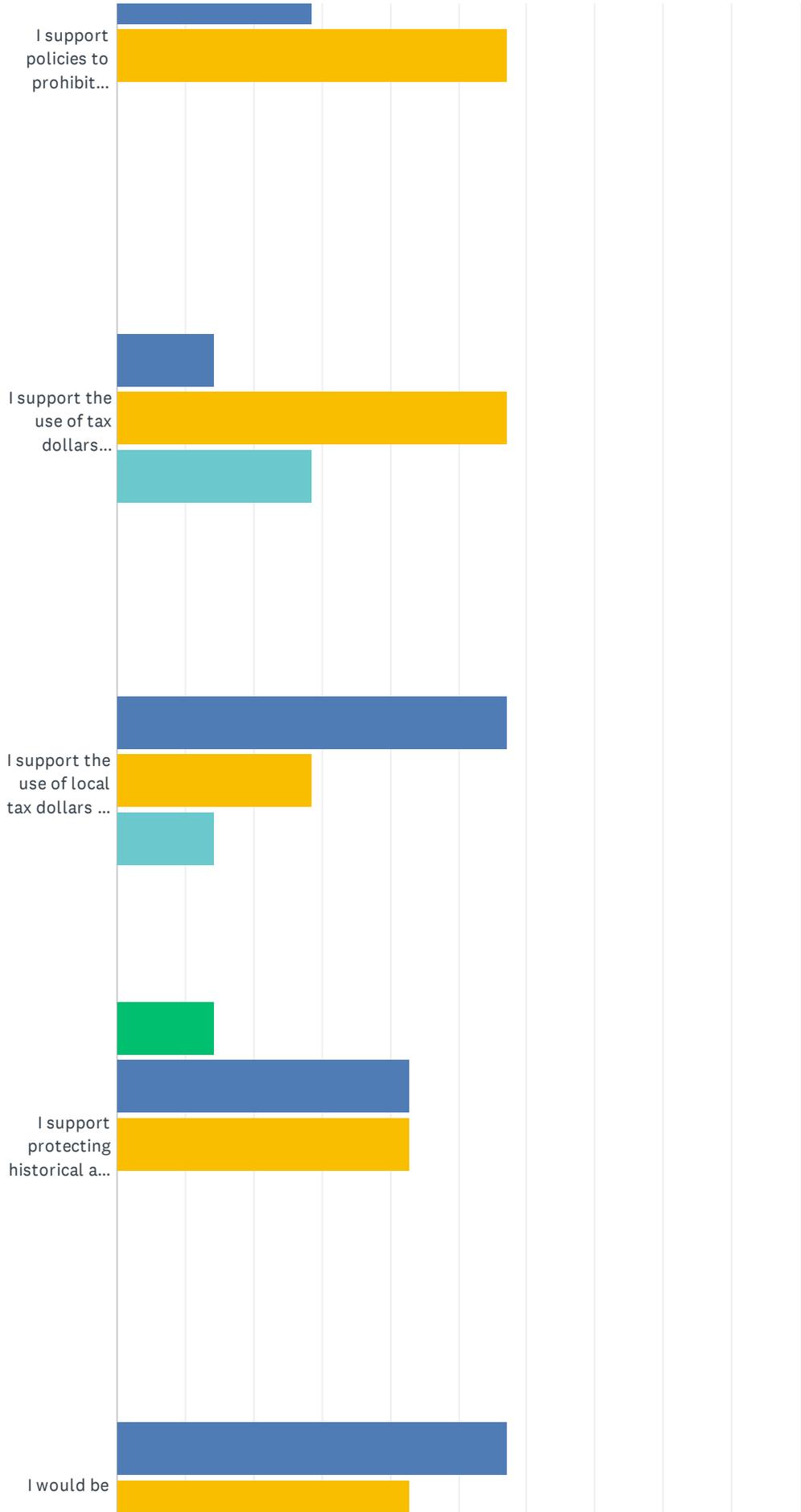
	NOT IMPORTANT	NOT VERY IMPORTANT	NEUTRAL	SOMEWHAT IMPORTANT	VERY IMPORTANT	TOTAL	WEIGHTED AVERAGE
Elder-care Facilities	0.00% 0	0.00% 0	14.29% 1	28.57% 2	57.14% 4	7	4.43
Schools (K-12)	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 7	7	5.00
Hospitals	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 7	7	5.00
Major Bridges	0.00% 0	14.29% 1	0.00% 0	0.00% 0	85.71% 6	7	4.57
Fire/Police	0.00% 0	0.00% 0	0.00% 0	14.29% 1	85.71% 6	7	4.86
Museums/Historic Buildings	0.00% 0	42.86% 3	14.29% 1	28.57% 2	14.29% 1	7	3.14
Small Businesses	0.00% 0	0.00% 0	28.57% 2	42.86% 3	28.57% 2	7	4.00
City Hall	0.00% 0	0.00% 0	57.14% 4	14.29% 1	28.57% 2	7	3.71
Courthouse	0.00% 0	14.29% 1	42.86% 3	14.29% 1	28.57% 2	7	3.57
Parks	0.00% 0	28.57% 2	42.86% 3	14.29% 1	14.29% 1	7	3.14

Q12 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.

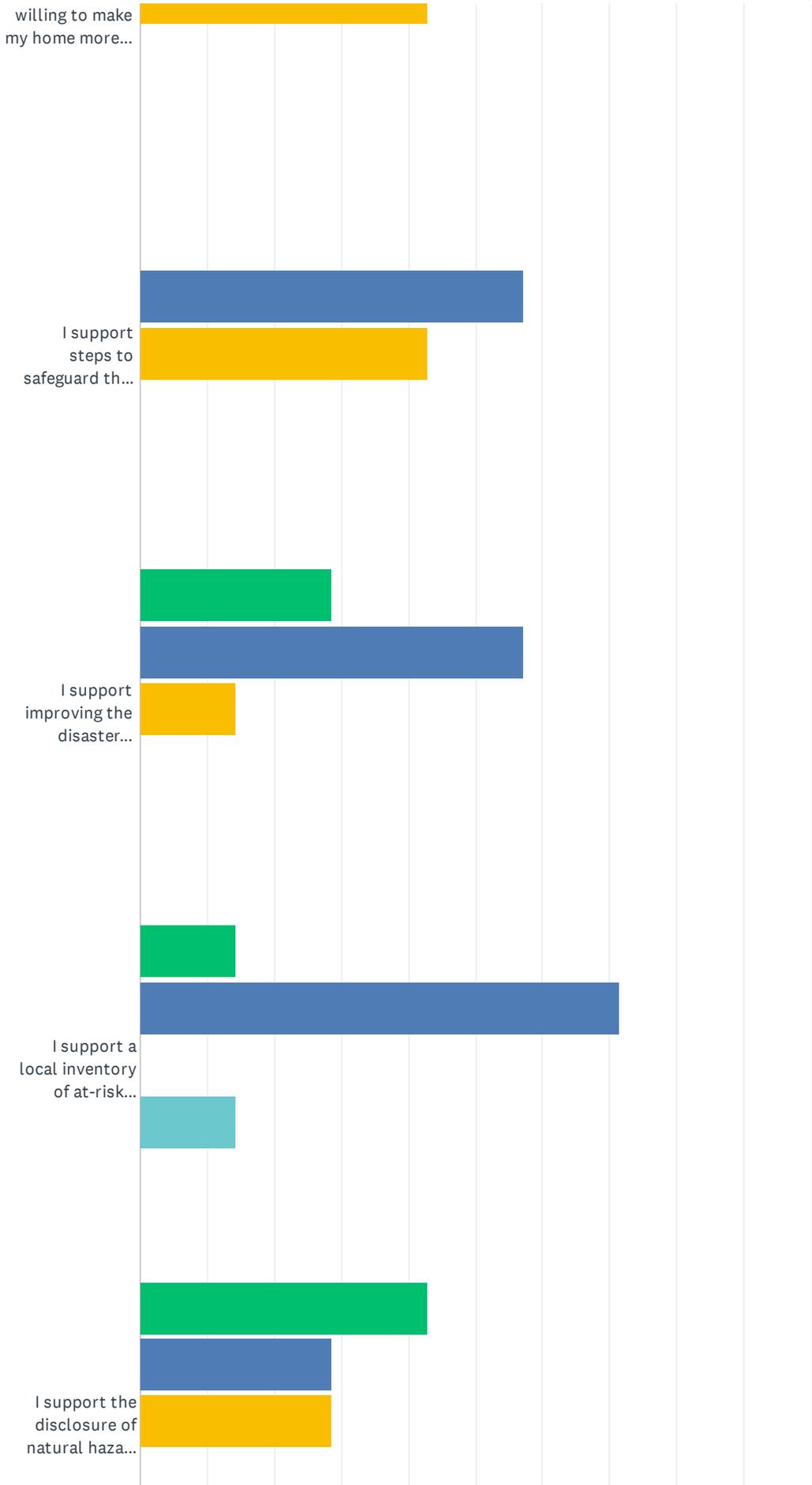
Answered: 7 Skipped: 0



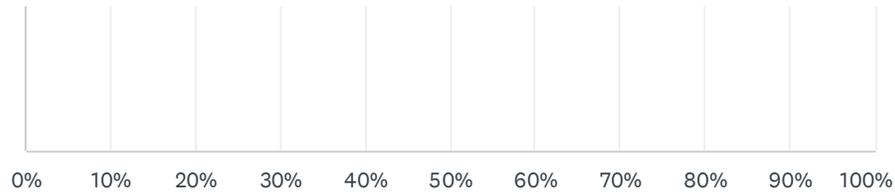
Livingston County Natural Hazard Questionnaire



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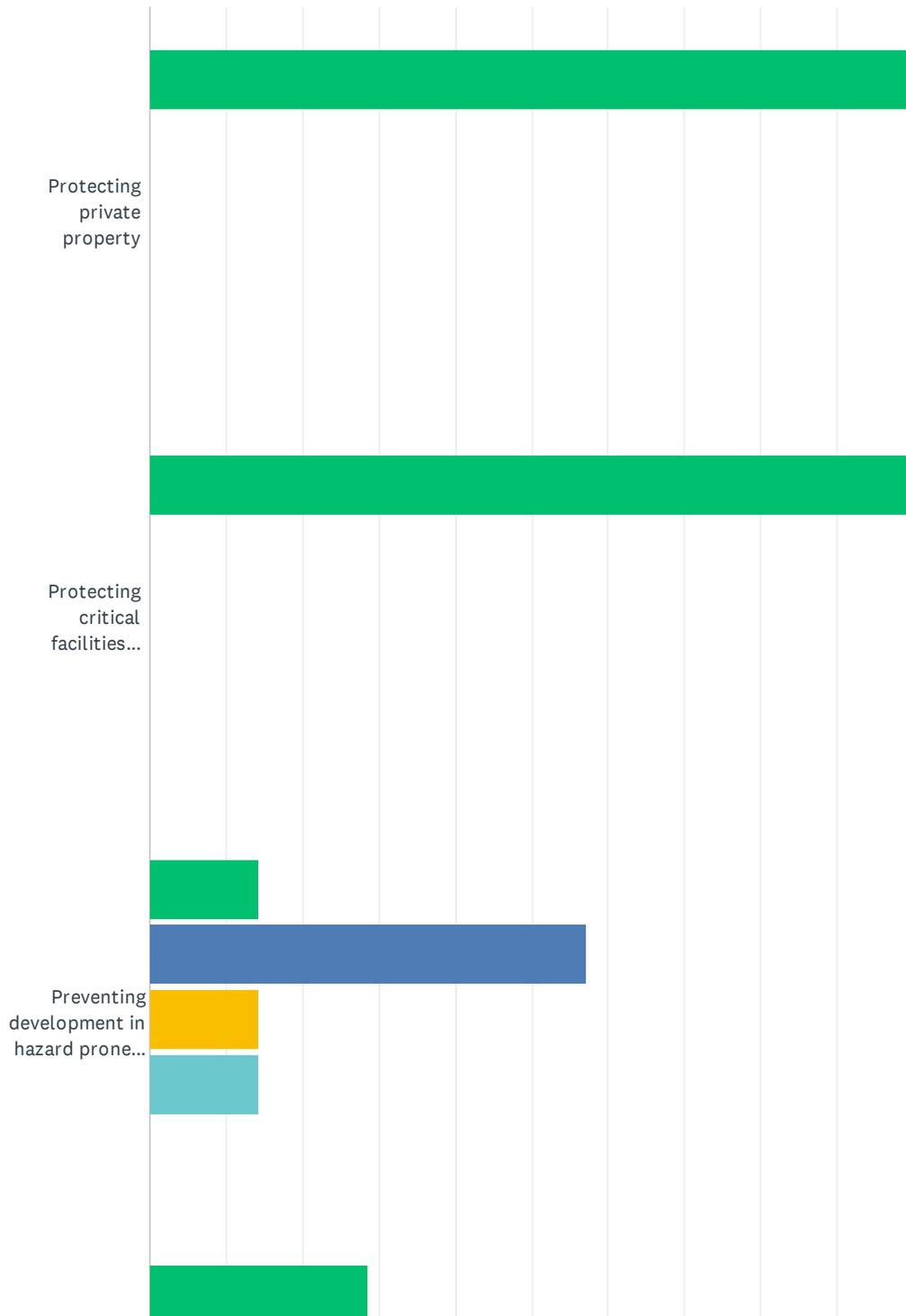
## Livingston County Natural Hazard Questionnaire



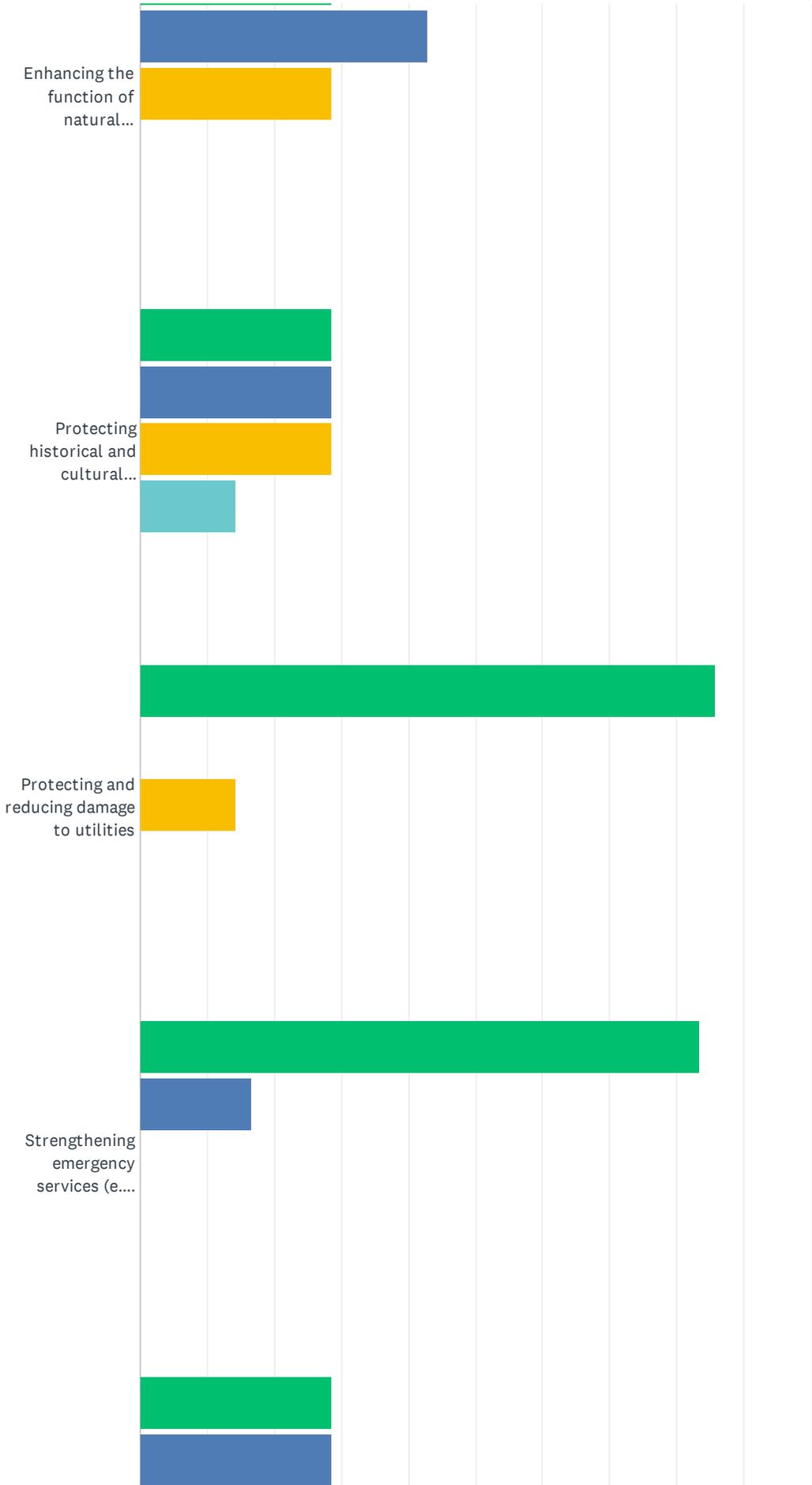
	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	TOTAL	WEIGHTED AVERAGE
I support a regulatory approach to reducing risk	28.57% 2	0.00% 0	57.14% 4	14.29% 1	0.00% 0	7	2.57
I support a non-regulatory approach to reducing risk	14.29% 1	57.14% 4	28.57% 2	0.00% 0	0.00% 0	7	2.14
I support a mix of both regulatory and non-regulatory approaches to reducing risk	0.00% 0	85.71% 6	14.29% 1	0.00% 0	0.00% 0	7	2.14
I support policies to prohibit development in areas subject to natural hazards	14.29% 1	28.57% 2	57.14% 4	0.00% 0	0.00% 0	7	2.43
I support the use of tax dollars (federal and/or local) to compensate landowners for not developing in areas subject to natural hazards	0.00% 0	14.29% 1	57.14% 4	28.57% 2	0.00% 0	7	3.14
I support the use of local tax dollars to reduce risks and losses from natural disasters	0.00% 0	57.14% 4	28.57% 2	14.29% 1	0.00% 0	7	2.57
I support protecting historical and cultural structures	14.29% 1	42.86% 3	42.86% 3	0.00% 0	0.00% 0	7	2.29
I would be willing to make my home more disaster resilient	0.00% 0	57.14% 4	42.86% 3	0.00% 0	0.00% 0	7	2.43
I support steps to safeguard the local economy following a disaster event	0.00% 0	57.14% 4	42.86% 3	0.00% 0	0.00% 0	7	2.43
I support improving the disaster preparedness of local schools	28.57% 2	57.14% 4	14.29% 1	0.00% 0	0.00% 0	7	1.86
I support a local inventory of at-risk buildings and infrastructure	14.29% 1	71.43% 5	0.00% 0	14.29% 1	0.00% 0	7	2.14
I support the disclosure of natural hazard risks during real estate transactions	42.86% 3	28.57% 2	28.57% 2	0.00% 0	0.00% 0	7	1.86

Q13 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.

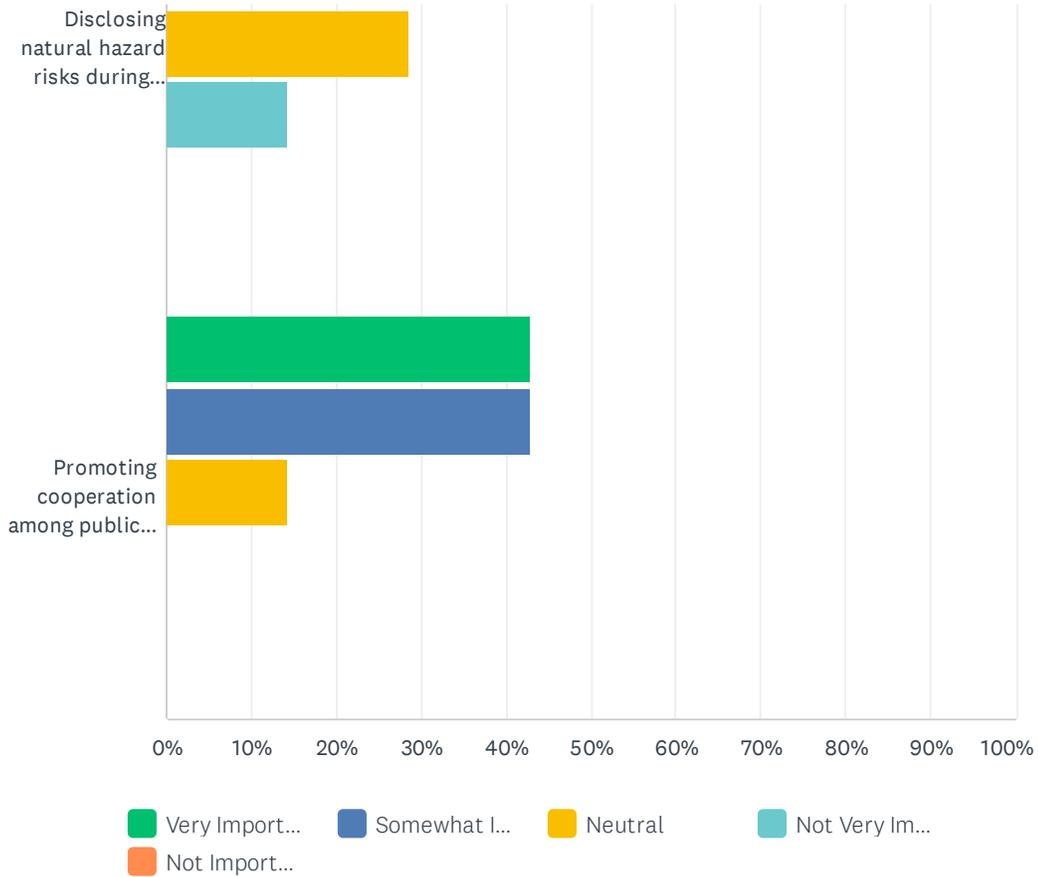
Answered: 7 Skipped: 0



Livingston County Natural Hazard Questionnaire



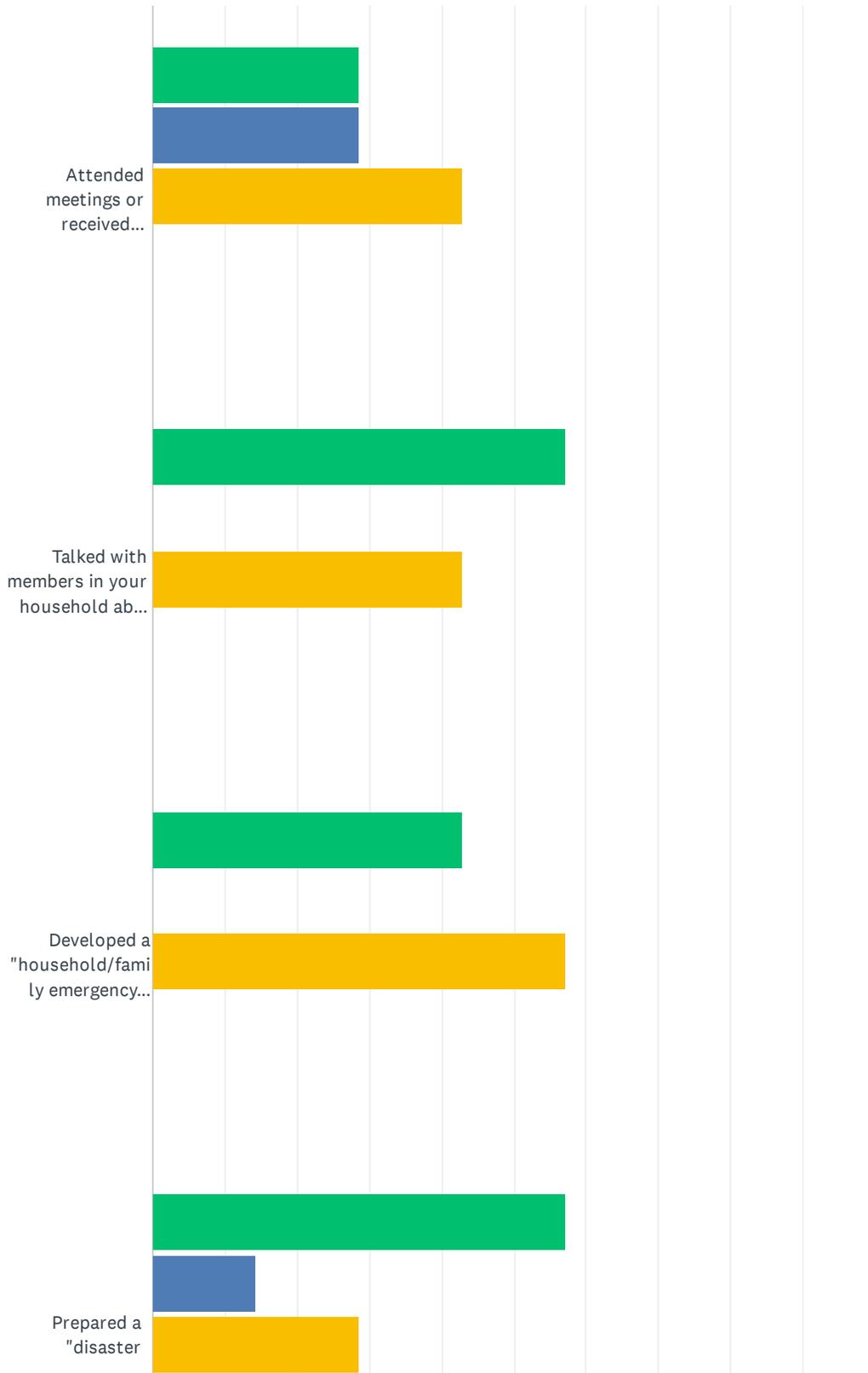
## Livingston County Natural Hazard Questionnaire



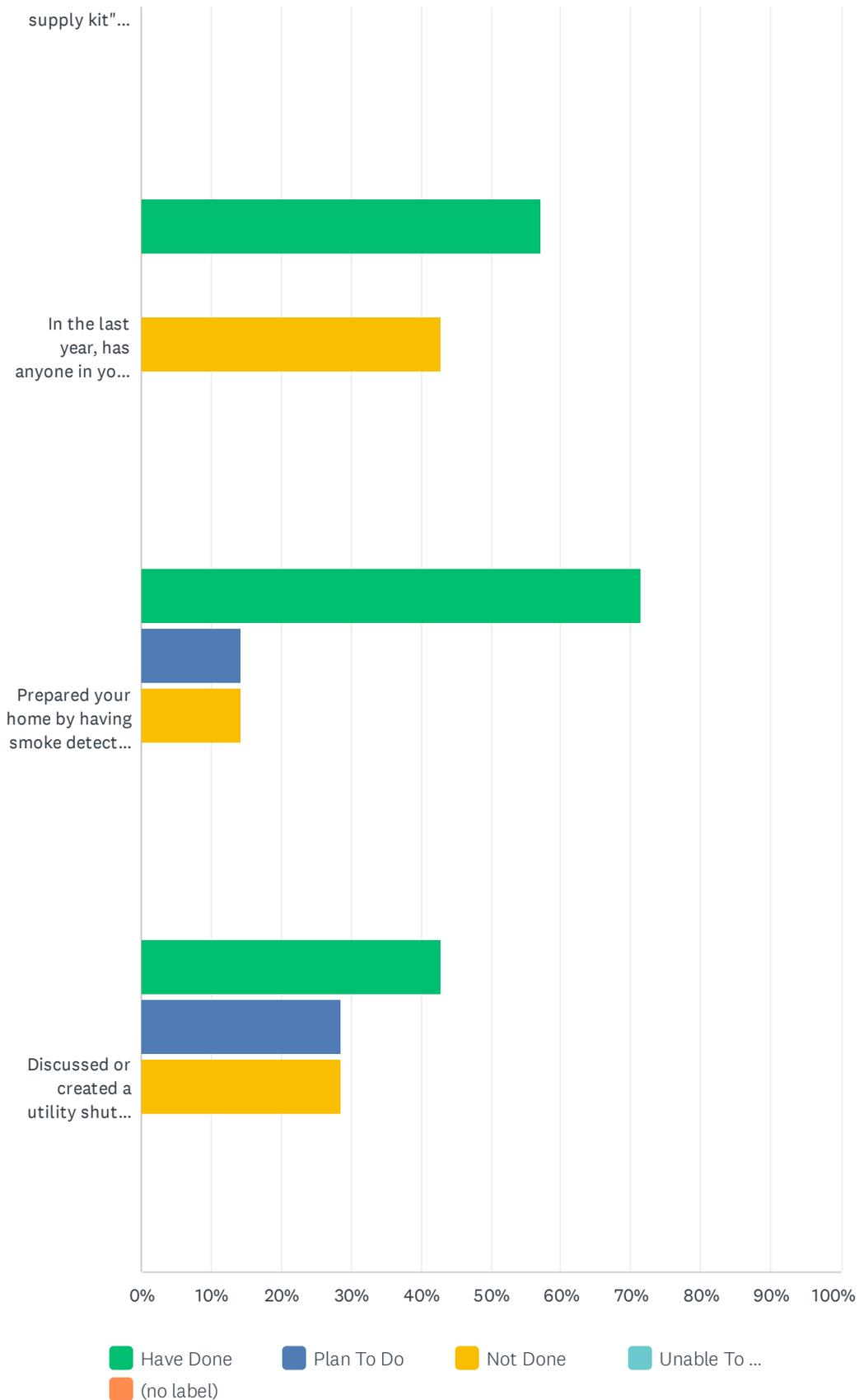
	VERY IMPORTANT	SOMEWHAT IMPORTANT	NEUTRAL	NOT VERY IMPORTANT	NOT IMPORTANT	TOTAL
Protecting private property	100.00% 7	0.00% 0	0.00% 0	0.00% 0	0.00% 0	7
Protecting critical facilities (transportation networks, hospitals, fire stations)	100.00% 7	0.00% 0	0.00% 0	0.00% 0	0.00% 0	7
Preventing development in hazard prone areas	14.29% 1	57.14% 4	14.29% 1	14.29% 1	0.00% 0	7
Enhancing the function of natural features (e.g. streams, wetlands)	28.57% 2	42.86% 3	28.57% 2	0.00% 0	0.00% 0	7
Protecting historical and cultural landmarks	28.57% 2	28.57% 2	28.57% 2	14.29% 1	0.00% 0	7
Protecting and reducing damage to utilities	85.71% 6	0.00% 0	14.29% 1	0.00% 0	0.00% 0	7
Strengthening emergency services (e.g. police, fire, ambulance)	83.33% 5	16.67% 1	0.00% 0	0.00% 0	0.00% 0	6
Disclosing natural hazard risks during real estate transactions	28.57% 2	28.57% 2	28.57% 2	14.29% 1	0.00% 0	7
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	42.86% 3	42.86% 3	14.29% 1	0.00% 0	0.00% 0	7

### Q14 In the following, please check those activities that you have done in your household, plan to do in the near future, or are unable to do.

Answered: 7 Skipped: 0



# Livingston County Natural Hazard Questionnaire

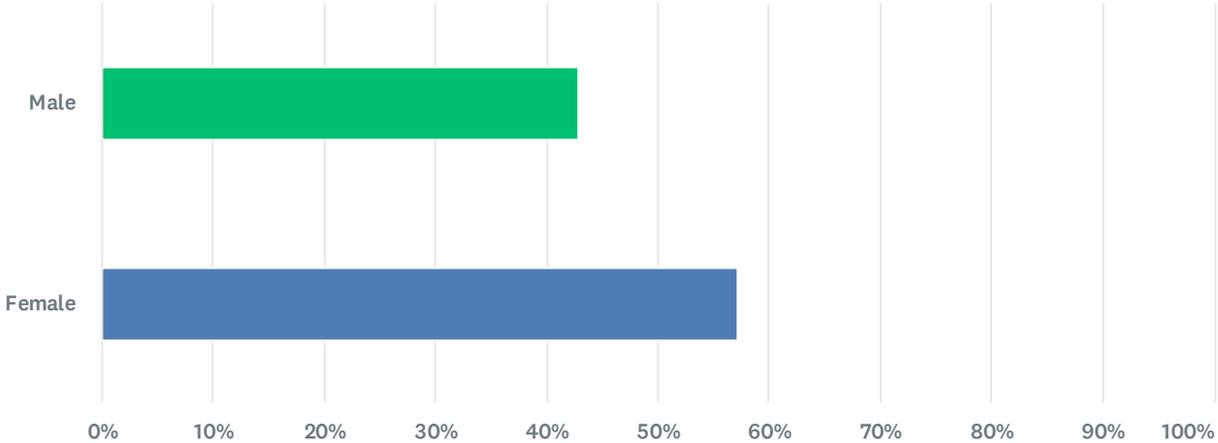


Livingston County Natural Hazard Questionnaire

	HAVE DONE	PLAN TO DO	NOT DONE	UNABLE TO DO	(NO LABEL)	TOTAL
Attended meetings or received written information on natural disasters or emergency preparedness	28.57% 2	28.57% 2	42.86% 3	0.00% 0	0.00% 0	7
Talked with members in your household about what to do in case of a natural disaster or emergency	57.14% 4	0.00% 0	42.86% 3	0.00% 0	0.00% 0	7
Developed a "household/family emergency plan" in order to decide what everyone would do in the event of a disaster	42.86% 3	0.00% 0	57.14% 4	0.00% 0	0.00% 0	7
Prepared a "disaster supply kit" (stored extra food, water, batteries, or other emergency supplies)	57.14% 4	14.29% 1	28.57% 2	0.00% 0	0.00% 0	7
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)	57.14% 4	0.00% 0	42.86% 3	0.00% 0	0.00% 0	7
Prepared your home by having smoke detectors on each level of the house	71.43% 5	14.29% 1	14.29% 1	0.00% 0	0.00% 0	7
Discussed or created a utility shutoff procedure in the event of a natural disaster	42.86% 3	28.57% 2	28.57% 2	0.00% 0	0.00% 0	7

### Q15 Gender?

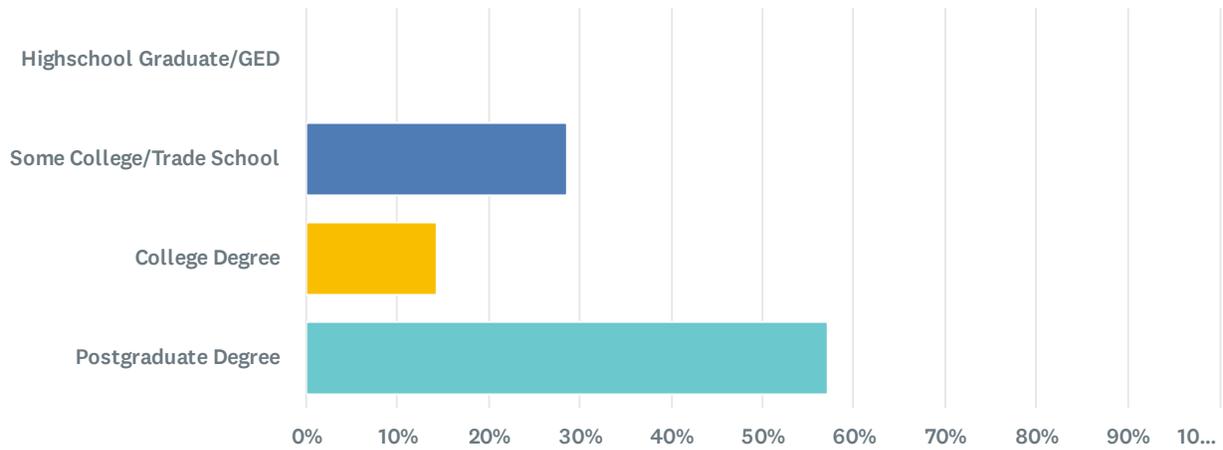
Answered: 7 Skipped: 0



Answer Choices ↓	Percentage ↓	Responses ↓	
● Male	42.86%	3	...
● Female	57.14%	4	...
<b>Total</b>		<b>7</b>	

## Q16 Please indicate your level of education.

Answered: 7 Skipped: 0



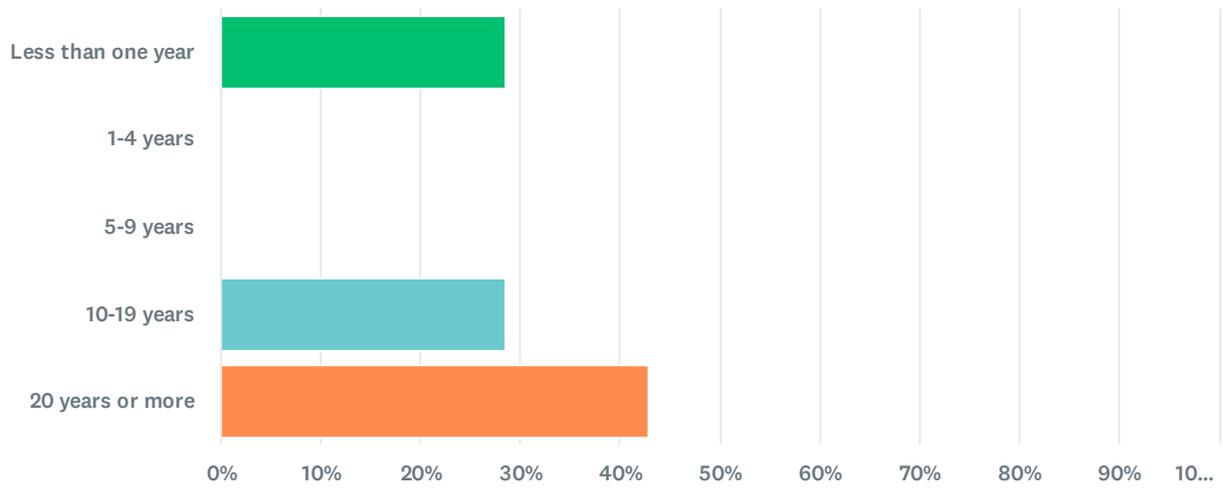
Answer Choices ↓	Percentage ↓	Responses ↓	
● Highschool Graduate/GED	0%	0	...
● Some College/Trade School	28.57%	2	...
● College Degree	14.29%	1	...
● Postgraduate Degree	57.14%	4	...
<b>Total</b>		<b>7</b>	

## Q17 Zip Code

Answered: 7 Skipped: 0

## Q18 How long have you lived in Livingston County?

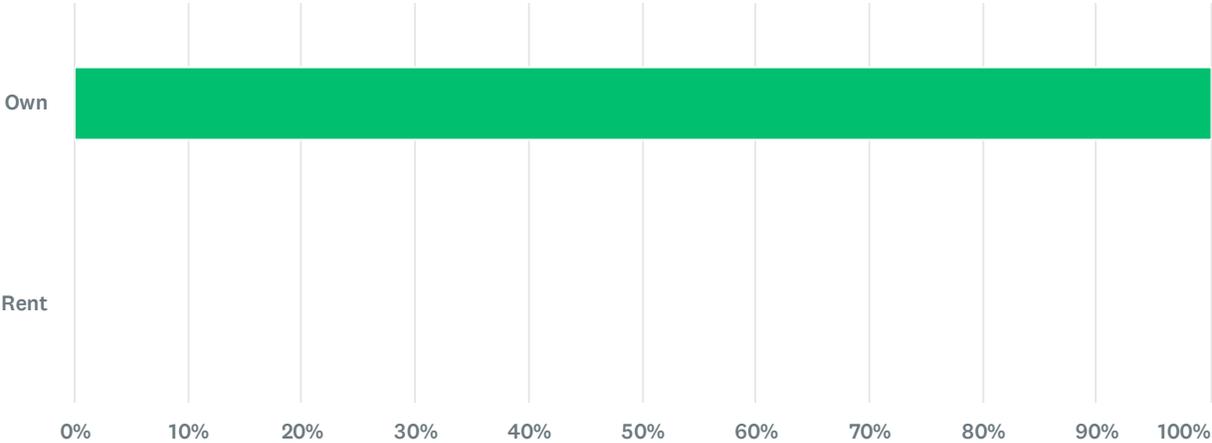
Answered: 7 Skipped: 0



Answer Choices ↓	Percentage ↓	Responses ↓	
● Less than one year	28.57%	2	...
● 1-4 years	0%	0	...
● 5-9 years	0%	0	...
● 10-19 years	28.57%	2	...
● 20 years or more	42.86%	3	...
<b>Total</b>		<b>7</b>	

### Q19 Do you own or rent your home?

Answered: 7 Skipped: 0



Answer Choices ↓	Percentage ↓	Responses ↓	
● Own	100.00%	7	...
● Rent	0%	0	...
<b>Total</b>		<b>7</b>	

**Q20 Please feel free to provide any additional comments in the space provided.**

Answered: 0 Skipped: 7

# Appendix D

- Critical Facilities (Redacted from Public Version)

# Appendix E

- Resolutions of Adoption

**RESOLUTION NO. R1-2026**  
**City of Chillicothe, Missouri**

A RESOLUTION OF THE City of Chillicothe ADOPTING THE Livingston County Multi - Jurisdictional Hazard Mitigation Plan

WHEREAS the City of Chillicothe recognizes the threat that natural hazards pose to people and property within the City of Chillicothe; and

WHEREAS the City of Chillicothe has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Livingston County Multijurisdictional 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 Chillicothe from the impacts of future hazards and disasters; and

WHEREAS the City of Chillicothe recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the City of Chillicothe will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by the City of Chillicothe demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY THE City of Chillicothe, in the State of Missouri, THAT:

In accordance with local rules for adopting resolutions, the City of Chillicothe adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of 5 in favor and 0 against, and 0 abstaining, this 26<sup>th</sup> day of January, 2026.

By (Sig):  \_\_\_\_\_  
Print name: Theresa Kelly - Mayor

ATTEST:  
By (Sig.):  \_\_\_\_\_  
Print name: Amy Hess – City Clerk

APPROVED AS TO FORM:

By (Sig.): \_\_\_\_\_  
Print name: \_\_\_\_\_

\_\_\_\_\_

County of Livingston, Missouri RESOLUTION NO. 012226

A RESOLUTION OF THE County of Livingston ADOPTING THE Livingston County Multijurisdictional Hazard Mitigation Plan

WHEREAS the County of Livingston recognizes the threat that natural hazards pose to people and property within the County of Livingston; and

WHEREAS the County of Livingston has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Livingston County Multijurisdictional 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 County of Livingston from the impacts of future hazards and disasters; and

WHEREAS the County of Livingston recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the County of Livingston will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by the County of Livingston demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY THE County of Livingston, in the State of Missouri, THAT:

In accordance with local rules for adopting resolutions, the County of Livingston adopts the final FEMA-approved *Plan*.

ADOPTED by a vote of 3 in favor and 0 against, and 0 abstaining, this 22<sup>nd</sup> day of January, 2020.

By (Sig.): ED Douglas

Print name: ED Douglas

ATTEST:

By (Sig.): Dennis Hicks

Print name: Dennis Hicks

APPROVED AS TO FORM:

By (Sig.): Bryce Anderson

Print name: Bryce Anderson