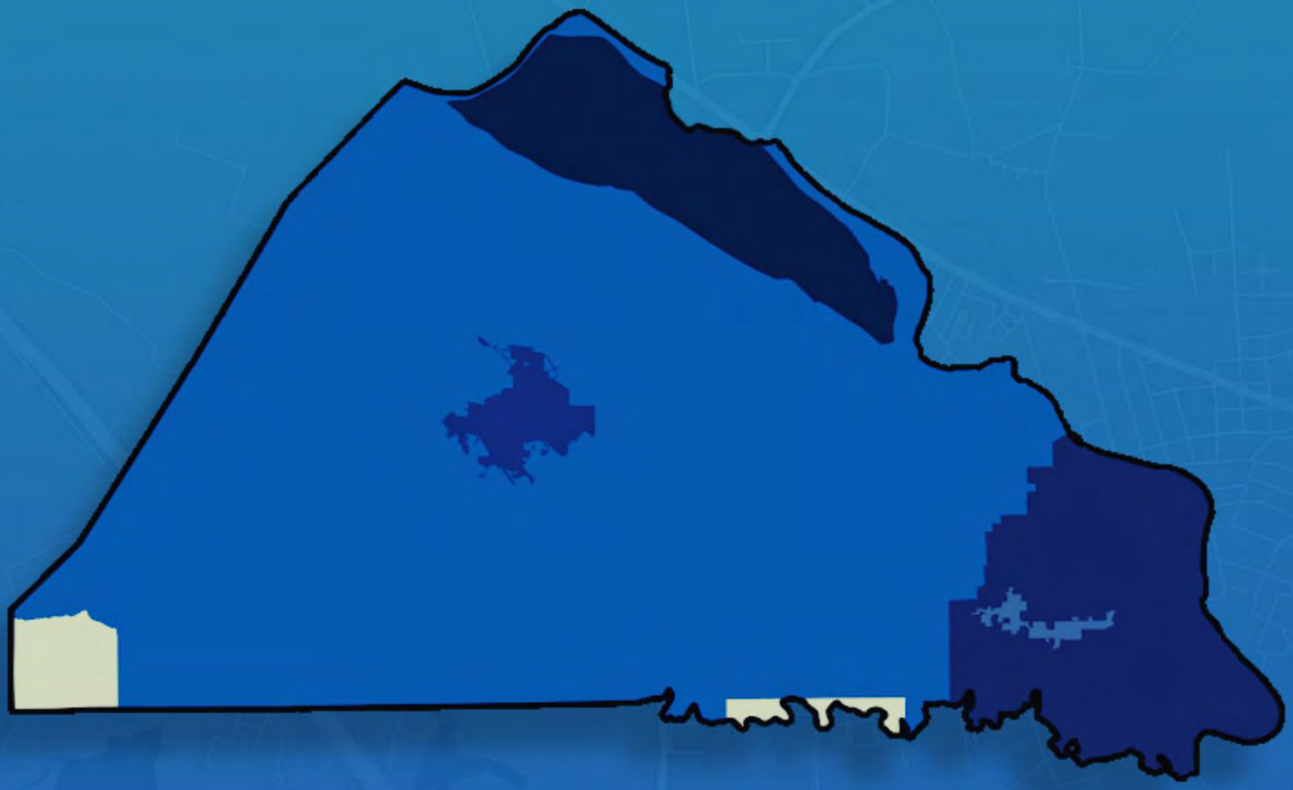
2025 Perry County Multi-Jurisdictional

HAZARD MITIGATION PLAN
5 YEAR UPDATE



SEMORPC
SOUTHEAST MISSOURI REGIONAL PLANNING COMMISSION

CONTRIBUTORS

Perry County Hazard Mitigation Planning Committee

Jurisdictional Representatives

Name	Title	Department	Jurisdiction
Brent Buerk	City Administrator	Administration	Perryville
Jeremy Mantz	Emergency Services Manager	Emergency	Perryville
Mike Sauer	County Commissioner	County	Perry County
Tom Grayson	Emergency Management Director	Emergency	Perry County
Kristi Hagan	Treasurer	Administration	Boris Brule Levee District
Mike Gremaud	Board President	Administration	Boris Brule Levee District
Garrett Schott	Safety Director	Administration	Perry County School
Dr. Fara Jones	Superintendent	Administration	Perry County School

Stakeholder Representatives

Name	Title	Department	Agency/Organization
Andy Spieler	Principal	Administration	Immanuel Lutheran School
Angie Brewer	Director of Operation	Administration	Mercy Hospital
Angie Schuessler	Health Dept.	Administration	Perry County
Ann Kirsch	ER Director	Administration	Mercy Hospital
Ashley Steffens	Admin Assistant	Administration	Altenburg Public School District
Boyd France	Mayor	Administration	City of Frohna
Debbie Haertling	Superintendent	Administration	Altenburg School District 48
Direk Hunt	Chief of Police	Police	Perryville Police Department
Garrett Schott	Assistant Superintendent	Administration	Perry County School District 32
Harold Gallaher	Presiding Commissioner	County Commission	St. Francois County Commission
Jared Kutz	County Clerk	County Commission	Perry County
Jason Klaus	Sherriff	Sheriff's	Perry County
Jay Wengert	Associate Commissioner	County Commission	Perry County Commission
Jeff Layton	Public Works Director	Public Works	City of Perryville
Jenny Macke	City Clerk	Administration	City of Frohna
Jeremy Mantz	Water & Sewer Supervisor	Public Works	City of Perryville Public Works
Jim Cadwell	Parks & Rec Director	Parks & Rec	City of Perryville
Jon Lainer	Captain	Police	Perryville Police Department
Kristi Hagan	Secretary	Administration	Boris Brule Levee District
Kyle Hagan	Fire Chief	Fire Department	Biehle Fire Department
Larry Riney	Mayor	Administration	City of Perryville
Mark Gremaud	President	Administration	Bois Brule Levee District
Mike Sauer	Commissioner	County Commission	Perry County Commission
Russ Krull	Fire Chief	Fire Department	Frohna and Altenburg Fire
Stephani Breig	Infectious Prevention	Administration	Mercy Hospital
Tom Grayson	Emergency Management	Administration	Perry County
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Zachary Stobart	Head of Schools	Administration	St. Vincent de Paul Catholic High

TABLE OF CONTENTS

CONTRIBUTORS ..... *i*
Perry County Hazard Mitigation Planning Committee i
Stakeholder Representatives i

TABLE OF CONTENTS ..... *ii*

EXECUTIVE SUMMARY ..... *iii*

PREREQUISITES ..... *v*
Model Resolution vi

1 Introduction and Planning Process 1.1

2 Planning Area Profile and Capabilities 2.1

3 Risk Assessment 3.1

4 Mitigation Strategy 4.1

5 Plan Maintenance Process 5.1

Appendix A: References
Appendix B: Completed/Deleted Mitigation Actions
Appendix C: STAPLEE Worksheets
Appendix D: Adoption Resolutions
Appendix E: Meeting Materials

EXECUTIVE SUMMARY

The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. Perry County and participating jurisdictions and school/special districts developed this multijurisdictional local hazard mitigation plan update to reduce future losses from hazard events to the County and its communities and school/special districts. The plan is an update of a plan that was approved on October 10, 2013. The plan and the update were prepared under 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 four (4) jurisdictions that participated in the planning process:

- Perry County
- City of Perryville
- Perry County School District No. 32
- Boris Brule Levee District

The City of Altenburg, Frohna, and Altenburg School District No. 48 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, they will be invited again to participate.

Perry 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 Perry County and participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to Perry 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:

1. Protect the health, safety, and welfare of residents and students.
2. Ensure the operation of critical facilities and services.
3. Protect public and private property.
4. Enhance informed decision-making of mitigation actions

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

Table I. Mitigation Action Matrix

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
	Structure and Infrastructure Projects							
1.1	Construct Safe Room	Perry County	Medium	1	Tornado	✓		
1.2	Construct Emergency Warning Sirens	Perry County	Medium	1, 2, 3	Tornado	✓	✓	
2.1	Emergency Generators	Perry County	Medium	1, 2	Multi			
2.2	Low Water Crossing	Perry County	Medium	1, 2, 3, 4	Flood	✓	✓	✓
2.3	Emergency Generators	Perryville	High	1, 2	Multi			
2.4	Stormwater System Improvements	Perryville	Medium	1, 2, 3, 4	Flood	✓	✓	
1.3	Construct Safe Room	Perryville	Medium	1	Tornado		✓	
1.1	Maintain and Inspect Levee	Bois Brule	High	1, 3	Flood	✓		
1.1	Construct Safe Room	PCSD 32	Medium	1, 2	Tornado	✓		
2.1	Emergency Generators	PCSD 32	Medium	1, 2	Multi			
2.2	Bury Power Lines	PCSD 32	Medium	1, 2, 4	Multi	✓		
	Natural Systems Protection							
3.2	Water Conservation	Perry County	Low	1	Drought	✓	✓	
3.3	Dam EOP	Perry County	High	1	Dam Failure		✓	
3.4	High- Risk Development Management	Perry County	High	1	Sinkholes		✓	
3.5	Wildfire Annex	Perry County	High	2, 4	Wildfire	✓	✓	
1.4	Wildland Management	Perryville	High	1	Wildfire	✓	✓	
2.1	Emergency Equipment	Perryville	High	2, 4	Multi	✓	✓	
2.2	Radio Acquisition	Perryville	High	2, 4	Multi			
2.5	Water Conservation	Perryville	High	1	Drought	✓	✓	
2.6	Sinkhole Development	Perryville	High	1	Sinkholes	✓	✓	
1.1	Weather Instrumentation	Perryville	High	1, 2, 4	Extreme Temperatures	✓	✓	
2.3	Weather Alert	PCSD 32	Medium	1, 2, 4	Multi			
2.4	Radio/Repeater Upgrade	PCSD 32	Medium	1, 2, 4	Multi			
	Planning and Regulation							
1.3	NFIP Participation	Perry County	High	3, 4	Flood			✓
3.1	Contract with NIXLE	Perry County	High	2, 4	Multi	✓	✓	
1.2	NFIP Participation	Perryville	Medium	3, 4	Flood			✓

PREREQUISITES

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.

- Perry County
- Perryville
- Perry County School District No. 32
- Bois Brule Levee District

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

1 INTRODUCTION AND PLANNING PROCESS 1.1
1.1 Purpose *1.1*
1.2 Background and Scope *1.1*
1.3 Plan Organization *1.2*
1.4 Planning Process *1.3*
1.4.1 Multi-JurisdictionalParticipation 1.5
1.4.2 The Planning Steps 1.7

1.1 PURPOSE

Hazard mitigation refers to the proactive measures taken to reduce or eliminate the risks and impacts of natural and man-made hazards before they occur. The primary purpose of developing and updating a local hazard mitigation plan is to identify these risks, evaluate vulnerabilities, and outline strategies to mitigate potential damage to communities and infrastructure. The Federal Emergency Management Agency (FEMA) mandates that communities and special districts adopt and implement such plans to qualify for mitigation grants, as outlined by the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288), amended by the Disaster Mitigation Act of 2000 (Public Law 106-390). Implementing regulations for these requirements are detailed in the Interim Final Rule published on February 26, 2002 (44 CFR §201.6) and finalized on October 31, 2007. According to FEMA's Local Mitigation Planning Handbook (May 2023) and Local Mitigation Planning Policy Guide (April 19, 2023), entities that do not adopt a comprehensive hazard mitigation plan will be ineligible for federal mitigation grant funding. Additionally, communities participating in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) can benefit from insurance premium discounts based on their CRS class ratings, which reflect their commitment to floodplain management and mitigation efforts.

1.2 BACKGROUND AND SCOPE

The current hazard mitigation plan update is based on the 2020 Perry County HMP, which was approved by FEMA on January 6, 2020, and was valid for five years. This plan update continues Perry County's efforts to assess and mitigate risks from natural hazards, ensuring ongoing eligibility for FEMA funding and support.

Of the four jurisdictions participating in this update, three were involved in the previous plan. The new addition to the plan is the Bois Brule Levee District, which has joined the effort to address flood risk and enhance local mitigation strategies. For jurisdictions with assets extending beyond Perry County, only the assets within the county are covered under this plan, unless special circumstances dictate otherwise, as is the case with the Bois Brule Levee District.

1.3 PLAN ORGANIZATION

The updated Perry County Hazard Mitigation Plan (HMP) follows a structured outline designed to address key aspects of hazard mitigation, much like the 2020 plan. The format of the plan remains largely consistent with the previous version to ensure continuity and ease of comparison between the updates and the prior risk assessments. The approach that was chosen to provide a clear and familiar structure for stakeholders and decision-makers is as follows:

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

Table 1.1 shows each chapter and summarizes the changes made in this update.

Table 1.1. Changes Made in Plan Update

Plan Section	Summary of Updates
Chapter 1 - Introduction and Planning Process	Updated members of the Mitigation Planning Committee (MPC) and participating jurisdictions formally adopted the MPC.
Chapter 2 - Planning Area Profile and Capabilities	Noted new GIS capabilities for participating jurisdictions.
Chapter 3 - Risk Assessment	Combined extreme heat and extreme cold into one hazard: extreme temperatures.
Chapter 4 - Mitigation Strategy	The mitigation category of each action was added to the action worksheets.
Chapter 5 - Plan Implementation and Maintenance	Updated MPC meetings for evaluating and updating the plan to quarterly.

1.4 PLANNING PROCESS

The Southeast Missouri Regional Planning Commission (SEMO RPC) was contracted by the Missouri State Emergency Management Agency (SEMA) to facilitate the update of Perry County's multi-jurisdictional Hazard Mitigation Plan (HMP). In this role, SEMO RPC played a crucial part in guiding the planning process and ensuring that the updated plan met federal requirements while addressing the specific needs of the participating jurisdictions.

One of SEMO RPC's primary responsibilities was assisting local jurisdictions in establishing a Mitigation Planning Committee (MPC) as defined by the Disaster Mitigation Act (DMA). This committee was composed of representatives from various local governments, school districts, and special districts, fostering a comprehensive and collaborative approach to hazard mitigation. The RPC evaluated whether the MPC from the previous plan had remained a standing committee, assessing any changes in membership or procedures since the last plan's adoption. Through this evaluation, SEMO RPC ensured continuity and addressed any gaps in representation.

To ensure that the updated plan complied with DMA requirements established by federal regulations and followed the most current planning guidance from the Federal Emergency Management Agency (FEMA), SEMO RPC took necessary steps to secure the plan's approval and maintain the county's eligibility for federal funding.

Throughout the plan development process, SEMO RPC facilitated the planning stages by organizing meetings, setting agendas, and coordinating interactions among various jurisdictions and stakeholders. Their leadership was vital in maintaining momentum and focus throughout the planning process. They identified the data that MPC participants needed to provide and conducted additional research to supplement this information, ensuring that the risk assessment was thorough and that all relevant hazards and vulnerabilities were adequately addressed.

Additionally, SEMO RPC assisted in soliciting public input by organizing outreach efforts and collecting feedback, which allowed for the incorporation of community perspectives into the planning process. Public involvement is crucial in hazard mitigation planning to ensure that the plan reflects the values and concerns of the community.

Finally, the commission was responsible for producing both the draft and final versions of the updated plan, ensuring they were formatted to meet FEMA's approval requirements. SEMO RPC coordinated the plan reviews with SEMA and FEMA, addressing any comments or concerns to secure the necessary approvals. Through these efforts, SEMO RPC effectively ensured that the updated Hazard Mitigation Plan addressed Perry County's current risks and vulnerabilities while fostering collaboration among participating jurisdictions, aligning the plan with federal standards, and enhancing the county's resilience to natural hazards.

Table 1.2 shows the MPC members who participated in the direct preparation of this plan.

Table 1.2. Jurisdictional Representatives of Perry County Mitigation Planning Committee

Name	Title	Department	Jurisdiction
Brent Buerk	City Administrator	Administration	Perryville
Jeremy Mantz	Emergency Services Manager	Emergency	Perryville
Mike Sauer	County Commissioner	County	Perry County
Tom Grayson	Emergency Management Director	Emergency	Perry County
Kristi Hagan	Treasurer	Administration	Boris Brule Levee District
Mike Gremaud	Board President	Administration	Boris Brule Levee District
Garrett Schott	Safety Director	Administration	Perry County School District
Dr. Fara Jones	Superintendent	Administration	Perry County School District

The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. Perry County, its two participating jurisdictions, and three participating school districts developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses from hazard events to the county, its communities, and school/special districts. The current plan is an update of a plan that was approved on June 1st, 2020. The plan and the update were prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 to result in eligibility for the Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grant Programs.

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

- Unincorporated Perry County
- City of Perryville
- Perry County #32 School District
- Bois Brule Levee District

The cities of Frohna and Altenburg 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, these jurisdictions will again be invited to participate.

Perry County and the entities listed above developed a Multi-Jurisdictional Hazard Mitigation Plan that was approved by FEMA on June 1st, 2020 (hereafter referred to as the 2020 Perry County Hazard Mitigation Plan). This current planning effort serves to update that previously approved plan.

The plan update process followed a methodology in accordance with FEMA guidance, which began with the formation of a Mitigation Planning Committee (MPC) comprised of representatives from Perry County and its participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to Perry County and analyzed jurisdictional vulnerability to those 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 (2020). 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 & winter weather, severe thunderstorms/hail/lightning/high winds/dense fog, and tornadoes are among the hazards that historically have had a significant impact within the county.

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			
Perryville City Administrator	✓	✓		✓	✓	
Count Emergency Management	✓	✓	✓	✓	✓	✓
County Commission	✓	✓		✓	✓	
Levee District	✓	✓	✓			
City Emergency Management	✓	✓	✓	✓	✓	✓
School Safety Office	✓				✓	✓

1.4.1 Multi-Jurisdictional Participation

Active participation in the hazard mitigation process is vital for developing a comprehensive and effective plan that addresses the unique risks faced by communities. The Federal Emergency Management Agency emphasizes the importance of involving diverse stakeholders—including local governments, public schools, special districts, and community members—in the planning process. Engaging a wide array of participants ensures that the plan reflects the needs and priorities of the entire community, thereby enhancing the resilience of all populations to potential hazards. By actively contributing their insights and experiences, stakeholders can help identify vulnerabilities, propose practical solutions, and foster a collaborative approach to mitigation that ultimately strengthens the community's capacity to respond to and recover from disasters.

To facilitate the plan update, incorporated communities, public schools, special districts, and various stakeholders were invited to participate through outreach efforts, meetings, and the dissemination of information about the planning process. Documentation of these efforts can be found in the appendix. The Disaster Mitigation Act mandates that each jurisdiction actively participate in the planning process and officially adopt the resulting plan. Minimum criteria for participation were established during the first planning meeting to ensure that each jurisdiction met specific requirements. These included designating a representative to serve on the MPC, participating in a minimum number of designated meetings—either directly or through authorized representatives—providing sufficient information for plan development through Data Collection Questionnaires, reporting progress on mitigation actions from the previous plan, identifying additional actions, reviewing and commenting on drafts, soliciting public input, and formally adopting the plan prior to submission to SEMA and FEMA for final approval.

During its first meeting, the MPC determined the criteria for being considered an eligible participant in this planning process, as follows:

- Representation (direct or through appointee) at a majority of the public HMPC meetings,
- Actively solicit public input and participation in the planning process,
- Review prior plan,
- Complete HMP questionnaire,
- Update the jurisdiction's hazard mitigation actions from the previous plan,
- Review and comment on the new draft, and
- Adoption of the new plan.

Each participating jurisdiction met the participation requirements outlined above, demonstrating their commitment to the hazard mitigation process. However, challenges were encountered in soliciting public participation, particularly among smaller towns that often lack the resources and full-time staff necessary for effective engagement. Geographic barriers, such as long commuting distances to meetings, further complicated participation. To address these challenges in future planning cycles, strategies could be implemented to enhance accessibility and inclusivity. Options could include virtual meetings, flexible scheduling to accommodate diverse work hours, and targeted outreach efforts to engage underrepresented communities. By adopting these measures, the planning process can become more inclusive, ensuring that the perspectives of all community members are considered in the development of the hazard mitigation plan.

Table 1.4. Jurisdictional Participation in Planning Process

Jurisdiction	Kick-off Meeting	Meeting #2	Meeting #3	Data Collection Questionnaire Response	Update/Develop Mitigation Actions
Unincorporated Perry County	X	X	X	X	X
Perryville	X	X	X	X	X
Perryville School District No. 32	X	X	X	X	X
Boris Biehle Levee District		X	X	X	X

1.4.2 The Planning Steps

SEMO RPC and Perry County worked together to establish the framework and process for this planning effort using FEMA's Local Mitigation Planning Handbook (May 2023). The plan update was completed utilizing the 9-task approach within a broader four-phase process:

1. Organize resources,
2. Assess risks,
3. Develop the mitigation plan, and
4. Implement the plan and monitor progress.

Table 1.5. County Mitigation Plan Update Process

Community Rating System (CRS) Planning Steps (Activity 510)	Local Mitigation Planning Handbook (2023) Tasks (44 CFR Part 201)
Step 1. Organize	Task 1: Determine the Planning Area and Resources
	Task 2: Build the Planning Team 44 CFR 201.6(c)(1)
Step 2. Involve the public	Task 3: Create an Outreach Strategy 44 CFR 201.6(b)(1)
Step 3. Coordinate	Task 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)

The planning process resulting in the preparation of this plan document officially began with the Kick-off meeting in Perryville, MO on July 30, 2024. Participants of the meeting included representatives from all three participating jurisdictions and RPC staff. The purpose of this meeting was to set planning meeting dates, determine hazards to be included in the plan update, discuss options for the flood risk assessment methodology, develop an initial public participation strategy, and discuss the plan update format. During this meeting, the MPC received Data Questionnaires and were able to ask questions and review the document before its completion. Meeting materials are included in the appendix. An MPC was created that includes representatives from each participating jurisdiction. After the initial meeting, a second planning meeting was held on August 13, 2024. A complete list of all representatives of the agencies and organizations that participated in the MPC is provided in the appendix. The MPC communicated during the planning process with a combination of face-to-face meetings, phone interviews, and email correspondence. The meeting schedule and topics are listed in Table 1.6.

Table 1.6. Schedule of MPC Meetings

Meeting	Topic	Date
Kick-off Meeting	General overview of planning process, requirements, and schedule. Introduction to DMA, hazard identification, and public input strategy. Distribution of data collection guide to jurisdictions. Preliminary hazard rankings. Determine a process to monitor, evaluate, and update the plan.	7/30/2024
Planning Meeting #2	Review of draft Risk Assessment, distribution of critical facility inventories for jurisdictions to validate/correct, and development of plan goals. Mitigation action update, development, and prioritization.	8/13/2024
Planning Meeting #3	The meeting reviewed plan requirements, updated mitigation actions, and prioritized new strategies, including grant opportunities. Plan maintenance and ongoing evaluation were also discussed.	8/27/2024

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

At the kickoff meeting, the HMPC discussed options for soliciting public input on the mitigation plan. To provide an opportunity for the public to comment during the drafting stage, the committee determined the most effective method would be to invite the public to the HMPC meetings to gather direct input.

The public was also given an opportunity to provide input on a draft of the complete plan prior to its submittal to the State and FEMA. The entire plan draft was made available on the RPC's website as a PDF document. In addition, two hard copies were made available: one at the Emergency Management Office and the other at the County Courthouse. The County and RPC announced the availability of the entire final draft plan and the two-week final public comment period on their websites. A copy of the announcement is provided in the appendix. The final opportunity for public input was held from July 30, 2024, to October 1, 2024.

The HMPC invited other targeted stakeholders to comment on the draft plan via e-mail, and phone conversations, which are described in greater detail in Step 3: Coordinate with Other Departments and Agencies. Much of the public's input was focused on specific actions they wanted jurisdictions to pursue. These suggestions were forwarded to the HMPC and were discussed with the pertinent jurisdiction and with the HMPC. The specific jurisdictions conducted internal assessments of the suggestions and incorporated the actions when feasible.

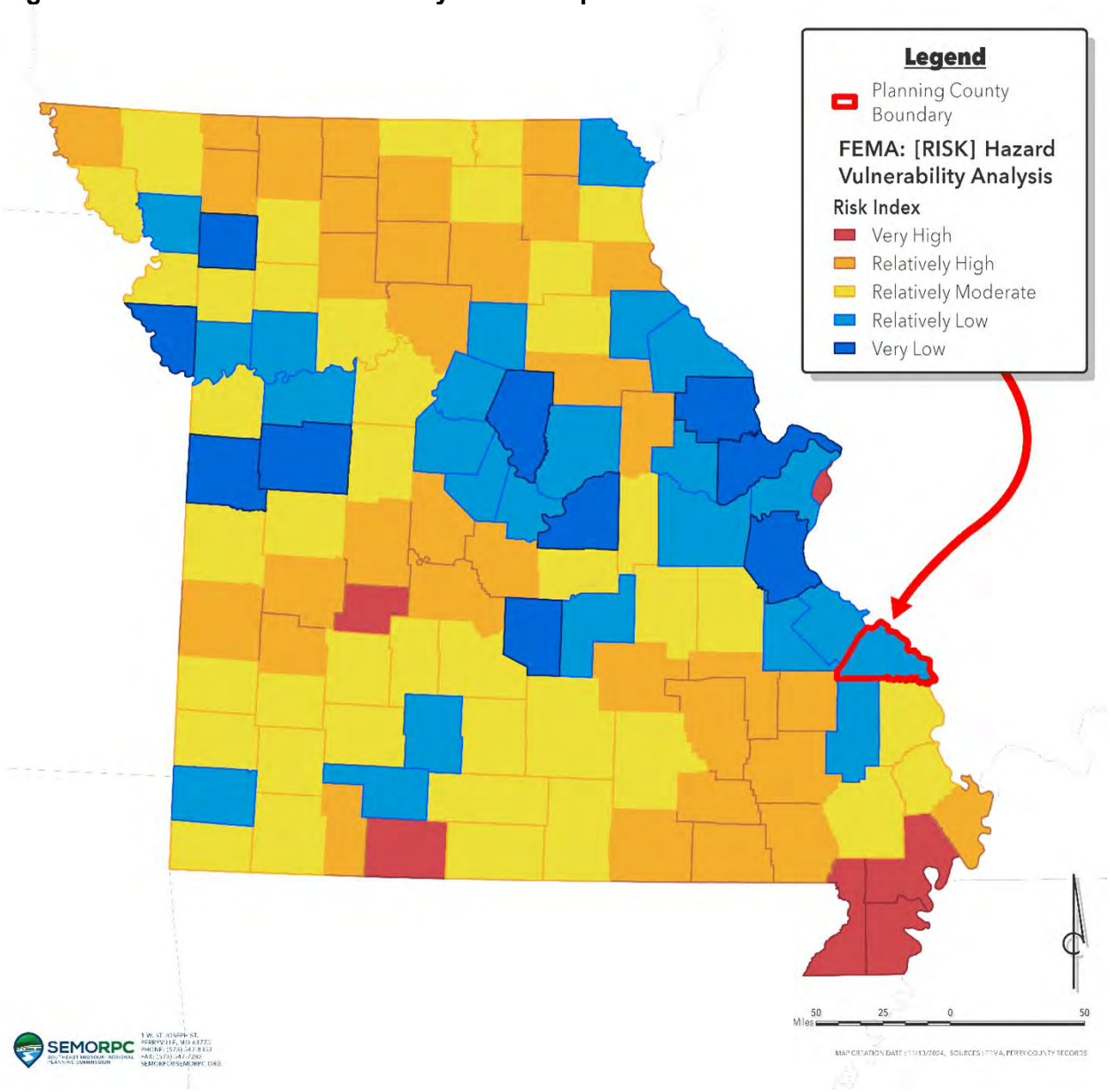
Step 3: Coordinate with Other Departments and Agencies and Incorporate Existing Information
(Handbook Task 2)

There are numerous organizations whose goals and interests interface with hazard mitigation in Perry County. Coordination with these organizations and other community planning efforts is vital to the success of this plan. The County invited neighboring counties, other local, state, and federal departments and agencies to the planning meetings to learn about the hazard mitigation planning initiative. In addition, the HMPC developed a list of additional stakeholders involved in hazard mitigation activities, to invite to review and comment on the draft of the Perry County Multi-jurisdictional Hazard Mitigation Plan prior to submittal to the State and FEMA. Those agencies invited to meetings and/or comment on the plan draft included emergency management officials of adjacent counties, economic development agencies, and various state agencies such as the Department of Natural Resources and MoDOT. The following table shows the other departments and agencies which were coordinated with. All positions were notified via written notice. Through the public nature of the planning process and specifically the planning meetings, private and non-profit organizations such as the Red Cross, the sheltered workshop, and local businesses were welcomed to participate in the plann

Name	Title	Department	Agency/Organization
Andy Spieler	Principal	Administration	Immanuel Lutheran School
Angie Brewer	Director of Operation	Administration	Mercy Hospital
Angie Schuessler	Health Dept.	Administration	Perry County
Ann Kirsch	ER Director	Administration	Mercy Hospital
Ashley Steffens	Admin Assistant	Administration	Altenburg Public School District
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Direk Hunt	Chief of Police	Police	Perryville Police Department
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Kristi Hagan	Secretary	Administration	Boris Brule Levee District
Kyle Hagan	Fire Chief	Fire Department	Biehle Fire Department
Larry Riney	Mayor	Administration	City of Perryville
Mark Gremaud	President	Administration	Bois Brule Levee District
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Trent Mullis	Director	Administration	Perry County Health Department
Zachary Stobart	Head of Schools	Administration	St. Vincent de Paul Catholic High

Coordination with FEMA Risk MAP Project

Figure 1.1. RISK MAP Study Status Map



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

SEMO RPC assisted the HMPC in a process to identify the hazards that have impacted or could impact communities in the County. At the first meeting, the HMPC examined the history of disaster declarations in Perry County, the list of hazards considered in the 2024 Missouri State Hazard Mitigation Plan, and the hazards identified in the previous hazard mitigation plan. The committee then worked through this list of all potential hazards that could affect the planning area. They discussed past hazard events, types of damage, and where additional information might be found. The committee identified 11 natural hazards that have the potential to impact the planning area. Additional information on the hazard identification process and which hazards were identified for each jurisdiction is provided in Chapter 3.

During the kick-off meeting, the HMPC refined the list of hazards to make the analysis relevant to Perry County, discussed past events and impacts and came to consensus on the preliminary probability and magnitude on a county-wide basis. In addition, each jurisdiction completed a Data Collection Guide, including information on previous hazard events in their community. Utilizing the information from the Data Collection Guides as well as existing plans, studies, reports, and technical information as well as information available through internet research and GIS analysis, a profile was developed for each hazard identified. More information on the methodology and resources used to identify and profile the hazards can be found in Chapter 3.

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

Assets for each jurisdiction were identified through a combination of several resources. A listing of critical facilities in each jurisdiction from the previous HMP was presented at Meeting #2 for correction and validation. Once the critical/essential facility lists were validated, they were geolocated to create a consolidated GIS layer of these facilities to be used in additional risk analysis. Methodologies and results of the analyses are provided in Chapter 3.

Additional assets such as historic, cultural, and economic assets as well as specific vulnerable populations and structures were obtained from a variety of sources as described in Chapter 3. The HMPC also analyzed development trends from data available from the U.S. Census Bureau as well as information obtained from each jurisdiction such as Comprehensive Plans and Future Development Plans. For each hazard, there is a discussion regarding future development and how it may impact vulnerability to that specific hazard.

After profiling the hazards that could affect the County and identifying assets, the HMPC collected information to describe the likely impacts of future hazard events on the participating jurisdictions.

Existing mitigation capabilities were also considered in developing loss estimates. This assessment consisted of identifying the existing mitigation capabilities of participating jurisdictions. This involved collecting information about existing government programs, policies, regulations, ordinances, and plans that mitigate or could be used to mitigate risk from hazards. Participating jurisdictions collected information on their regulatory, personnel, fiscal, and technical capabilities, as well as previous and ongoing mitigation initiatives. This information is included in Chapter 2 Planning Area Profile and Capabilities. Specific capabilities such as participation in the National Flood Insurance Program as well as placement of storm sirens are incorporated in the vulnerability analysis discussions. Taking into consideration the vulnerability and capability assessments, and where sufficient information was available, a variety of methods were used to estimate losses for each profiled hazard. For geographic hazards such as river flooding and wildfire, specific assets at risk and loss estimates were determined through GIS analysis. For other hazards such as weather-related hazards, loss estimates were developed based on statistical analysis of historic events and HMPC input. For dam and levee failure, GIS data was not available to identify specific geographic boundaries at risk. Therefore, the risk assessment is based on aerial photography analysis of development within an estimated hazard area. The methodologies for each loss estimate are described in detail in Chapter 3. Within each hazard section, the text provides details on how the hazard varies by jurisdiction, where applicable. In addition, at the conclusion of each hazard section, a summary table indicates the specific probability and magnitude of the hazard for each jurisdiction to show how the hazard varies. Where applicable, introductory text preceding the table highlights noted variables.

Results of the preliminary risk assessment were presented at Meeting #2 and the Draft Risk Assessment (Chapter 3) was provided to the HMPC for review and comment. Several comments, corrections, and suggestions were provided to SEMO RPC and incorporated into the risk assessment as appropriate

Step 6: Set Goals
(Handbook Task 6)

SEMO RPC facilitated a discussion session with the HMPC during Meeting #2 to review and update goals. Common categories of mitigation goals were presented as well as the 2024 State Hazard Mitigation Plan goals. This planning effort is an update to an existing hazard mitigation plan. As a result, the goals from the previous plan were reviewed. The planning committee decided that the 2012 goals were still valid. The goals for the plan update are provided below:

1. Protect the health, safety, and welfare of residents and students.
2. Ensure the operation of critical facilities and services.
3. Protect public and private property.
4. Enhance informed decision-making of mitigation actions.

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

One of the focuses of Meeting #2 was to update the mitigation strategy by reviewing existing actions submitted in the previous mitigation plans as well as discuss relevant new actions considered necessary because of the updated risk assessment. The development of mitigation actions was facilitated through group discussion of the capabilities and risks of each jurisdiction. Consideration was given to the analysis results provided in the risk assessment and the anticipated success for each project type. Committee members discussed issues such as: availability of funds, prioritization of actions, and feasibility of implementation utilizing the STAPLEE methodology as a guide. Projects relating to emergency response were discussed, but participants were encouraged to focus on long-term mitigation solutions since response-related mitigation actions occur on a routine basis as requirements of other plans. Complex projects that would necessitate the use of large numbers of county resources were also discussed.

This opportunity to discuss a broad range of mitigation alternatives allowed the jurisdictions to understand the overall priorities of the committee and to allow for discussion of the types of projects most beneficial to each jurisdiction. As part of this discussion, consideration was given to the potential cost of each project in relation to the anticipated future cost savings.
Since this plan is an update to the 2020 Perry County Hazard Mitigation Plan, the update of the mitigation strategy included review and update of the status of all actions included in the previous hazard mitigation plan. Jurisdictions were encouraged to maintain a focused approach and continue forward only those actions that are aimed at implementing long-term solutions to prevent losses from hazards. To facilitate the update of previous actions, a spreadsheet was provided to each jurisdiction prior to Meeting #2 with the actions they submitted in the previous mitigation plan. The jurisdictions were also provided instructions for completing the status of each of the previous actions as well as the details to provide for continuing and newly developed actions. A modified form of the STAPLEE prioritization tool was provided to assist jurisdictions in determining the prioritization that should be assigned to each action. Each participating jurisdiction prioritized the projects they submitted by indicating high, moderate, or low local priority. The completed spreadsheets with action details were returned to SEMO RPC. Chapter 4 provides additional details regarding the process undertaken to refine the mitigation strategy to make the County and its jurisdictions more disaster resistant.

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

A complete draft of the plan was made available online and in hard copy for review and comment by the public, other agencies, and interested stakeholders. This review period began 9-6-2024. Methods for inviting interested parties and the public to review and comment on the plan were discussed in Steps 2 and 3, and materials are provided in the appendix. Comments were integrated into a final draft for submittal to SEMA and FEMA. The action worksheets, including the implementation plan, submitted by each jurisdiction for the updated Mitigation Strategy are included in Chapter 4.

Step 9: Adopt the Plan
(Handbook Task 8)

To secure buy-in and officially implement the plan, the governing bodies of each participating jurisdiction adopted the plan. Scanned copies of resolutions of adoption are included in the appendix of this plan.

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

The MPC developed and agreed upon an overall strategy for plan implementation, monitoring, and maintaining the plan over time during Meeting #1. This strategy is described in Chapter 5, Plan Maintenance Process.

2 PLANNING AREA PROFILE AND CAPABILITIES

2 PLANNING AREA PROFILE AND CAPABILITIES 2.1

2.1 Perry County Planning Area Profile 2.1

Geography, Geology and Topography 2.3

2.2.1 Climate 2.7

2.2.2 Population/Demographics 2.7

2.2.3 History 2.10

2.2.4 Occupations 2.10

2.2.5 Agriculture 2.11

2.2.6 FEMA Hazard Mitigation Assistance (HMA) Grants in Planning Area 2.11

2.2.7 FEMA Public Assistance (PA) Grants in Planning Area 2.12

2.2 Jurisdictional Profiles and Mitigation Capabilities 2.14

2.2.8 Unincorporated Perry County - District Profile and Mitigation Capabilities 2.14

2.2.9 City of Perryville - District Profile and Mitigation Capabilities 2.17

2.2.10 Special Districts - Profile and Mitigation Capabilities 2.20

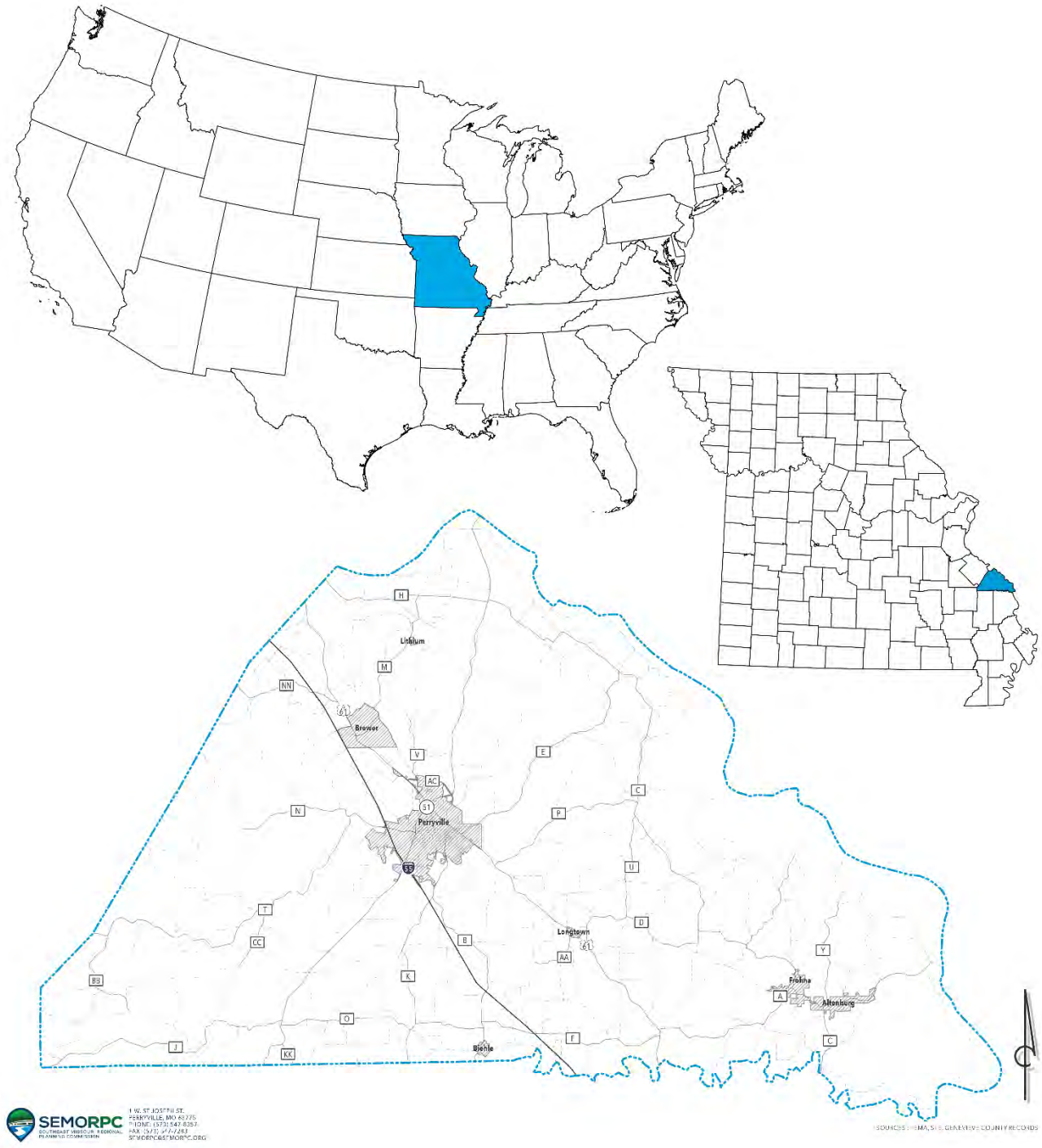
2.2.11 Summary of Jurisdictional Capabilities 2.24

2.2.12 School Districts - Profiles and Mitigation Capabilities 2.26

2.1 PERRY COUNTY PLANNING AREA PROFILE

The intent of this section is to provide an overview profile of the entire planning area for the multi-jurisdictional plan. As of 2020, the total Perry County population was 18,956, a decline of 0.1% since 2010. The population growth rate was below both the nation's (7.6%) and the State's (2.8%). Perry County median household income was $61,486 in 2022 an increase of 16% over 2016, which is less than half of that of the national rate of 35% and about 2/3 of the state rate of 25%. The county's 2022 MHI is below that of the nation ($74,580) and the state's ($65,920). Perry County median home value in 2022 was $151,900, up 20% from 2016 census estimates in the last plan. Median home value is below state and national amounts ($163,600 and $229,800) its rate of increase was near the state's rate of 21% and the nations rate of 24%. Figure 2.1 provides a map of the Perry County planning area.

Figure 2.1. Map of Perry County



Geography, Geology and Topography

Perry County lies in the foothills of the Ozarks in Southeast Missouri. Terrain varies from flat alluvial bottom land along the Mississippi River to steeper forested areas in the western part of the County. In between the extremes, the land is mostly gently rolling in nature. The land is either timbered or used for agricultural or urban uses.

The County can be broadly divided into four physiographic subregions: the Mississippi Bottoms, which consist of the Missouri portion of the Mississippi River floodplain and are generally characterized by nearly level ground with relief generally ranging from 5 to 10 feet; the Perryville Sinkhole Plain, which is a belt 3 to 15 miles wide extending from the vicinity of Ste. Genevieve to Cape Girardeau and is generally dominated by gentle to moderate slopes; the Ste. Genevieve ("Becket") Hills, a 7 to 16 mile wide belt extending northwestward from western Perry County through Ste. Genevieve County and northeastern St. Francois County, an area of moderate to steep slopes; and finally, the Castor River Hills which extend into the southwestern part of the County and exhibit moderate to steep slopes.

Soils in Perry County can be classified into eight broad general types. The Menfro Association consists of gently sloping to very steep, deep, well drained, silty soils on uplands adjoining the floodplains along the Mississippi River. The association extends west into the central part of the County. These soils are on ridgetops and side slopes. Menfro soils typically have a surface layer of brown, friable silt loam. The color of the subsoil is brown and dark yellowish brown silty clay loam and silt loam.

The second association occurs on broad floodplains and terraces along the Mississippi River. The LetaDarwin-Parkville Association consists of nearly level, deep, somewhat poorly drained and poorly drained, clayey soils. Poorly drained Leta soils generally are on low terraces and have a surface layer of very dark gray silty clay. Darwin soils are poorly drained and located in floodplains. Normally they have a surface layer of very dark grayish brown silty clay. The Parkville soils are generally somewhat poorly drained and located on low terraces. The surface layer of this soil is generally very dark gray silty clay.

A third association, the Haymond-Wilbur-Auxvasse, is nearly level and very gently sloping, deep, well drained to somewhat poorly drained, silty soils located on flood plains and terraces. These soils are usually located along the tributaries of the Mississippi River. Haymond soils are well drained on narrow to wide floodplains.

They normally have a surface layer of dark brown silt loam. The Wilbur soils are moderately well drained soils on narrow to wide floodplains. The surface layer of this soil is typically dark brown silt loam. The Auxvasse soils are somewhat poorly drained and are located on terraces. Their surface layer is dark grayish brown silt loam.

The fourth association is the Goss-Hildebrecht Association which consists of gently sloping to very steep, deep, well drained and moderately well drained, cherty and silty soils, typically located on uplands. Goss soils are generally well drained, moderately steep to very steep soils generally located on the lower sides of slopes. The surface layer is typically dark grayish brown cherty silt loam. The Hildebrecht soils are generally moderately well drained soils on ridgetops, side slopes, and foot slopes. The typical surface layer is brown silt loam.

Elsah-Ashton-Auxvasse Association is the fifth soil type in the County. It consists of nearly level and very gently sloping, deep, somewhat excessively drained, well drained, and somewhat poorly drained, loamy and silty soils. The soils occur on narrow floodplains and low terraces along tributaries. Elsah soils are somewhat excessively drained with a typical surface layer of dark yellowish-brown loam. They are located on narrow to wide floodplains. Well drained Ashton soils have a typical surface layer of dark brown loam and are located on terraces. Auxvasse soils are somewhat poorly drained and are located on terraces. The surface layer of these soils is generally dark grayish brown silt loam.

The sixth soil type is the Goss-Weingarten-Gasconade Association. This is a gently sloping to very steep, deep and shallow, well drained and somewhat excessively drained, cherty, silty and stony soil, typically located on uplands. Goss soils are deep, well drained, moderately steep and cherty soils located on side slopes. The surface layer is typically a layer of dark grayish brown cherty silt loam. Weingarten soils are deep, well drained gently sloping to strongly sloping soils on ridges, foot slopes, and side slopes. The surface layer is usually brown silt loam. The Gasconade soils are shallow, somewhat excessively drained, strongly sloping to very steep on the lower side slopes. Their surface layer is typically black stony silty clay loam.

A seventh soil type is the Minnith-Lily Association. This is a gently sloping to steep, deep and moderately deep, moderately will drained and well drained silty and loamy soil on uplands. The Minnith soils are deep, moderately well drained, gently sloping to steep soils on ridgetops and shoulder slopes. They typically have a surface layer of brown silt loam. Lily soils are moderately deep, well drained, strongly sloping to steep soils on irregularly shaped side slopes. The surface layer is of very dark grayish brown loam.

Clarksville-Menfro Association is the eighth soil type in the County. It is a steep and very steep, deep, somewhat excessively drained and well drained, cherty and silty soil on uplands. Clarksville soils are cherty, somewhat excessively drained and are located on the mid and lower side slopes. They typically have a surface layer of very dark grayish brown very cherty silt loam. The Menfro soils are well drained on narrow ridgetop, shoulder slopes or foot slopes. Menfro soils usually have a surface layer of dark brown silt loam.

Several types of bedrock occur in Perry County. Dolomite and sandstone are the primary bedrock types in the western part of the county. An area of dolomite mixed with some limestone, sandstone and shale occurs in the area west of Interstate 55, while sandstone occurs in a narrow band that nearly coincides with the location of Interstate 55. Limestone and dolomite, along with some shale, underlay the remainder of the County, except for the bottom land along the Mississippi River which is underlain by alluvium.

Figure 2.2. Topographic Map of Perry County

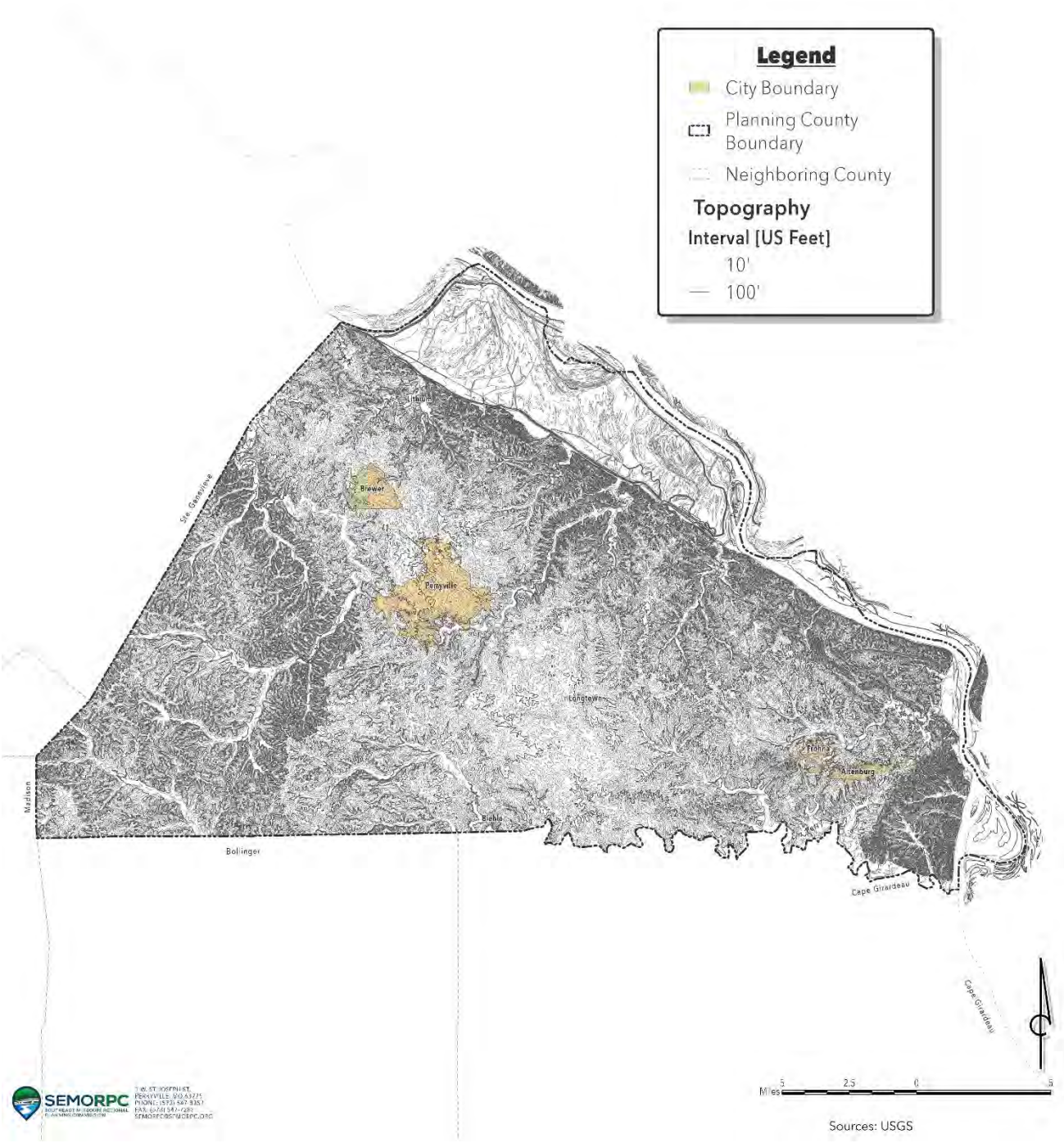
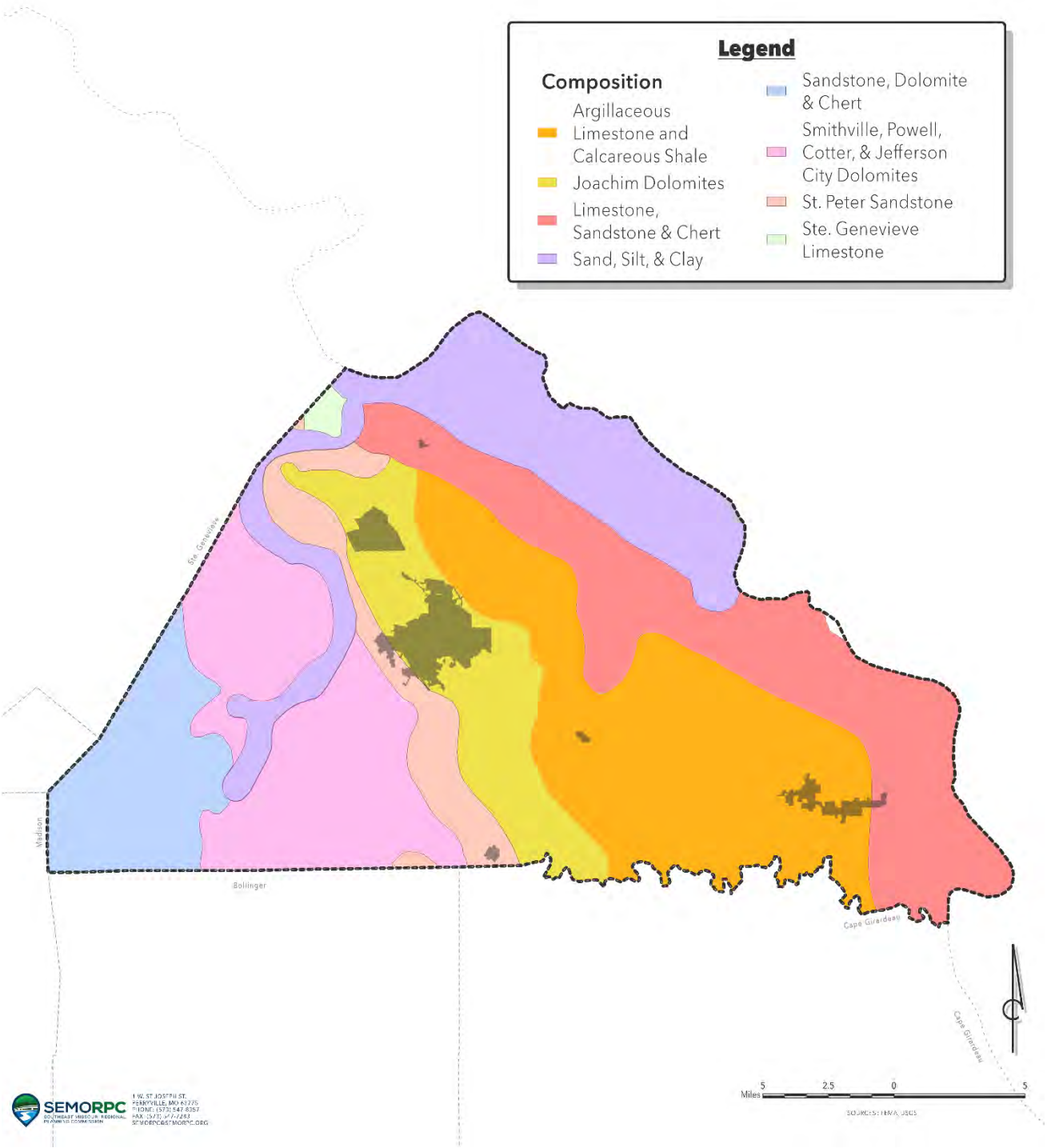


Figure 2.3. Geologic Map of Perry County



2.2.1 Climate

Because the County is located in the middle section of the United States, it is prone to several kinds of natural hazards. The county has a continental climate, meaning that the weather is changeable and has large variations in temperature and precipitation. Perry County's climate parallels that of southeast Missouri. In general, the County has hot humid summers and mild to cold winters. Average temperatures fall in the 56° to 58° range. The warmest month is normally July, when average maximum temperatures are around 90° to 92°, and minimum temperatures range in the neighborhood of 62° to 68°. The coldest month is usually January, when maximum temperatures reach an average of only 45° to 46°, and minimum average temperatures run 25° to 28°. Below freezing temperatures usually occur on 80 to 100 days during the year. Rainfall averages approximately 39 to 42 inches per year, while snowfall averages approximately 11 to 13 inches per year. Springtime and early summer are normally the seasons when much of the rainfall occurs during frequent thunderstorms. This is also the 2.4 time when flooding normally occurs along the creeks and rivers in the County. On average, 60% of the annual rainfall occurs during the months from April through September.

2.2.2 Population/Demographics

Perry County, with a population of 18,956 according to the 2020 Census, demonstrates a modest increase of 223 residents, or 1.18%, from the 2010 population of 18,971. Within the county, Perryville has seen a growth of 333 residents, raising its population to 8,558, which represents a 4.05% increase over the same period. In contrast, the unincorporated areas of the county have experienced a slight decline, with a 2020 population of 10,636, down from 10,746 in 2010, reflecting a decrease of 110 residents or 1.03%.

The population distribution shows that approximately 5.5% of Perry County's residents are under age 5, while around 19% are over age 65. Compared to statewide figures, where about 6.6% of the population is under 5 and 18.4% is over 65, Perry County has a lower percentage of young children and a higher percentage of seniors. Nationally, the percentages are roughly 6.1% for those under 5 and 16.5% for those over 65. This highlights the county's aging population, necessitating enhanced healthcare services and community programs aimed at supporting older residents, while also indicating a potential concern for future population sustainability if young families are not attracted to the area.

Perry County has approximately 7,329 households, leading to an average household size of about 2.59 individuals. This figure is slightly higher than the statewide average of around 2.5 and comparable to the national average of 2.6 individuals per household.
This demographic data reveals several trends worth noting. The growth in Perryville indicates a possible migration of residents toward more urbanized areas, likely driven by better access to services, employment opportunities, and amenities. The increase in the incorporated population suggests that residents may prefer the benefits of community resources that urban areas offer, such as schools, healthcare, and recreational facilities.

On the other hand, the slight decline in the unincorporated regions may highlight challenges such as limited access to services, economic opportunities, and a potential aging population. This trend could prompt concerns about the viability of rural communities within the county and raises questions about the sustainability of services in these areas.

The demographic shifts also point to the need for targeted economic and social policies. As Perryville grows, there may be increased pressure on infrastructure and housing, necessitating careful planning to accommodate future growth while maintaining quality of life. Conversely, revitalization efforts in unincorporated areas might be required to attract new residents, support local businesses, and enhance overall community engagement.

Overall, the demographic profile of Perry County reflects both growth and challenges, emphasizing the importance of strategic planning that addresses the unique needs of its urban and rural populations. By understanding these dynamics, stakeholders can develop more effective policies and initiatives that foster community resilience and sustainable development throughout the county.

Table 2.1. Perry County Population 2010-2020 by Jurisdiction

Jurisdiction	2010 Population	2020 Population	2020 Annual Population Estimate or ACS Population	# Change (2010-2020)	% Change (2010-2020)
Perry County	18,971	18,956	18,956	-15	-0.1%
Perryville	8,225	8,558	8,536	+333	+4.05%
Unincorporated	10,746	10,636	10,420	+110	+1.03%

Source: U.S. Bureau of the Census, 2020 Decennial Census; *population includes the portions of these cities in adjacent counties

The University of South Carolina developed an index to evaluate and rank the ability to respond to, cope with, recover from, and adapt to disasters. The index synthesizes 29 socioeconomic variables which research literature suggests contribute to reduction in a community's ability to prepare for, respond to, and recover from hazards. SoVI ® data sources include primarily those from the United States Census Bureau. Perry County Missouri ranked -1.84.

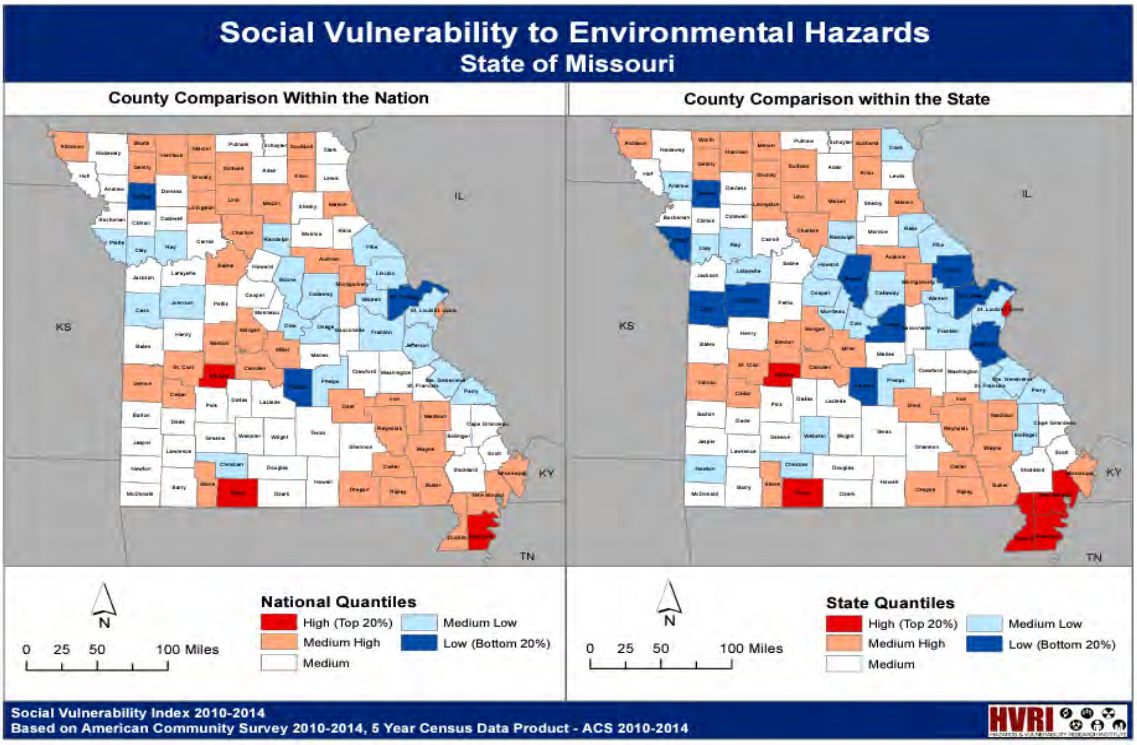


Table 2.2. Unemployment, Poverty, Education, and Language Percentage Demographics, Perry County, Missouri

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
Perry County	60.5%	5.58%	11.3%	85.6%	20.3%	3.3%
Perryville	62.8%	5.58%	17.6%	85.3%	20.3%	4.4%
State	62.5%	5%	12%	91.3%	31.2%	6.3%
Nation	63%	6.7%	12.5%	89.1%	34.3%	21.7%

Source: U.S. Census, 2020 Decennial Census.

2.2.3 History

Perry County, Missouri, is steeped in history and community, offering a rich tapestry of culture and development. Established in 1820, the county was named after Commodore Oliver Hazard Perry, a naval hero of the War of 1812. The area was originally inhabited by various Native American tribes before European settlers began to arrive in the early 19th century, drawn by the region's fertile land and natural resources.

The county seat, Perryville, was founded in 1818 and has grown to become a vibrant hub of economic and social activity. Perryville is known for its historical architecture, including the Perry County Courthouse, which showcases classic 19th-century design. The city has developed into a center for trade and education, bolstered by the presence of local businesses and community services.

Perry County is also home to the Perryville School District No. 32, which plays a crucial role in the education of the community's children. The district is committed to providing quality education and fostering a supportive environment for students. It emphasizes academic achievement, character development, and community involvement, making it a vital part of the county's future.

Additionally, the Bois Brule Levee District serves an essential function in the county's infrastructure. Established to manage flood risks, the district oversees the levee system that protects agricultural land and residential areas along the Bois Brule Creek. This proactive measure helps safeguard the community against natural disasters, allowing for safe and sustainable development in the region.

2.2.4 Occupations

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

Table 2.3. Occupation Statistics, Perry 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
Perry County	53.9%	58.5%	71.1%	73.3%	92.4%
Perryville	60.6%	61.8%	69.1%	61.8%	94.2%

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

2.2.5 Agriculture

Perry County, Missouri, is home to a robust agricultural sector, featuring 736 farms that cover 193,440 acres. The average farm size is about 263 acres, reflecting a diverse range of farming practices in the region.

The county's primary crops include corn for grain, harvested from approximately 1,210 acres and yielding around 36,278 bushels, along with 472 acres of wheat producing 12,988 bushels and 988 acres of sorghum. These crops contribute to a total market value of agricultural products sold estimated at $3,561,771, with average sales per farm around $11,148.

Agriculture also plays a vital role in local employment, providing approximately 1,500 jobs, which constitutes about 18.75% of the total workforce in Perry County, estimated at around 8,000 individuals. This highlights the essential role of farming in supporting the local economy and community.

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

Since 1993, there have been two HMA grants in Perry County totaling $3,723,399 in total project costs. Details are shown in **Table 2.4**

Table 2.4. FEMA HMA Grants in Perry County from 1993-2024

Disaster Declaration	Project Type	Sub-Grantee	Date Approved	Project Total
995	Property Acquisition	Perry County	1994-03-10	$760,147
4317	Safe Room	Perry County School Dist. 32	2018-08-14	$2,222,439
Total				$3,723,339

Source: Federal Emergency Management Agency, 10/10/2024

2.2.7 FEMA Public Assistance (PA) Grants in Planning Area

Since 1993, there have been sixty-seven PA grants in Perry County totaling $7,117,986 in project costs. Details are shown in **Table 2.5** below.

Table 2.5. FEMA PA Grants in Perry County from 1993-2024

Disaster Declaration	Project Type	Project Size	Applicant	Project Total
1412	Roads and Bridges	Small	Perry County	$21,031
1412	Roads and Bridges	Small	Perry County	$27,343
1412	Protective Measures	Large	Bois Brule Levee & Drainage District	$94,213
1412	Protective Measures	Small	Bois Brule Levee & Drainage District	$2,997
1631	Roads and Bridges	Small	Perry County	$34,889
1631	Protective Measures	Small	Perry County	$4,244
1631	Protective Measures	Small	Perry Co. Rural Fire Protection Assn.	$1,427
1749	Debris Removal	Small	Perry County	$2,526
1749	Roads and Bridges	Small	Perry County	$22,574
1749	Debris Removal	Small	Bois Brule Levee & Drainage District	$22,550
1749	Roads and Bridges	Small	Perry County	$9,804
1749	Roads and Bridges	Small	Perry County	$9,297
1749	Protective Measures	Small	Public Water Supply District #1	$6,242
1749	Public Utilities	Small	Public Water Supply District #1	$20,867
1749	Protective Measures	Large	Bois Brule Levee & Drainage District	$579,309
1749	Protective Measures	Small	Bois Brule Levee & Drainage District	$2,108
1773	Protective Measures	Small	Bois Brule Levee & Drainage District	$44,927
1773	Protective Measures	Large	Bois Brule Levee & Drainage District	$256,637
1773	Protective Measures	Small	Bois Brule Levee & Drainage District	$6,523
1847	Protective Measures	Small	Frohna/Altenburg Fire Dept.	$7,678
1847	Protective Measures	Large	Perry County	$75,509
1847	Public Buildings	Small	Perry County	$5,000
1847	Debris Removal	Small	Bois Brule Levee & Drainage District	$6,040
1847	Protective Measures	Large	Bois Brule Levee & Drainage District	$131,872
1847	Public Buildings	Small	Perry County	$3,450
1847	Recreational or Other	Small	Perry County	$4,315
1847	Public Buildings	Small	Perryville	$5,000
1847	Protective Measures	Small	Perryville	$5,458
1847	Debris Removal	Large	Perryville	$78,730
1847	Protective Measures	Small	Perryville	$3,097
1847	Protective Measures	Small	Frohna/Altenburg Fire Dept.	$597
1934	Protective Measures	Small	Bois Brule Levee & Drainage District	$14,800
1934	Protective Measures	Large	Bois Brule Levee & Drainage District	$155,152
1980	Recreational or Other	Small	Perryville	$1,146
1980	Public Buildings	Small	Perryville	$300

1980	Public Utilities	Small	Perryville	$3,854
1980	Debris Removal	Small	Perryville	$28,789
1980	Protective Measures	Small	Perryville	$158
1980	Protective Measures	Small	Perryville	$7,496
1980	Debris Removal	Small	Perry Co Road Dept.	$2,280
1980	Roads and Bridges	Small	Perry Co Road Dept.	$1,428
1980	Public Buildings	Small	Perry Co Road Dept.	$5,000
1980	Roads and Bridges	Small	Perry Co Road Dept.	$1,689
1980	Protective Measures	Small	Bois Brule Levee & Drainage District	$6,345
1980	Protective Measures	Large	Bois Brule Levee & Drainage District	$749,074
1980	Protective Measures	Small	Bois Brule Levee & Drainage District	$1,525
1980	Roads and Bridges	Small	Perry Co Road Dept.	$6,699
1980	Debris Removal	Small	Bois Brule Levee & Drainage District	$48,482
1980	Protective Measures	Small	Bois Brule Levee & Drainage District	$25,639
1980	Roads and Bridges	Small	Perry Co Road Dept.	$13,448
1980	Roads and Bridges	Small	Perry Co Road Dept.	$26,616
1980	Roads and Bridges	Small	Perry Co Road Dept.	$11,082
4130	Protective Measures	Large	Bois Brule Levee & Drainage District	$181,833
4130	Debris Removal	Small	Bois Brule Levee & Drainage District	$4,230
4130	Protective Measures	Small	Bois Brule Levee & Drainage District	$9,760
4238	Protective Measures	Large	Bois Brule Levee & Drainage District	$425,976
4238	Protective Measures	Small	Bois Brule Levee & Drainage District	$6,195
4238	Debris Removal	Small	Bois Brule Levee & Drainage District	$4,204
4250	Roads and Bridges	Small	Perry County	$69,405
4250	Protective Measures	Small	Bois Brule Levee & Drainage District	$15,377
4250	Debris Removal	Small	Bois Brule Levee & Drainage District	$8,198
4250	Protective Measures	Large	Bois Brule Levee & Drainage District	$801,310
4317	Emergency Protective Measures	Large	Bois Brule Levee & Drainage District	$524,119
4317	Emergency Work Donated Resources	Small	Bois Brule Levee & Drainage District	$24,671
4317	Debris Removal	Small	Bois Brule Levee & Drainage District	$10,911
4435	Roads and Bridges	Small	Bois Brule Levee & Drainage District	$20,744
4435	Emergency Work Donated Resources	Small	Bois Brule Levee & Drainage District	$3,330
4435	Management Costs	Small	Bois Brule Levee & Drainage District	$3,326
4435	Emergency Protective Measures	Large	Bois Brule Levee & Drainage District	$887,402
4451	Water Control Facilities	Small	Bois Brule Levee & Drainage District	$16,433
4451	Emergency Work Donated Resources	Small	Bois Brule Levee & Drainage District	$4,844
4451	Roads and Bridges	Small	Bois Brule Levee & Drainage District	$25,590
4451	Management Costs	Small	Bois Brule Levee & Drainage District	$7,368
4451	Emergency Protective Measures	Large	Bois Brule Levee & Drainage District	$1,258,892
4490	Emergency Protective Measures	Small	Perry County	$164,113
4490	Emergency Protective Measures	Small	157-0865A-00	$32,501
Total				**$7,117,986**

Source: Federal Emergency Management Agency, 10-10-2024

2.2 JURISDICTIONAL PROFILES AND MITIGATION CAPABILITIES

This section includes individual profiles for each participating jurisdiction as well as a discussion of previous mitigation initiatives and a summary table indicating specific capabilities of each jurisdiction that relate to their ability to implement mitigation opportunities. The unincorporated county is profiled first in **2.2.8**, followed by the incorporated city in sections **2.2.9**, these jurisdictions are summarized in a comparison table in section **2.2.11**.

Section **2.2.10** addresses the special districts, school districts can be found in Section **2.2.12**.

Data questionnaires can be found in Appendix A.

2.2.8 Unincorporated Perry County - District Profile and Mitigation Capabilities

The jurisdiction of Perry County encompasses all unincorporated regions within its boundaries. The local government operates under a County Commission, which consists of a Presiding Commissioner elected by the entire county and two Associate Commissioners elected by their respective districts. The County government comprises various departments and offices, including:

- County Commissioners
- County Assessor
- County Attorney
- County Auditor
- County Recorder
- County Sheriff
- County Treasurer
- Emergency Management
- Health Department

Mitigation Initiatives/Capabilities

Table 2.6 shows the County's planning and hazard mitigation capabilities. As social, political, financial, legal, and administrative resources allow, the county will expand on these capabilities by adding staff, commissioning studies and plans, and developing regulations.

Table 2.6. Unincorporated Perry County Mitigation Capabilities

Capabilities	Status, *Including Date of Document or Policy*
Planning Capabilities	
Comprehensive Plan	N/A
Builder's Plan	No
Capital Improvement Plan	Yes
City Emergency Operations Plan	N/A
County Emergency Operations Plan	Yes [12/2023]
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	N/A
County Mitigation Plan	Yes [2019]
Debris Management Plan	No
Economic Development Plan	N/A
Transportation Plan	Yes [2019]
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	N/A
Firewise or other fire mitigation plan	No
School Mitigation Plan	N/A
Critical Facilities Plan	No
Policies/Ordinance	
Zoning Ordinance	No
Building Code	Version:2016
Floodplain Ordinance	2012
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	N/A
Program	
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	None

Capabilities	Status, *Including Date of Document or Policy*
National Weather Service (NWS) Storm Ready	No
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	Rated: 8x
Economic Development Program	Yes
Land Use Program	No
Public Education/Awareness	Yes
Property Acquisition	Yes: FEMA Buyout Program
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes: All Adjacent Counties
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	N/A
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	Yes [E911 Office]
Engineer	No
Development Planner	No
Public Works Official	Yes
Emergency Management Director	Yes
NFIP Floodplain Administrator	Yes
Emergency Response Team	No
Hazardous Materials Expert	Yes [Perry Co. Fire Dpt.]
Local Emergency Planning Committee	No
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	Yes
Housing Department	No
Historic Preservation	N/A
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes
Salvation Army	Yes
Veterans Groups	Yes
Local Environmental Organization	No
Homeowner Associations	Yes
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes

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

Source: Data Collection Questionnaire, 8-6-2024

2.2.9 City of Perryville - District Profile and Mitigation Capabilities

The City of Perryville, located in the geographic center of the county and is governed by a mayor and board of aldermen.

The following **Table 2.7** lists the mitigation capabilities collected from data questionnaires. As social, political, financial, legal, and administrative resources allow, the county will expand on these capabilities by adding staff, commissioning studies and plans, and developing regulations.

Table 2.7. City of Perryville Mitigation Capabilities

Capability	Status, *Including Date of Document or Policy*
Planning Capabilities	
Comprehensive Plan	Yes [2024]
Builder's Plan	No
Capital Improvement Plan	Yes [2023]
Local Emergency Plan	Yes [2015]
County Emergency Plan	N/A
Local Recovery Plan	No
County Recovery Plan	N/A
Local Mitigation Plan	Yes [2019]
County Mitigation Plan	Yes [2019]
Economic Development Plan	No
Transportation Plan	N/A
Land-use Plan	Yes [2013]
Flood Mitigation Assistance (FMA) Plan	Yes [2011]
Watershed Plan	No
Firewise or other fire mitigation plan	Yes [2023]
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	N/A
Policies/Ordinance	
Zoning Ordinance	Yes
Building Code	Yes
Floodplain Ordinance	Yes
Subdivision Ordinance	Yes
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	Yes
Drainage Ordinance	Yes
Seismic Construction Ordinance	N/A
Capability	
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	No

Capability	Status, *Including Date of Document or Policy*
Landscape Ordinance	No
Wetlands and Riparian Areas Conservation Plan	N/A
Debris Management Plan	N/A
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
National Flood Insurance Program (NFIP) Participant	No
NFIP Community Rating System (CRS) Participating Community	Yes
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	Yes
ISO Fire Rating	Rated: 4x
Economic Development Program	Yes
Land Use Program	Yes
Public Education/Awareness	Yes [Fire & CNG]
Property Acquisition	Yes
Planning/Zoning Boards	Yes
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	Yes
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	N/A
FEMA Flood Insurance Study (Detailed)	N/A
Evacuation Route Map	No
Critical Facilities Inventory	Yes
Vulnerable Population Inventory	No
Land Use Map	Yes
Staff/Department	
Building Code Official	Yes
Building Inspector	Yes
Mapping Specialist (GIS)	Yes
Engineer	Yes
Development Planner	No
Public Works Official	Yes
Emergency Management Coordinator	Yes
NFIP Floodplain Administrator	Yes
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes
County Emergency Management Commission	N/A
Sanitation Department	Yes
Transportation Department	No
Economic Development Department	Yes
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Veterans Groups	Yes
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes

Capability	Status, *Including Date of Document or Policy*
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	No
Ability to withhold spending in hazard prone areas	Yes

Source: Data Collection Questionnaire, 8-6-2024

2.2.10 Special Districts - Profile and Mitigation Capabilities

This section includes general profile information for The Bois Brule Levee and Drainage District. Being the only levee district that fully participated in the development process of this updated plan.

The Bois Brule Levee and Drainage District serves a critical purpose in managing flood control and drainage within its jurisdiction in Perry County, Missouri. This special district is specifically tasked with protecting approximately 26,000 acres of agricultural land, industries, and vital infrastructure, such as the Perryville airport and key transportation routes. The existing flood protection infrastructure consists of 33.1 miles of levee, 341 relief wells, and four pump stations. This extensive system is designed to mitigate flood risks and manage water drainage effectively within the district.

One of the most impactful events in the district's history was the Great Flood of 1993, which devastated the Bois Brule Bottom. This catastrophic flooding severely affected local communities, many of which struggled to recover in the aftermath. Another significant event occurred during the 2008 flooding, where heavy rains from March 17 to May 9 resulted in extensive flooding across Perry County. In response, FEMA prepared Project Worksheet 647 to provide funding for emergency measures aimed at mitigating the disaster's impact.

In addition to these historical challenges, the Bois Brule Levee and Drainage District undertook proactive measures by designing and constructing a levee raise and seepage berm. This project was essential for enhancing the flood protection capabilities of the district and addressing vulnerabilities identified during previous flooding events.

As a public entity, the Bois Brule Levee and Drainage District operates under the governance of a Board of Trustees, who are typically appointed or elected by local authorities. This governance structure ensures that community interests and concerns are represented in decision-making processes related to flood management and infrastructure maintenance.

Figure 2.2 shows the geographic location of the Bois Brule Levee jurisdiction, followed by the mitigation capabilities shown in **Table 2.8**.

Figure 2.4. Bois Brule Levee District

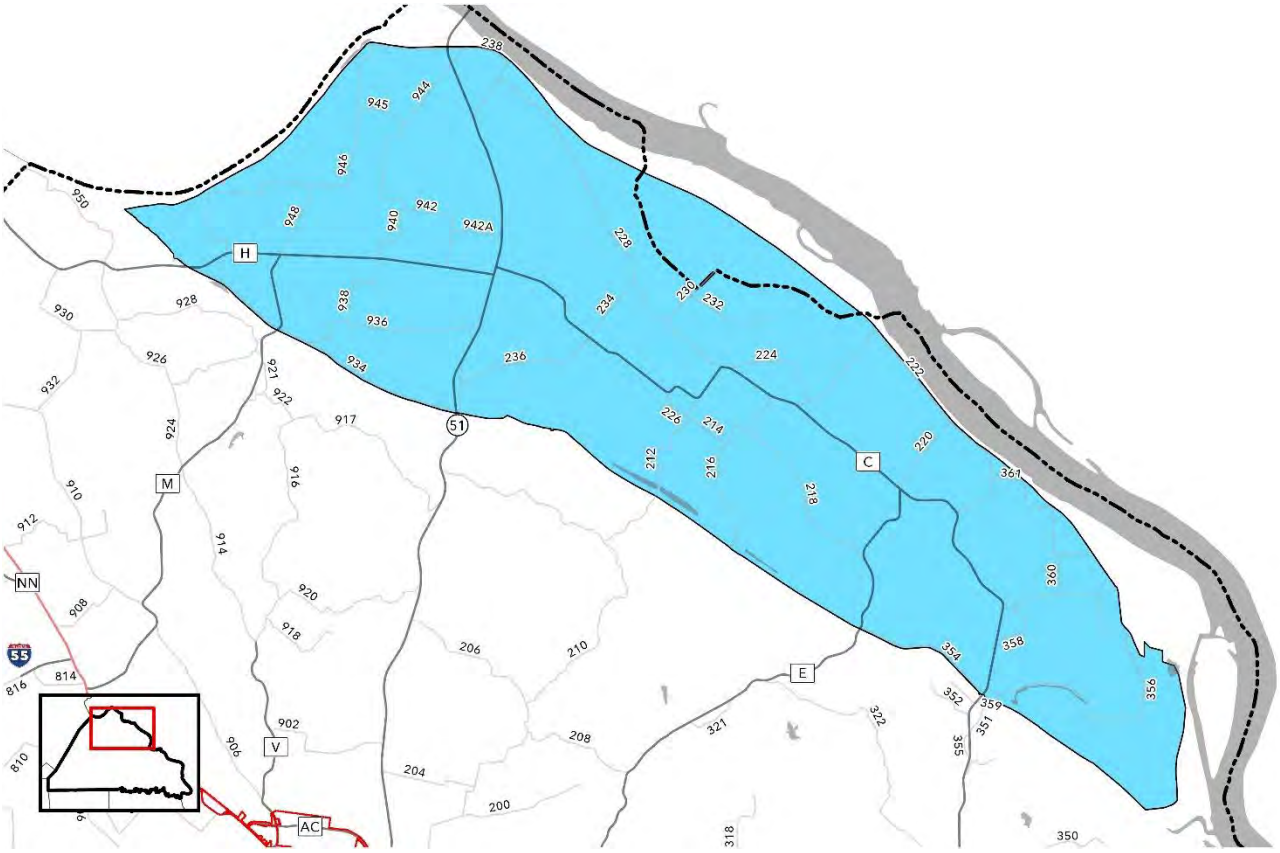


Table 2.8. The Bois Brule Levee and Drainage District Mitigation Capabilities

Capability	Status, *Including Date of Document or Policy*
Planning Capabilities	
Comprehensive Plan	N/A
Builder's Plan	N/A
Capital Improvement Plan	N/A
Local Emergency Plan	N/A
County Emergency Plan	N/A
Local Recovery Plan	N/A
County Recovery Plan	N/A
Local Mitigation Plan	N/A
County Mitigation Plan	N/A
Economic Development Plan	N/A
Transportation Plan	N/A
Land-use Plan	N/A
Flood Mitigation Assistance (FMA) Plan	N/A
Watershed Plan	Comment: We pump out excess storm water
Firewise or other fire mitigation plan	N/A
School Mitigation Plan	N/A
Critical Facilities Plan (Mitigation/Response/Recover)	N/A
Policies/Ordinance	
Zoning Ordinance	N/A
Building Code	N/A
Floodplain Ordinance	N/A
Subdivision Ordinance	N/A
Tree Trimming Ordinance	N/A
Nuisance Ordinance	N/A
Storm Water Ordinance	N/A
Drainage Ordinance	N/A
Seismic Construction Ordinance	N/A
Capability	
Site Plan Review Requirements	N/A
Historic Preservation Ordinance	N/A
Landscape Ordinance	N/A
Wetlands and Riparian Areas Conservation Plan	-
Debris Management Plan	N/A
Program	
Zoning/Land Use Restrictions	N/A
Codes Building Site/Design	N/A
National Flood Insurance Program (NFIP) Participant	N/A
NFIP Community Rating System (CRS) Participating Community	N/A
Hazard Awareness Program	N/A
National Weather Service (NWS) Storm Ready	N/A
Firewise Community Certification	N/A
Building Code Effectiveness Grading (BCEGs)	N/A
ISO Fire Rating	N/A
Economic Development Program	N/A
Land Use Program	N/A
Public Education/Awareness	N/A
Property Acquisition	N/A
Planning/Zoning Boards	N/A
Stream Maintenance Program	N/A
Tree Trimming Program	N/A

Engineering Studies for Streams (Local/County/Regional)	N/A
Mutual Aid Agreements	N/A
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	N/A
Hazard Analysis/Risk Assessment (County)	N/A
Flood Insurance Maps	N/A
FEMA Flood Insurance Study (Detailed)	N/A
Evacuation Route Map	N/A
Critical Facilities Inventory	N/A
Vulnerable Population Inventory	N/A
Land Use Map	N/A
Staff/Department	
Building Code Official	N/A
Building Inspector	N/A
Mapping Specialist (GIS)	Yes
Engineer	Yes
Development Planner	N/A
Public Works Official	N/A
Emergency Management Coordinator	N/A
NFIP Floodplain Administrator	N/A
Bomb and/or Arson Squad	N/A
Emergency Response Team	N/A
Hazardous Materials Expert	N/A
Local Emergency Planning Committee	Yes
County Emergency Management Commission	N/A
Sanitation Department	N/A
Transportation Department	N/A
Economic Development Department	N/A
Housing Department	N/A
Historic Preservation	N/A
Non-Governmental Organizations (NGOs)	
American Red Cross	N/A
Salvation Army	N/A
Veterans Groups	N/A
Environmental Organization	N/A
Homeowner Associations	N/A
Neighborhood Associations	N/A
Chamber of Commerce	N/A
Community Organizations (Lions, Kiwanis, etc.)	N/A
Local Funding Availability	
Ability to apply for Community Development Block Grants	N/A
Ability to fund projects through Capital Improvements funding	N/A
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	N/A
Impact fees for new development	N/A
Ability to incur debt through general obligation bonds	N/A
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	N/A
Ability to withhold spending in hazard prone areas	N/A

Source: Data Collection Questionnaire, 8-6-2024

2.2.11 Summary of Jurisdictional Capabilities

Table 2.9 below summarizes the mitigation capabilities of participating jurisdictions covered in **Table 2.6** and **Table 2.8**, including the Unincorporated County, the City of Perryville, and The Bois Brule Levee and Drainage District.
Each jurisdiction's capabilities are assessed based on their resources, programs, and strategies aimed at addressing potential hazards and implementing effective mitigation measures.

Table 2.9. Mitigation Capabilities Summary Table

Capabilities	Unincorporated Perry County	City of Perryville	Bois Brule Levee and Drainage District
Planning Capabilities			
Comprehensive Plan	N/A	Yes [2024]	N/A
Builder's Plan	No	No	N/A
Capital Improvement Plan	Yes	Yes [2023]	N/A
Local Emergency Plan	N/A	Yes [2015]	N/A
County Emergency Plan	Yes [12/2023]	N/A	N/A
Local Recovery Plan	No	No	N/A
County Recovery Plan	No	N/A	N/A
Local Mitigation Plan	N/A	Yes [2019]	N/A
County Mitigation Plan	Yes [2019]	Yes [2019]	N/A
Debris Management Plan	No	No	N/A
Economic Development Plan	N/A	N/A	N/A
Transportation Plan	Yes [2019]	Yes [2013]	N/A
Land-use Plan	No	Yes [2011]	N/A
Flood Mitigation Assistance (FMA) Plan	No	No	N/A
Watershed Plan	N/A	Yes [2023]	Comment: We pump out excess storm water
Firewise or other fire mitigation plan	No	No	N/A
School Mitigation Plan	N/A	N/A	N/A
Critical Facilities Plan (Mitigation/Response/Recovery)	No	No	N/A
Policies/Ordinance			
Zoning Ordinance	No	Yes	N/A
Building Code	Version:2016	Version: IBC 2021	N/A
Floodplain Ordinance	2012	Yes [2023]	N/A
Subdivision Ordinance	No	Yes	N/A
Tree Trimming Ordinance	No	No	N/A
Nuisance Ordinance	No	Yes	N/A
Storm Water Ordinance	No	Yes	N/A
Drainage Ordinance	No	Yes	N/A
Site Plan Review Requirements	No	Yes	N/A
Historic Preservation Ordinance	No	No	N/A
Landscape Ordinance	No	No	N/A
Seismic Construction Ordinance	N/A	N/A	N/A
Program			
Zoning/Land Use Restrictions	No	Yes	N/A
Codes Building Site/Design	No	Yes	N/A
National Flood Insurance Program (NFIP) Participant	Yes	No	N/A
NFIP Community Rating System (CRS) Participating Community	None	Yes	N/A

Capabilities	Unincorporated Perry County	City of Perryville	Bois Brule Levee and Drainage District
Hazard Awareness Program	No	No	N/A
National Weather Service (NWS) Storm Ready	No	No	N/A
Building Code Effectiveness Grading (BCEGs)	No	Yes	N/A
ISO Fire Rating	Rated: 8x	Rated: 4x	N/A
Economic Development Program	Yes	Yes	N/A
Land Use Program	No	Yes	N/A
Public Education/Awareness	Yes	Yes [Fire & CNG]	N/A
Property Acquisition	Yes [FEMA Buyout Program]	Yes	N/A
Planning/Zoning Boards	No	Yes	N/A
Stream Maintenance Program	No	No	N/A
Tree Trimming Program	No	No	N/A
Engineering Studies for Streams (Local/County/Regional)	No	Yes	N/A
Mutual Aid Agreements	Yes	Yes	N/A
Studies/Reports/Maps			
Hazard Analysis/Risk Assessment (Local)	N/A	Yes	N/A
Hazard Analysis/Risk Assessment (County)	No	Yes	N/A
Flood Insurance Maps	No	N/A	N/A
FEMA Flood Insurance Study (Detailed)	No	N/A	N/A
Evacuation Route Map	No	No	N/A
Critical Facilities Inventory	No	Yes	N/A
Vulnerable Population Inventory	No	No	N/A
Land Use Map	No	Yes	N/A
Staff/Department			
Building Code Official	No	Yes	N/A
Building Inspector	No	Yes	N/A
Mapping Specialist (GIS)	Yes [E911 Office]	Yes	Yes
Engineer	No	Yes	Yes
Development Planner	No	No	N/A
Public Works Official	Yes	Yes	N/A
Emergency Management Coordinator	Yes	Yes	N/A
NFIP Floodplain Administrator	Yes	Yes	N/A
Emergency Response Team	No	No	N/A
Hazardous Materials Expert	Yes [Perry Co. Fire Dpt.]	No	N/A
Local Emergency Planning Committee	No	Yes	Yes
County Emergency Management Commission	No	N/A	N/A
Sanitation Department	No	Yes	N/A
Transportation Department	No	No	N/A
Economic Development Department	Yes	Yes	N/A
Housing Department	No	No	N/A
Historic Preservation	N/A	No	N/A
Non-Governmental Organizations (NGOs)			
American Red Cross	Yes	No	N/A
Salvation Army	Yes	No	N/A
Veterans Groups	Yes	Yes	N/A
Environmental Organization	No	No	N/A
Homeowner Associations	Yes	No	N/A
Neighborhood Associations	No	No	N/A
Chamber of Commerce	Yes	Yes	N/A
Community Organizations (Lions, Kiwanis, etc.)	Yes	Yes	N/A
Financial Resources			
Apply for Community Development Block Grants	Yes	Yes	N/A

Capabilities	Unincorporated Perry County	City of Perryville	Bois Brule Levee and Drainage District
Fund projects through Capital Improvements funding	Yes	Yes	N/A
Authority to levy taxes for specific purposes	Yes	Yes	Yes
Fees for water, sewer, gas, or electric services	Yes	Yes	N/A
Impact fees for new development	No	Yes	N/A
Incur debt through general obligation bonds	Yes	Yes	N/A
Incur debt through special tax bonds	Yes	Yes	Yes
Incur debt through private activities	No	No	N/A
Withhold spending in hazard prone areas	Yes	Yes	N/A

Source: Data Collection Questionnaire, 8-6-2024

2.2.12 School Districts - Profiles and Mitigation Capabilities

This section includes general profile information for Perry County School District No. 32. The school district fully participated in the development process of this plan. Perry County School district serves Perryville and neighboring areas, and it is comprised of 5 learning centers or schools, listed below:

- Perryville Primary Center
- Perryville Elementary
- Perryville Middle School
- Perryville High School
- Perryville Area Career and Learning Center

The following tables, **Table 2.10** and **Table 2.11** shows data collected from the completed data questionnaire and the Missouri Department of Education. As social, political, financial, legal, and administrative resources allow, the district will expand on these capabilities by adding staff, commissioning studies and plans, and developing regulations.

Figure 2.5 below illustrates the coverage areas of the school districts in Perry County. Altenburg School District No. 48 serves the eastern region of Perry County, including the communities of Frohna and Altenburg. District 48 chose not to participate in the plan's development. Additionally, two other districts cover small areas of the county, but they do not have any structures or assets in Perry County, and as such, they are not included in this mitigation plan since they are addressed by other plans.

Figure 2.5. Figure 2.3 Perry County School Districts

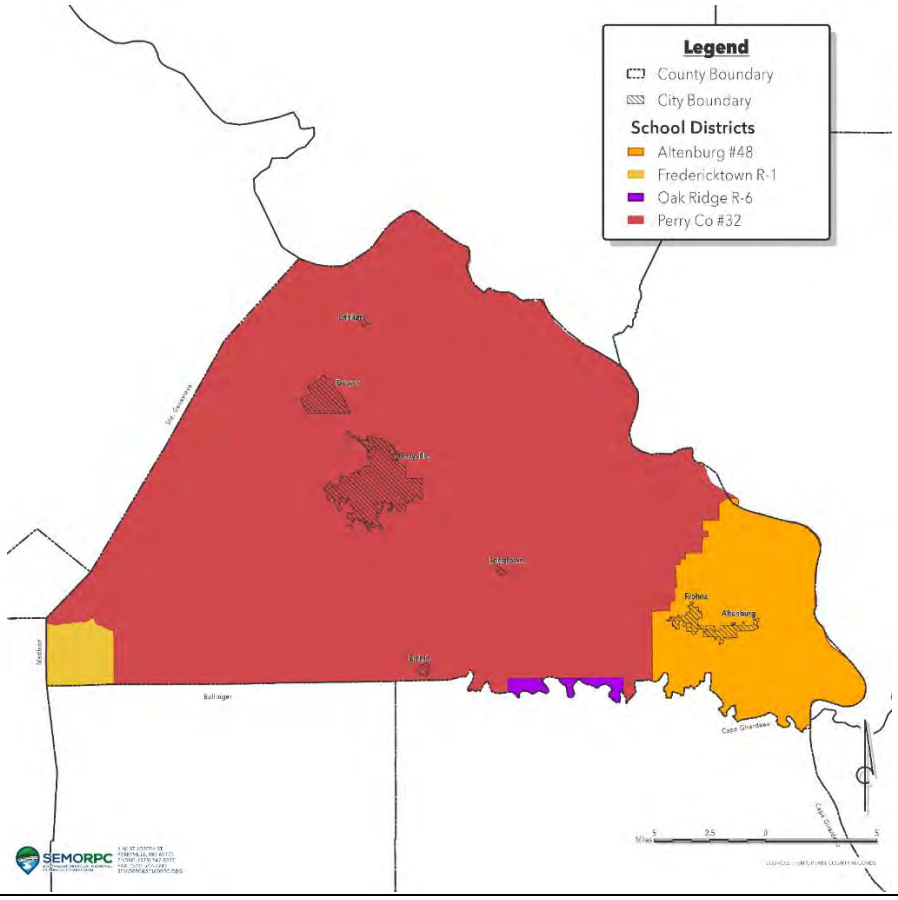


Table 2.10. Perry County School District No. 32 Buildings and Enrollment Data, 10-14-2024

District Name	Building Name	Building Enrolment
Perry Co. 32	Perry Co. Middle	439
Perry Co. 32	Perryville Area Car & Tech Center	0
Perry Co. 32	Perryville Elem.	411
Perry Co. 32	Perryville Primary Center	474
Perry Co. 32	Perryville Sr. High	747

Source: https://dese.mo.gov/school-data, 10-14-2024

Table 2.11. Summary of Mitigation Capabilities-Perry County School Districts

Capability	Perry County No. 32
Planning Elements	
Master Plan/ Date	Yes / N/A
Capital Improvement Plan/Date	Yes / N/A
School Emergency Plan / Date	Yes / N/A
Weapons Policy/Date	Yes / N/A
Personnel Resources	
Full-Time Building Official (Principal)	Yes / N/A
Emergency Manager	Yes / Safety Director
Grant Writer	Yes / N/A
Public Information Officer	Yes / Communications Director
Financial Resources	
Capital Improvements Project Funding	Yes / N/A
Local Funds	Yes / N/A
General Obligation Bonds	Yes / N/A
Special Tax Bonds	Yes / N/A
Private Activities/Donations	Yes / N/A
State and Federal Funds/Grants	Yes / N/A
Other	
Public Education Programs	N/A
Privately or Self- Insured?	N/A
Fire Evacuation Training	Yes
Tornado Sheltering Exercises	Yes
Public Address/Emergency Alert System	Yes
NOAA Weather Radios	No
Lock-Down Security Training	Yes
Mitigation Programs	Yes
Tornado Shelter/Saferoom	Yes
Campus Police	Yes

Source: Data Collection Questionnaire, 8-6-2024

3 RISK ASSESSMENT

3 RISK ASSESSMENT 1

3.1 HAZARD IDENTIFICATION 4

3.1.1 Review of Existing Mitigation Plans 4

3.1.2 Review Disaster Declaration History 4

3.1.3 Research Additional Sources 6

3.1.4 Hazards Identified 8

3.1.5 Multi-Jurisdictional Risk Assessment 9

3.2 ASSETS AT RISK 9

3.2.1 Total Exposure of Population and Structures 10

Unincorporated County and Incorporated Cities: 10

3.2.2 Critical and Essential Facilities and Infrastructure 11

3.2.3 Other Assets 15

3.3 LAND USE AND DEVELOPMENT 19

3.3.1 Development Since Previous Plan Update 19

3.3.2 Future Land Use and Development 20

3.4 HAZARD PROFILES, VULNERABILITY, AND PROBLEM STATEMENTS 21

Hazard Profiles 21

Vulnerability Assessments 22

Problem Statements 22

3.4.1 Flooding (Riverine and Flash) 23

Hazard Profile 23

Problem Statement 31

3.4.2 Levee Failure 32

Hazard Profile 32

Vulnerability 35

Problem Statement 36

3.4.3 Dam Failure 37

Hazard Profile 37

Vulnerability 41

Problem Statement 42

3.4.4 Earthquakes 43

Hazard Profile 43

Vulnerability 47

Problem Statement 48

3.4.5 Land Subsidence/Sinkholes 49

Hazard Profile 49

Vulnerability 51

Problem Statement 51

3.4.6 Drought 52

Hazard Profile 52

Vulnerability 55

Problem Statement 55

3.4.7 Extreme Temperatures 56

Hazard Profile 56

Vulnerability 60
Problem Statement 61
3.4.8 Severe Thunderstorms Including High Winds, Hail, and Lightning 62
Hazard Profile 62
Vulnerability 67
Problem Statement 68
3.4.9 Severe Winter Weather 69
Hazard Profile 69
Vulnerability 73
Problem Statement 74
3.4.10 Tornado 75
Hazard Profile 75
Vulnerability 79
Problem Statement 80
3.4.11 Wildfire 81
Hazard Profile 81
Vulnerability 83
Problem Statement 84

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.

There has been little change in Perry County over the past 5 years. While the City of Perryville has a slight increase in population since 2020, the overall population of the county has been flat with a very slight decline. Likewise, there has only been marginal commercial, office, and industrial development in the county and communities. These small changes, while important to the residents, mean that much of the exposure and risk in the planning area has remained relatively unchanged since the 2020 plan.

This chapter is divided into four main parts:

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

3.1 HAZARD IDENTIFICATION

There are 10 hazards identified for this plan update listed below in alphabetical order:

- Dam & Levee Failure
- Drought
- Earthquake
- Extreme Temperatures
- Flooding (Flash & Riverine)
- Severe Thunderstorms
- Severe Winter Weather
- Sinkholes
- Tornadoes
- Wild Fire

It should be noted that this mitigation plan, like most local HMP in the state, only includes natural hazards and does not address "man-made" hazards such as terrorism, structural fires, chemical spills, etc.

Sections 3.1.1 through 3.1.3 describe how these hazards were identified for this plan update.

3.1.1 Review of Existing Mitigation Plans

During the planning process the MPC reviewed the 2020 plan and took all hazards, natural and anthropogenic, into consideration before determining that the best course of action for the county was to focus on the hazards identified in the previous plan. The MPC determined that the primary focus should remain on natural hazards because they are federally mandated and historically have posed the most significant risk to the area. The decision to exclude certain man-made or technical hazards was based on a lack of substantial evidence indicating that these hazards pose a significant threat to the planning area.

3.1.2 Review Disaster Declaration History

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

FEMA also issues emergency declarations, which are more limited in scope and do not include the long-term federal recovery programs of major disaster declarations. Determinations for declaration type are based on scale and type of damage and institutions or industrial sectors affected. **Table 3.1** lists the federal FEMA disaster declarations that included the planning area from 1965 to present.

Additionally, 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. If an Executive Order resulted in a Federal Disaster Declaration, the Federal Declaration will be listed in **Table 3.1.**

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

Disaster Number	Description	Declaration Date Incident Period	Individual Assistance (IA) Public Assistance (PA)
4741	Severe Storm	9/21/2023	PA
4490	Biological	3/26/2020	PA
3482	Biological	3/13/2020	PA
4451	Severe Storm	7/9/2019	PA
4435	Flood	5/20/2019	PA
4317	Flood	6/2/2017	PA
4250	Flood	1/21/2016	PA
3374	Flood	1/2/2016	PA
4238	Severe Storm	8/7/2015	PA
4130	Severe Storm	7/18/2013	PA
1980	Severe Storm	5/9/2011	PA
3317	Severe Storm	2/3/2011	PA
1934	Severe Storm	8/17/2010	PA
1847	Severe Storm	6/19/2009	PA
3303	Severe Ice Storm	1/30/2009	PA
1809	Severe Storm	11/13/2008	PA
1773	Severe Storm	6/25/2008	PA
1749	Severe Storm	3/19/2008	PA
3281	Severe Ice Storm	12/12/2007	PA
1631	Severe Storm	3/16/2006	IA,PA
3232	Hurricane	9/10/2005	PA
1463	Severe Storm	5/6/2003	IA
1412	Severe Storm	5/6/2002	IA,PA
1054	Severe Storm	6/2/1995	IA,PA
1006	Severe Storm	12/1/1993	IA,PA
995	Flood	7/9/1993	IA,PA
672	Flood	12/10/1982	IA
372	Severe Storm	4/19/1973	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 data and information on hazards and the impacted areas were collected from the following sources:

- Missouri Hazard Mitigation Plans (2010, 2013, 2018, and 2023)
- Previously approved planning area Hazard Mitigation Plan (2020)
- Federal Emergency Management Agency (FEMA)
- Missouri Department of Natural Resources
- National Drought Mitigation Center Drought Reporter
- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics
- National Agricultural Statistics Service (Agriculture production/losses)
- Data Collection Questionnaires completed by each jurisdiction
- State of Missouri GIS data
- Environmental Protection Agency
- Flood Insurance Administration
- Hazards US (Hazus)
- Missouri Department of Transportation
- Missouri Division of Fire Marshal Safety
- Missouri Public Service Commission
- National Fire Incident Reporting System (NFIRS)
- National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI);
- 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 (you should state that you will give citations to the sources in the body of the plan)

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

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

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

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

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

3.1.4 Hazards Identified

Through the hazard identification review process, 11 natural hazards that have the potential to significantly affect the planning area were chosen for further analysis in the risk assessment. The hazards identified for this plan update are shown in **Table 3.2.** Although 11 hazards were identified, not all hazards impact every jurisdiction. In addition to listing the hazards selected for this plan, **Table 3.2** also provides a visual summary of the jurisdictions impacted by each hazard. An "X" indicates the jurisdiction is impacted by the hazard, while a "-" indicates the hazard is not applicable to that jurisdiction.

Table 3.2. Hazards Identified for Each Jurisdiction

Jurisdiction	Dam & Levee Failure	Drought	Earthquake	Extreme Temperatures	Flooding (Flash and Riverine)	Severe Thunderstorms	Severe Winter Weather	Sinkholes	Tornadoes	Wild Fire
Perry County	X	X	X	X	X	X	X	X	X	X
City of Perryville	-	X	X	X	X	X	X	X	X	X
Perry Co. Sch. Dist. No. 32	-	-	X	-	-	X	X	-	X	-
Bois Brule Levee District	X	-	-	-	X	-	-	-	-	-

Omission of Certain Jurisdictions from Risk

- **City of Perryville:** The city has no upstream dams or areas that are protected by levees that effect the area within the city limits.
- **Perry County School District No. 32:** All school district structures are located within the city limits of Perryville and as such have no threat from dam or levee failure. District facilities are not directly impacted to drought conditions and receive municipal water from the City of Perryville. Perryville's drought risk is discussed in section 3.4.6. All of the district facilities are both heated and air-conditioned reducing risk to students and faculty to extreme temperatures. In the event of power failure, school is likely to be closed allowing students and faculty to seek other shelter. The school district's facilities are also all located outside of SFHA and not prone to flooding. There are no known sinkholes in proximity to facilities that pose significant risk to the jurisdiction and facilities are separated from WUI areas reducing risk to wildfires.
- **Bois Brule Levee District:** The levee district is by definition only concerned with flooding protection of the area inside the levee protected area. As such only flooding and levee failure is of direct consequence. While other hazards may impact the area inside the district, these are outside the responsibility of the Levee district and would fall under the County's jurisdiction.

Understanding these insights helps inform targeted strategies for hazard mitigation, focusing on reducing vulnerabilities and protecting valuable assets across the various jurisdictions within Perry County.

3.1.5 Multi-Jurisdictional Risk Assessment

For this multi-jurisdictional plan, the risks are assessed for each jurisdiction where they deviate from the risks facing the entire planning area. The planning area is uniform in terms of climate and topography as well as building construction characteristics. Accordingly, the geographic areas of occurrence for weather-related hazards do not vary greatly across the planning area for most hazards. The more urbanized areas within the planning area have more assets that are vulnerable to the weather-related hazards and varied development trends impact future vulnerability. These differences are discussed in greater detail in the vulnerability sections of each hazard.

The hazards that have the potential to vary across the planning area in terms of geographic areas at risk include dam/levee failure, flash & riverine flooding, sinkhole, and wildfire.

3.2 ASSETS AT RISK

This section assesses the population, structures, critical facilities, and other important assets in the planning area that may be at risk to hazards.

Geographic and Environmental Risk Factors

Certain jurisdictions may be more at risk due to geographic locations or environmental factors, some of these factors to consider are the following.

Proximity to Water Bodies: Jurisdictions near rivers, such as Perry County and the Bois Brule Levee District, are inherently at greater risk for flooding. The potential for dam and levee failures further exacerbates this risk, particularly during heavy rainfall events.

Topography: Areas with low-lying topography are more susceptible to flooding, especially when drainage systems are inadequate. Perry County's varied terrain, including hills and valleys, can influence runoff patterns and flood behavior.

Land Use and Development Patterns: Increased impervious surfaces from urban development can lead to higher runoff and strain existing drainage systems, making urban areas like Perryville more vulnerable to flooding and severe weather impacts.

Historical Weather Patterns: The region's history of severe weather events, including tornadoes and thunderstorms, indicates a pattern that could continue due to climate change, increasing the overall risk profile for affected jurisdictions.

3.2.1 Total Exposure of Population and Structures

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. Contents exposure values were calculated by factoring a multiplier to the building exposure values based on usage type. The multipliers were derived from the Hazus and are defined below in **Table 3.3**.

Land values have been purposely excluded from consideration because land remains following disasters, and subsequent market devaluations are frequently short term and difficult to quantify. Another reason for excluding land values is that state and federal disaster assistance programs generally do not address loss of land (other than crop insurance). It should be noted that the total valuation of buildings is based on county assessors' data which may not be current. In addition, government-owned properties are usually taxed differently or not at all, and so may not be an accurate representation of true value. Note that public school district assets and special districts assets are included in the total exposure tables assets by community and county.

Table 3.3 shows the total population, building count, estimated value of buildings, estimated value of contents and estimated total exposure to parcels for the unincorporated county and each incorporated city. For multi-county communities, the population and building data may include data on assets located outside the planning area.

Table 3.3 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	2022 Annual Population Estimate	Building Count	Building Exposure ($1,000)	Contents Exposure ($1,000)	Total Exposure ($1,000)
City of Perryville	8,536	4,337	$454,276.00	$537,630.00	$1,457,924.00
Unincorporated County	10,434	16,893	$920,294.00	$286,509.00	$740,786.00
Totals	18,970	21,230	$1,374,570.00	$824,140.00	$2,198,710.00

Source: U.S. Bureau of the Census, Annual population estimates/ 5-Year American Community Survey 2022; Building Count and Building Exposure, Missouri GIS Database from SEMA Mitigation Management; Contents Exposure derived by applying multiplier to Building Exposure based on Hazus 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 (in $1,000)

Jurisdiction	Residential	Commercial	Industrial	Agricultural	Total
City of Perryville	$487,234.00	$198,410.00	$39,655.00	$292.00	$740,786.00
Unincorporated County	$1,120,958.00	$116,310.00	$171,239.00	$43,258.00	$1,457,924.00
Totals	**$1,608,192.00**	**$314,720.00**	**$210,894.00**	**$43,550.00**	**$2,198,710.00**

Source: Missouri GIS Database, SEMA Mitigation Management Section

Table 3.5. Building Counts by Usage Type

Jurisdiction	Residential Counts	Commercial Counts	Industrial Counts	Agricultural Counts	Total
City of Perryville	4,101	145	22	49	4,337
Unincorporated County	9,435	85	95	7,264	16,106
	13,536	**230**	**117**	**7,313**	**21,230**

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 ($)
Perry County School Dist. 32	2,152	7	$12,995,000	N/A	$12,995,000

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:

- 2023 Missouri State Hazard Mitigation Plan and Hazard Mitigation Viewer
- Local Emergency Planning Committee
- Hazus

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

Jurisdiction	Airport Facility	Bus Facility	Childcare Facility	Communications Tower	Electric Power Facility	Emergency Operations	Fire Service	Government	Housing	Shelters	Highway Bridge	Hospital/Health Care	Military	Natural Gas Facility	Nursing Homes	Police Station	Potable Water Facility	Rail	Sanitary Pump Stations	School Facilities	Stormwater Pump Stations	Tier II Chemical Facility	Wastewater Facility	Total
City of Perryville	1	1	-	0	-	1	3	5	-	-	7	2	1	20	2	1	11	0	20	11	-	-	1	**87**
Perry County	1	0	-	2	-	1	4	14	8,563	-	113	0	0	0	0	1	3	1	0	1	-	-	3	**8,707**
Totals	**2**	**1**	**-**	**2**	**-**	**2**	**7**	**19**	**8,563**	**-**	**120**	**2**	**1**	**20**	**2**	**2**	**14**	**1**	**20**	**12**	**-**	**-**	**4**	**8,794**

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

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.

Figure 3.1. Perry County Bridges

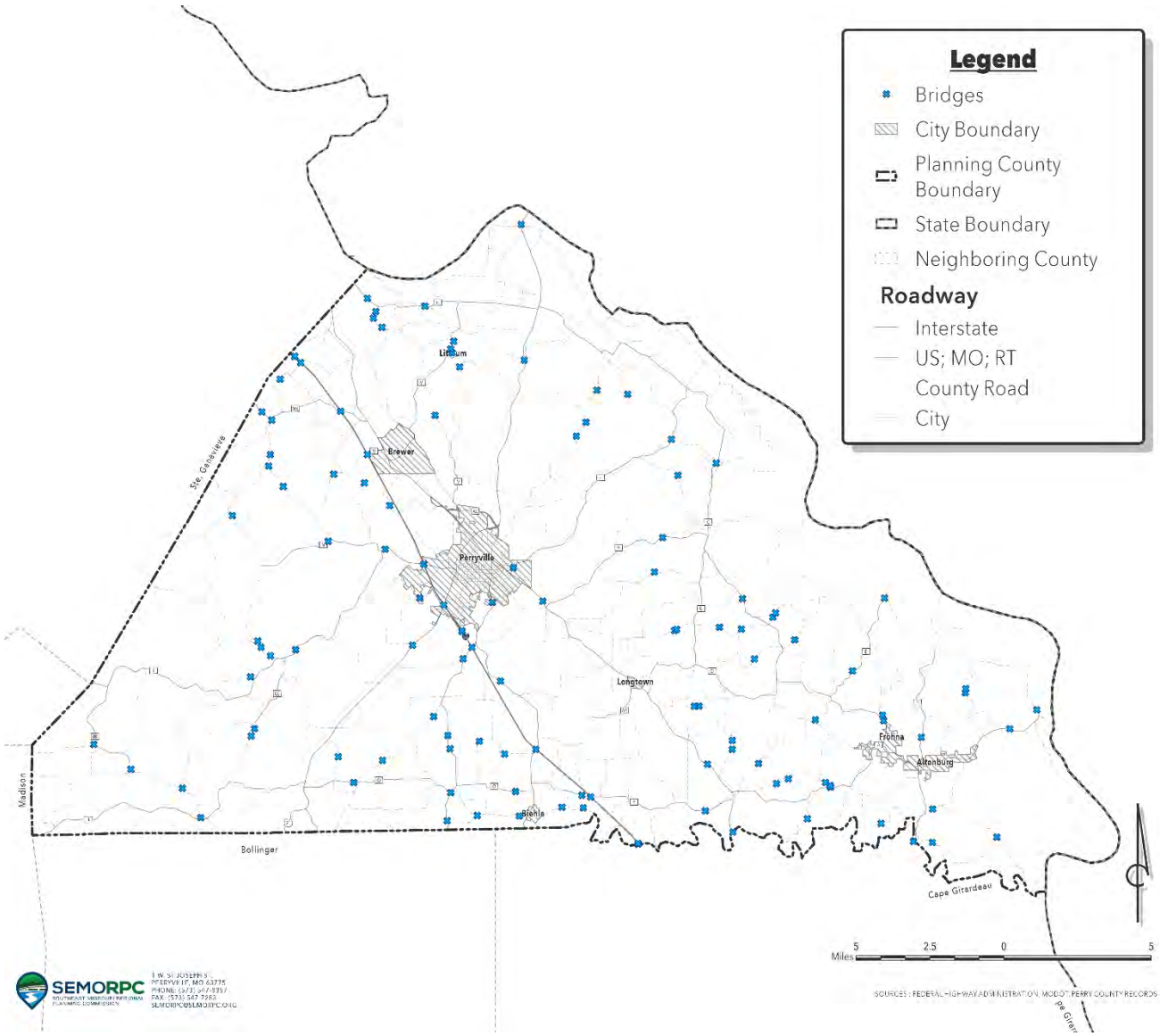
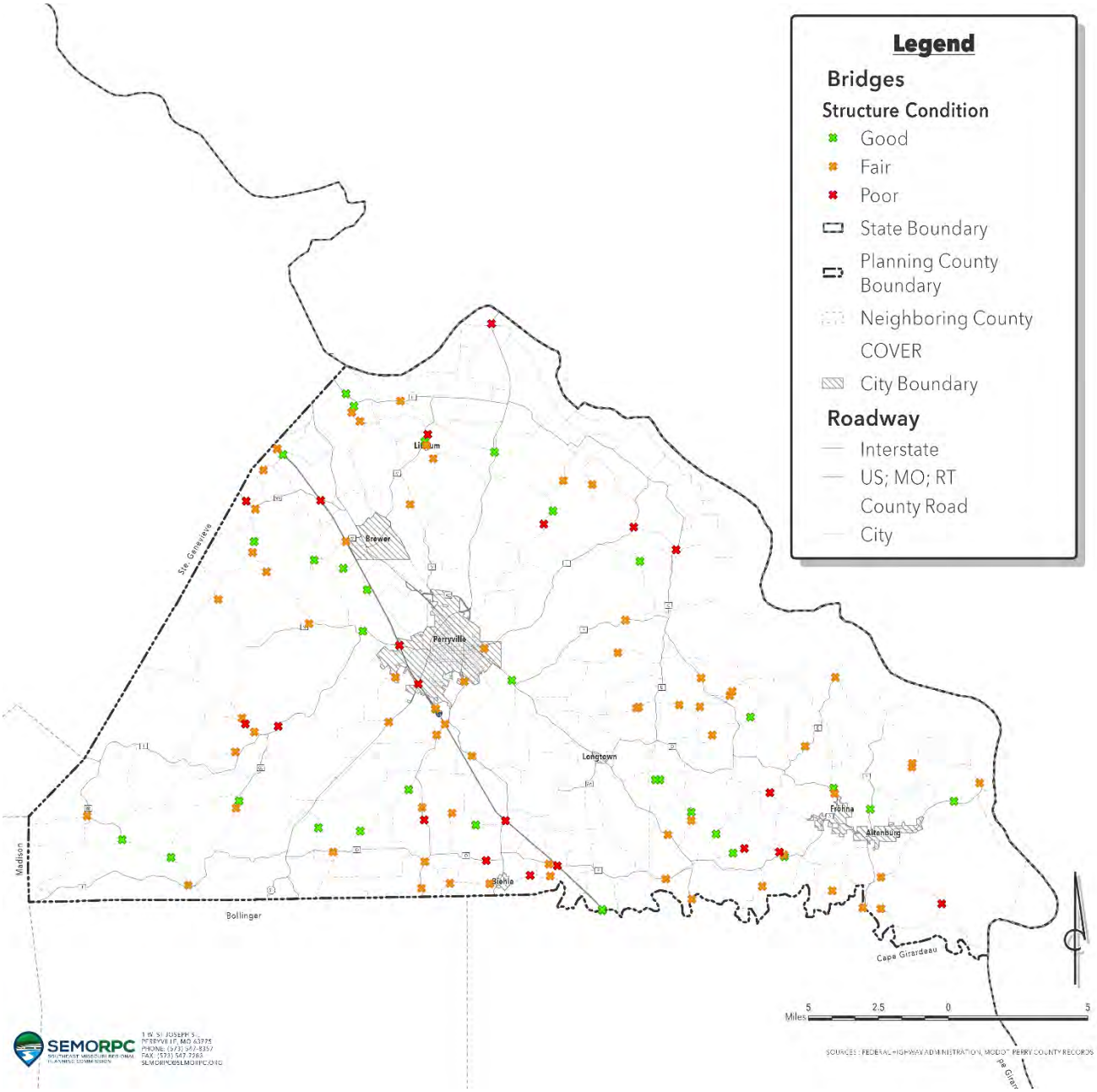


Figure 3.2. Perry County Structurally Deficient Bridges



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 Perry County

Common Name	Scientific Name	Status
Gray Bat	*Myotis grisescens*	Endangered
Indiana Bat	*Myotis sodalis*	Endangered
Northern Long-eared Bat	*Myotis septentrionalis*	Endangered
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered
Alligator Snapping Turtle	*Macrochelys temminckii*	Proposed Threatened
Grotto Sculpin	*Cottus specus*	Endangered
Pallid Sturgeon	*Scaphirhynchus albus*	Endangered
Curtis Pearlymussel	*Epioblasma Florentina curtisii*	Endangered
Monarch Butterfly	*Danaus Plexippus*	Candidate
Mead's Milkweed	*Asclepias meadii*	Threatened

Source: U.S. Fish and Wildlife Service, Listed Species (fws.gov); https://ecos.fws.gov/ipac/

Natural Resources:

The Missouri Department of Conservation (MDC) plays a pivotal role in managing the state's natural resources, ensuring the preservation of biodiversity and providing the public with access to outdoor recreational opportunities. The MDC maintains a comprehensive database of lands it owns, leases, or manages across the state for public use. This includes parks, conservation areas, and other managed lands where individuals can engage in a variety of activities, such as hiking, fishing, hunting, and wildlife observation. These efforts support both conservation goals and community well-being by encouraging responsible interaction with Missouri's diverse natural environments.

Table 3.9 lists the names and locations of parks and conservation areas within the planning area, providing an overview of accessible sites that contribute to local ecological preservation and recreational opportunities.

Table 3.9. Parks in Perry County

Park / Conservation Area	Address	City
Bank of Missouri Soccer Complex	1238 Star Street	Perryville
Blue Springs Branch Conservation Area	2312 PCR 916	Perry County
City Park	800 City Park Lane	Perryville
Feltz Street Park	Feltz Street	Perryville
Legion Lake	1100 Veterans Drive	Perryville
Missouri's National Veterans Memorial	1172 Veterans Memorial Parkway	Perryville
Northdale Park	500 Northdale Drive	Perryville
Perry County Community Lake	Off PCR 700	Perryville
Perry Park Center	800 City Park Lane	Perryville
Red Rock Landing Conservation Area	Off PCR 350	Perry County
Robert J. Miget Memorial Park	300 South French Lane	Perryville
School Street Park	339 North School Street	Perryville
Seventy-Six Conservation Area	PCR 437	Perry County
Tower Rock Conservation Area	Off PCR 460	Perry County
Viola Blechle Park	Star Street	Perryville

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

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. Perry County Properties on the National Register of Historic Places

Property	Address	City	Date Listed
Bergt, Christian A., Farm	E of Frohna	Frohna	1/10/1980
Concordia Log Cabin College	8769 Main St.	Altenburg	11/21/1978
Doerr-Brown House	17 E. Saint Joseph St.	Perryville	11/14/1980
Eggers and Company General Store	19 PCR 328	Farrar	6/21/2007
Mack's Chapel Cemetery	1.25 mi. E. of junc. Hwy D & PCR 439	Altenburg	1/29/2018
Perry County Courthouse	15 W. Saint Marie St.	Perryville	5/23/2016
Shelby-Nicholson-Schindler House	701 W. Saint Joseph St.	Perryville	7/24/1974
St. Mary's of the Barrens	1805 W. Saint Joseph St.	Perryville	8/25/1995
Tower Rock	1 mi. S. of Wittenburg in Mississippi River off PCR 460	Wittenburg	2/26/1970

Source: National Parks Service, National Register Database and Research

Economic Resources:

Table 3.11. Major Non-Government Employers in Perry County

Employer Name	Main Locations	Product or Service	Employees
TG Missouri Corp.	2200 Plattin Rd., Perryville	Auto Parts and Components	1,625
Gilster-Mary Lee Corp.	615 Old St. Marys Rd.	Cake mix/Cereal/Popcorn	1,300
Mercy Hospital Perry	212 Hospital Ln., Perryville	Health Care	400
Perry County School Dist #32	326 College St., Perryville	Education	317
Wal-Mart	1750 S. Perryville Blvd., Perryville	Retail	199
Buchheit, Inc.	33 PCR 540, Perryville	Retail	148
East Perry Lumber Co.	7029 Main St., Frohna	Hardwood products	85
West Star Aviation	1390 Hwy H, Perryville	Refurbish Jet Aircraft	152

Source: Data Collection Questionnaires; local Economic Development Commissions

Agriculture:

According to the 2022 Census of Agriculture, Perry County had 736 farms, with a total of 193,440 acres. The average farm size was 263 acres. Farms in the county sold over $58.4 million in crops and $59.1 million in livestock and poultry, totaling an estimated market value of agricultural products sold at approximately $117.67 million. The average market value of sales per farm was around $159.87 thousand.

According to the 2022 NASS Agricultural Census, Perry County had approximately 63.63% of workers employed for less than 150 days a year, while around 36.36% worked for 150 days or more. This data underscores the predominance of short-term employment in the county's agricultural sector. The following data, presented in **Table 3.12.,** further highlights the distribution of hired workers in the agricultural employment of Perry County.

Table 3.12. Agriculture-Related Jobs in Perry County; Hired Farm Labor

Items	Values
Hired farm labor	
Farms	117
Workers	241
Payroll ($1,000)	$3,047
Workers by days worked	
150 days or more	
Farms	48
Workers	85
Less than 150 days	
Farms	96
Workers	156

Source: NASSA, Census of Agriculture 2022 Annual Report

3.3 LAND USE AND DEVELOPMENT

3.3.1 Development Since Previous Plan Update

Since the acceptance of the previous hazard mitigation plan, there have been no significant changes to the development landscape in Perry County. The overall growth patterns, infrastructure, and community planning remain consistent with prior assessments. This stability suggests that the strategies and measures outlined in the previous plan continue to be relevant and effective in addressing the county's hazard mitigation needs. As such, the county's focus can remain on implementing and enhancing existing initiatives rather than adapting to new development challenges.

Table 3.13. County Population Growth, 2010-2020

Jurisdiction	Total Population 2010	Total Population 2020	2010-2020 # Change	2000-2020 % Change
Perry County	18,971	18,956	-15	-0.1%
City of Perryville	8,225	8,558	+333	+4.05%

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

Population growth or decline is generally accompanied by increases or decreases in the number of housing units. **Table 3.14** shows the change in numbers of housing units in the planning area from 2010 to 2020. This data is similar to the population trends over the same time period, with neither jurisdiction seeing any significant growth in housing units; with the unincorporated county experiencing a decline in housing units. This data, like the population data, indicates almost no change in the jurisdiction since the previous plan update.

Table 3.14. Change in Housing Units, 2010-2020

Jurisdiction	Housing Units 2010	Housing Units 2020	2010-2020 # Change	2000-2020 % Change
Perry County	8,568	8,464	-104	-1.2%
City of Perryville	3,588	3,736	+148	+4.1%

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

Unincorporated County

There have been little to no changes in development of the county since the previous update. The unincorporated county experienced practically no change in population, while experiencing a drop in the number of housing units.

Perryville

The city experienced a minimal 4% increase in population and housing units, and as a result saw little development within the planning area. What development did occur was scattered across the city as in-fill development, or was spread around the edges of the city, with no concentrations of growth.

3.3.2 Future Land Use and Development

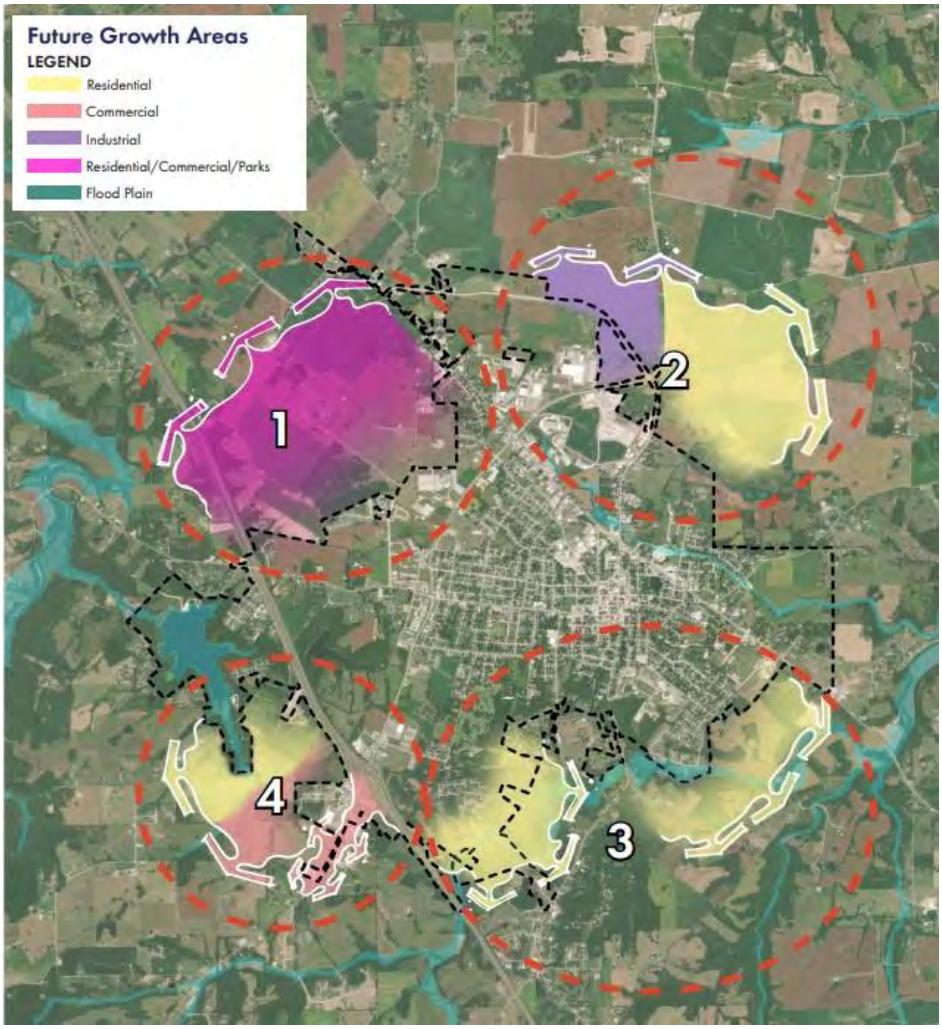
Unincorporated County

Based on recent trends, the county expects to see little to no change in population over the next 5 years, and by extension little development occurring in unincorporated areas. Any development that does occur will likely be residential or agricultural in nature. There are no increases in risk or exposure to hazards anticipated in the next few years.

Perryville

The City of Perryville expects to expand on its modest increase in population and development in the future. Other current planning efforts are being conducted to support new development in residential, commercial, and industrial areas. The extent of this growth given past performance is expected to be minimal in the next 5 years and there may be minimal increases in risk or exposure to hazards anticipated in that time frame. Figure 3.3 below shows the expected future growth areas for the City from their current Comprehensive Plan.

Figure 3.3. Perry County Future Growth Areas



Perry County School District 32 Future Development
The school district anticipates only minor changes in student population over the next 5 years and does not expect any building development in the foreseeable future, other than potentially building safe rooms for students and surrounding communities.

Bois Brule Levee District Future Development
There are currently no plans for future development in the Levee District. This indicates a focus on maintaining existing services rather than pursuing new initiatives or expansions. The Bois Brule levee district expects all land use to remain agricultural in nature.

3.4 HAZARD PROFILES, VULNERABILITY, AND PROBLEM STATEMENTS

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

Hazard Profiles

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 of 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 description of a value on an established scientific scale or measurement system, such as an EF2 tornado on the Enhanced Fujita Scale. This section should also include information on the typical or expected strength/magnitude/extent of the hazard in the planning area. Strength, magnitude, and extent can also include the speed of onset and the duration of hazard events. Describing the strength/magnitude/extent of a hazard is not the same as describing its potential impacts on a community. Strength/magnitude/extent defines the characteristics of the hazard regardless of the people and property it affects.

Previous Occurrences: This section includes available information on historic incidents and their impacts. Historic event records form a solid basis for probability calculations.

Probability of Future Occurrence: The frequency of recorded past events is used to estimate the likelihood of future occurrences. Probability can be determined by dividing the number of recorded events by the number of years of available data and multiplying by 100. This gives the percent chance of the event happening in any given year. For events occurring more than once annually, the probability should be reported as 100% in any given year, with a statement of the average number of events annually. For hazards such as drought that may have gradual onset and extended duration, probability can be based on the number of months in drought in a given time-period and expressed as the probability for any given month to be in drought.

Changing Future Conditions Considerations: The effects of long-term changes in weather patterns and climate on the identified hazard.

VulnerabilityAssessments

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 are based on the best available data. The vulnerability assessments were also based on data that was collected for the 2023 Missouri State Hazard Mitigation Plan Update. With the Missouri State Plan Update, SEMA provided online access to the risk assessment data and associated mapping for the 114 counties in the State, including Perry County. Through the web-based Missouri Hazard Mitigation Viewer, the MPC could obtain all State Plan datasets developed during the 2023 Missouri State Plan Update.

The vulnerability assessments in the Perry County plan are 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.

Detailed profiles for each of the identified hazards include information categorized as follows.

Vulnerability Overview:
An overall summary of each jurisdiction's vulnerability to the identified hazards.

Potential Losses to Existing Development:
Describes the potential impacts of the hazard.

Previous and Future Development:
This section provides information on how changes in development have impacted the community's vulnerability to this hazard.

Hazard Summary by Jurisdiction:
For hazards that vary by jurisdiction, this section will provide an overview of the variation.

Problem Statements

A brief summary of the problems created by the hazard in the planning area, and possible ways to resolve those problems.

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

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

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

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

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

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

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

Geographic Location

Riverine flooding is most likely to occur in SFHAs. **Table 3.15** shows the number of past flood events in Perry County and the City of Perryville. Figures 3.4 and 3.5 show the location specific hazards for each jurisdiction respectively.

Table 3.15. Perry County NCEI Flood Events by Location, 2004-2024

Location	# of Events
Unincorporated County	27
-Unincorporated County (unspecified)- 4 flood events	
-Unincorporated County (Altenburg)- 8 flood events	
-Unincorporated County (Biehle)- 1 flood events	
-Unincorporated County (Brewerville)- 1 flood events	
-Unincorporated County (Claryville)- 3 flood events	
-Unincorporated County (McBride)- 2 flood events	
-Unincorporated County (Menfro)- 2 flood events	
-Unincorporated County (Perryville Muni Airport)- 1 flood events	
-Unincorporated County (Sliver Lake)- 1 flood events	
-Unincorporated County (Wittenburg)- 4 flood events	
Perryville	3
-Perryville (unspecified)- 3 flood events	

Source: National Centers for Environmental Information, 6/30/2024

Flash flooding occurs in SFHAs and those locations in the planning area that are low-lying and also in areas without adequate drainage to carry away the amount of water that falls during intense rainfall events. **Table 3.16** shows the number of flash flood events by location recorded in the planning area.

Table 3.16. Perry County NCEI Flash Flood Events by Location, 2004-2024

Location	# of Events
Unincorporated County	10
-Unincorporated County (Altenburg)- 1 flood events	
-Unincorporated County (Applecreek)- 1 flood events	
-Unincorporated County (Biehle)- 1 flood events	
-Unincorporated County (Brewer)- 2 flood events	
-Unincorporated County (Highland)- 1 flood events	
-Unincorporated County (Lithium)- 2 flood events	
-Unincorporated County (McBride)- 1 flood events	
-Unincorporated County (Schnerbusch)- 1 flood events	
Perryville	2
-Perryville (unspecified)- 2 flood events	

Source: National Centers for Environmental Information, 6/30/2024

Figure 3.4. Location of Specific Hazards in Perry County

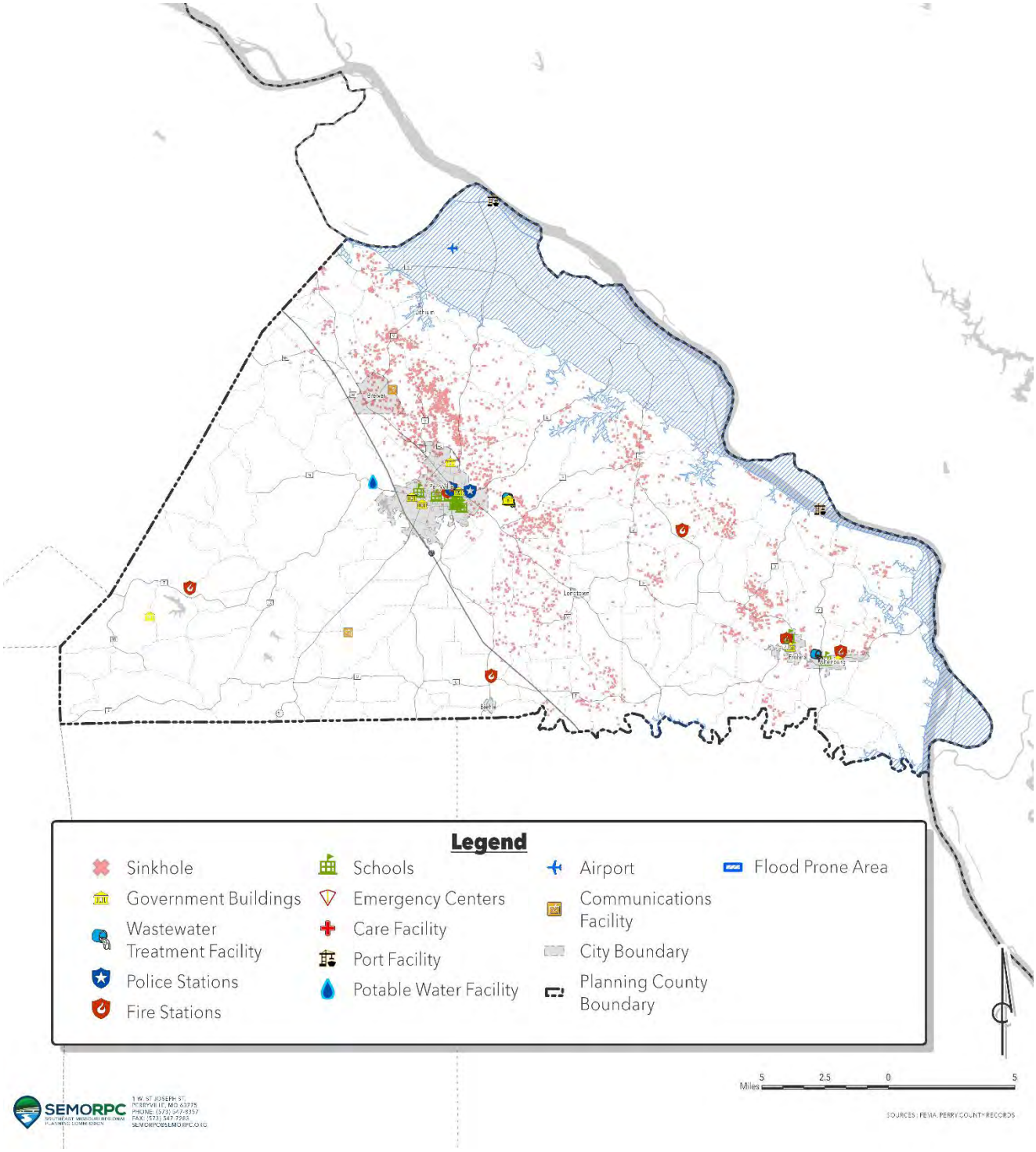


Figure 3.5. Location of Specific Hazards in Perryville

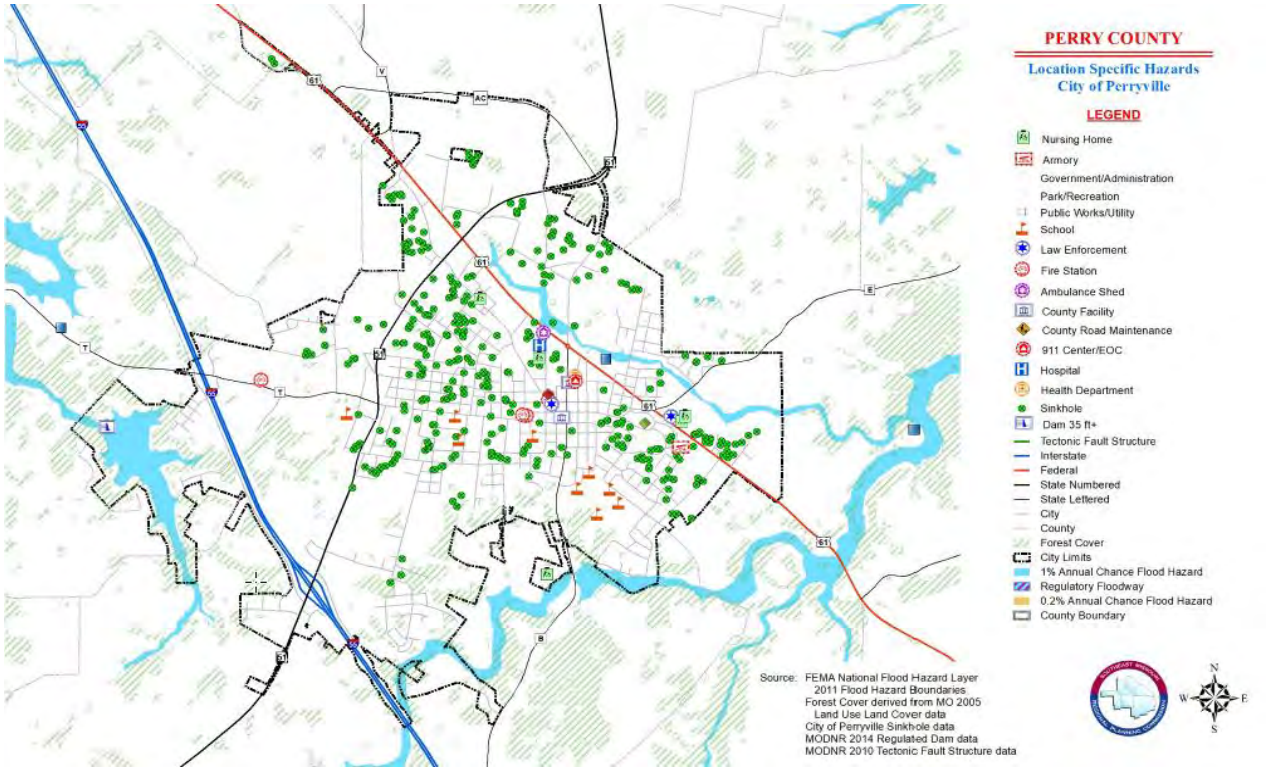


Figure 3.6. FIRMette – Floodplain Map for City of Perryville



Strength/Magnitude/Extent

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

Both Perry County and Perryville participate in the NFIP. Both jurisdictions have adopted local regulations for the management of development in the floodplain and both have also adopted the latest Flood Insurance Rate Maps (FIRM) for their areas. The jurisdictions regulate and permit development in the Special Flood Hazard Areas (SFHA) within their boundaries using their regulations and ordinance along with the FIRMs which identify the SFHAs. The management of the floodplains is handled primarily by each jurisdiction's Floodplain Manager, who is appointed to implement the local regulations and ensure local compliance with the NFIP requirements.

Both jurisdictions' local floodplain regulations have provisions regarding substantial improvements to a structure in a SFHA and repairs to structures to address substantial damage related to a flood event. These provisions, like the rest of the NFIP, are intended to protect property owners' investments and reduce taxpayer burden of disaster assistance payments. To implement these provisions, both jurisdictions require owners to obtain permits for substantial improvements and repairs to structures in a SFHA. This allows the Floodplain Managers the opportunity to review proposed work and determine if the work meets all NFIP requirements. Both jurisdictions have developed plans which will be implemented after a major flood event to help them process permit requests as quickly as possible. These plans include assigning additional staff to assist the Floodplain Manager during the recovery period, and the use of tools to help determine the market value of multiple properties at one time.

Table 3.17. NFIP Participation in Perry 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
#295415	Altenburg, City of	Y		
#295417	Frohna, City of	Y		
#295418	Longtown, Village of	Y		
#290282	Perryville, City of	Y	07/19/2011	City of Perryville
#290280	Perry County	Y	07/21/2011	Perry County

Source: NFIP Community Status Book, 9/17/2024; PIVOT (information from STATE) Community Status Book | FEMA.gov; M= No elevation determined – all Zone A, C, and X: NSFHA = No Special Flood Hazard Area; E=Emergency Program

Table 3.18. NFIP Participation in Perry County - Mapping Information

Community ID #	Community Name	Current Effective Map Date	Regular- Emergency Program Entry Date
#295415	Altenburg, City of	08/02/2011	10/22/2013
#295417	Frohna, City of	08/02/2011	10/09/2014
#295418	Longtown, Village of	08/02/2011	08/13/2013
#290282	Perryville, City of	08/02/2011	01/06/1988
#290280	Perry County	08/02/2011	08/04/1983

Source: NFIP Community Status Book, 9/17/2024; PIVOT (information from STATE) Community Status Book | FEMA.gov; M= No elevation determined – all Zone A, C, and X: NSFHA = No Special Flood Hazard Area; E=Emergency Program

NFIP Participation by Jurisdiction

Perry County	
Adoption of minimum NFIP floodplain management criteria by local regulation	Yes – August 4, 1983
Adoption of latest FIRM	Yes – July 21, 2011
Implementation and enforce local floodplain management regulations	Yes/County Floodplain Management Ordinance 60.3(d) – Article 2- Section B Perry County Assessor
Appoint a designee to implement NFIP commitments/requirements	Charles Triller Perry County Assessor ctriller@perrycountymo.gov
Describe how substantial improvement/substantial damage provisions are implemented after event	SI/SD cited in County Floodplain Management Ordinance 60.3(d) – Article 4 and Article 8

City of Perryville	
Adoption of minimum NFIP floodplain management criteria by local regulation	Yes – January 6, 1988
Adoption of latest FIRM	Yes – July 19, 2011
Implementation and enforce local floodplain management regulations	Yes/City Municipal Code Chapter 15.17.210 and Chapter 15.17.320
Appoint a designee to implement NFIP commitments/requirements	Jeff Layton Public Works Director jefflayton@perryvillemo.gov
Describe how substantial improvement/substantial damage provisions are implemented after event	SI/SD cited in Municipal Code Chapter 15.17 Articles 4 & 6

Table 3.19. NFIP Policy and Claim Statistics as of Date

Community Name	Policies in Force	Insurance in Force	Closed Losses	Total Payments
PERRY COUNTY*	68	$6,486,000	295	$5,262,060.86
PERRYVILLE, CITY OF	8	$2,055,000	5	$142,130.49

Source: NFIP Community Status Book, 9/17/2024; PIVOT (information from STATE), Community Status Book | FEMA.gov

*Closed Losses are those flood insurance claims that resulted in payment. Loss statistics are current as of 11/14/2024.

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 4 repetitive loss properties. As of 11/14/2024, no properties have been mitigated, leaving 4 un-mitigated repetitive loss properties.

Table 3.20. Perry County Repetitive Loss Properties

Jurisdiction	# of Properties	Type of Property	# Mitigated	Building Payments	Content Payments	Total Payments	Average Payment	# of Losses
PERRY COUNTY*	4	2 – Residential 2 - Commercial	0	$199,460.04	$112,126.75	$311,586.79	$34,620.75	9

Source: Flood Insurance Administration as of 11/14/2024

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

Previous Occurrences

In the past 20 years there have been 30 flood events in the county and 12 flash flood events, with 3 of the flood events and 2 flash flood events in the City of Perryville. Despite this number of local events there have only been 4 declared flood disasters for the same time period in Perry County.

NCEI information for the last 20 years for both flash and river flooding are located in **Table 3.21** and **Table 3.22**.

Table 3.21. NCEI Perry County Flash Flood Events Summary, 2004 to 2024

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2005	1	0	0	$0.00	$0.00
2008	2	0	0	$8,000.00	$0.00
2009	1	0	0	$0.00	$0.00
2015	1	0	0	$10,000.00	$0.00
2016	1	0	0	$0.00	$0.00
2017	3	0	0	$10,000.00	$0.00
2020	3	0	0	$0.00	$0.00

Source: NCEI, data accessed 06/30/2024

Table 3.22. NCEI Perry County Riverine Flood Events Summary, 2004 to 2024

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2004	2	0	0	$0.00	$0.00
2005	1	0	0	$0.00	$0.00
2006	1	0	0	$0.00	$0.00
2008	2	0	0	$150,000.00	$0.00

2009	1	0	0	$0.00	$0.00
2010	2	0	0	$0.00	$0.00
2011	5	0	0	$80,000.00	$0.00
2015	5	0	0	$20,000.00	$0.00
2016	2	0	0	$250,000.00	$0.00
2017	2	0	0	$270,000.00	$50,000.00
2018	1	0	0	$0.00	$0.00
2019	3	0	0	$20,000.00	$100,000
2024	3	0	0	$0.00	$0.00

Source: NCEI, 06/30/2024

Probability of Future Occurrence

For flood events, the unincorporated county had 27 events in 20 years, equaling a 135% annualized probability of incurring some kind of flood event. For the same time frame the City of Perryville experienced 3 flood events, equaling a 15% annualized probability.
Flash flood events are less probable. The unincorporated county experienced 10 flash flood events during the same time period, for a 50% annualized probability. The City of Perryville's annualized probability is calculated at 10% with only 2 events in the past 20 years.

Changing Future Conditions Considerations

Historical data does not suggest significant changes in frequency of flooding in the planning area. However, anticipated changes in rainfall patterns due to climate change are likely to impact the frequency and intensity of flood events. As climate change progresses, we can expect an increase in extreme weather events, resulting in more intense and prolonged rainfall, and higher likelihood of flooding, particularly in vulnerable low-lying areas and floodplains. In Missouri, studies indicate that the state has experienced an increase in heavy rainfall events over the past few decades, with projections suggesting that this trend will continue. This increase in rainfall can saturate soils, reduce infiltration capacity, and overwhelm drainage systems, thereby exacerbating flooding risks. Additionally, rising temperatures may contribute to increased evaporation rates, which could lead to more severe storms and increased runoff. These factors underscore the need for comprehensive flood mitigation strategies and enhanced infrastructure resilience in Perry County.

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, the 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 rockslides 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 presenting a health hazard.

Potential Losses to Existing Development

Based on data provided from the 2023 Missouri State Hazard Mitigation Plan, Perry County has a total of 688 structures located in the floodplain. Based on Hazus valuations this equates to a building exposure of $29.3 million in the county.

Impact of Previous and Future Development

Future development which occurs in floodplains, low-lying areas near rivers or streams or where drainage systems are not adequate to provide drainage during heavy rainfall events will face a much higher risk of flooding. Additionally, future development will also increase impervious surfaces, leading to additional run off, putting more strain on existing drainage systems.

Hazard Summary by Jurisdiction

Analysis of data provided from the 2023 Missouri State Hazard Mitigation Plan indicates the County has approximately 49 residences, 17 commercial structures, 1 industrial structure, and 573 agricultural structures in SFHAs. Perryville has an estimated 41 residences and 7 commercial structures in SFHAs. The school district has no structures in the floodplain.

Problem Statement

Flood prone areas of the county are primarily relegated to the area along the Mississippi River. The majority of the structures in the area are agricultural in nature, with one industrial facility and Perryville airport being the two exceptions. Both facilities have structural and administrative mitigation measures in place to address potential flooding. Other than the airport, and roadways, there is no critical infrastructure in the SFHA.
One other impact of flood is the closure of Highway 51 leading to the Chester Bridge. This closure shuts off access between Perryville and Chester, IL, which significantly impacts businesses and industries on both sides of the river. However, a new bridge and approach are currently under construction with an expected open in late 2026. This new bridge and approach will eliminate the need to close the roadway at high river levels due to the elimination of the current flood gate.

3.4.2 Levee Failure

Hazard Profile

Hazard Description

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

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

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

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

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

Geographic Location

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

There are two concurrent nation-wide levee inventory development efforts, one led by the United State Army Corps of Engineers (USACE) and one led by Federal Emergency Management Agency (FEMA). The National Levee Database (NLD), developed by USACE, captures all USACE related levee projects, regardless of design levels of protection. The Midterm Levee Inventory (MLI), developed by FEMA, captures all levee data (USACE and non-USACE) but primarily focuses on levees that provide 1% annual-chance flood protection on FEMA Flood Insurance Rate Maps (FIRMs).

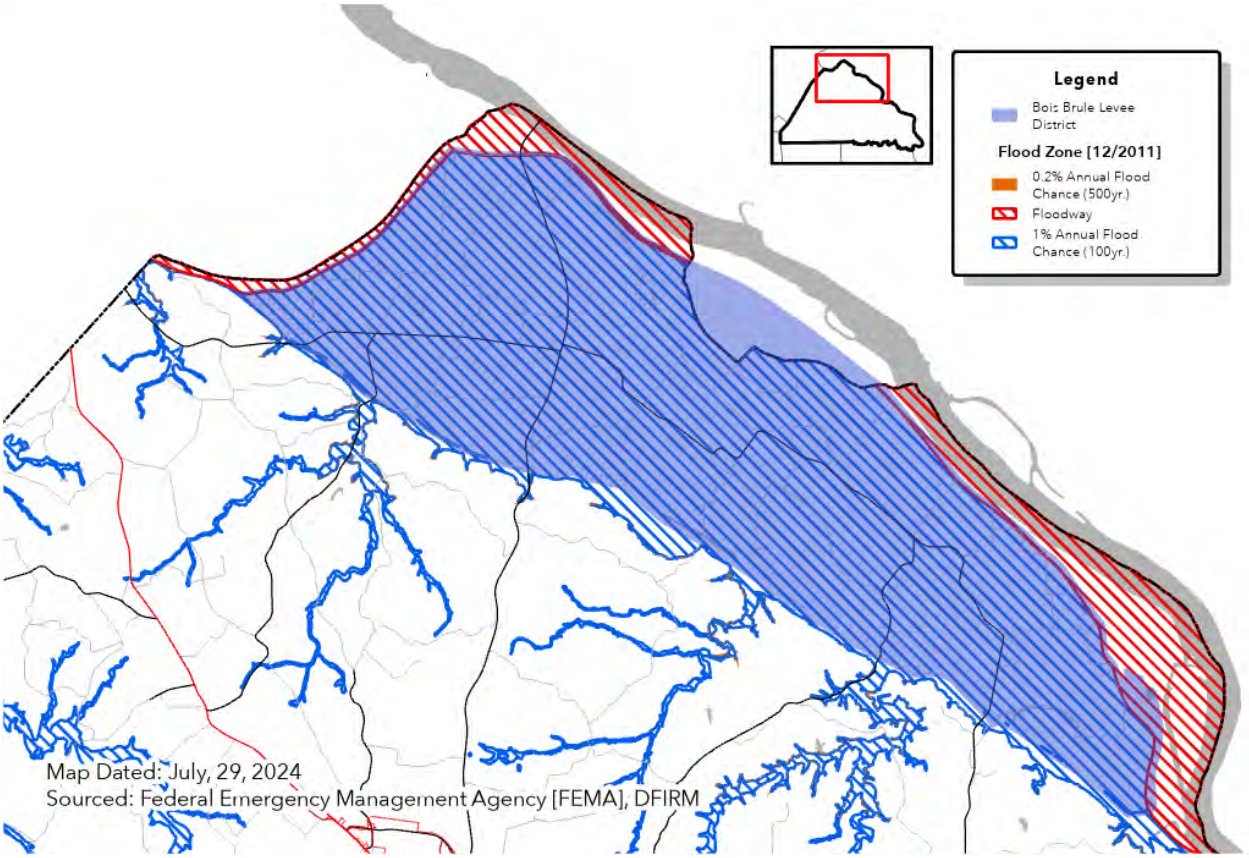
It is likely that agricultural levees and other non-regulated levees within the planning area exist that are not inventoried or inspected. These levees that are not designed to provide protection from the 1-percent annual chance flood would overtop or fail in the 1-percent annual chance flood scenario.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

The Bois Brule Levee and Drainage District Levee System reduces the risk of flooding from the Mississippi River primarily to Perry County, Missouri including the communities of McBride, Belgique, and Menfro. A small portion of the agricultural lands fall within Randolph County, Illinois due to historic river migration. The system is federally authorized and constructed and locally operated and maintained by the sponsor, Bois Brule Levee and Drainage District. The levee system was originally completed in 1968 and consists of 33 miles of earthen embankment in an oblong shape along the Mississippi River and several tributaries; construction of improvements to the system has been ongoing since 2014 to increase its resiliency. Within the over 26,000-acre leveed area are residences, several small businesses, two major industrial facilities, a municipal airport, a BNSF railroad line, MO HWY 51 and access to the Chester Bridge, a major Mississippi River crossing. The Chester Bridge crossing is of significant regional importance; flooding of the leveed area could interrupt transportation for nearly 6,500 vehicles per day. Most of the leveed area is productive agricultural bottomland. This system provides benefits to approximately 500 residents and employees and approximately $239 million in property value. During the record-setting Flood of 1993, the levee failed due to under-seepage before floodwaters can reach the top of the levee, and subsequent events, including the 2019 flood, have required mitigation of under-seepage to prevent major flooding. Despite the under-seepage issues, the Bois Brule levee system has prevented flood damages during many flood events along the Mississippi River in recent years, and it is estimated that the levee system prevented $65 million in flood damages during the 2019 flood event alone.

The Grand Tower Levee primarily protects portions of Illinois, as it is on the east side of the Mississippi River. However, due to river migration, a small, uninhabited portion of Perry County, which is east of the river, is also protected by the levee.

The following map shows the locations of the two levees, with the Boise Brule Levee being the Northern of the two levees.

Figure 3.7. County Levees Shown on DFIRM as Providing Protection from the 1-Percent Annual Chance Flood



Source: FEMA Flood Insurance Rate Map, FEMA Flood layer Data Dated 2011

Strength/Magnitude/Extent

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

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

Previous Occurrences

The Bois Brule Levee, which protects the bottoms area of the county from rising Mississippi waters, failed in 1993 due to under-seepage, causing the entire district to be flooded with 20 feet of water.

Probability of Future Occurrence

The single levee failure in the past 35 years indicates a probability of 4%. However, levee failures are directly tied to flooding events, making their probability harder to determine.

Changing Future Conditions Considerations

Climate change increases risks to levee safety by intensifying rainfall and flood events. Levees face higher water pressure, increasing the chances of overtopping, erosion, or failure. More extreme weather, such as heavy rain and prolonged flooding, can weaken levee structures and lead to internal erosion. Changing temperatures and soil moisture levels further stress levees, potentially causing cracking or weakening.

Vulnerability

Vulnerability Overview

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

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

Both Routine and Periodic Inspections result in a rating for operation and maintenance. Each levee segment receives an overall segment inspection rating of Acceptable, Minimally Acceptable, or Unacceptable. **Figure 3.8** below defines the three ratings.

Figure 3.8. Definitions of the Three Levee System Ratings

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

A risk assessment was completed on the Bois Brule levee system in 2022. The likelihood of the levee being overtopped is estimated to have a 1% chance of occurring each year. Floods along the Mississippi River are well forecast, and levee overtopping would be anticipated, allowing for adequate warning and response by local officials. Before overtopping, the primary concern with the levee system is associated with under

seepage. Though multiple construction contracts have been completed in recent years to decrease the risk of failure, some risk associated with under seepage remains. A levee failure could result in flooding of depths of up to 30 feet, loss of life if the community is not evacuated, and significant economic damage.

Potential Losses to Existing Development

The Perryville Airport, West Star Aviation, and a Gilster-Mary Lee food manufacturing center are all located in the bottoms area protected by the Bois Brule levee. While these facilities have taken steps to protect from and mitigate the effects of another levee failure, there would still be significant impacts to both. The Grand Tower levee protects only an uninhabited portion of the county. According to the 2023 Missouri State Hazard Mitigation Plan, building loss due to levee failure could total nearly $13.2 million.

Impact of Previous and Future Development

Little agricultural development has occurred in the area protected by the Bois Brule levee due to the possibility of another levee failure in the future, and no development has occurred in the area protected by the Grand Tower levee due to it being entirely cut off from the rest of the county by the Mississippi River. The bottoms area is almost entirely farmland, while the Grand Tower area is entirely farmland. Data limitations prevent further analysis at this time.

Hazard Summary by Jurisdiction

The county is the only jurisdiction exposed and vulnerable to a levee failure. However the Perryville Airport, while not in the city limits of Perryville, is owned and operated by the City.

Problem Statement

A levee failure in the county would result in the inundation of the entire “bottoms” area of the county, flooding thousands of acres of agricultural lands, shutting down the city’s airport, closing one food processing plant, and closing access to the Chester Bridge. There is little residential development in the area, limiting the impacts of a levee failure to primarily economic in nature. However, these impacts would be significant. The levee has been repaired and strengthened throughout the years, but has also been threatened with failure in recent years. Improved mapping and real-time data collection has helped local jurisdictions and the CoE more quickly address areas of potential failure during recent flood events.

3.4.3 Dam Failure

Hazard Profile

Hazard Description

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

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

Dams in the NID are classified according to hazard potential, an indicator of the consequences of dam failure. A dam's hazard potential classification does not indicate its condition. Dams assigned the high hazards potential classification are those where failure will potentially result in loss of human life. Significant hazard potential are those dams where failure results in no probable loss of human life but can cause economic loss. Dams assigned the low hazard potential classification are those where failure will result in no probable loss of human life and low economic or environmental losses. Losses are principally limited to the owner's property.

Table 3.23. MoDNR Dam Hazard Classification Definitions

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

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

Table 3.24. NID Dam Hazard Classification Definitions

Hazard Class	Definition
Low Hazard	Failure or mis-operation is unlikely to result in loss of live, and economic and/or environmental losses are likely to be low
Significant Hazard	Failure or mis-operation is unlikely to result in loss of life, but could cause economic loss, environmental damage, or disruption of lifeline facilities
High Hazard	Failure or mis-operation is likely to result in loss of life

Source: National Inventory of Dams

There is not a direct correlation between the State Hazard classification and the NID classifications. However, most dams that are in the DNR's Class I and Class II are considered NID High Hazard Dams.

Geographic Location

Dams Located Within the Planning Area:

Table 3.25 below lists the 39 dams in the National Inventory of Dams listing for Perry County.

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

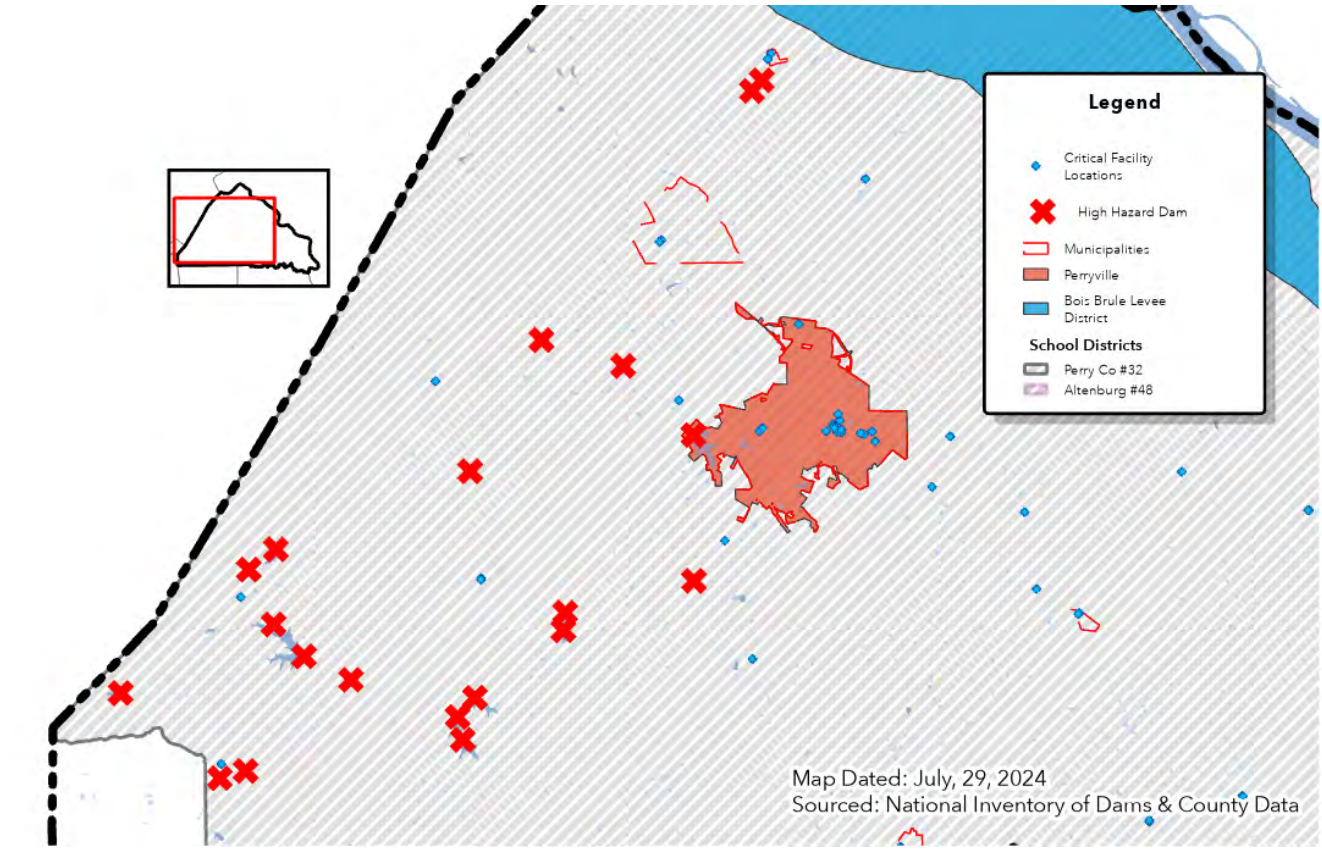
Dam Name	Emergency Action Plan (EAP)AP	Dam Height (Ft)	Normal Storage (Acre-Ft)	Last Inspection Date	River	Nearest Downstream City	Distance To Nearest City (Miles)	Dam Owner
Port Perry Dam	Yes	70	828	1/5/2023	TR NATIONS CREEK	SILVER LAKE	5	
Zoellner Dam	Yes	62	570	6/28/2022				
Lake Kah-Tan-Da Dam	Yes	56	712	1/5/2023	TR-NATIONS CREEK	SILVER LAKE	6	VINCE ADELMAN
Perry County Comm. Lake Dam	Yes	47	1690	12/2/2020	TR-SOUTH FORK SALINE CR	SAINT MARYS	20	MO DEPT OF CONSERVATION
Hickory Hollow Lake Dam	Yes	44	712	1/5/2023	TR-GOOSE CREEK	ST MARYS	16	MR. TOM ALLEN
Kool Breeze Ridge Dam	Yes	39	64	1/5/2023	TR-GOOSE CR	ST MARYS	9	
Perry CO Sportsmans Club Lake Dam	Not Required	34	162	10/4/1979	TR-WHITEWATER RIVER	YOUNT	5	PERRY CO SPORTSMANS CLUB
Parker Lake No 1 Dam	Not Required	34	176	10/11/1979	TR JORDAN BR-SALINE CREEK	ST MARYS	28	F M PARKER-ESTATE
Parker Lake Dam No. 2	Not Required	34	800	9/7/1978	JORDAN BRANCH SALINE CREEK	SILVER LAKE	0	MRS F.M. PARKER
Lake Kah-Tan-Da No.3	Not Required	34	415	9/27/1979	TR-NATIONS CREEK	SILVER LAKE	3	LAKE KAH-TAN-DA EST,INC
Twin Lakes Lower Dam	Not Required	33	80		TR MCCLANAHAN CREEK	MENFRO	6	TWIN LAKES INC
Lake Kah-Tan-Da No.2	Not Required	32	370	9/27/1979	TR-NATIONS CREEK	SILVER LAKE	3	LAKE KAH-TAN-DA EST,INC
Eddleman Lake Dam	Not Required	32	70		TR-SOUTH FORK SALINE CR	ST MARYS	0	ODEL EDDLEMAN
Whitewood Lake Dam	Not Required	32	95	12/18/1980	WHITEWATER CREEK	YOUNT	3	STANLEY WHITE
Port Perry #2 Lake Dam	Not Required	30	110		TR-NATIONS CREEK	ST MARYS	30	VINCENT KOVARIK
Legion Lake Dam	Not Required	30	78		TR-CINQUE HOMMES CREEK	MENFRO		PERRY COUNTY COURT
Lakenan Lake Dam	Not Required	30	69	12/19/1980	TR-SPRING BRANCH	LITHIUM	1	JAMES M LAKENAN
Absher Lake Dam	Not Required	30	64		TR-SOUTH SALINE CREEK	ST MARYS	9	CHARLES D ABSHER
Mary's Lake Dam	Not Required	30	110		TR SOUTH FORK SALINE CREEK	ST MARY'S	0	ST MARY'S SEMINARY
Ellis Lake Dam	Not Required	29	45	12/19/1980	TR-BLUE SPRING BRANCH	LITHIUM	1	HAROLD ELLIS

Dam Name	Emergency Action Plan (EAP)AP	Dam Height (Ft)	Normal Storage (Acre-Ft)	Last Inspection Date	River	Nearest Downstream City	Distance To Nearest City (Miles)	Dam Owner
Mach Lake Dam	Not Required	29	74	1/30/1981	TR-GOOSE CREEK	SAINT MARYS		JOE MACH
Colonial Acres Lake Dam	Not Required	29	136	9/27/1979	TYLER BRANCH-CINQUE HOMMES	MENFRO	0	COLONIAL ACRES INC
Mark Steinbecker	Not Required	28	15	11/30/2002	TR-SALINE CREEK	ST. MARY		MARK STEINBECKER
Lach Difani Dam	Not Required	28	72		TR SALINE CREEK	ST MARYS	8	LACH DIFANI INC
Baudendistel Dam	Not Required	26	20		TR-WHITEWATER	YOUNT		ANDY BAUDENDISTEL
Ken Buchheit Dam	Not Required	26	54	11/30/2002	TR-APPLE CREEK	OLD APPLETON		KEN BUCHHEIT
Larry Baer Dam	Not Required	26	16		TR-APPLE CREEK	OLD APPLETON		LARRY BAER
Perco Lake Dam North	Not Required	25	105		TR-SOUTH FORK SALINE CR	ST MARYS	23	PERCO HNT + FSH CLB
Hudson Lake Dam (Shallow)	Not Required	25	25		TR CEDAR FORK	ST MARYS	10	MARVIN HUDSON
Loness Dam	Not Required	25	22		TR-HUNT BRANCH	ST. MARY		ED LONESS
Rock Valley Lake Dam	Not Required	25	65		TR SOUTH FORK SALINE CREEK	ST MARYS	0	ROCK VALLEY LAKE INC
Clifford Hoehn Dam	Not Required	25	88.44	3/29/2006	APPLE CREEK	OLD APPLETON		CLIFFORD HOEHN
Turkey Toe Canyon Lake Dam	Not Required	25	38		TR CINQUE HOMMES CREEK	MENFRO	3	RAY POURNEY
Sleepy Hollow Lake Dam	Not Required	25	80		TR DRY FORK	ST MARYS	16	PAUL PAUTLER
Rodney Barber Dam	Not Required	25	25		TR-BRAZEAU CREEK	NONE		RODNEY BARBER
Mallard Lake Dam	Not Required	24	134	10/11/1979	TR-WHITEWATER RIVER	YOUNT	3	GEORGE MATKINS
The Lost Seven Lake Dam	Not Required	23	55		NATIONS CREEK	SILVER LAKE	8	WM KALKBRENNER
Perco Lake Dam South	Not Required	22	44		TR-SOUTH FORK SALINE CR	ST MARYS	23	PERCO HNT + FSH CLB
Ollie Moore Lower Lake Dam	Not Required	18	50		TR HIGHLAND CREEK	MENFRO	14	MRS OLLIE MOORE

Sources: Missouri Department of Natural Resources, https://dnr.mo.gov/geology/wrc/dam-safety/damsinmissouri.htm and National Inventory of Dams, http://nid.usace.army.mil/cm_apex/f?p=838:12. Contact the MoDNR Dam and Reservoir Safety Program at 800-361-4827 to request the inundation maps for your county to show geographic locations at risk, extent of failure and to perform GIS analysis of those assets at risk to dam failure.

Of the listed dams, 20 are identified as High Hazard Dams according to the NID. **Figure 3.9** shows the locations of the NID high hazard dams located in the planning area.

Figure 3.9. High Hazard Dam Locations in Perry County and Areas Impacted in the Event of Breach.



Source: National Inventory of Dams, County Data

Inundation areas for the failure of High hazard dams in the county are estimated to impact only limited numbers of residents and structures. The majority of the dams in the county are either agricultural or recreational in nature and most are privately owned. Failure of a dam in the county would result in only minimal damage to structures as most of the development near the dams occurs upstream around the lakes or ponds created by the dam. There are no critical facilities in the inundation zones.
Perryville does have 1 dam nearby located on Perry County Community Lake. Failure of this dam would potentially impact only a few structures downstream, including the City of Perryville Water Treatment Plant. However, from that point the water would flow away from the City itself.

Upstream Dams Outside the Planning Area

There are no dams outside the county that would significantly impact the planning area in the event of a failure.

Strength/Magnitude/Extent

The severity/magnitude of dam failure would be similar in some cases to the impacts associated with flood events (see the flood hazard vulnerability analysis and discussion). Based on the hazard class definitions, failure of any of the High Hazard/Class I dams could result in a serious threat of loss of human life, serious damage to residential, industrial or commercial areas, public utilities, public buildings, or major transportation facilities. Catastrophic failure of any high hazard dams has the potential to result in greater destruction due to the potential speed of onset and greater depth, extent, and velocity of flooding. Note that for this reason, dam

failures could flood areas outside of mapped flood hazards. Also note that inundation areas have not been mapped for these dams; however, the expected inundation area is generally considered greater than the SFHA near the dam, decreasing down to equaling the SFHA further from the dam, and then eventually lying within the SFHA.

Previous Occurrences

There have been no previous occurrences of dam or levee failures in the past 25 years.

Probability of Future Occurrence

Without an occurrence of dam failure, the future probability cannot be accurately quantitatively defined. Based on the number of high hazard dams in the planning area and no record of previous occurrences, the probability of a future occurrence in the next five years is highly unlikely or less than 1%.

Changing Future Conditions Considerations

Climate change poses significant risks to dam safety, primarily due to increased rainfall, more frequent extreme weather events, and changing hydrological conditions. These scenarios can cause higher inflows to reservoirs, raising the risk of overtopping, which is a leading cause of dam failure. As storms become more intense, dams may face stress from larger and more unpredictable flood events.

Additionally, changes in seasonal water availability, such as more intense rainfall followed by drought periods, can cause fluctuations in water levels that impact the structural stability of dams. Prolonged exposure to high water levels can weaken dams, while fluctuating levels can cause rapid erosion or destabilization of the surrounding landscape. These conditions also increase the need for more regular dam inspections and maintenance to address wear-and-tear exacerbated by shifting weather patterns.

Vulnerability

Vulnerability Overview

According to the 2023 Missouri State Hazard Mitigation Plan, there are approximately 40 buildings in the county vulnerable to failure of a state-regulated dam. There are, of course, other non-regulated dams in the county, but estimates are difficult due to data limitations.

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

The 2023 Missouri State Hazard Mitigation Plan estimates potential losses due to the failure of state-regulated dams at $3.7 million. As with the number of buildings exposed, it is difficult to make any estimates for non-regulated dams due to data limitations.

Impact of Previous and Future Development

Future development will be most prominent around the City of Perryville in the center of the county. Therefore, over the next five years, little development is anticipated in the estimated inundation areas of local dams.

Hazard Summary by Jurisdiction

Unincorporated County
While there are multiple dams in the unincorporated areas of the county, the sparse development patterns limit the impact of any dam failure. There are no critical structures in estimated inundation zones.

City of Perryville
Areas within the city limits of Perryville have no direct impact from inundation zones from dam failures. However, a failure of the Perry County Community Lake dam may have some impact to operations of the City's water treatment facility.

Perry County School District 32
The school district has no facilities that would be impacted by a dam failure in the County.

Problem Statement

Dam failures primarily pose a problem for unincorporated areas of the county, which are generally less densely populated and have far less commercial or industrial development. While this limits the magnitude of potential loss of life due to a dam failure, damage to homes and agricultural assets still represent significant problems for county residents. Continued inspection of dams will help alleviate the chance of dam failure, and future mapping of inundation areas will help identify what structures are vulnerable.

3.4.4 Earthquakes

Hazard Profile

Hazard Description

An earthquake is a sudden motion or trembling that is caused by a release of energy accumulated within or along the edge of the earth's tectonic plates. Earthquakes occur primarily along fault zones and tears in the earth's crust. Along with 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 near 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 energy to buildings and other structures on the earth's surface.

While most earthquakes are too small to be felt or cause significant damage, large earthquakes can have devastating effects on communities. Understanding the risk of earthquakes requires considering both local geology and the proximity of fault lines.

One of the most significant earthquake risks in the planning area is posed by the New Madrid Seismic Zone. In the early 19th century, a series of catastrophic earthquakes struck this zone, with the most notable occurring between December 1811 and February 1812. These earthquakes, which reached estimated magnitudes of 7.0 or greater, caused widespread destruction across the central United States and were felt as far away as the East Coast. The quakes reshaped the landscape, causing the Mississippi River to flow backward temporarily and forming Reelfoot Lake in Tennessee. Today, the New Madrid Seismic Zone remains one of the most seismically active areas in the eastern United States, representing a significant hazard for communities in Missouri and surrounding states.

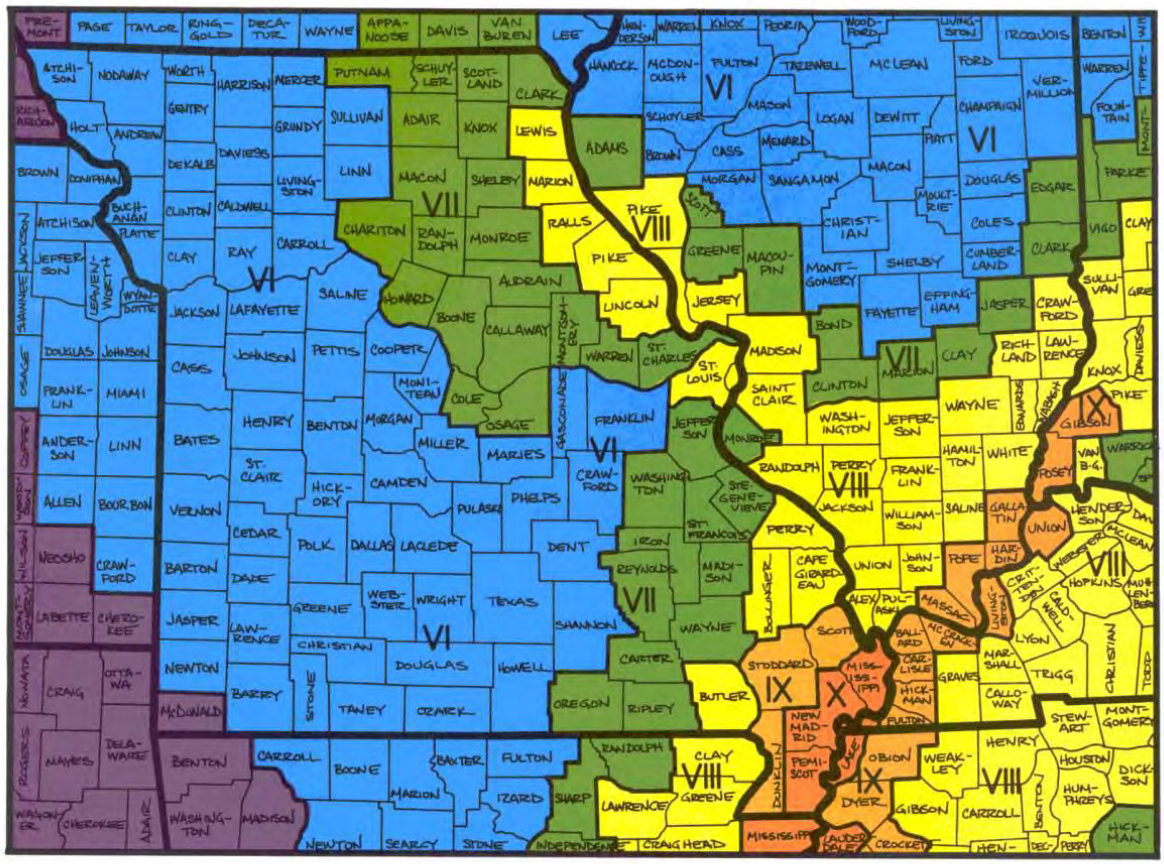
This historical event serves as a reminder of the potential for future seismic activity in the region, emphasizing the importance of preparedness and building resilience to reduce risks to life and property.

Geographic Location

Perry County is located approximately 80 miles northwest of the New Madrid Fault. This fault was responsible for the famous 1811 earthquakes that registered up to 7.9 on the Richter Scale and rang church bells in Boston, MA.

The following figures illustrate the potential impact the New Madrid Fault could have on the county.

Figure 3.10. Impact Zones for Earthquake Along the New Madrid Fault

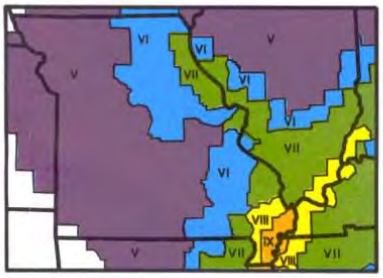


This map shows the highest projected Modified Mercalli intensities by county from a potential magnitude – 7.6 earthquake whose epicenter could be anywhere along the length of the New Madrid seismic zone.

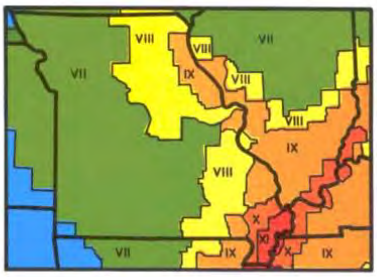
6.7

7.6

8.6



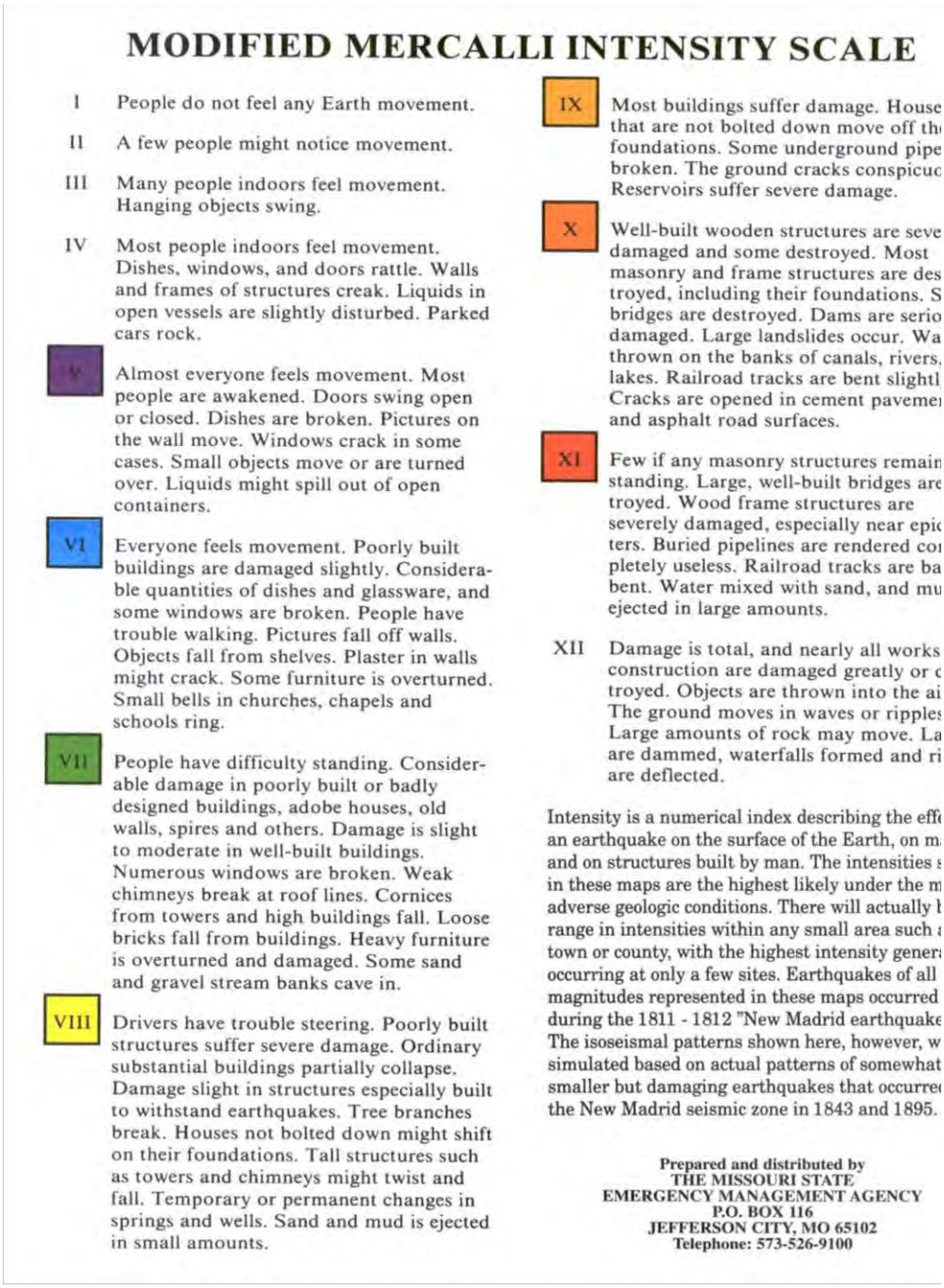
This map shows the highest projected Modified Mercalli intensities by county from a potential magnitude – 6.7 earthquake whose epicenter could be anywhere along the length of the New Madrid seismic zone.



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

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

Figure 3.11. 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. House that are not bolted down move off th foundations. Some underground pipe broken. The ground cracks conspicuo Reservoirs suffer severe damage.

X Well-built wooden structures are seve damaged and some destroyed. Most masonry and frame structures are des troyed, including their foundations. S bridges are destroyed. Dams are serio damaged. Large landslides occur. Wa thrown on the banks of canals, rivers, lakes. Railroad tracks are bent slightl Cracks are opened in cement paveme and asphalt road surfaces.

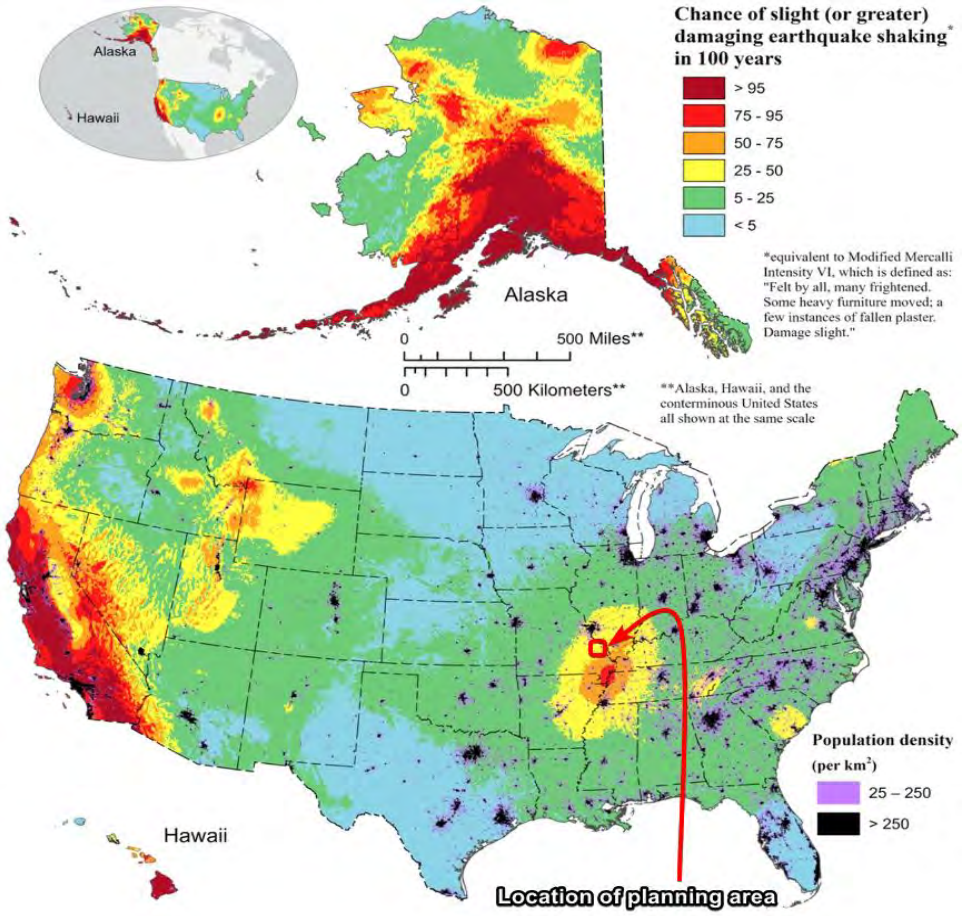
XI Few if any masonry structures remain standing. Large, well-built bridges are troyed. Wood frame structures are severely damaged, especially near epic ters. Buried pipelines are rendered co pletely useless. Railroad tracks are ba bent. Water mixed with sand, and mu ejected in large amounts.

XII Damage is total, and nearly all works construction are damaged greatly or c troyed. Objects are thrown into the ai The ground moves in waves or ripples Large amounts of rock may move. La are dammed, waterfalls formed and ri are deflected.

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

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JEFFERSON CITY, MO 65102
Telephone: 573-526-9100

Figure 3.12. United States Seismic Hazard Map



Source: National Seismic Hazard Model (2023)

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.

Figure 3.10 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 3.10** show the same regional intensities for 6.7 and 8.6 earthquake, respectively. **Figure 3.11** contains descriptions of the intensity scale ratings and possible impacts to areas in those zones. Based on this information the planning area could experience between a 7 and 9 on the Modified Mercalli Intensity Scale.

Previous Occurrences

In recent years there have been earthquakes recorded near the county ranging in magnitude from 1 to 3, but no known serious damage has resulted. The New Madrid Seismic Zone experiences more than 200 measurable earthquakes a year. Earthquakes of magnitude 2.5 to 3 on the Richter scale are felt annually, with a quake of 4 or more being released every 18 months. An earthquake of 5.0 or greater on the Richter scale occurs about once per decade.

Probability of Future Occurrence

Perry County, MO has a moderate earthquake risk. The USGS database shows that there is a 5.73% chance of a major earthquake within 30 miles of Perry County, MO within the next 50 years. The largest earthquake within 30 miles of Perry County, MO was a 5.0 Magnitude in 1977.

Changing Future Conditions Considerations

Climate change is not believed to directly cause earthquakes, as seismic events are driven by tectonic activity, not atmospheric conditions. However, indirect effects of climate change, such as increased rainfall, melting glaciers, and shifts in groundwater, could potentially influence seismic activity. For instance, heavy rainfall and flooding can increase the weight on fault lines, potentially triggering small earthquakes in certain regions. Additionally, the rapid melting of glaciers reduces pressure on the Earth's crust, which may cause an uplift and increased seismic activity in areas previously covered by ice.

Vulnerability

Vulnerability Overview

Perry County has a higher-than-average loss ratio for earthquake damage compared to other parts of the State due to its proximity to the New Madrid Seismic Zone.

Potential Losses to Existing Development

Given a scenario of 2% probability of exceedance in 50 years, Perry County would be projected to suffer over $756 million in total economic loss to buildings. Such an economic loss in a rural county could be catastrophic and devastate the population for decades.

Impact of Previous and Future Development

Future development is not expected to increase the risk of an earthquake other than by contributing to the overall exposure of what could become damaged because of an event. Any growth that may be experienced in Perry County would increase this exposure.

Hazard Summary by Jurisdiction

Earthquake intensity will not vary in any meaningful way across the county; therefore, all jurisdictions are equally exposed to an earthquake, and the impacts are expected to be similar for all jurisdictions, given similar development patterns and types.

Problem Statement

Earthquakes pose a serious threat to all jurisdictions in the county. A sufficiently strong earthquake will likely damage numerous private and public structures and facilities, including utility distribution and supply infrastructure. The disruption to transportation, water, sewer, electricity, and natural gas will leave residents, businesses, and schools unable to function reliably for potentially weeks after the event. Seismic retrofitting can help, but is often cost prohibitive, and seismic requirements for new development can drive costs up and stymie the growth of the city. Emergency generators can help alleviate the potential loss of power presented by an event.

3.4.5 Land Subsidence/Sinkholes

Hazard Profile

Hazard Description

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

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

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

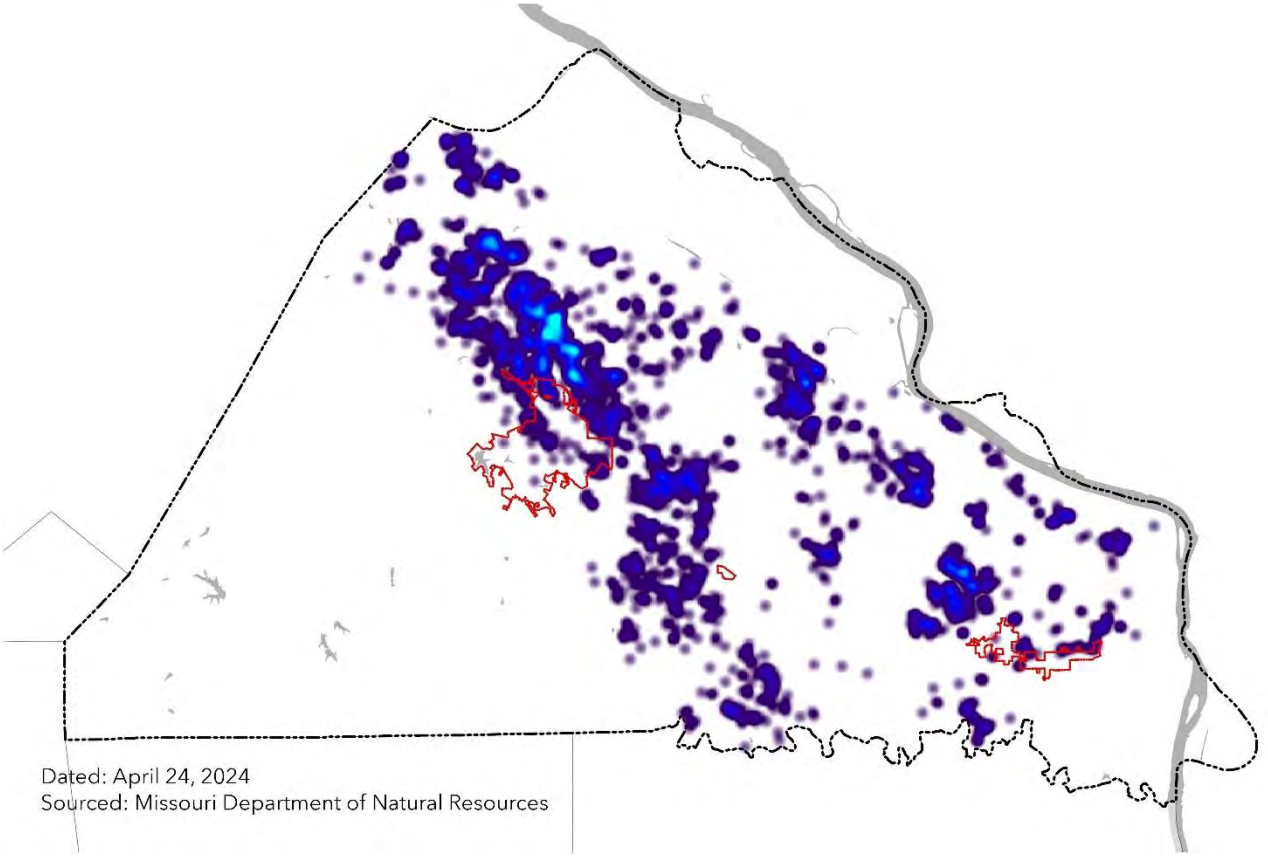
According to the U.S. Geological Survey (USGS), the most damage from sinkholes tends to occur in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania. Fifty-nine percent of Missouri is underlain by thick, carbonate rock that makes Missouri vulnerable to sinkholes. Sinkholes occur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

While some mineral rights exist in Perry County in the north and west most parts. No mining activity is conducted currently with the exception of open pit limestone and sand quarries.

Geographic Location

The eastern part of the county from I-55 to the Mississippi River is covered with sinkholes leading into the cave systems underground. This area is known as the Perry County Karst and due to the number of sinkholes in the area, locations in the county are shown in the figure below in a density heat map.

Figure 3.13. Sinkhole Locations by Density



Strength/Magnitude/Extent

Sinkholes vary in size and location, and these variances will determine the impact of the hazard. A sinkhole could result in the loss of a personal vehicle, a building collapse, or damage to infrastructure such as roads, water, or sewer lines. Groundwater contamination is also possible from a sinkhole. Because of the relationship of sinkholes to groundwater, pollutants captured or dumped in sinkholes could affect a community's groundwater system. Sinkhole collapse could be triggered by large earthquakes. Sinkholes located in floodplains can absorb floodwaters but make detailed flood hazard studies difficult to model. To date, Missouri sinkholes have historically not had major impacts on development, nor have they caused serious damage. Thus, the severity of future events is likely to be low.

Previous Occurrences

The 2023 Missouri State Hazard Mitigation Plan included fifteen documented sinkhole "notable events". The plan stated that sinkholes are common to Missouri and the probability is high that they will occur in the future. While there are over 2,700 known sinkholes in the County, there have been no significant events related to them. The City of Perryville has experienced a few sinkholes opening that have caused minor impact to yards or roadways, but to date no structural or property damage or injuries have been incurred.

Probability of Future Occurrence

It is difficult to predict the probability of future occurrence of sinkholes given the complexities involved with bedrock conditions and the unknown "start" dates of the existing sinkholes. The 2023 Missouri State Hazard Mitigation Plan indicated a statewide probability of future events is at least 83%. Given the karst topography of the county and the concentration of sinkholes, this is likely representative of the planning area.

Changing Future Conditions Considerations

Climate change can significantly influence the occurrence of sinkholes, especially in areas with karst geology characterized by soluble rocks like limestone. Increased and intense rainfall, a consequence of climate change, can accelerate erosion and saturate the ground, leading to the collapse of underground cavities. Conversely, prolonged drought conditions can cause soil shrinkage and lower groundwater levels, compromising the stability of overlying soil. This instability increases the likelihood of sinkhole formation when groundwater levels rise again or after heavy rains. Furthermore, the over-extraction of groundwater, which may be exacerbated by changing precipitation patterns, can lower water tables and destabilize soils, further contributing to sinkhole development.

Vulnerability

Vulnerability Overview

With 2,700 known sinkholes but no significant events associated with them, the County's vulnerability to such events is estimated to be low.

Potential Losses to Existing Development

There are no county owned structures in the county within 100 ft. of a known sinkhole. The occurrence of new sinkholes is possible, but it is virtually impossible to predict the exact location currently, making potential losses impractical to estimate.

Impact of Previous and Future Development

Additional future development will statistically increase the risk of damage to development, though it is not currently possible to predict by what amount.

Hazard Summary by Jurisdiction

Sinkholes, while present and possible, are expected to pose little threat to any jurisdiction.

Problem Statement

Sinkholes are common throughout the county between I-55 and the SFHA of the Mississippi River. Development of new sinkholes is likely to occur, but there is no way to predict where, or to what magnitude. Perryville has mapped and protected all known sinkholes within the city, and the county is working to map known sinkholes in the county.

3.4.6 Drought

Hazard Profile

Hazard Description

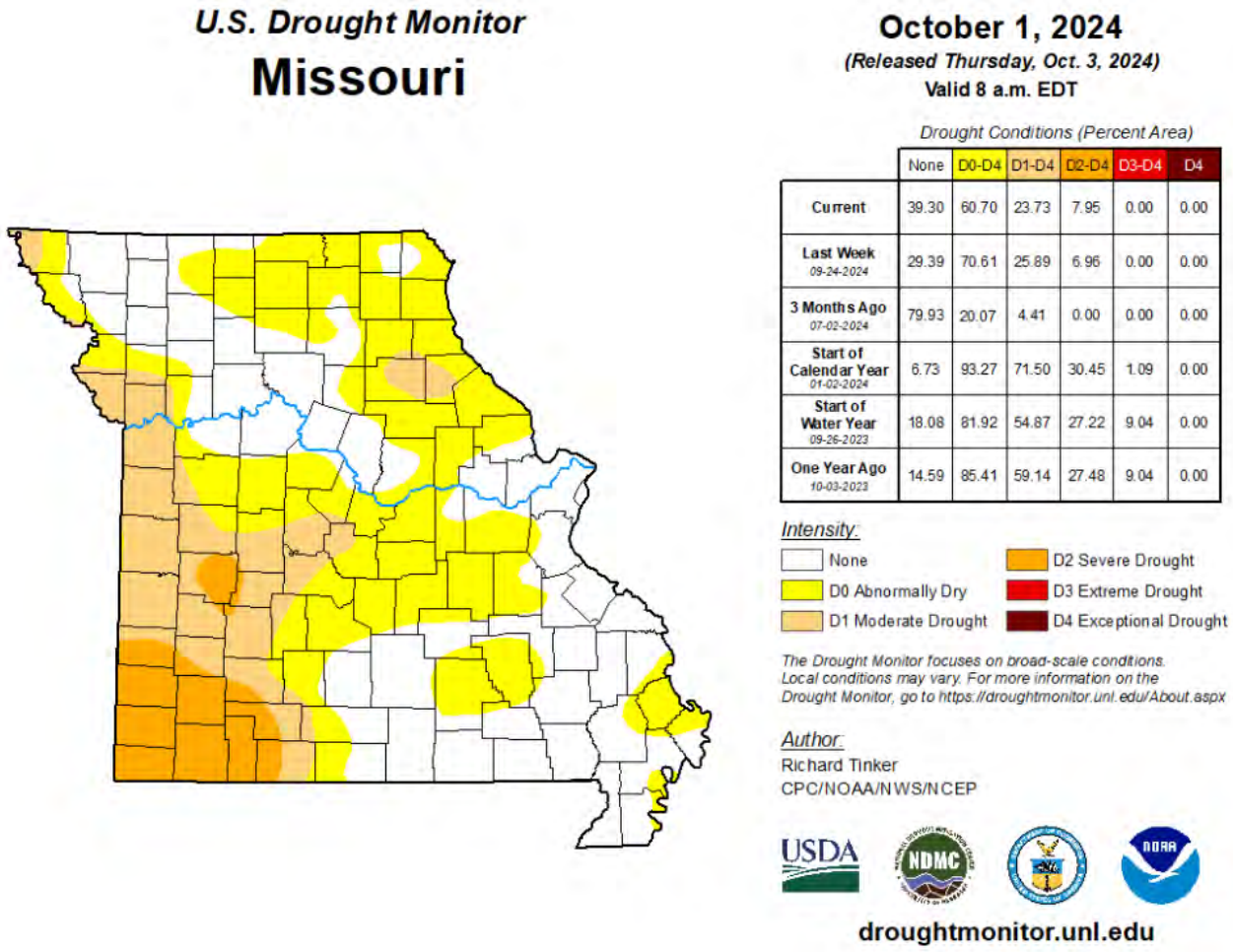
Drought is generally defined as a condition of moisture levels significantly below normal for an extended period of time over a large area that adversely affects plants, animal life, and humans. A drought period can last for months, years, or even decades. There are four types of drought conditions relevant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

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

Geographic Location

Given the nature of droughts, the entire county is equally exposed to this hazard. Droughts do tend to have greater impact on agricultural activities and would therefore have more impact in the unincorporated county than the more urbanized areas.

Figure 3.14. U.S. Drought Monitor Map of Missouri



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

Strength/Magnitude/Extent

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

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

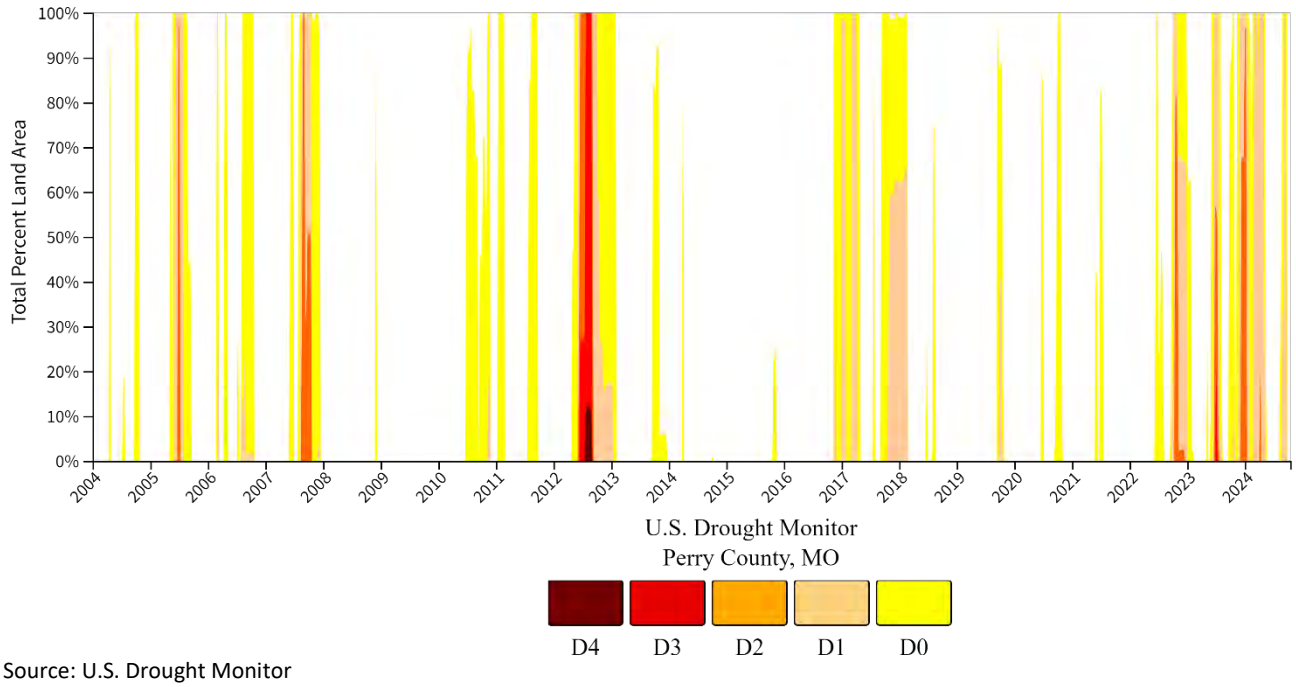
Palmer also developed a formula for standardizing drought calculations for each individual location based

on the variability of precipitation and temperature at that location. The Palmer index can therefore be applied to any site for which sufficient precipitation and temperature data is available.

Previous Occurrences

Since 2004, there have been 7 drought events rated a D2 or higher based on data from the US Drought Monitor. Of these events the most severe was a multi-month long event in 2012 followed by a shorter period in July 2023. The figure below shows the percentage of Perry County in drought over the past 20 years.

Figure 3.15. Percent of Perry County in Drought 2004-2024



Source: U.S. Drought Monitor

Probability of Future Occurrence

Over the last 20 years there have been approximately 83 months of drought conditions of varying intervals. Using this count, Perry County has a 34% monthly chance of drought. Although drought is not predictable, long-range outlooks and predicted impacts of climate change could indicate an increased chance of drought.

Changing Future Conditions Considerations

Climate change significantly exacerbates drought conditions, affecting water availability, agriculture, and ecosystems. Rising temperatures increase evaporation rates, leading to reduced soil moisture and altered precipitation patterns, which can result in prolonged droughts. The National Oceanic and Atmospheric Administration (NOAA) predicts that climate change will lead to more frequent and severe droughts across the United States, including Missouri. The 2023 Missouri State Hazard Mitigation Plan indicates that changing climate conditions may lead to more drought events, threatening agricultural production and water supplies. These droughts can also have cascading effects on ecosystems, increasing wildfire risks and disrupting habitats, which ultimately highlights the need for sustainable water resource management in response to

these challenges.

Vulnerability

Vulnerability Overview

According to the Missouri Hazard Mitigation Viewer, the county has a “Low Medium” vulnerability to drought hazards.

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.

Much of the impact would be felt by agricultural activities, especially for crop related uses. Approximately half of Perry County’s agricultural land use is in crops, which has greater vulnerability to drought than livestock. This explains the County’s moderate annualized crop insurance claims and indicates that potential losses to existing development Medium-Low. Impacts on the city and the school district will be lesser still.

Impact of Previous and Future Development

Given the small amount of growth the County is expected to experience over the next 5 years, impacts of future development will be almost identical to those on existing development.

Hazard Summary by Jurisdiction

All jurisdictions are equally exposed to drought but given the greater number of agricultural activities in the County, it has a greater vulnerability to drought than any of the other jurisdictions.

Problem Statement

While droughts have regional impacts, within the county the most vulnerable areas are the agricultural assets in the unincorporated county. Droughts have little to no impact on the school district, and the City of Perryville has had no issues with water source depletion in recent history.

3.4.7 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 3.16** uses both 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 of ice jams on flat rivers or streams. When combined with high winds from winter storms, extreme cold becomes extreme wind chill, which is hazardous to health and safety.

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

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

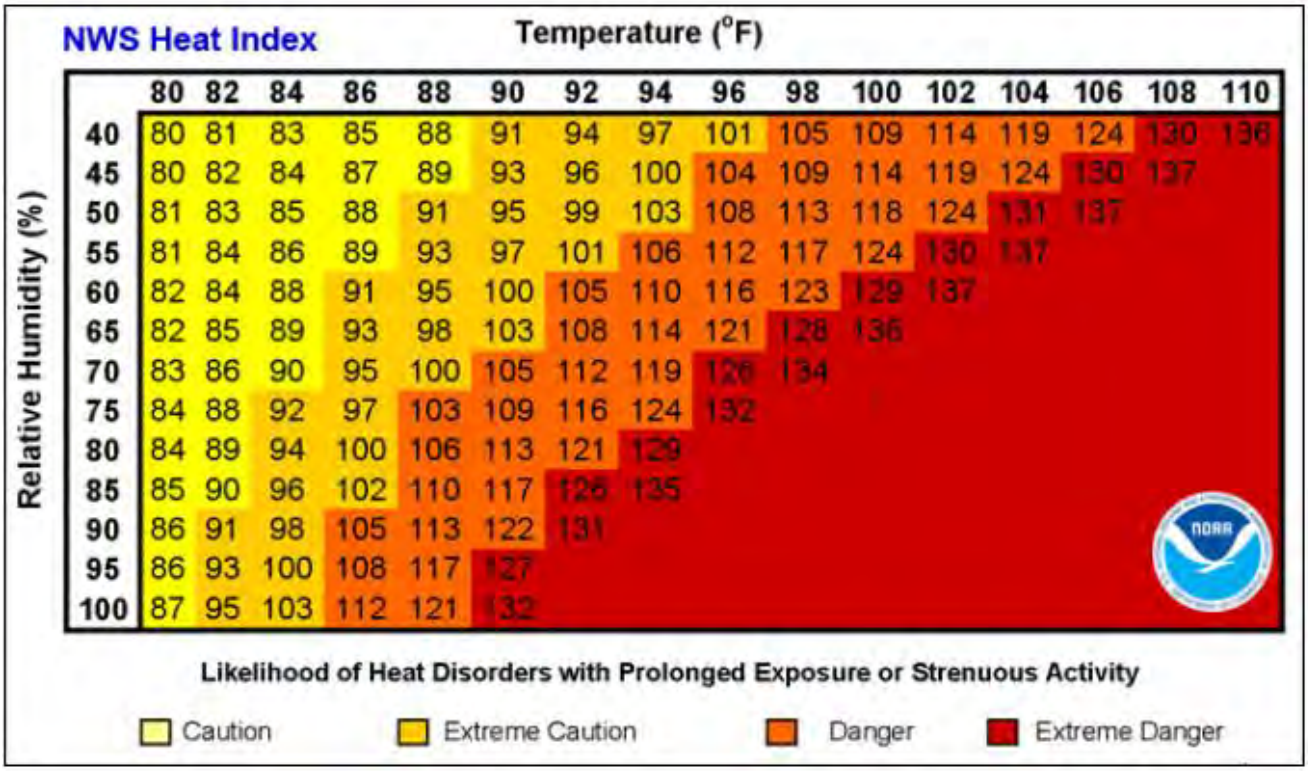
Geographic Location

Extreme temperatures are an area-wide hazard event, and the risk of extreme temperatures does not vary across the jurisdictions in the planning area with all being affected equally.

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.

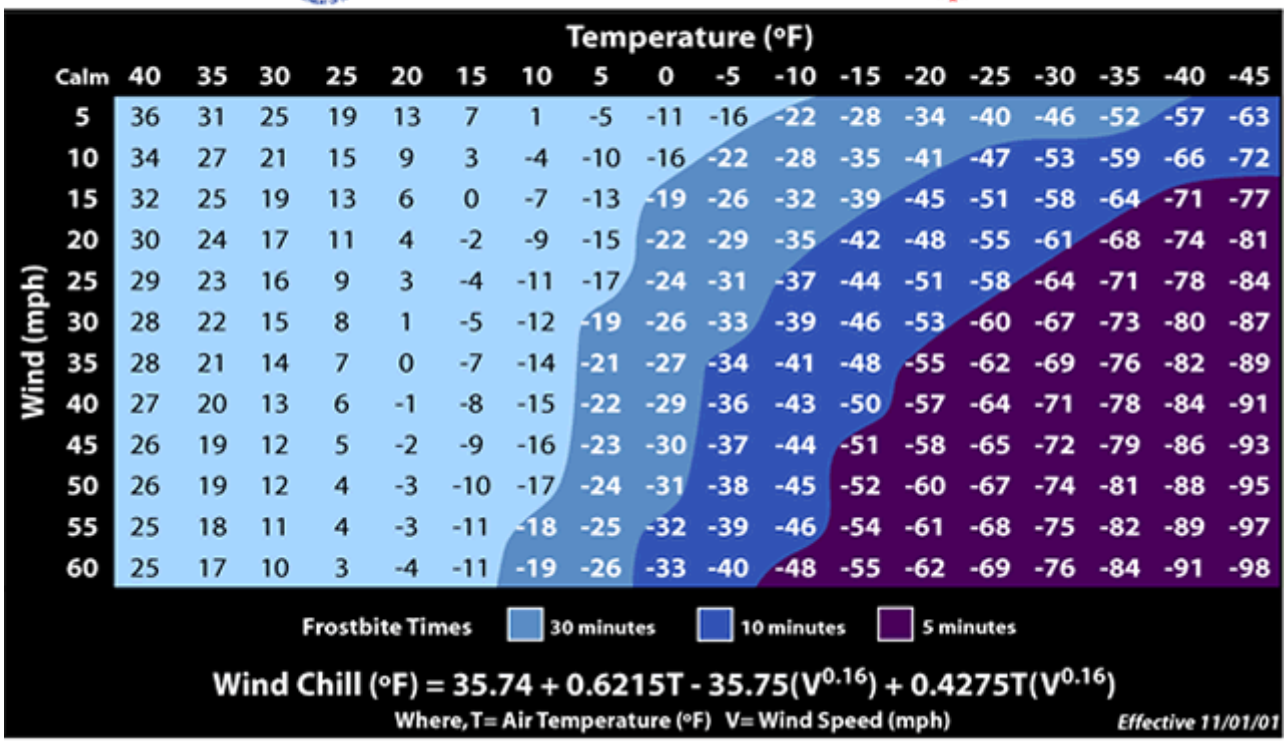
Figure 3.16. Heat Index (HI) Chart



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

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

Figure 3.17. Wind Chill Chart



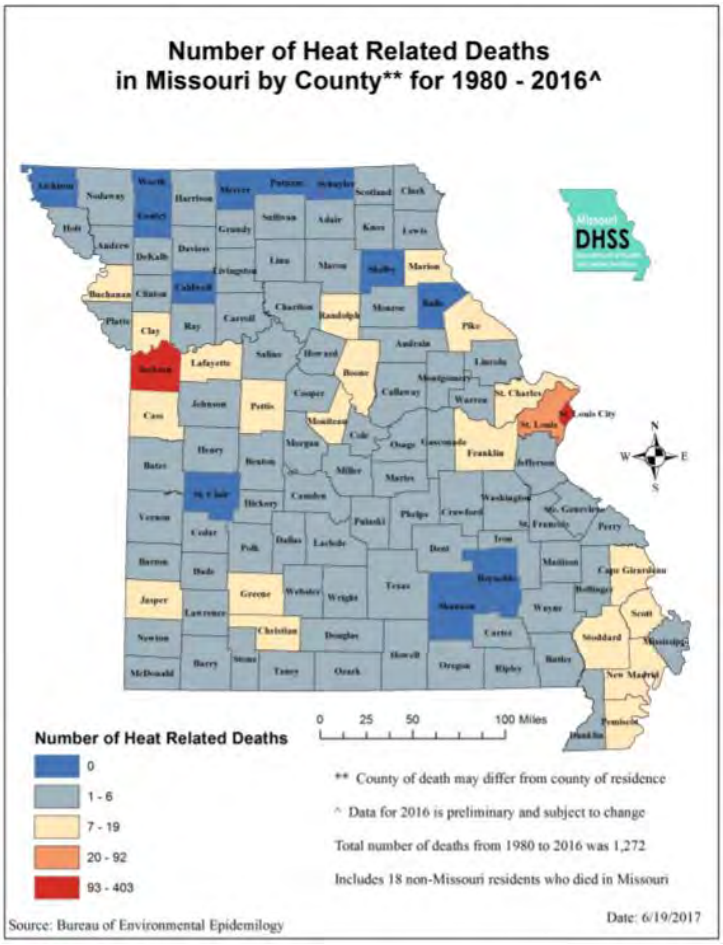
Source: https://www.weather.gov/safety/cold-wind-chill-chart

Previous Occurrences

The NCEI lists a total of 139 temperature related events for Perry County since 2004. Of these 12 were related to Cold/Windchill, 51 to Frost/Freeze, and 53 related to Heat. The remaining 23 were in relation to Extreme Temperatures with 21 Extreme Heat and 2 Exterme Cold/Wind Chill events.

The following map in **Figure 3.18** shows the number of heat related deaths in Missouri since 1980. Perry County is listed in the 1-6 range, however according to NCEI data there have been no deaths in the county in the past 20 years related to extreme temperatures either high or low.

Figure 3.18. Heat Related Deaths in Missouri 2000 - 2016



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

Extreme heat can cause stress to crops and animals. Extreme heat can also strain electricity delivery infrastructure overloaded during peak use of air conditioning during extreme heat events. Another type of infrastructure damage from extreme heat is road damage. When asphalt is exposed to prolonged extreme heat, it can cause buckling of asphalt-paved roads, driveways, and parking lots.

Based on data from the 2023 Missouri Hazard Mitigation Plan, there were 269 fatalities in the state attributed to annual heat events and 5 fatalities attributed to extreme cold and frost freeze events in a 25 year period from 1996 to 2021. This translates to an annual state average of 11 deaths. During the same period, no deaths were recorded in the planning area, according to NCEI data. The National Weather Service stated that among natural hazards, no other natural disasters- not lightning, hurricanes, tornadoes, floods, or earthquakes—causes more deaths.

Probability of Future Occurrence

In the past 20 years there have been a total of 21 Excessive Heat events reported. This equates to a 105% annualized chance for a similar event to happen in the planning area. For the same time frame only 2 Extreme Cold/Wind Chill events were reported equaling a 10% annualized chance. However, this is difficult to verify as extreme temperature events can potentially be under-reported in the NCEI data.

Changing Future Conditions Considerations

Climate change scenarios predict significant increases in extreme temperature events, particularly in Missouri, including Perry County. According to the 2023 Missouri State Hazard Mitigation Plan, average temperatures are expected to rise, leading to more frequent and intense heatwaves. The plan highlights that by the end of the century, the number of extreme heat days could increase substantially, which may have dire implications for public health, agriculture, and infrastructure.

Research from the National Oceanic and Atmospheric Administration (NOAA) supports these findings, indicating that as the climate continues to warm, regions will experience longer durations of extreme heat. The implications of such changes necessitate proactive planning and adaptation strategies to mitigate risks associated with heatwaves, including improved infrastructure, enhanced public health measures, and sustainable agricultural practices.

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 2023 State Hazard Mitigation Plan categorized the county at a medium risk for Extreme Heat and medium-high risk for Extreme Cold.

Table 3.26 lists typical symptoms and health impacts due to exposure to extreme heat.

Table 3.26. 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 is highly likely with continued exposure

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

Potential Losses to Existing Development

Given the absence of temperature-related deaths in the past 20 years and the median concentration of elderly in the County, the potential losses to existing development are marginal.

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. While no jurisdictions are experiencing major growth, the aging of the Baby Boomers is likely to lead to a growth in the percentage of elderly in the County.

Hazard Summary by Jurisdiction

To determine jurisdictions within the planning area with populations more vulnerable to extreme heat, demographic data was obtained from the 2022 ACS 5-year estimates 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. **Table 3.27** 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 3.27. Perry County Population Under Age 5 and Over Age 65, 2022 Census Data

Jurisdiction	Population Under 5 yrs	Population 65 yrs and over
*Perry County	1,038	3,613
City of Perryville	527	1,404

Source: U.S. Census Bureau, 2022 AC Survey 5-Year Estimates (*) includes entire population of each city or county

Problem Statement

Extreme temperatures pose significant risks to the entire population in Perry County, especially for vulnerable groups such as the elderly and youth. While schools serve as safe havens for youth during extreme temperature events, providing climate-controlled environments that help protect students who may not have air conditioning at home, these facilities also play a crucial role in community resilience.

3.4.8 Severe Thunderstorms Including High Winds, Hail, and Lightning

Hazard Profile

Hazard Descriptions

Thunderstorms — A thunderstorm is defined as a storm that contains lightning and thunder which is caused by unstable atmospheric conditions. When cold upper air sinks and warm moist air rises, storm clouds or 'thunderheads' develop resulting in thunderstorms. This can occur singularly, as well as in clusters or lines. The National Weather Service defines a thunderstorm as "severe" if it includes hail that is one inch or more, or wind gusts that are at 58 miles per hour or higher. At any given moment across the world, there are about 1,800 thunderstorms occurring. Severe thunderstorms most often occur in Missouri in the spring and summer, during the afternoon and evenings, but can occur at any time. Other hazards associated with thunderstorms are heavy rains resulting in flooding (discussed separately in **Section 3.4.1**) and tornadoes (discussed separately in **Section 3.4.10**).

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.

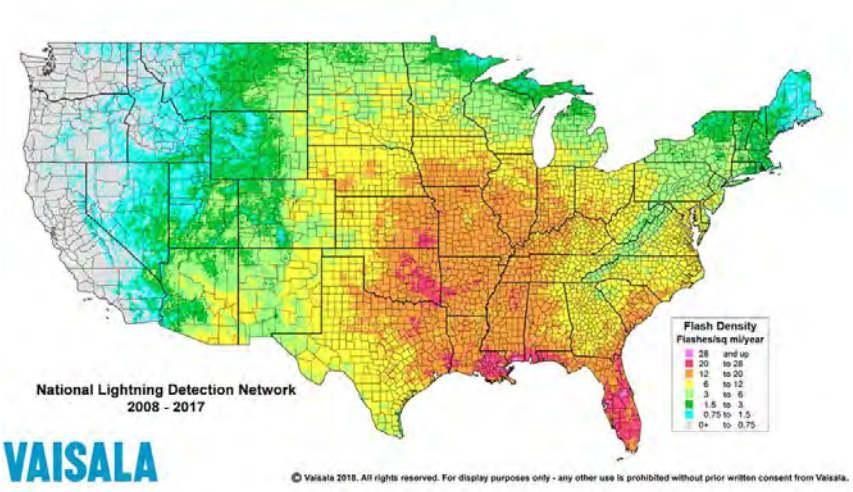
Hail — According to the National Oceanic and Atmospheric Administration (NOAA), hail is precipitation that is formed when thunderstorm updrafts carry raindrops upward into an extremely cold atmosphere causing them to freeze. The raindrops form into small frozen droplets. They continue to grow as they come to 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. If 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 to the earth. For example, a ¼" diameter or pea sized hail requires updrafts of 24 miles per hour, while a 2 ¾" diameter or baseball sized hail requires an updraft of 81 miles per hour. According to the NOAA, the largest hailstone in diameter recorded in the United States was found in Vivian, South Dakota on July 23, 2010. It was eight inches in diameter, almost the size of a soccer ball. Soccer-ball-sized hail is the exception, but even small pea-sized hail can do damage.

Geographic Location

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

The map in **Figure 3.19** shows lightning frequency in the state. The planning area in the southeast part of Missouri is colored in the 12 to 20 flashes per square mile per year category.

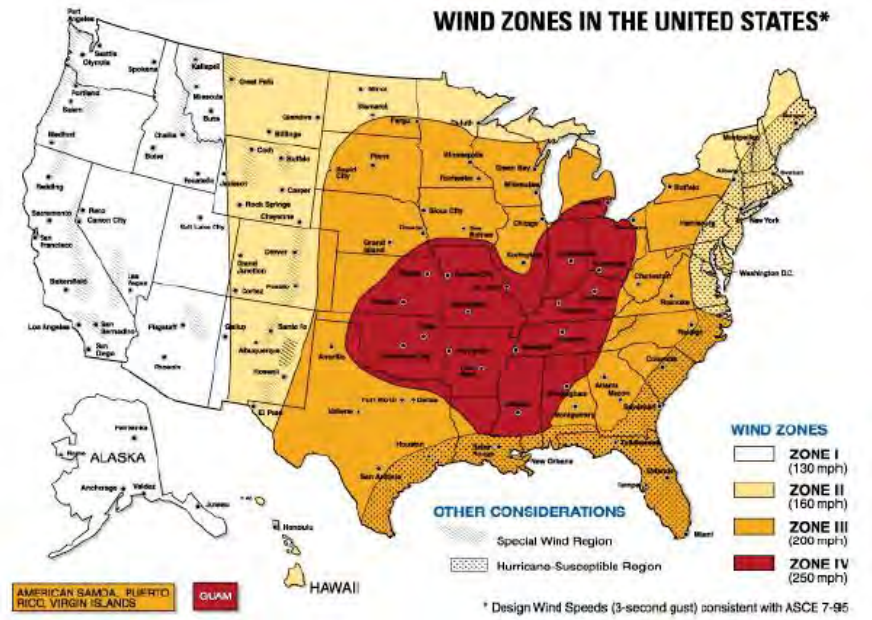
Figure 3.19. Location and Frequency of Lightning in Missouri



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.

The map in **Figure 3.20** shows wind zones in the United States. The planning area located in southeast Missouri is well within Zone IV area near the southern quarter of Illinois.

Figure 3.20. Wind Zones in the United States



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

Strength/Magnitude/Extent

Based on information provided by the Tornado and Storm Research Organization (TORRO), **Table 3.28.** below describes typical damage impacts of the various sizes of hail.

Table 3.28. Tornado and Storm Research Organization Hailstorm Intensity Scale

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

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

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

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

Previous Occurrences

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

The tables below (**Table 3.29 through Table 3.32**) 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 3.29. Crop Insurance Claims Paid in Perry County from Thunderstorms, 2019-2023

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2019	Wheat	Excess Moisture/Precipitation/Rain	$218,542.00
2019	Corn	Excess Moisture/Precipitation/Rain	$1,301,372.00
2019	Grain Sorghum	Excess Moisture/Precipitation/Rain	$930.00
2019	Soybeans	Excess Moisture/Precipitation/Rain	$1,457,580.00
2020	Wheat	Excess Moisture/Precipitation/Rain	$105,882.00
2020	Corn	Excess Moisture/Precipitation/Rain	$345,310.00
2020	Soybeans	Excess Moisture/Precipitation/Rain	$338,542.00
2021	Wheat	Excess Moisture/Precipitation/Rain	$9,410.00
2021	Corn	Excess Moisture/Precipitation/Rain	$20,367.00
2021	Soybeans	Excess Moisture/Precipitation/Rain	$161,212.00
2022	Wheat	Excess Moisture/Precipitation/Rain	$54,160.00
2022	Corn	Excess Moisture/Precipitation/Rain	$28,548.00
2022	Soybeans	Excess Moisture/Precipitation/Rain	$68,788.00
2023	Wheat	Excess Moisture/Precipitation/Rain	$84,012.00
2023	Corn	Excess Moisture/Precipitation/Rain	$18,785.00
2023	Soybeans	Excess Moisture/Precipitation/Rain	$44,491.00
Total			**$4,254,932.00**

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

Table 3.30. Crop Insurance Claims Paid in Perry County from High Winds, 2019-2023

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2021	Corn	Wind/Excess Wind	$7,575.00
Total			**$7,575.00**

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

Table 3.31. Crop Insurance Claims Paid in Perry County from Lightning, 2019-2023

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2022	Corn	Other (Snow, Lightning, Etc.)	$0.00
Total			**$0.00**

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

Table 3.32. Crop Insurance Claims Paid in Perry County from Hail, 2019-2023

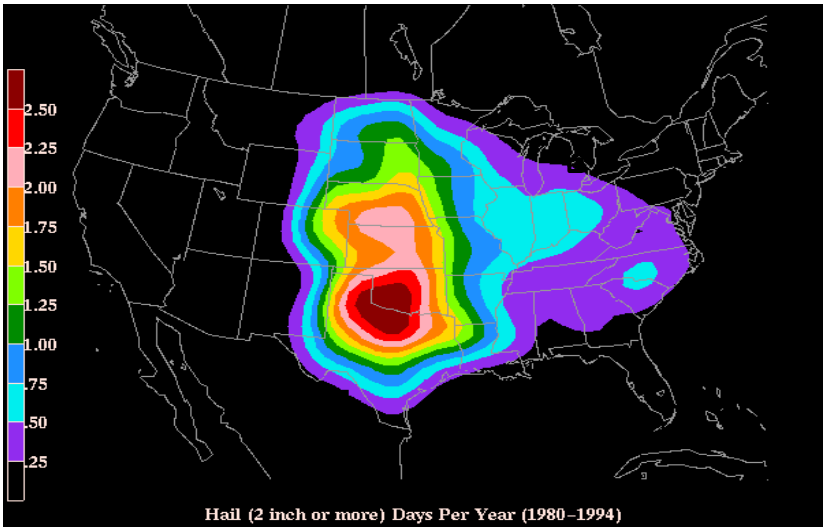
Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2023	Soybeans	All Other Causes	$22.75
Total			**$22.75**

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

Probability of Future Occurrence

Four events of high or strong winds of over 50 knots in past 25 years are listed in the NCEI, leading to a probability of 16%. While only 2 lighting events are listed in the NCEI, data limitations are the leading factor in this phenomenon, not the lack of actual events. The HMPC believes it is safe to assume that at least one lightning strike will occur each year in the County. NCEI lists 22 events of hail over 1in. in diameter in the past 25 years, a probability of 88%. Additionally, NOAA's NSSL indicates hail of 2" diameter or more is likely to occur 1 day every 16 months in the County (see Figure 3.21) based on hailstorm data from 1980-1994. The planning area located in the light blue .50-.75 area of southeast Missouri.

Figure 3.21. Annual Hailstorm Probability (2'' diameter or larger), U 1980- 1994



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

Changing Future Conditions Considerations

The potential impacts of climate change on severe thunderstorms in Perry County, Missouri, are tied to broader changes in atmospheric conditions due to increasing global temperatures. Rising temperatures contribute to more frequent and intense thunderstorms by increasing the amount of water vapor in the

atmosphere, which can fuel stronger storm systems. This includes greater risks of lightning, heavy rainfall, high winds, and tornadoes.

The 2023 Missouri State Hazard Mitigation Plan highlights that climate change will likely lead to changes in the frequency and intensity of severe weather events like thunderstorms. Warmer air holds more moisture, which can lead to stronger storms with more intense precipitation, raising the risk of flooding. Additionally, increased atmospheric instability could result in more severe thunderstorms, with higher chances of damaging winds and hail.

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 Perry County are vulnerable to thunderstorms with lightning, high winds, and hail including people, crops, vehicles, and built structures. Although this hazard results in high annual losses, private property insurance and crop insurance usually cover most 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 damage to crops, if fields or forested lands are set on fire. Communications equipment and warning transmitters and receivers can also be knocked out by lightning strikes.
http://www.vaisala.com/en/products/thunderstormandlightningdetectionsystems/Pages/NLDN.aspx
and http://www.lightningsafety.noaa.gov/

Potential Losses to Existing Development

The Missouri Hazard Mitigation Viewer (2023 Update) lists annualized hail damage at $231,153.85, annualized lighting damage at $38.46, and annualized wind damage to property at $2,006,384.62.

Previous and Future Development

Additional development will result in the exposure of more structures to damage from severe thunderstorms.

Hazard Summary by Jurisdiction

Perryville is the most exposed jurisdiction simply due to the higher density of development, followed by the county. Other than the population density difference, all jurisdictions are equally at risk to such hazard events.

Problem Statement

Impacts from these events are typically property related, with debris, falling trees, and hail damage. Advanced warnings typically keep residents inside during such events which limits potential injuries and loss of life. While all jurisdictions can be impacted by these events, the city and county are most affected do to their size compared to the relatively small campus of the school district. Of the city and the county, the city is the most affected due to the density of development and concentration of higher property values.

3.4.9 Severe Winter Weather

Hazard Profile

Hazard Description

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

Blizzard — Winds of 35 miles per hour or more with snow and blowing snow reducing visibility to less than ¼ mile for at least three hours.

Blowing Snow — Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.

Snow Squalls — Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.

Snow Showers — Snow falling at varying intensities for brief periods of time. Some accumulation is possible.

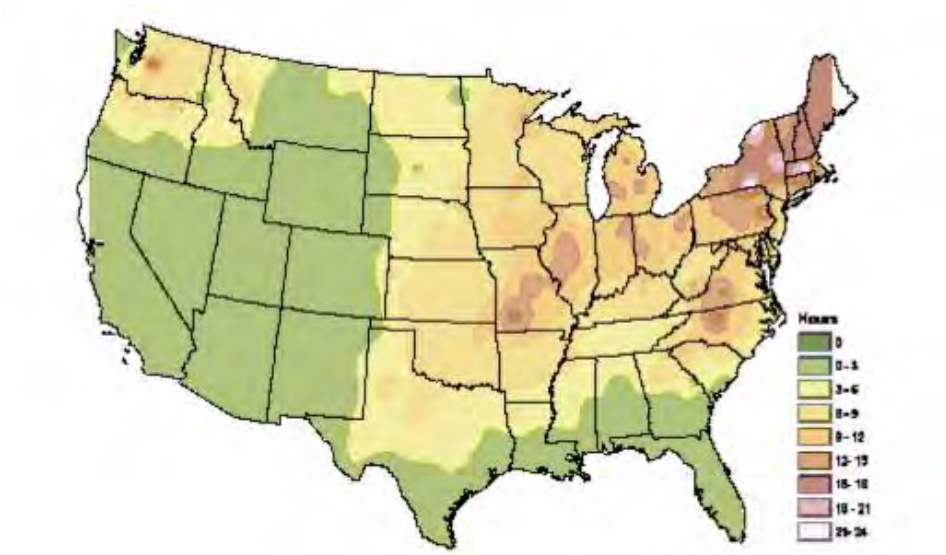
Freezing Rain — Measurable rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Most freezing-rain events are short lived and occur near sunrise between the months of December and March.

Sleet — Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting the surface and does not stick to objects.

Geographic Location

The entire county is vulnerable to heavy snow, ice, extreme cold temperatures and freezing rain. **Figure 3.22** shows the average number of hours per year with freezing rain, with the County sitting on the line between 8-9 hours and 9-12 hours.

Figure 3.22. 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 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 blinding snow (near zero visibility), deep drifts, and life-threatening wind chill.

Ice Storm Warning — Dangerous accumulations of ice are expected with generally over one quarter inch of ice on exposed surfaces. Travel is impacted, and widespread downed trees and power lines often result.

Wind Chill Advisory — Combination of low temperatures and strong winds will result in wind chill readings of -20 degrees F or lower.

Wind Chill Warning — Wind chill temperatures of -35 degrees F or lower are expected. This is a life-threatening situation.

Previous Occurrences

The NCEI data contains 56 events for the planning area from 2014 to 2024. These events include blizzards, cold/wind chill, extreme cold/wind chill, heavy snow, ice storms, sleet, winter storms, and winter weather. **Table 3.33** provides a list of these events in chronological order.

Table 3.33. NCEI Perry County Winter Weather Events Summary, 2014-2024

Type of Event	Inclusive Dates	Magnitude	# of Injuries	Property Damages	Crop Damages
Winter Storm	1/5/2014 - 1/5/2014	0	0	$0.00	$0.00
Cold/Wind Chill	1/5/2014 - 1/7/2014	0	0	$0.00	$0.00
Winter Storm	2/4/2014 - 2/4/2014	0	0	$0.00	$0.00
Winter Storm	3/2/2014 - 3/3/2014	0	0	$0.00	$0.00
Winter Weather	11/16/2014 - 11/16/2014	0	0	$0.00	$0.00
Winter Weather	12/1/2014 - 12/1/2014	0	0	$0.00	$0.00
Winter Weather	1/15/2015 - 1/15/2015	0	0	$0.00	$0.00
Heavy Snow	2/15/2015 - 2/16/2015	0	0	$0.00	$0.00
Winter Weather	2/17/2015 - 2/18/2015	0	0	$0.00	$0.00
Cold/Wind Chill	2/19/2015 - 2/19/2015	0	0	$0.00	$0.00
Winter Storm	2/20/2015 - 2/21/2015	0	0	$0.00	$0.00
Winter Weather	2/28/2015 - 2/28/2015	0	0	$0.00	$0.00
Winter Weather	3/1/2015 - 3/1/2015	0	0	$0.00	$0.00
Winter Storm	3/4/2015 - 3/4/2015	0	0	$0.00	$0.00
Winter Weather	1/19/2016 - 1/20/2016	0	0	$0.00	$0.00
Winter Weather	2/14/2016 - 2/14/2016	0	0	$0.00	$0.00
Winter Storm	2/24/2016 - 2/24/2016	0	0	$30,000	$0.00
Winter Weather	12/17/2016 - 12/18/2016	0	0	$0.00	$0.00
Winter Weather	1/5/2017 - 1/5/2017	0	0	$0.00	$0.00
Ice Storm	1/13/2017 - 1/13/2017	0	0	$50,000.00	$0.00
Cold/Wind Chill	1/1/2018 - 1/1/2018	0	0	$0.00	$0.00
Winter Weather	1/11/2018 - 1/12/2018	0	0	$0.00	$0.00
Winter Weather	1/15/2018 - 1/15/2018	0	0	$0.00	$0.00
Cold/Wind Chill	1/16/2018 - 1/16/2018	0	0	$0.00	$0.00
Winter Weather	2/6/2018 - 2/7/2018	0	0	$0.00	$0.00
Winter Weather	2/11/2018 - 2/11/2018	0	0	$0.00	$0.00
Winter Weather	4/7/2018 - 4/7/2018	0	0	$0.00	$0.00
Winter Weather	11/14/2018 - 11/15/2018	0	0	$0.00	$0.00
Heavy Snow	1/11/2019 - 1/12/2019	0	0	$0.00	$0.00
Heavy Snow	1/19/2019 - 1/19/2019	0	0	$0.00	$0.00
Cold/Wind Chill	1/30/2019 - 1/30/2019	0	0	$0.00	$0.00
Winter Storm	2/15/2019 - 2/15/2019	0	0	$0.00	$0.00
Winter Weather	3/3/2019 - 3/3/2019	0	0	$0.00	$0.00
Winter Weather	11/11/2019 - 11/11/2019	0	0	$0.00	$0.00

Winter Weather	1/1/2021	-	1/1/2021	0	0	$0.00	$0.00
Winter Weather	1/27/2021	-	1/27/2021	0	0	$0.00	$0.00
Winter Weather	2/10/2021	-	2/10/2021	0	0	$0.00	$0.00
Cold/Wind Chill	2/14/2021	-	2/14/2021	0	0	$0.00	$0.00
Winter Storm	2/14/2021	-	2/15/2021	0	0	$0.00	$0.00
Cold/Wind Chill	2/16/2021	-	2/16/2021	0	0	$0.00	$0.00
Winter Weather	2/17/2021	-	2/18/2021	0	0	$0.00	$0.00
Winter Weather	1/6/2022	-	1/6/2022	0	0	$0.00	$0.00
Winter Storm	2/2/2022	-	2/3/2022	0	0	$0.00	$0.00
Winter Storm	2/23/2022	-	2/24/2022	0	0	$0.00	$0.00
Winter Weather	3/11/2022	-	3/11/2022	0	0	$0.00	$0.00
Winter Weather	11/12/2022	-	11/12/2022	0	0	$0.00	$0.00
Winter Weather	12/22/2022	-	12/22/2022	0	0	$0.00	$0.00
Extreme Cold/Wind Chill	12/22/2022	-	12/24/2022	0	0	$0.00	$0.00
Winter Weather	12/26/2022	-	12/26/2022	0	0	$0.00	$0.00
Heavy Snow	1/24/2023	-	1/25/2023	0	0	$50,000	$0.00
Winter Weather	1/29/2023	-	1/30/2023	0	0	$0.00	$0.00
Winter Storm	1/30/2023	-	1/31/2023	0	0	$0.00	$0.00
Cold/Wind Chill	1/14/2024	-	1/14/2024	0	0	$0.00	$0.00
Cold/Wind Chill	1/16/2024	-	1/16/2024	0	0	$0.00	$0.00
Cold/Wind Chill	1/20/2024	-	1/20/2024	0	0	$0.00	$0.00
Winter Weather	1/22/2024	-	1/22/2024	0	0	$0.00	$0.00
Total					**0**	**$80,000.00**	**$0.00**

Source: NCEI, data accessed 10-1-2024

Winter storms, cold, frost and freeze take a toll on crop production in the planning area. **Table 3.34** shows the USDA's Risk Management Agency payments for insured crop losses in the planning area as a result of cold conditions and snow back to 2016.

Table 3.34. Crop Insurance Claims Paid in Perry County as a Result of Cold Conditions and Snow 2016-2024

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid ($)
2020	Soybeans	Cold Wet Weather	$3,323.00
2021	Soybeans	Cold Wet Weather	$819.00
2022	Wheat	Cold Wet Weather	$5,054.00
2022	Corn	Other (Snow, Lightning, Etc.)	$0.00
2023	Corn	Cold Wet Weather	$2,026.00
2016	Wheat	Other (Snow, Lightning, Etc.)	$21.00
2016	Corn	Cold Wet Weather	$6,545.00
2017	Soybeans	Other (Snow, Lightning, Etc.)	$2,671.00
2018	Wheat	Cold Wet Weather	$8,887.00
2018	Soybeans	Cold Wet Weather	$492.80
Total			**$29,839.80**

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

Probability of Future Occurrence

With 56 events in 11 years, the County is projected to experience 5 winter weather events annually. However, when only county Winter and Ice storm events that number drops to a chance of approximately 1.2 events annually.

Changing Future Conditions Considerations

Climate change scenarios suggest notable alterations in severe winter weather patterns across Missouri, including Perry County. The 2023 Missouri State Hazard Mitigation Plan indicates that, despite an overall rise in winter temperatures, the region may still encounter intense winter storms characterized by increased precipitation that predominantly falls as heavy snow rather than rain. This change in precipitation can lead to more severe snowstorms, ice events, and blizzards, which pose significant risks to public safety and infrastructure.

Vulnerability

Vulnerability Overview

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

Buildings with overhanging tree limbs are more vulnerable to damage during winter storms when limbs fall. Businesses experience loss of income as a result of closure during power outages. In general heavy winter storms increase wear and tear on roadways though the cost of such damage is difficult to determine. Businesses can experience loss of income because of closure during winter storms.

Overhead power lines and infrastructure are also vulnerable to damage 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. Damage also occurs to lines and equipment from falling trees and tree limbs weighed 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.

Potential Losses to Existing Development

According to the 2023 Missouri State Hazard Mitigation Plan, the County has had property annualized losses of $396,000 per year.

Previous and Future Development

Additional development will increase focus jurisdictions exposure to the hazard by adding structure and people to the study area. The minor growth rate of the county and communities indicates little future impact due to development trends.

Hazard Summary by Jurisdiction

All jurisdictions are equally exposed to severe winter weather, though the event will have different impacts on different jurisdictions. Schools are typically closed during these events, making property damage their primary concern. While the County has far less population density compared to the communities, county residents can far more easily have transportation and communications severed by winter storms, leaving them isolated for days or even weeks in extreme cases. For the communities, the inverse is true; residents continue to have services and contacts in proximity, but there are far more people affected by the event.

Problem Statement

Winter weather can affect any of the participants. While the school district typically closes during sever events, in some cases children are present when an event occurs soon or stronger than expected. Transportation of students during such an event can be dangerous, and power failures are also possible. The density of development in the city increases its exposure, but residents are also closer to emergency services when compared to county residents. Because of this, each jurisdiction is impacted by these events in a slightly different manner.

3.4.10 Tornado

Hazard Profile

Hazard Description

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

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

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

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

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

Geographic Location

Tornadoes can occur at any location in the planning area with equal probability.

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 damaged paths can be more than one mile wide and 50 miles long. Tornadoes have been known to lift and move objects weighing more than 300 tons a distance of 30 feet, toss homes more than 300 feet from their foundations, and siphon millions of tons of water from water bodies. Tornadoes also can generate a tremendous amount of flying debris or "missiles," which often become

airborne shrapnel that causes additional damage. If wind speeds are high enough, missiles can be thrown at a building with enough force to penetrate windows, roofs, and walls. However, the less spectacular damage is much more common.

Tornado magnitude is classified according to the EF- Scale (or the Enhance Fujita Scale, based on the original Fujita Scale developed by Dr. Theodore Fujita, a renowned severe storm researcher). The EF- Scale (see **Table 3.35**) 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 3.35. Enhanced F Scale for Tornado Damage

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

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

The wind speeds for the EF scale and damage descriptions are based on information on the NOAA Storm Prediction Center as listed in **Table 3.36**. The damage descriptions are summaries. For the actual EF scale, it is necessary to look up the damage indicator (type of structure damaged) and refer to the degrees of damage associated with that indicator. Information on the Enhanced Fujita Scale's damage indicators and degrees or damage is located online at www.spc.noaa.gov/efscale/ef-scale.html.

Table 3.36. 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 distance.
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 3.37 includes NCEI reported tornado events and damage since 1993 in the planning area. Prior to that date, only destructive tornadoes were recorded. There are limitations to the use of NCEI tornado data that must be noted. For example, one tornado may contain multiple segments as it moves geographically. A tornado that crosses a county line or state line is considered a separate segment for the purposes of reporting to the NCEI. Also, a tornado that lifts off the ground for less than 5 minutes or 2.5 miles is considered a separate segment. If the tornado lifts off the ground for greater than 5 minutes or 2.5 miles, it is considered a separate tornado. Tornadoes reported in Storm Data and the Storm Events Database are in segments.

The largest event in this time frame occurred on February 28, 2017. This large and violent tornado touched down about four miles west of Perryville. The tornado quickly became violent, reaching EF-4 intensity and leveling five homes just west of Interstate 55, about 3.5 miles northwest of Perryville. Numerous unoccupied cars from a salvage yard were blown into or over Interstate 55. The lone fatality occurred when a southbound vehicle on Interstate 55 was intercepted by the tornado. The victim's pickup truck was tossed into a field at least 100 yards from the interstate. The coroner reported that the victim was thrown from the vehicle and died at the scene. The passenger in the vehicle was treated for minor injuries at a local hospital. The area of

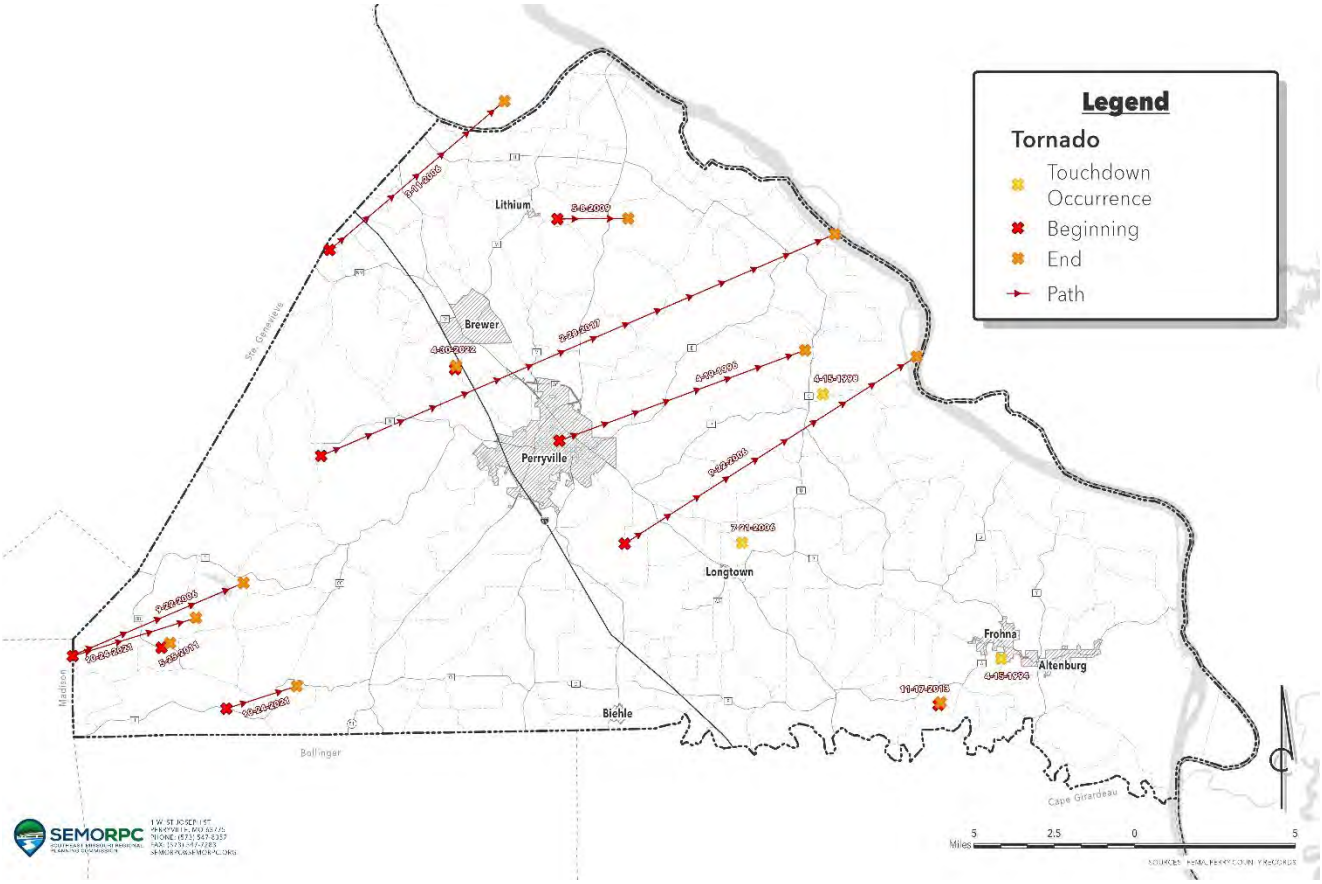
greatest home and property destruction was three miles north of Perryville, in the vicinity of U.S. Highway 61. Maximum wind speeds were estimated near 180 mph in the vicinity of Interstate 55 and near U.S. Highway 61. The damage path showed multiple vortex characteristics with ground striations and scarring to bare ground. At least 100 homes were damaged or destroyed in Perry County, mostly on the northern outskirts of Perryville. Most people in the tornado's path took shelter in their basements. All twelve tornado injuries occurred in Perry County, where the tornado was at its strongest. At least one couple was trapped in their basement until rescuers removed debris. As the tornado approached the Mississippi River, multiple ground striations were noted in a farm field, indicative of multiple vortices. The maximum path width was over one-half mile shortly before the tornado crossed the Mississippi River into Randolph County, Illinois.

Table 3.37. Recorded Tornadoes in Perry County, 1993 – Present

Date	Beginning Location	Ending Location	Length (miles)	Width (yards)	F/EF Rating	Death	Injury	Property Damage	Crop Damages
4/15/1994	FROHNA		0.3	25	F0	0	0	$50,000.00	$0.00
4/19/1996	PERRYVILLE	MENFRO	11.5	175	F3	0	0	$5,000,000.00	$0.00
4/15/1998	CROSSTOWN	CROSSTOWN	0.2	20	F0	0	0	$0.00	$0.00
3/11/2006	BREWER	BREWER	7	400	F3	2	10	$1,000,000.00	$0.00
7/21/2006	FRIEDENBURG	FRIEDENBURG	0.2	50	F0	0	0	$15,000.00	$0.00
9/22/2006	SILVER LAKE	SILVER LAKE	6	400	F2	0	0	$150,000.00	$0.00
9/22/2006	PERRYVILLE	PERRYVILLE	8	220	F4	0	5	$7,000,000.00	$0.00
5/8/2009	MC BRIDE	MC BRIDE	2.2	50	EF0	0	0	$7,000.00	$0.00
5/25/2011	YOUNT	YOUNT	0.3	60	EF0	0	0	$3,000.00	$0.00
11/17/2013	FROHNA	FROHNA	0.1	50	EF0	0	0	$1,000.00	$0.00
2/28/2017	SILVER LAKE	BELGIQUE	17.39	1100	EF4	1	12	$8,000,000.00	$0.00
10/24/2021	BARKS	BARKS	4.01	880	EF2	0	0	$200,000.00	$0.00
10/24/2021	YOUNT	YOUNT	2.3	25	EF1	0	0	$10,000.00	$0.00
4/30/2022	BREWER	BREWER	0.1	50	EF0	0	0	$30,000.00	$0.00
Total						**3**	**27**	**$21,466,000.00**	**$0.00**

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

Figure 3.23. Perry County Map of Historic Tornado Events



Probability of Future Occurrence

There have been 13 NCEI listed tornadoes in the County since 1993. This equals an annual probability of 45% of a tornado event.

Changing Future Conditions Considerations

Climate change scenarios suggest that tornado events in Missouri, including Perry County, may be influenced by rising temperatures and shifting weather patterns. The 2023 Missouri State Hazard Mitigation Plan notes that while the overall number of tornadoes may not significantly increase, their intensity and frequency could change due to climate-related factors. Warmer air can hold more moisture, potentially leading to more severe thunderstorms that are conducive to tornado formation.

Vulnerability

Vulnerability Overview

Perry County is located in a region of the U.S. with high frequency of dangerous and destructive tornadoes referred to as "Tornado Alley". **Figure 3.24** illustrates this area where dangerous tornadoes historically have occurred. This high frequency leads to an elevated vulnerability to tornadoes for the County, but the rural nature of the County limits the amount of damage done by any single event. Because of this, the 2023 Missouri State Hazard Mitigation Plan rates Perry County with a "Medium Low" tornado vulnerability.

Figure 3.24. Tornado Alley in the U.S.



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

Potential Losses to Existing Development

According to the 2023 Missouri State Hazard Mitigation Plan, Perry County has annualized tornado damages of $1.2 million. This places the county in the top half of the State for annualized losses and indicates a significant amount of potential loss.

Previous and Future Development

Additional development in any jurisdiction will lead to greater exposure of structures to a tornado event. Given the low growth history of the County recently though, increases are expected to be minimal.

Hazard Summary by Jurisdiction

A tornado event is equally likely to happen in any area of the County. With its higher density development though, Perryville is the most exposed jurisdiction.

Problem Statement

Any participant can be affected by a tornado. While the city is the most exposed due to population and development density, the school district is also densely populated during session. The school district has constructed two safe rooms. The city and county have early warning sirens to alert residents of approaching tornadoes. Given the low population density in the county, safe rooms are not typically cost effective, unless developed on a county property in the city.

3.4.11 Wildfire

Hazard Profile

Hazard Description

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

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

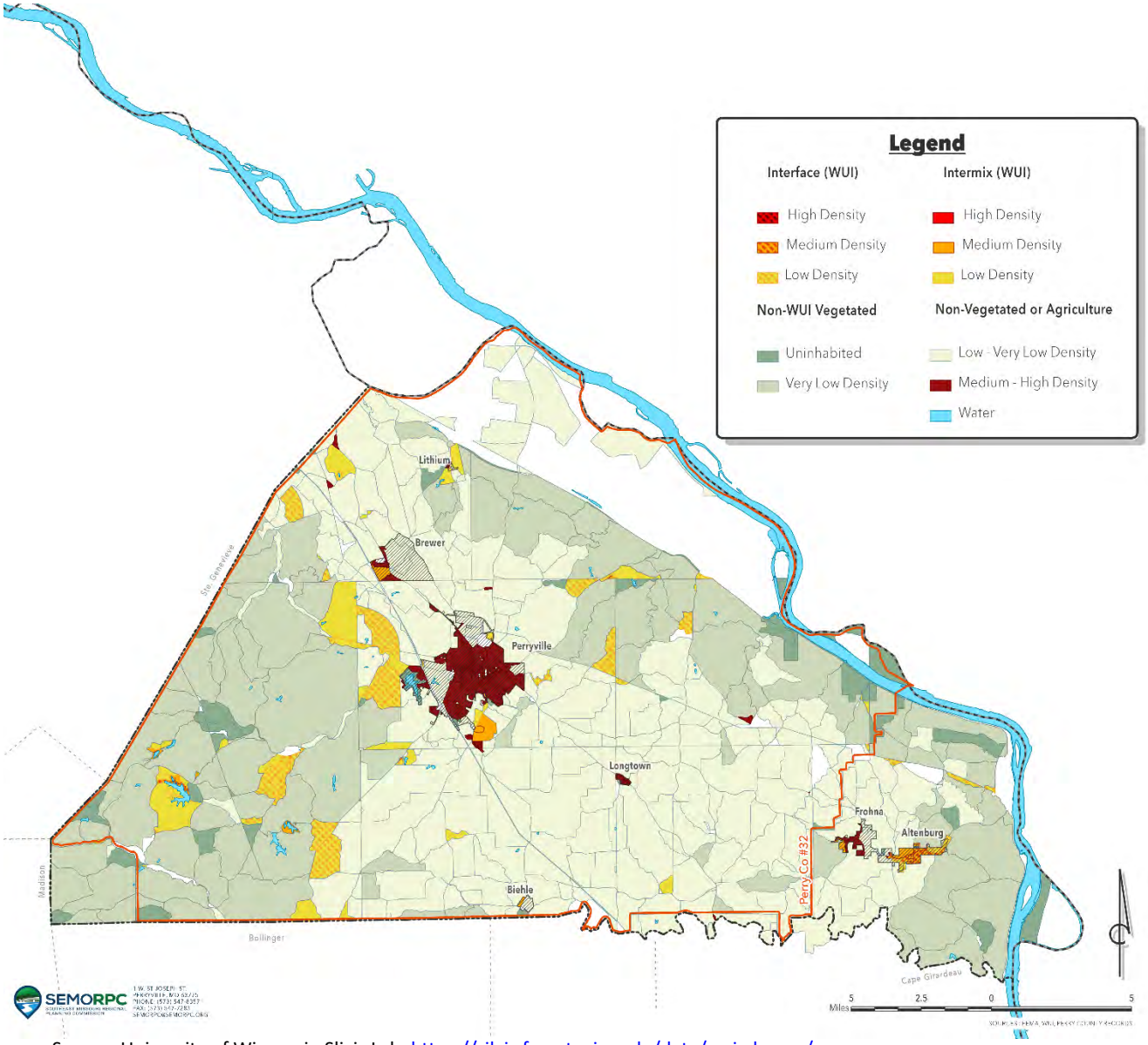
Most Missouri fires occur during the spring season between February and May. The length and severity of wildland fires depend largely on weather conditions. Spring in Missouri is usually characterized by low humidity and high winds. These conditions result in higher fire danger. In addition, due to the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

Geographic Location

The risk of structural fire does not vary widely across the planning area. However, damage due to wildfires are likely to be higher in communities with more wildland-urban interface (WUI) areas. The term refers to the zone of transition between unoccupied land and human development and needs to be defined in the plan. Within the WUI, there are two specific areas identified: 1) Interface and 2) Intermix. The interface areas are those areas that abut wildland vegetation and the Intermix areas are those areas that intermingle with wildland areas.

The map below shows WUI areas in the planning area. Much of the county is very low to no housing density, but pockets of intermix and interface exist. Most notable of these are the lake development areas in the western part of the county where the developments are in a more densely forested area.

Figure 3.25. Wildland-Urban Interface (WUI) Change for Perry County from 1990-2020



Source: University of Wisconsin Slivis Lab, https://silvis.forest.wisc.edu/data/wui-change/

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. Wildfire instances 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 to suppress fires safely.

Often wildfires in Missouri go unnoticed by the 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.

Information on the severity of damage from wildfires in the planning area is not currently available.

Previous Occurrences

No records of wildfires are currently readily available for the County. SEMO RPC will continue to work with local and state agencies to develop reliable data sets for wildfires in the region.

Probability of Future Occurrence

No statistics are currently available on which to estimate the probability of future occurrence. The 2023 Missouri State Hazard Mitigation Viewer indicates the likelihood of 2 annual wildfire events in the county with an average of 32 acres burned. Given this there is a 100% chance that a wildfire could occur in the planning area in a given year, however these are likely to occur in agriculture or undeveloped areas of the county and risk of significant structure damage is low.

Changing Future Conditions Considerations

Climate change scenarios predict an increasing risk of wildfires in Perry County, Missouri. The 2023 Missouri State Hazard Mitigation Plan indicates that rising temperatures, coupled with shifting precipitation patterns, may create conditions conducive to wildfires, particularly during extended dry periods.

Vulnerability

Vulnerability Overview

The 2023 Missouri State Hazard Mitigation Plan indicates Perry County has a “Medium Low” vulnerability to wildfires. The woodland-urban interface map indicates this is likely true for the participating cities as well.

Potential Losses to Existing Development

Data was sought from the National Fire Incident Reporting System, the Department of Conservation, and DNR. However, no data is readily available.

Impact of Previous and Future Development

Future development is likely to occur in areas of Intermix on the WUI map. This will increase the number of structures in the area while also reducing the amount of vegetation to serve as fuel. These two factors are expected to balance one another, leading to no significant impact from future development.

Hazard Summary by Jurisdiction

There is little "Intermix" area in the county, with much of it located away from Perryville. The County certainly has more forest cover than the cities, but the lower population density minimizes the impacts of wildfire threats to human life and structures in the county.

Problem Statement

A small percentage of Perry County parcels are located within the identified WUI area. A lack of historical data makes it difficult to judge the future impact events such as these may have. Anecdotal evidence suggests that past wildfire events have been small in scale and primarily in crops or undeveloped lands with no damage to structures and contained quickly. However, any wildfire does pose the threat to grow quickly and impact a much larger area if not addressed quickly. Local fire departments are equipped and trained to handle these events.

4 MITIGATION STRATEGY 4.1

4.1 Goals 4.1

4.2 Identification and Analysis of Mitigation Actions 4.2

4.3 Implementation of Mitigation Actions 4.3

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 a review of general goal statements to guide the jurisdictions in lessening disaster impacts as well as specific mitigation actions to directly reduce vulnerability to hazards and losses. The following definitions are taken from FEMA's *Local 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

This planning effort serves as an update to Perry County's existing hazard mitigation plan, which was approved by FEMA in 2020. As part of the update process, the Mitigation Planning Committee (MPC) conducted a thorough review of the goals from the previous Hazard Mitigation Plan (HMP) to assess whether they remained valid, feasible, practical, and applicable to the current hazard landscape.

During the second MPC meeting, a discussion session was held to evaluate and potentially update the existing plan goals. To ensure that the updated goals were comprehensive and aligned with broader mitigation efforts, the 2023 State Hazard Mitigation Plan goals were reviewed. SEMO RPC also shared common goals from other county HMPs for consideration. Although various alternative goals were presented, the MPC ultimately agreed that the goals from the 2020 plan still best represented the group's priorities and accurately reflected current conditions.

After a thorough discussion, the MPC decided that the 2020 goals were still valid and should remain unchanged in the 2025 plan update. These goals are as follows:

1. **Protect the health, safety, and welfare of residents and students.**
   This goal emphasizes the ongoing commitment to safeguarding lives and promoting community well-being during hazardous events.

2. **Ensure the operation of critical facilities and services.**
   Maintaining the functionality of essential services and infrastructure, such as hospitals, schools, utilities, and emergency services, remains a high priority for the county.

3. **Protect public and private property.**
   The goal continues to focus on reducing damage to homes, businesses, and public assets through mitigation strategies that address key hazards such as flooding, severe storms, and wildfire risks.

4. **Enhance informed decision-making of mitigation actions.**
   This goal underscores the importance of using data-driven approaches and lessons learned from previous disasters to improve mitigation strategies and increase community resilience.

These goals remain integral to Perry County's long-term approach to hazard mitigation and align with state-level priorities, ensuring that local and state efforts are coordinated in reducing risks and vulnerabilities across the county.

4.2 Identification and Analysis of Mitigation Actions

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 the update of the mitigation strategy. For a comprehensive range of mitigation actions to consider), 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 B 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.

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

Table 4.1. Action Status Summary

Jurisdiction	Completed Actions	Continuing Actions (ongoing or modify)	Deleted Actions
Perry County	0	10	0
Perryville	1	10	0
Perry Co. School District No. 32	0	5	0
Bois Brule Levee Dist.	0	1	0

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)
Construct Emergency Sirens throughout City of Perryville	03/01/2021; $500,000; General Revenue
Deleted Actions	**Reason for Deletion**

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

4.3 Implementation of Mitigation Actions

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[7(a)]. During the prioritization process, the jurisdictions used worksheets to assign scores. The worksheets posed questions based on the STAPLEE elements as well as the potential mitigation effectiveness of each action. Scores were based on the responses to the questions as follows:

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

The following questions were asked for each proposed action.

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

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

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

Figure 4.1. Blank STAPLEE Worksheet

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

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

Completed by
(Name, Title, Phone Number) _____

Figure 4.2. Blank Action Worksheet

ACTION WORKSHEET

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

Table 4.3. Mitigation Action Matrix

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
	Structure and Infrastructure Projects							
1.1	Construct Safe Room	Perry County	Medium	1	Tornado	✓		
1.2	Construct Emergency Warning Sirens	Perry County	Medium	1, 2, 3	Tornado	✓	✓	
2.1	Emergency Generators	Perry County	Medium	1, 2	Multi			
2.2	Low Water Crossing	Perry County	Medium	1, 2, 3, 4	Flood	✓	✓	✓
2.3	Emergency Generators	Perryville	High	1, 2	Multi			
2.4	Stormwater System Improvements	Perryville	Medium	1, 2, 3, 4	Flood	✓	✓	
1.3	Construct Safe Room	Perryville	Medium	1	Tornado		✓	
1.1	Maintain and Inspect Levee	Bois Brule	High	1, 3	Flood	✓		
1.1	Construct Safe Room	PCSD 32	Medium	1, 2	Tornado	✓		
2.1	Emergency Generators	PCSD 32	Medium	1, 2	Multi			
2.2	Bury Power Lines	PCSD 32	Medium	1, 2, 4	Multi	✓		
	Natural Systems Protection							
3.2	Water Conservation	Perry County	Low	1	Drought	✓	✓	
3.3	Dam EOP	Perry County	High	1	Dam Failure		✓	
3.4	High- Risk Development Management	Perry County	High	1	Sinkholes		✓	
3.5	Wildfire Annex	Perry County	High	2, 4	Wildfire	✓	✓	
1.4	Wildland Management	Perryville	High	1	Wildfire	✓	✓	
2.1	Emergency Equipment	Perryville	High	2, 4	Multi	✓	✓	
2.2	Radio Acquisition	Perryville	High	2, 4	Multi			
2.5	Water Conservation	Perryville	High	1	Drought	✓	✓	
2.6	Sinkhole Development	Perryville	High	1	Sinkholes	✓	✓	
1.1	Weather Instrumentation	Perryville	High	1, 2, 4	Extreme Temperatures	✓	✓	
2.3	Weather Alert	PCSD 32	Medium	1, 2, 4	Multi			
2.4	Radio/Repeater Upgrade	PCSD 32	Medium	1, 2, 4	Multi			
	Planning and Regulation							
1.3	NFIP Participation	Perry County	High	3, 4	Flood			✓
3.1	Contract with NIXLE	Perry County	High	2, 4	Multi	✓	✓	
1.2	NFIP Participation	Perryville	Medium	3, 4	Flood			✓

5 PLAN MAINTENANCE PROCESS

5 PLAN MAINTENANCE PROCESS 5.1

5.1 Monitoring, Evaluating, and Updating the Plan 5.1

5.1.1 Responsibility for Plan Maintenance 5.1

5.1.2 Plan Maintenance Schedule 5.3

5.1.3 Plan Maintenance Process 5.3

5.2 Incorporation into Existing Planning Mechanisms 5.4

5.3 Continued Public Involvement 5.6

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

5.1.1 Responsibility for Plan Maintenance

The role of the Mitigation Planning Committee (MPC) in the maintenance of the Hazard Mitigation Plan (HMP) is essential for ensuring its ongoing effectiveness and relevance to the community. Regular annual meetings, along with sessions held after significant disaster events, are crucial for evaluating how well the plan has been implemented. These gatherings allow for the assessment of progress on mitigation actions and facilitate necessary updates based on changing risks and community needs.

Effective communication is a cornerstone of the MPC's function. By serving as a forum for hazard mitigation issues, the committee encourages collaboration among jurisdictions, including schools and special districts. This collaborative approach helps disseminate important information regarding hazard mitigation strategies and activities to all stakeholders, fostering a sense of involvement and engagement in the mitigation process.

Prioritizing high-priority actions, particularly those that are low-cost or no-cost, is a critical focus of the MPC. Additionally, the committee actively seeks out funding opportunities to support the implementation of other recommended actions that may currently lack financial backing. This proactive stance ensures that the community remains committed to enhancing its hazard mitigation efforts.

Moreover, the MPC emphasizes the integration of mitigation strategies into broader community decision-making processes. By identifying opportunities where the plan’s recommendations align with other community goals and activities, the committee helps to reduce vulnerabilities and enhance resilience.

Finally, the MPC takes on the responsibility of reporting progress and recommending changes to the Perry County Commission and governing bodies of participating jurisdictions. Engaging the public is also a key aspect of its mission, as the committee seeks to inform the community about the plan's progress and gather input on hazard mitigation efforts, thereby fostering a collaborative environment that prioritizes risk reduction and resilience.

5.1.2 Plan Maintenance Schedule

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

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

5.1.3 Plan Maintenance Process

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

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

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

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

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

- Each proposed action in the plan identified an individual, office, or agency responsible for action implementation. This entity will track and report on an annual basis to the jurisdictional MPC 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.

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 deems appropriate and necessary. Changes will be approved by the Perry County Commission and the governing boards of the other participating jurisdictions.

5.2 Incorporation into Existing 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 Perry 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;
- Perry 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 Perry County Emergency Management Director will provide the updated Mitigation Strategy with current status of each mitigation action to the County Commission as well as all Mayors, City Clerks, and School District Superintendents. The Emergency Management Director will request that the mitigation strategy be incorporated, where appropriate, in other planning mechanisms.

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

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

Jurisdiction	Planning Mechanisms	Integration Process for Previous Plan	Integration Process for Current Plan
Perry County	Capital Improvement Program	County officials identified actions relating to infrastructure that were included in annual update to CIP	County officials identified new actions or ongoing actions relating to infrastructure that will be included in annual update to CIP
Perry County	County Emergency Operations Plan	County officials identified actions relating to emergency operations that were included in the update to the EOP	County officials identified new or ongoing actions relating to emergency operations that will be included in the next update to the EOP
Perryville	Capital Improvement Program	City officials identified actions relating to infrastructure that were included in annual update to CIP	City officials identified new actions or ongoing actions relating to infrastructure that will be included in annual update to CIP
Perryville	Emergency Operations Plan	City officials identified actions relating to emergency operations that were included in the update to the EOP	City officials identified new or ongoing actions relating to emergency operations that will be included in the next EOP.
Perryville	Watershed Plan	Plan was not developed during previous HMP process	City officials identified new or ongoing actions relating to flooding and sinkholes that will be included in the next watershed plan.
Perry County School Dist. No. 32	Continuous School Improvement Plan	School officials identified actions relating to emergency operations that were included in the update to the CSIP	School officials identified new or ongoing actions relating to emergency operations that will be included in the next CSIP.
Perry Co School Dist. No. 32	Capital Improvement Program	School representatives identified actions relating to infrastructure that were included in annual update to CIP	School representatives identified new actions or ongoing actions relating to infrastructure that will be included in annual update to CIP
Perry Co School Dist No. 32	School Emergency Plan	School representatives identified actions relating to emergency procedures that were included in previous update to Emergency Plan	School representatives identified new actions or ongoing actions relating to emergency procedures that will be included in the next update to the Emergency Plan

5.3 Continued Public Involvement

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 Perry County website following each annual review of the mitigation plan and will solicit comments from the public based on the annual review. When the MPC reconvenes for the five-year update, it will coordinate with all stakeholders participating in the planning process. Included in this group will be those who joined the MPC after the initial effort, to update and revise the plan. Public notice will be posted, and public participation will be actively solicited, at a minimum, through available website postings and press releases to local media outlets, primarily newspapers.

Appendix A *Data Questionnarie*

1.1 Perry County..... 1.1

1.2 City of Perryville..... 1.1

1.3 Bois Brule Levee and Drainage District..... 1.2

1.4 Perryville School District No.32..... 1.3

Perry County
CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan. Although some of this information may have been captured in your previous mitigation plan, it is important to ensure this information is current in the plan update.

Please indicate which of the following your jurisdiction has in place. For elements that do not pertain to your type of public entity, please indicate with "N/A". If applicable, please provide a completion date for the element. If your jurisdiction does not have a particular element, and a higher level of government has the authority pertaining to your jurisdiction, please indicate this in the comments column. If your jurisdiction has any of the **underlined and bolded** elements, please provide a copy of the document to the contact listed on the front and indicate method in the comments column (i.e. available on the web, will email or mail).

Element	Yes, No, N/A	Comments
Planning Capabilities		
Comprehensive Plan	Date:	
Builder's Plan	Date: NO	
Capital Improvement Plan	Date: YES	
City Emergency Operations Plan	Date: N/A	
County Emergency Operations Plan	Date: 12/2023	
Local Recovery Plan	Date: NO	
County Recovery Plan	Date: NO	
City Mitigation Plan	Date: N/A	
County Mitigation Plan	Date: 2019	
Debris Management Plan	Date: NO	
Economic Development Plan	Date:	
Transportation Plan	Date: 2018	
Land-use Plan	Date: NO	
Flood Mitigation Assistance (FMA) Plan	Date: NO	
Watershed Plan	Date:	
Firewise or other fire mitigation plan	Date: NO	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date: NO	
Policies/Ordinance		

Element	Yes, No, N/A	Comments
Zoning Ordinance	NO	
Building Code	Version:2016	
Floodplain Ordinance	Date: 2012	
Subdivision Ordinance	NO	
Tree Trimming Ordinance	NO	
Nuisance Ordinance	NO	
Storm Water Ordinance	NO	
Drainage Ordinance	NO	
Site Plan Review Requirements	NO	
Historic Preservation Ordinance	NO	
Landscape Ordinance	NO	
Program		
Zoning/Land Use Restrictions	NO	
Codes Building Site/Design	NO	
Hazard Awareness Program	NO	
National Flood Insurance Program	YES	
Community Rating System (CRS) program under the National Flood Insurance Program (NFIP)?	NONE	
National Weather Service (NWS) Storm Ready Certification	NO	
Firewise Community Certification	NO	
Building Code Effectiveness Grading (BCEGs)	NO	
ISO Fire Rating	Rating:8X	
Economic Development Program	YES	
Land Use Program	NO	
Public Education/Awareness	YES	
Property Acquisition	YES	FEMA Buy Out Program
Planning/Zoning Boards	NO	
Stream Maintenance Program	NO	
Tree Trimming Program	NO	
Engineering Studies for Streams (Local/County/Regional)	NO	
Mutual Aid Agreements	YES	All adjacent counties
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	N/A	
Hazard Analysis/Risk Assessment (County)	NO	
Evacuation Route Map	NO	
Critical Facilities Inventory	NO	
Vulnerable Population Inventory	NO	
Land Use Map	NO	

Staff/Department		Full Time or Part Time?

Element	Yes, No, N/A	Comments
Building Code Official	NO	
Building Inspector	NO	
Mapping Specialist (GIS)	YES	E911 Office
Engineer	NO	
Development Planner	NO	
Public Works Official	YES	Road and Bridge
Emergency Management Coordinator	YES	E911 Office
NFIP Floodplain Administrator	YES	E911 Office
Bomb and/or Arson Squad	NO	
Emergency Response Team	NO	
Hazardous Materials Expert	YES	Perry County Fire Department
Local Emergency Planning Committee	NO	
County Emergency Management Commission	NO	
Sanitation Department	NO	
Transportation Department	NO	
Economic Development Department	YES	
Housing Department	NO	
Historic Preservation		
Non-Governmental Organizations (NGOs)	Is there a local chapter? Yes or No	
American Red Cross	YES	
Salvation Army	YES	
Veterans Groups	YES	
Local Environmental Organization	NO	
Homeowner Associations	YES	
Neighborhood Associations	NO	
Chamber of Commerce	YES	
Community Organizations (Lions, Kiwanis, etc.	YES	
Financial Resources	Is your jurisdiction able to? Yes or No	
Apply for Community Development Block Grants	YES	
Fund projects thru Capital Improvements funding	YES	
Authority to levy taxes for specific purposes	YES	
Fees for water, sewer, gas, or electric services	YES	
Impact fees for new development	NO	
Incur debt through general obligation bonds	YES	
Incur debt through special tax bonds	YES	
Incur debt through private activities	NO	
Withhold spending in hazard prone areas	YES	

For plan updates, the plan maintenance process outlined in your previous plan requires all participating jurisdictions to incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate. A key element of effective implementation of mitigation is for the mitigation plan to be incorporated in existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	NO
Builder's Plan	NO
Capital Improvement Plan	YES
Local Recovery Plan	NO
County Recovery Plan	NO
Debris Management Plan	NO
Economic Development Plan	YES
Transportation Plan	NO
Land-use Plan	NO
Watershed Plan	NO
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	NO

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)
3 County Commissioners with one being the Presiding Commissioner.

2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.
Fire safety conducted in schools by Fire Associations. Earthquake shake out is done in all schools annually.

3. List any other past or ongoing projects or programs designed to reduce disaster losses. These may include projects to protect critical facilities. Be sure to include pending or approved projects submitted for FEMA mitigation grants.
None

4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers.
Extreme cold/hot weather and power outages causing mass sheltering.

5. How many outdoor warning sirens are in your community?
None in the county.
How are they activated (indicate responsible department/personnel)?
N/A
6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe them.
Nixle

7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?
None in the county. One in Perryville and one in Altenburg
Please provide address locations:

8. List residential, commercial and industrial development in your jurisdiction since last plan update.
None

9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas.

None. Developing in a floodplain is highly discouraged in the county.

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.
Joint Justice Center in Perryville.

11. Please list major employers in your jurisdiction with an estimated number of employees.

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.

The county is in the NFIP. It is enforced through County ordinances and through building permits.

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 hazard specific column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Riverine Flooding (Major & Flash)-**RF**	Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**	Hazardous Materials Release (fixed facility, accidents)-**HM**
Dam Failure-**DF**	Droughts-**D**	Mass Transportation Accident-**MTA**
Levee Failure-**LF**	Extreme Temperatures-**ET**	Nuclear Power Plants (emergencies & accidents)-**NPP**
Earthquake-**EQ**	Fires (structural, urban, and wild)-**F**	Public Health Emergencies/Environmental Issues-**PH**
Land Subsidence / Sinkholes-**LSS**	Attack (nuclear, conventional, chemical, and biological)-**A**	Special Events-**SE**
Severe Thunderstorm (incl. winds, hail, lightning)-**ST**	Civil Disorder-**CD**	Terrorism-**TX**
Tornadoes-**T**	Cyber Disruption-**CyD**	Utilities (interruptions & system failures)-**U**

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.

Critical Facilities

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers						
Perry County Sheriff's Office	710 S Kingshighway St, Perryville, MO 63775					EQ/ST/T/F/A/CD/Cyd/PH/TX/U
Mercy Hospital	212 Hospital Ln #102, Perryville, MO 63775					EQ/ST/T/F/A/CD/Cyd/PH/TX/U
Biehle Fire Association	9169 Hwy B, Perryville, MO 63775					EQ/ST/T/F/A/CD/Cyd/PH/TX/U
East Perry Fire Association	6298 Main Street, Frohna, MO. 63748 and 17751 State Highway C, Perryville, MO. 63775					EQ/ST/T/F/A/CD/Cyd/PH/TX/U
Altenburg Fire Association	8904 Main St Altenburg, MO. 63732					EQ/ST/T/F/A/CD/Cyd/PH/TX/U
Perry County Rural Fire Association	3255 PCR Perryville, MO 63775					EQ/ST/T/F/A/CD/Cyd/PH/TX/U
Perry County EOC	406 N Spring Street Perryville, MO 63775					EQ/ST/T/F/A/CD/Cyd/PH/TX/U

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
High Potential Loss Facilities such as power plants, dams/levees, military installations, hazardous materials sites, shelters, day care centers, nursing homes, main government buildings (Do not include schools—they will be reported by the school districts)						
Port Perry Dam	S08, T34, N, R09E	900 ft				RF/ DF/ DQ
Perry County Community Lake Dam	LG0856, T35, N, R19E	900 ft				RF/ DF/ DQ
Lake Kah-Tan-Da Dam	S13, T34, N, R093	850 ft				RF/ DF/ DQ
Kool Breeze Ridge Dam	S07, T35, N, R10E	465 ft				RF/ DF/ DQ
Hickory Hollow Lake Dam	S25, T35, N, R09E	760 ft				RF/ DF/ DQ
Zoellner Dam	S2, T34, N, R09E					RF/ DF/ DQ
Perry County Administration	321 N. Main Street Perryville, MO 63775					EQ/ ST/ T/ F/ HM/ EQ/ ST/ F/ A/ CD/ Cyd/ TX/ U
Perry County Health Department	406 N Spring St # 1, Perryville, MO 63775					EQ/ ST/ T/ F/ HM/ EQ/ ST/ F/ A/ CD/ Cyd/ TX/ U/ PH
Transportation and Lifelines such as highways, bridges, and tunnels; railroads and facilities, bus facilities, airports, water treatment facilities, natural gas facilities and pipelines, oil facilities, oil facilities and pipelines, communications facilities						
Chester Bridge	Mississippi River, Perryville, MO 63775	2,826 ft				RF/ EQ/ T/ MTA/ TX
Grand Tower Pipeline Bridge						RF/ EQ/ T/ MTA/ TX

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
BNSF Railroad	North to Southeast County					RF/ LE/ EQ/ SWN/ HM/ TX
Interstate 55	North to South County					RF/ EQ/ SWN/ HM/ TX
US Highway 61	North to South County					RF/ EQ/ SWN/ HM/ TX
Missouri State Highway 51	North to South County					RF/ EQ/ SWN/ HM/ TX
Perry County Water District 1	1505 N Kingshighway St Perryville, MO 63775					EQ/ ST/ T/ F/ HM/ EQ/ ST/ F/ A/ CD/ Cyd/ TX/ U
Perry County Water District 2	R4FV+H2G, Perryville, MO 63775					EQ/ ST/ T/ F/ HM/ EQ/ ST/ F/ A/ CD/ Cyd/ TX/ U
PWSD #1 of Cape Girardeau and Perry Counties	6386 Hwy 61, Jackson, Missouri 63755					EQ/ ST/ T/ F/ HM/ EQ/ ST/ F/ A/ CD/ Cyd/ TX/ U

***If replacement cost data is not available, use the best available data (assessed valuation or other method for estimating cost) and explain any data deficiencies.**

Economic Assets (Major Employers, etc)

Asset	Address	Product/ Service	Value (if known)	Number of Employees	Hazards
Gilster Mary Lee (popcorn plant)	8366 MO-51, Perryville, MO 63775	Popcorn		400	EQ/ST/T/F/HM
Buchheit Corporation	33 Pcr 540, Perryville, MO 63775	Agriculture Products		148	EQ/ST/T/F/HM
East Perry Lumber Company	7029 Main St, Frohna, MO 63748	Hardwood Products		85	EQ/ST/T/F/HM

HISTORIC HAZARD EVENTS

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	Perry County
Type of event	Flooding
Nature and magnitude of event	Major Flooding
Location	North Perry County and Levee District
Date of event	Apr 29, 2019 - Jul 6, 2019
Injuries	None
Deaths	None
Property damage	None
Infrastructure damage	Yes
Crop damage	Yes
Business/economic impacts	Yes
Road/school/other closures	Yes
Other damage	None
Insured losses	None
Federal/state disaster relief funding	PA
Opinion on likelihood of occurring again	Moderate
Source of information	SEMA/FEMA
Comments	**DR-4451-MO.** Flooding of farmland. Closure of Chester Bridge. Continuous pumping operations.

Jurisdiction	Perry County
Type of event	Pandemic
Nature and magnitude of event	COVID outbreak
Location	Entire county
Date of event	January 20, 2020 - May 11, 2023
Injuries	None
Deaths	None
Property damage	None
Infrastructure damage	None
Crop damage	None
Business/economic impacts	Yes
Road/school/other closures	Yes
Other damage	None
Insured losses	None
Federal/state disaster relief funding	PA
Opinion on likelihood of occurring again	Low
Source of information	SEMA/FEMA
Comments	**DR-4490-MO** COVID outbreak. Funding for protective personal equipment, disinfectant, hand sanitizer, etc.

Jurisdiction	Perry County
Type of event	Pandemic
Nature and magnitude of event	COVID outbreak
Location	Entire county
Date of event	January 20, 2020 - May 11, 2023
Injuries	None
Deaths	None
Property damage	None
Infrastructure damage	None
Crop damage	None
Business/economic impacts	Yes
Road/school/other closures	Yes
Other damage	None
Insured losses	None
Federal/state disaster relief funding	PA
Opinion on likelihood of occurring again	Low
Source of information	SEMA/FEMA
Comments	**DR-4490-MO** COVID outbreak. Funding for protective personal equipment, disinfectant, hand sanitizer, etc.

City of Perryville
CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan. Although some of this information may have been captured in your previous mitigation plan, it is important to ensure this information is current in the plan update.

Please indicate which of the following your jurisdiction has in place. For elements that do not pertain to your type of public entity, please indicate with "N/A". If applicable, please provide a completion date for the element. If your jurisdiction does not have a particular element, and a higher level of government has the authority pertaining to your jurisdiction, please indicate this in the comments column. If your jurisdiction has any of the **underlined and bolded** elements, please provide a copy of the document to the contact listed on the front and indicate method in the comments column (i.e. available on the web, will email or mail).

Element	Yes, No, N/A	Comments
Planning Capabilities		
Comprehensive Plan	Date: 2024	
Builder's Plan	Date: No	
Capital Improvement Plan	Date: 2023	
City Emergency Operations Plan	Date: 2015	
County Emergency Operations Plan	Date:	
Local Recovery Plan	Date: No	
County Recovery Plan	Date: NA	
City Mitigation Plan	Date: 2019	
County Mitigation Plan	Date: 2019	
Debris Management Plan	Date: No	
Economic Development Plan	Date:	
Transportation Plan	Date: 2013	
Land-use Plan	Date: 2011	
Flood Mitigation Assistance (FMA) Plan	Date: No	
Watershed Plan	Date: 2023	
Firewise or other fire mitigation plan	Date: No	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date: No	
Policies/Ordinance		

Element	Yes, No, N/A	Comments
Zoning Ordinance	Yes	
Building Code	Version: IBC 2021	
Floodplain Ordinance	Date: 2023	
Subdivision Ordinance	Yes	
Tree Trimming Ordinance	No	
Nuisance Ordinance	Yes	
Storm Water Ordinance	Yes	
Drainage Ordinance	Yes	
Site Plan Review Requirements	Yes	
Historic Preservation Ordinance	No	
Landscape Ordinance	No	
Program		
Zoning/Land Use Restrictions	Yes	
Codes Building Site/Design	Yes	
Hazard Awareness Program	No	
National Flood Insurance Program	Yes	
Community Rating System (CRS) program under the National Flood Insurance Program (NFIP)?	If so, what is your current level rating? No	
National Weather Service (NWS) Storm Ready Certification	No	
Firewise Community Certification	No	
Building Code Effectiveness Grading (BCEGs)	Yes	
ISO Fire Rating	Rating: 4	
Economic Development Program	Yes	
Land Use Program	Yes	
Public Education/Awareness	Yes	Fire and CNG
Property Acquisition	Yes	
Planning/Zoning Boards	Yes	
Stream Maintenance Program	No	
Tree Trimming Program	No	
Engineering Studies for Streams (Local/County/Regional)	Yes	
Mutual Aid Agreements	Yes	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	No	
Hazard Analysis/Risk Assessment (County)	No	
Evacuation Route Map	No	
Critical Facilities Inventory	Yes	
Vulnerable Population Inventory	No	
Land Use Map	Yes	

Staff/Department		Full Time or Part Time?

Element	Yes, No, N/A	Comments
Building Code Official	Yes	
Building Inspector	Yes	
Mapping Specialist (GIS)	Yes	
Engineer	Yes	
Development Planner	No	
Public Works Official	Yes	
Emergency Management Coordinator	Yes	
NFIP Floodplain Administrator	Yes	
Bomb and/or Arson Squad	No	
Emergency Response Team	No	
Hazardous Materials Expert	No	
Local Emergency Planning Committee	Yes	SEMO LEPD
County Emergency Management Commission	NA	
Sanitation Department	Yes	
Transportation Department	No	
Economic Development Department	Yes	
Housing Department	No	
Historic Preservation	No	
Non-Governmental Organizations (NGOs)	Is there a local chapter? Yes or No	
American Red Cross	No	
Salvation Army	No	
Veterans Groups	Yes	
Local Environmental Organization	No	
Homeowner Associations	No	
Neighborhood Associations	No	
Chamber of Commerce	Yes	
Community Organizations (Lions, Kiwanis, etc.	Yes	
Financial Resources	Is your jurisdiction able to? Yes or No	
Apply for Community Development Block Grants	Yes	
Fund projects thru Capital Improvements funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	Water, Sewer, Natural Gas
Impact fees for new development	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Incur debt through private activities	No	
Withhold spending in hazard prone areas	Yes	

For plan updates, the plan maintenance process outlined in your previous plan requires all participating jurisdictions to incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate. A key element of effective implementation of mitigation is for the mitigation plan to be incorporated in existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	yes
Builder's Plan	no
Capital Improvement Plan	no
Local Recovery Plan	no
County Recovery Plan	no
Debris Management Plan	n/a
Economic Development Plan	yes
Transportation Plan	yes
Land-use Plan	yes
Watershed Plan	yes
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	yes

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members) Mayor/City Council, 1 Mayor and 6 Council 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. FIRE: Yearly fire prevention presentations at schools, as well as yearly open house events. CNG: Customer packets and LED sign boards.

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. Addition of 3 early warning sirens. Automation of warning sirens and redundancy of ways to activate sirens.

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. Transportation of special needs persons and emergency sheltering for those individuals.

5. How many outdoor warning sirens are in your community? 7

How are they activated (indicate responsible department/personnel)? Police/Fire Communications, EMD mobile radio. Soon an automated system to be installed.

6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe them. Social media and Nixel alerts.

7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards? Yes, yes.

Please provide address locations: 324 College St.

8. List residential, commercial and industrial development in your jurisdiction since last plan update. All continue to grow rapidly every year. Many new housing units (single and multi-family) have been built as well as several new businesses coming to the community.

9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas. None planned at this time.

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. Perry County Joint Justice Center, currently under construction with completion by end of 2024.

11. Please list major employers in your jurisdiction with an estimated number of employees. TG Missouri, Gilster Mary Lee, Mercy Perry Hospital.

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. The City of Perryville has a flood plain ordinance and follows the NFIP for guidance through the Flood Plain Administrator.

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 hazard specific column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Riverine Flooding (Major & Flash)-**RF**	Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**	Hazardous Materials Release (fixed facility, accidents)-**HM**
Dam Failure-**DF**	Droughts-**D**	Mass Transportation Accident-**MTA**
Levee Failure-**LF**	Extreme Temperatures-**ET**	Nuclear Power Plants (emergencies & accidents)-**NPP**
Earthquake-**EQ**	Fires (structural, urban, and wild)-**F**	Public Health Emergencies/Environmental Issues-**PH**
Land Subsidence / Sinkholes-**LSS**	Attack (nuclear, conventional, chemical, and biological)-**A**	Special Events-**SE**
Severe Thunderstorm (incl. winds, hail, lightning)-**ST**	Civil Disorder-**CD**	Terrorism-**TX**
Tornadoes-**T**	Cyber Disruption-**CyD**	Utilities (interruptions & system failures)-**U**

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.

Critical Facilities

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers						
Perryville Police Department	120 N. Jackson St. Perryville Mo. 63775		3,000,000	360,000		EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Perryville Fire Dept. Station 1	301 W. Ste. Marie St. Perryville Mo. 63775		1,300,000	2,600,000		EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Perryville Fire Dept. Station 2	650 N. Perryville Blvd. Perryville Mo. 63775		2,700,000	1,800,000		EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Perryville Fire Dept. Station 3	400 Delaney St. Perryville Mo. 63775		1,200,000	1,300,00		EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Emergency Services Warehouse	205 N. West St. Perryville Mo. 63775		85,000	94,000		EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Mercy Perry Hospital	434 N. West St. Perryville Mo. 63775					EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Mercy Perry Ambulance	201 N. Kingshighway Perryville Mo. 63775					EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Perry County Sheriff Dept.	710 S. Kingshighway Perryville Mo. 63775					EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Perry County Joint Justice Center	400 W. St. Joseph St. Perryville Mo. 63775					EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
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)						
Independence Care Center	800 S. Kingshighway Perryville Mo. 63775					EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Estates of Perryville	430 N. West St. Perryville Mo. 63775					EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Perryville City Hall	215 N. West St. Perryville Mo. 63775					EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Perryville Public Works	304 S. Kingshighway Perryville Mo. 63775		1,500,000	3,600,000		RF, EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Perry County Court House	15 W. Ste. Marie St. Perryville Mo. 63775					EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Perry County Administrative Office	321 N. Main St. Perryville Mo. 63775					EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Transportation and Lifelines such as highways, bridges, and tunnels; railroads and facilities, bus facilities, airports, water treatment facilities, natural gas facilities and pipelines, oil facilities, oil facilities and pipelines, communications facilities						
Perryville Water Treatment Plant	3698 Hwy T Perryville Mo. 63775		3,000,000	2,000,000		RF, EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Drinking Water Well #1	418 Chloe St. Perryville Mo. 63775		65,000	100,000		EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Drinking Water Well #2	500 Northdale Dr. Perryville Mo. 63775		75,000	100,000		EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Drinking Water Well #3	Industrial Dr. Perryville Mo. 63775		32,000	100,000		EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Drinking Water Well #4	3698 Hwy T Perryville Mo. 63775		116,000	434,000		RF, EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Drinking Water Well #5	3698 Hwy T Perryville Mo. 63775		116,000	434,000		EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Water Tower #1	390 S. French Ln. Perryville Mo. 63775		1,200,000	250,000		EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Water Tower #2	2001 N. Perryville Blvd. Perryville Mo. 63775		1,000,000	48,000	500,000 Gal.	EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Water Tower #3	Industrial Dr. Perryville Mo. 63775		1,200,000	100,000		EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Water Tower #4	Liberty St. Perryville Mo. 63775		1,500,000		500,000 Gal.	EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Water Tower #5	National Guard Dr. Perryville Mo. 63775		1,500,000		500,000 Gal.	EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Perryville Wastewater Treatment Plant	1131 Hidden Valley Ln. Perryville Mo. 63775		18,800,000	9,900,000		RF, EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Perryville Natural Gas Take Point	1700 Hwy 61 Oak Ridge Mo. 63769		103,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Airport Natural Gas Pressure Reducing Station	1390 Hwy H Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Alama Drive Natural Gas Pressure Reducing Station	1207 S. Perryville Blvd. Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Big Spring Natural Gas Pressure Reducing Station	1307 Big Spring Blvd. Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
City Natural Gas Gate	1408 S. Kingshighway Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Industrial Park/North District Natural Gas Pressure Reducing Station	627 Industrial Dr. Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Industrial Park #2 Natural Gas Pressure Reducing Station	2009 Walters Ln. Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Industrial Park #3 Natural Gas Pressure Reducing Station	1001 Industrial Dr. Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Industrial Park #4 Natural Gas Pressure Reducing Station	900 Toohey Dr. Perryville Mo. 63775		22,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Lake Drive Natural Gas Pressure Reducing Station	1500 Lake Dr. Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Liberty St. Natural Gas Pressure Reducing Station	1419 Liberty St. Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Longtown Natural Gas Pressure Reducing Station	6315 S Hwy 61 Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Ridge Drive Natural Gas Pressure Reducing Station	810 Ridge Dr. Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Schindler Natural Gas Pressure Reducing Station	803 Schindler Rd. Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
South District Natural Gas Pressure Reducing Station	112 Wichern Rd. Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
South Loop Natural Gas Pressure Reducing Station	895 S. Kingshighway Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Town Border Natural Gas Pressure Reducing Station	895 S. Kingshighway Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Industrial High-Capacity Natural Gas Farm Tap	1021 Industrial Dr. Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
McBride High-Capacity Natural Gas Farm Tap	8366 N Hwy 51 Perryville Mo. 63775		51,500			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Perryville CNG fill station	304 S. Kingshighway Perryville Mo. 63775					EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Perryville Municipal Airport	1856 Hwy H Perryville Mo. 63775					LF, EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Parkview Liftstation	904 N. Parkview. Dr. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Quarry Liftstation	275 Rock Quarry Ln. Perryville Mo. 63775		72,000			LF, EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Hilltop Liftstation	990 S. Kingshighway Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Mecker Liftstation	1408 Allens Landing Rd. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Industrial Liftstation	2618 Walters Ln. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Miles Liftstation	1109 N Main St. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Moll Liftstation	2026 Moll Ave. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Oak Liftstation	2669 N. Kingshighway Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Giesler Liftstation	25 Giesler Way Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Polo Run Liftstation	116 Polo Run Dr. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
KOA Liftstation	450 Lake Dr. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Shell Liftstation	1608 Constitution St. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Welty Liftstation	1519 Mid America St. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Forest Liftstation	840 Forest Ave. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Big Spring Liftstation	1307 Big Spring Blvd. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
West End Liftstation	421 W. North St. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Holly Liftstation	421 Holly St. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
School Liftstation	331 N. School St. Perryville Mo.63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Rand Liftstation	1129 Rand Ave. Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Airport Liftstation	1856 Hwy H Perryville Mo. 63775		72,000			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U

***If replacement cost data is not available, use the best available data (assessed valuation or other method for estimating cost) and explain any data deficiencies.**

Economic Assets (Major Employers, etc)

Asset	Address	Product/ Service	Value (if known)	Number of Employees	Hazards
TG Missouri	2200 Plattin Rd.	Automotive parts production			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Gilster Mary Lee Corp. Cake Plant	520 Old St. Marys Rd.	Cake mixes production			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U
Gilster Mary Lee Corp. Ceral Plant	615 Old St. Marys Rd.	Ceral production			EQ, LSS, ST, T, SWW, D, ET, F, A, CD, CyD, HM, PH, SE, TX, U

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan. Although some of this information may have been captured in your previous mitigation plan, it is important to ensure this information is current in the plan update.

Please indicate which of the following your jurisdiction has in place. For elements that do not pertain to your type of public entity, please indicate with "N/A". If applicable, please provide a completion date for the element. If your jurisdiction does not have a particular element, and a higher level of government has the authority pertaining to your jurisdiction, please indicate this in the comments column. If your jurisdiction has any of the **underlined and bolded** elements, please provide a copy of the document to the contact listed on the front and indicate method in the comments column (i.e. available on the web, will email or mail).

Element	Yes, No, N/A	Comments
Planning Capabilities		
Comprehensive Plan	Date: **n/a**	
Builder's Plan	Date: **n/a**	
Capital Improvement Plan	Date: **n/a**	
City Emergency Operations Plan	Date: **n/a**	
County Emergency Operations Plan	Date: **n/a**	
Local Recovery Plan	Date: **n/a**	
County Recovery Plan	Date: **n/a**	
City Mitigation Plan	Date: **n/a**	
County Mitigation Plan	Date: **n/a**	
Debris Management Plan	Date: **n/a**	
Economic Development Plan	Date: **n/a**	
Transportation Plan	Date: **n/a**	
Land-use Plan	Date: **n/a**	
Flood Mitigation Assistance (FMA) Plan	Date: **n/a**	
Watershed Plan	Date: **n/a**	
Firewise or other fire mitigation plan	Date: **n/a**	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date: **n/a**	
Policies/Ordinance		

Element	Yes, No, N/A	Comments
Zoning Ordinance	**n/a**	
Building Code	Version: **n/a**	
Floodplain Ordinance	Date: **n/a**	
Subdivision Ordinance	**n/a**	
Tree Trimming Ordinance	**n/a**	
Nuisance Ordinance	**n/a**	
Storm Water Ordinance	**n/a**	
Drainage Ordinance	**n/a**	
Site Plan Review Requirements	**n/a**	
Historic Preservation Ordinance	**n/a**	
Landscape Ordinance	**n/a**	
Program		
Zoning/Land Use Restrictions	**n/a**	
Codes Building Site/Design	**n/a**	
Hazard Awareness Program	**n/a**	
National Flood Insurance Program	**n/a**	
Community Rating System (CRS) program under the National Flood Insurance Program (NFIP)?	If so, what is your current level rating?	
National Weather Service (NWS) Storm Ready Certification	**n/a**	
Firewise Community Certification	**n/a**	
Building Code Effectiveness Grading (BCEGs)	**n/a**	
ISO Fire Rating	Rating: **n/a**	
Economic Development Program	**n/a**	
Land Use Program	**n/a**	
Public Education/Awareness	**n/a**	
Property Acquisition	**n/a**	
Planning/Zoning Boards	**n/a**	
Stream Maintenance Program	**n/a**	
Tree Trimming Program	**n/a**	
Engineering Studies for Streams (Local/County/Regional)		
Mutual Aid Agreements	**n/a**	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	**n/a**	
Hazard Analysis/Risk Assessment (County)	**n/a**	
Evacuation Route Map	**n/a**	
Critical Facilities Inventory	**n/a**	
Vulnerable Population Inventory	**n/a**	
Land Use Map	**n/a**	

Staff/Department		n/aFull Time or Part Time?

Element	Yes, No, N/A	Comments
Building Code Official	**n/a**	
Building Inspector	**n/a**	
Mapping Specialist (GIS)	**Yes**	**SEMO Regional Planning Commission**
Engineer	**Yes**	**Baer Engineering**
Development Planner	**n/a**	
Public Works Official	**n/a**	
Emergency Management Coordinator	**n/a**	
NFIP Floodplain Administrator	**n/a**	
Bomb and/or Arson Squad	**n/a**	
Emergency Response Team	**n/a**	
Hazardous Materials Expert	**n/a**	
Local Emergency Planning Committee	**Yes**	**Perry County Emergency Management**
County Emergency Management Commission	**n/a**	
Sanitation Department	**n/a**	
Transportation Department	**n/a**	
Economic Development Department	**n/a**	
Housing Department	**n/a**	
Historic Preservation	**n/a**	
Non-Governmental Organizations (NGOs)	Is there a local chapter? Yes or No	
American Red Cross	**n/a**	
Salvation Army	**n/a**	
Veterans Groups	**n/a**	
Local Environmental Organization	**n/a**	
Homeowner Associations	**n/a**	
Neighborhood Associations	**n/a**	
Chamber of Commerce	**n/a**	
Community Organizations (Lions, Kiwanis, etc.	**n/a**	
Financial Resources	Is your jurisdiction able to? Yes or No	
Apply for Community Development Block Grants	**n/a**	
Fund projects thru Capital Improvements funding	**n/a**	
Authority to levy taxes for specific purposes	**Yes**	**We receive assessments for annual maintenance.**
Fees for water, sewer, gas, or electric services	**n/a**	
Impact fees for new development	**n/a**	
Incur debt through general obligation bonds	**n/a**	
Incur debt through special tax bonds	**Yes**	**We have never done this though.**
Incur debt through private activities	**n/a**	
Withhold spending in hazard prone areas	**n/a**	

For plan updates, the plan maintenance process outlined in your previous plan requires all participating jurisdictions to incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate. A key element of effective implementation of mitigation is for the mitigation plan to be incorporated in existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	**n/a**
Builder's Plan	**n/a**
Capital Improvement Plan	**n/a**
Local Recovery Plan	**n/a**
County Recovery Plan	**n/a**
Debris Management Plan	**n/a**
Economic Development Plan	**n/a**
Transportation Plan	**n/a**
Land-use Plan	**n/a**
Watershed Plan	**We pump out excess storm water.**
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	**n/a**

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)
Board of Supervisors. 1 supervisor elected annually for a term of 5 years

2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.
The Supervisors participate in the Annual Spring Flood Preparedness Workshops and all relevant USACE workshops/webinars.

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.
Continual maintenance of the levee, as well as constant improvements being made. We are currently working with USACE and purchasing cubic yardages of dirt and real estate to raise the levee to the authorized height.

4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers.
None

5. How many outdoor warning sirens are in your community?
None
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 them.
None

7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?
N/A
Please provide address locations:

8. List residential, commercial and industrial development in your jurisdiction since last plan update.
No developments have occurred since our last updated Emergency Action Plan in December of 2023.

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.
Unknown

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.
We have installed 5 new engines recently and will be refurbishing a storm water pump this year.

11. Please list major employers in your jurisdiction with an estimated number of employees.

Gilster Mary-Lee; West Star Aviation – 100+ employees total between the two employers

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?

Bois Brule Levee and Drainage District Supervisors – No recent meetings or incidents due to low water and no recent flooding. The Supervisors have meet with USACE within the past year to discuss our current Emergency Action Plan.

13. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

N/A

VULNERABILITY ASSESSMENT

The purpose of this worksheet is to assess the vulnerable buildings, populations, critical facilities, infrastructure, and other important assets in your community by using the best available data to complete the table. Use the table on the next page to compile a detailed inventory of specific assets at risk including critical facilities and infrastructure; natural, cultural, and historical assets; and economic assets. In the hazard specific column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Riverine Flooding (Major & Flash)-**RF**	Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**	Hazardous Materials Release (fixed facility, accidents)-**HM**
Dam Failure-**DF**	Droughts-**D**	Mass Transportation Accident-**MTA**
Levee Failure-**LF**	Extreme Temperatures-**ET**	Nuclear Power Plants (emergencies & accidents)-**NPP**
Earthquake-**EQ**	Fires (structural, urban, and wild)-**F**	Public Health Emergencies/Environmental Issues-**PH**
Land Subsidence / Sinkholes-**LSS**	Attack (nuclear, conventional, chemical, and biological)-**A**	Special Events-**SE**
Severe Thunderstorm (incl. winds, hail, lightning)-**ST**	Civil Disorder-**CD**	Terrorism-**TX**
Tornadoes-**T**	Cyber Disruption-**CyD**	Utilities (interruptions & system failures)-**U**

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.

Critical Facilities

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers						
Bois Brule Pump Station	**1124 Levee Rd., Perryville**		**$900,000.00**			**RF, LF, EQ, ST, T, F, A, HM, MTA, SE, U**
Cinque Hommes (Menfro) Pump Station	**7362 Levee Rd., Perryville**		**$900,00.00**			**RF, LF, EQ, ST, T, F, A, HM, MTA, SE, U**
Jones Cut-Off Pump Station	**13452 Levee Rd., Perryville**		**$900,000.00**			**RF, LF, EQ, ST, T, F, A, HM, MTA, SE, U**
MO Chute Pump Station	**5574 Levee Rd., Perryville**		**$600,000.00**			**RF, LF, EQ, ST, T, F, A, HM, MTA, SE, U**

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
High Potential Loss Facilities such as power plants, dams/levees, military installations, hazardous materials sites, shelters, day care centers, nursing homes, main government buildings (Do not include schools—they will be reported by the school districts)						
33 miles of levee						
Transportation and Lifelines such as highways, bridges, and tunnels; railroads and facilities, bus facilities, airports, water treatment facilities, natural gas facilities and pipelines, oil facilities, oil facilities and pipelines, communications facilities						
Hwy 51	**All of these listed are within the**					
BNSF Railroad	**Levee District area**					
West Star Aviation						
Natural gas						
Commodity pipeline						
Hwy C, H, E						
Chester Bridge						

HISTORIC HAZARD EVENTS

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	**Bois Brule Levee and Drainage District**
Type of event	**Flooding**
Nature and magnitude of event	**Major Road Closures**
Location	**Bois Brule Levee and Drainage District**
Date of event	**2016, 2017, 2019**
Injuries	**0**
Deaths	**0**
Property damage	**Yes - Unknown**
Infrastructure damage	**Yes - Unknown**
Crop damage	**Yes - Unknown**
Business/economic impacts	**Gilster Mary Lee, West Star Aviation**
Road/school/other closures	**Hwy 51, Hwy C, Hwy E**
Other damage	**n/a**
Insured losses	**Unknown**
Federal/state disaster relief funding	**Yes – FEMA and SEMA**
Opinion on likelihood of occurring again	**Likely**
Source of information	**Bois Brule Levee and Drainage District & NOAA**
Comments	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: Bois Brule Levee and Drainage District

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost. The worksheet should include information on progress made in the implementation of the action, if any. Some of the actions might have been ongoing in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.

If no progress has been made in the implementation of a given action, discuss why. Note that implementation is not a requirement. However, if no progress has been made, perhaps this is an action that would be appropriate to delete in the updated plan.

During review of the previously approved actions, consider whether any new actions should be proposed. Perhaps damages from a recent hazard event have indicated the need for new approaches to protect property and life. Review the problem statements from the updated plan for ideas. Also review the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).*

Action # from previously approved plan	**No progress or changes due to the Levee District Emergency Action Plan remaining the same for numerous years. This plan is followed during each flood event. USACE is currently modifying and updating said plan and the**
Description of action	**Levee District is waiting on those updates.**
Person or agency responsible for implementation	
Progress made on implementation since previous plan adoption	
If action is ongoing in nature, describe activities accomplished since previous plan adoption	
Reasons for progress or lack of progress	
Delete, modify, or carry the proposed action forward unchanged	

Perryville Shcool District No. 32
CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan.
Please indicate which of the following your school district / institution has in place. For elements that do not pertain to you, please indicate with "N/A". If applicable, please provide a completion date for the element. If your school district / institution has any of the **underlined and bolded** elements, please provide a copy of the document to the contact indicated on the front of this questionnaire and indicate method in the comments column (i.e. available on the web, will email or mail).

Planning Elements	Yes/No	Date of Latest Version	Comments
Master Plan	Yes		
Capital Improvement Plan	Yes		
School Emergency Plan Shelter in place protocols Evacuation protocols	Yes		
Weapons Policy	Yes		

Administrative/Technical

Identify the technical and personnel resources responsible for activities related to hazard mitigation/loss prevention within your school district / institution.

Personnel Resources	Yes/No	Department/Position	Comments
Full-time building official (i.e. Principal)	Yes		
Emergency Manager	Yes	Safety Director	
Grant Writer	Yes		
Public Information Officer	Yes	Communication Director	

Financial Resources

Identify whether your school district /institution has access to or is eligible to use the following financial resources for hazard mitigation.

Financial Resources	Accessible/Eligible to Use (Y/N)	Comments
Capital improvements project funding	Yes	
Local funds	Yes	
General obligation bonds	Yes	
Special tax bonds	Yes	
Private activities/donations	Yes	
State and federal funds	Yes	

Additional Capabilities Questions

1. Are your buildings equipped with a public address system or other emergency alert system? Please describe.

Yes. We have public address system, emergency push buttons to activate emergency and the RAPTOR system.

2. Do your school's 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 potential hazards.

None

4. List any other past or ongoing projects or programs designed to reduce disaster losses. These may include projects to protect critical facilities.

None

5. Do any of your buildings have designated tornado shelters or "salerooms"? If so, are they constructed in accordance with FEMA standards?

Yes. Perry County School District 32 have 2 Shelters and are built to FEMA Standards.

6. Did your school district / institution make any additions to buildings or construct new buildings since the last plan update (2010)? Please list the buildings and the improvement.

Yes: A new Middle School was constructed and the old middle school was torn down. The elementary building was remodeled. A new primary center was constructed. A new bus transportation building was constructed.

7. Does your school district / institution plan to remodel or construct any buildings in the next 5 years? If so, please list the building or proposed building and planned improvements. Are any planned construction activities in known hazard areas?

8. What percentage is your projected enrollment expected to increase or decrease in the next five years?

Steady to increase 5%

9. Do you have your own campus police? Please explain your police department or who you rely on for security needs.

Yes. Perry County School District 32 has two School Resource Officers on Campus. One of the officers is Commissioned through Perryville Police and the second officer is through Perry County Sheriff.

VULNERABILITY ASSESSMENT

Asset Inventory

The purpose of this worksheet is to assist in the assessment of the vulnerable populations and facilities owned by your school district / institution. Use the table below to compile a detailed inventory of specific assets at risk. In the hazard specific column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Riverine Flooding (Major & Flash)-**RF**	Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**	Hazardous Materials Release (fixed facility, accidents)-**HM**
Dam Failure-**DF**	Droughts-**D**	Mass Transportation Accident-**MTA**
Levee Failure-**LF**	Extreme Temperatures-**ET**	Nuclear Power Plants (emergencies & accidents)-**NPP**
Earthquake-**EQ**	Fires (structural, urban, and wild)-**F**	Public Health Emergencies/Environmental Issues-**PH**
Land Subsidence / Sinkholes-**LSS**	Attack (nuclear, conventional, chemical, and biological)-**A**	Special Events-**SE**
Severe Thunderstorm (incl. winds, hail, lightning)-**ST**	Civil Disorder-**CD**	Terrorism-**TX**
Tornadoes-**T**	Cyber Disruption-**CyD**	Utilities (interruptions & system failures)-**U**

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	Square Feet	Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Perry County School District 32 High School	326 College St. – Perryville, MO 63775	106,978			810	
Perry County School District 32 Middle School	100 Campus Dr. – Perryville, MO 63775	57,712			512	
Perry County School District 32 Elementary	605 Schindler Rd. – Perryville, MO 63775	79,470			502	
Perry County School District 32 Primary Center	503 Schindler Rd. – Perryville, MO 63775	89,692			562	
Perry County School District 32 Career & Tech	Career Center Dr. – Perryville, MO 63775	48,220			350	

Name of Asset	Address	Square Feet	Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Perry County School District 32 Central Office	400 College St. – Perryville, MO 63775	26,560			12	
Perry County School District 32 Transportation	Campus Center Dr. – Perryville, MO 63775	4,473			8	

Appendix B *Action Worksheets*

1.1 Perry County.....1.1

1.2 City of Perryville..... 1.1

1.3 Bois Brule Levee and Drainage District..... 1.2

1.4 Perryville School District No.32..... 1.3

Figure 4.2. Perry County New and Continuing Actions

Action Worksheet	
Name of Jurisdiction:	Perry County
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado & Extreme Temperatures
Problem being Mitigated:	Lack of safe locations for some residents
Action or Project	
Applicable Goal Statement:	Protect the health, safety, and welfare of residents.
Action/Project Number:	Perry-1.1
Name of Action or Project:	Construct Safe Room
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Construct a safe room in county
Estimated Cost:	$5-$10 million
Benefits:	Provide safe location for residents to take shelter during a tornado
Plan for Implementation	
Responsible Organization/Department:	County Commission
Supporting Organization/Department:	
Action/Project Priority:	26/Medium
Timeline for Completion:	4 years
Potential Fund Sources:	FEMA Grant, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	CIP
Progress Report	
Action Status:	Continuing-not started
Report of Progress:	None, funding constraints

Action Worksheet	
Name of Jurisdiction:	Perry County
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado
Problem being Mitigated:	Lack of advanced warning
Action or Project	
Applicable Goal Statement:	Protect the health, safety, and welfare of residents and students.
Action/Project Number:	Perry-1.2
Name of Action or Project:	Construct emergency warning sirens
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Construct emergency warning sirens throughout county
Estimated Cost:	$500,000-$2,000,000
Benefits:	Provide advanced warning to residents during a tornado event
Plan for Implementation	
Responsible Organization/Department:	Public Works
Supporting Organization/Department:	County Commission
Action/Project Priority:	26/Medium
Timeline for Completion:	1-3 years
Potential Fund Sources:	FEMA Grant, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	CIP
Progress Report	
Action Status:	Continuing-not started
Report of Progress:	None, funding constraints

Action Worksheet	
Name of Jurisdiction:	Perry County
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Earthquake, Winter Storm, Severe Thunderstorm, Extreme Temperatures
Problem being Mitigated:	Loss of power and response capabilities
Action or Project	
Applicable Goal Statement:	Ensure the operation of critical facilities and services.
Action/Project Number:	Perry-2.1
Name of Action or Project:	Emergency Generators
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Purchase and install emergency generators at county facilities
Estimated Cost:	$50,000-$500,000
Benefits:	Keep facilities and services operational during and after an event.
Plan for Implementation	
Responsible Organization/Department:	Public Works
Supporting Organization/Department:	County Commission
Action/Project Priority:	27/Medium
Timeline for Completion:	2 years
Potential Fund Sources:	FEMA Grant, General Revenue, Homeland Security
Local Planning Mechanisms to be Used in Implementation, if any:	EOP
Progress Report	
Action Status:	Continuing-not started
Report of Progress:	None, funding constraints

Action Worksheet	
Name of Jurisdiction:	Perry County
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Impediment to transportation and emergency services
Action or Project	
Applicable Goal Statement:	Ensure the operation of critical facilities and services.
Action/Project Number:	Perry-2.2
Name of Action or Project:	Low water crossings
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Raise low water crossings in the county
Estimated Cost:	$100,000-$2,000,000
Benefits:	Keep transportation routes open to allow residents to travel as needed and allow emergency services to reach residents.
Plan for Implementation	
Responsible Organization/Department:	Road and Bridge
Supporting Organization/Department:	County Commission
Action/Project Priority:	26/Medium
Timeline for Completion:	3 years
Potential Fund Sources:	General Revenue, MoDOT BRO
Local Planning Mechanisms to be Used in Implementation, if any:	CIP
Progress Report	
Action Status:	Continuing-not started
Report of Progress:	None, funding constraints

Action Worksheet

Name of Jurisdiction:	Perry County
Risk / Vulnerability	
Problem being Mitigated:	Wildfires
Hazard(s) Addressed:	Lack of annex for Wildfires in County Emergency Operations Plan
Action or Project	
Action/Project Number:	Perry-3.5
Name of Action or Project:	Wildfire Hazard Identification
Action or Project Description:	Develop an annex to the Emergency Operations Plan for Wildfires. Identify high-risk areas. Work with NOAA to monitor drought and weather conditions causing wildfires.
Applicable Goal Statement:	Develop an annex to the Emergency Operations Plan
Estimated Cost:	$5,000
Benefits:	Provides and actionable plan for wildfire response in the County.
Plan for Implementation	
Responsible Organization/Department:	Perry County Emergency Management
Action/Project Priority:	43/High
Timeline for Completion:	5 years
Potential Fund Sources:	E911 Tax and General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	
Report of Progress	
Completed by:	

Action Worksheet	
Name of Jurisdiction:	Perry County
Risk / Vulnerability	
Problem being Mitigated:	Mitigate risks to infrastructure, property, and public safety due to unregulated development in high-risk areas.
Hazard(s) Addressed:	Sinkholes
Action or Project	
Action/Project Number:	Perry-3.5
Name of Action or Project:	County Development Policy
Action or Project Description:	Providing guidance for mitigation measures, such as soil stabilization or rerouting drainage to prevent further sinkhole development.
Applicable Goal Statement:	Protect public and private property
Estimated Cost:	$5,000-$10,000
Benefits:	Reduce infrastructure damage, property loss, and safety risks, saving significant costs.
Plan for Implementation	
Responsible Organization/Department:	Perry County Emergency Management
Action/Project Priority:	34/High
Timeline for Completion:	4 years
Potential Fund Sources:	General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	New
Report of Progress	
Completed by:	Tom Grayson

Action Worksheet	
Name of Jurisdiction:	Perry County
Risk / Vulnerability	
Problem being Mitigated:	Risk to life, property, and infrastructure due to inadequate emergency response planning and coordination.
Hazard(s) Addressed:	Dam Failures
Action or Project	
Action/Project Number:	Perry-3.3
Name of Action or Project:	Emergency Operations Plan for Dam Failure
Action or Project Description:	Develop and implement an Emergency Operations Plan for dam failures, including hazard assessments, public alert systems, evacuation procedures, and coordination with local, state, and federal emergency management agencies to minimize risks
Applicable Goal Statement:	Protect Public and Private Property
Estimated Cost:	$5,000-$15,000
Benefits:	Provides an actionable plan for Dam Failure response in the County.
Plan for Implementation	
Responsible Organization/Department:	Perry County Emergency Management
Action/Project Priority:	34/High
Timeline for Completion:	5-10 years
Potential Fund Sources:	FEMA, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	EOP
Progress Report	
Action Status	New
Report of Progress	
Completed by:	Tom Grayson

Action Worksheet	
Name of Jurisdiction:	Perry County
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Development in the Floodplain
Action or Project	
Action/Project Number:	Perry-1.3
Name of Action or Project:	NFIP Participation
Action or Project Description:	The county will work with residents to identify flood-prone areas and enforce floodplain management ordinances to minimize risks in SFHA. Residents will receive assistance with the FEMA map amendment process and guidance on safe construction practices to reduce vulnerability.
Applicable Goal Statement:	Protect the health, safety, and welfare of residents.
Estimated Cost:	$25,000- $50,000
Benefits:	Reduce Development in SFHA, Protect Floodplain
Plan for Implementation	
Responsible Organization/Department:	Emergency Management
Action/Project Priority:	30/High
Timeline for Completion:	Ongoing
Potential Fund Sources:	National Volunteer Fire Council, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain Ordinances
Progress Report	
Action Status	Continuing
Report of Progress	Ongoing
Completed by:	Tom Grayson

Action Worksheet	
Name of Jurisdiction:	Perry County
Risk / Vulnerability	
Problem being Mitigated:	Tornado, Earthquake, Winter Weather, Severe Thunderstorm, Flooding
Hazard(s) Addressed:	Lack of Advanced Warning
Action or Project	
Action/Project Number:	Perry-3.1
Name of Action or Project:	Contract with NIXLE
Action or Project Description:	Contract with NIXLE and develop a program for citizens to receive early warnings, on their cell phones, during emergencies.
Applicable Goal Statement:	Protect the health, safety, and welfare of residents.
Estimated Cost:	$2,000-$5,000
Benefits:	Provide advance warning prior to an all-hazard event and to provide instructions during response and recovery operations
Plan for Implementation	
Responsible Organization/Department:	Emergency Management
Action/Project Priority:	36/High
Timeline for Completion:	5 years
Potential Fund Sources:	General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing
Completed by:	Tom Grayson

Action Worksheet	
Name of Jurisdiction:	Perry County
Risk / Vulnerability	
Problem being Mitigated:	Lack of water during drought conditions, reducing water supply for firefighting operations
Hazard(s) Addressed:	Drought
Action or Project	
Action/Project Number:	3.6
Name of Action or Project:	Water Conservation
Action or Project Description:	Educate the public on water conservation techniques.
Applicable Goal Statement:	Protect the health, safety, and welfare of residents.
Estimated Cost:	$5,000
Benefits:	Help ensure water supply to protect life and property of community.
Plan for Implementation	
Responsible Organization/Department:	Perry County Emergency Management
Action/Project Priority:	24/LOW
Timeline for Completion:	3 years
Potential Fund Sources:	SEMA, FEMA, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP
Progress Report	
Action Status	
Report of Progress	
Completed by:	

Action Worksheet	
Name of Jurisdiction:	Perryville
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Earthquake, Winter Storm, Severe Thunderstorm, Flooding
Problem being Mitigated:	Inadequate communications capabilities for emergency services
Action or Project	
Applicable Goal Statement:	Ensure the operation of critical facilities and services.
Action/Project Number:	Perryville-2.2
Name of Action or Project:	Radio Acquisition
Mitigation Category:	Emergency Services
Action or Project Description:	Purchase radios and other communications equipment for hazard response
Estimated Cost:	$50,000-$500,000
Benefits:	Improved and interoperable communications for emergency and first responders.
Plan for Implementation	
Responsible Organization/Department:	Police Dept.
Supporting Organization/Department:	Emergency Management
Action/Project Priority:	30/High
Timeline for Completion:	5 years
Potential Fund Sources:	FEMA Grant, General Revenue, Homeland Security
Local Planning Mechanisms to be Used in Implementation, if any:	EOP
Progress Report	
Action Status:	Continuing-not started
Report of Progress:	None, funding constraints

Action Worksheet	
Name of Jurisdiction:	Perryville
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Earthquake, Winter Storm, Severe Thunderstorm
Problem being Mitigated:	Loss of power and response capabilities
Action or Project	
Applicable Goal Statement:	Ensure the operation of critical facilities and services.
Action/Project Number:	Perryville-2.3
Name of Action or Project:	Emergency Generators
Mitigation Category:	Emergency Services
Action or Project Description:	Purchase and install emergency generators at county facilities
Estimated Cost:	$50,000-$500,000
Benefits:	Keep facilities and services operational during and after an event.
Plan for Implementation	
Responsible Organization/Department:	Police Dept.
Supporting Organization/Department:	Emergency Management
Action/Project Priority:	30/High
Timeline for Completion:	3 years
Potential Fund Sources:	FEMA Grant, General Revenue, Homeland Security
Local Planning Mechanisms to be Used in Implementation, if any:	EOP
Progress Report	
Action Status:	Continuing-not started
Report of Progress:	None, funding constraints

Action Worksheet	
Name of Jurisdiction:	Perryville
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Stormwater flooding
Action or Project	
Applicable Goal Statement:	Ensure the operation of critical facilities and services.
Action/Project Number:	Perryville-2.4
Name of Action or Project:	Stormwater system improvements
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Improve stormwater sewer system to better handle heavy-rain events, including improvements to and protection of sinkholes
Estimated Cost:	$100,000-$1,000,000
Benefits:	Reduce flooding and impacts of downpour events.
Plan for Implementation	
Responsible Organization/Department:	Public Works.
Supporting Organization/Department:	
Action/Project Priority:	24/Medium
Timeline for Completion:	5 years
Potential Fund Sources:	FEMA Grant, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	Zoning Ordinance, Floodplain Management Ordinance
Progress Report	
Action Status:	New
Report of Progress:	New

Action Worksheet	
Name of Jurisdiction:	Perryville
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Development in floodplain
Action or Project	
Applicable Goal Statement:	Protect the health, safety, and welfare of residents.
Action/Project Number:	Perryville-1.2
Name of Action or Project:	NFIP Participation
Mitigation Category:	Prevention
Action or Project Description:	Enforce floodplain management ordinances, regulate new construction in SFHA, work with residents to identify flood prone areas, assist residents with map amendment process.
Estimated Cost:	$50,000-$100,000
Benefits:	Reduce development in SFHA, protect floodplain.
Plan for Implementation	
Responsible Organization/Department:	Development Services
Supporting Organization/Department:	
Action/Project Priority:	27/Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	Zoning Ordinances, Land Use Plan
Progress Report	
Action Status:	Continuing
Report of Progress:	Ongoing

Action Worksheet	
Name of Jurisdiction:	Perryville
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado
Problem being Mitigated:	Lack of safe locations for some residents
Action or Project	
Applicable Goal Statement:	Protect the health, safety, and welfare of residents.
Action/Project Number:	Perryville-1.3
Name of Action or Project:	Construct Safe Room
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Construct a safe room in the city
Estimated Cost:	$5-$20 million
Benefits:	Provide safe location for residents to take shelter during a tornado
Plan for Implementation	
Responsible Organization/Department:	Public Works
Supporting Organization/Department:	
Action/Project Priority:	27/Medium
Timeline for Completion:	5 years
Potential Fund Sources:	FEMA Grant, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	CIP, Comprehensive Plan
Progress Report	
Action Status:	Continuing-not started
Report of Progress:	None, funding constraints

Action Worksheet	
Name of Jurisdiction:	City of Perryville
Risk / Vulnerability	
Problem being Mitigated:	Exposure to Extreme Temperatures
Hazard(s) Addressed:	Extreme Temperatures and Severe Winter Weather
Action or Project	
Action/Project Number:	1.1
Name of Action or Project:	Weather Instrumentation
Action or Project Description:	Purchase and install weather data instruments to provide live data to limit exposure to extreme heat and cold weather.
Applicable Goal Statement:	Protect the health, safety and welfare of residents.
Estimated Cost:	$10,000-$25,000
Benefits:	Provide real time weather information to residents during extreme heat and cold during outdoor activities.
Plan for Implementation	
Responsible Organization/Department:	Emergency Services Department
Action/Project Priority:	35/High
Timeline for Completion:	3 years
Potential Fund Sources:	FEMA, SEMA, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	EOP
Progress Report	
Action Status	On Going
Report of Progress	
Completed by:	Jeremy Mantz

Action Worksheet	
Name of Jurisdiction:	City of Perryville
Risk / Vulnerability	
Problem being Mitigated:	Wildfire
Hazard(s) Addressed:	Inadequate education and preparedness for Wildfire events
Action or Project	
Action/Project Number:	Perryville- 1.4
Name of Action or Project:	Wildfire Management
Action or Project Description:	Work with the county to educate the public on proper wildland and wildfire management practices.
Applicable Goal Statement:	Protect the health, safety, and welfare of residents.
Estimated Cost:	$5,000
Benefits:	Provide education to properly address fire loads around buildings
Plan for Implementation	
Responsible Organization/Department:	Fire Department
Action/Project Priority:	39/High
Timeline for Completion:	3 Years
Potential Fund Sources:	National Volunteer Fire Council, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	EOP
Progress Report	
Action Status	New
Report of Progress	
Completed by:	Jeremy Mantz

Action Worksheet	
Name of Jurisdiction:	City of Perryville
Risk / Vulnerability	
Problem being Mitigated:	Lack of water during drought conditions, reducing water supply for firefighting operations
Hazard(s) Addressed:	Drought
Action or Project	
Action/Project Number:	Perryville- 2.5
Name of Action or Project:	Water Conservation
Action or Project Description:	Develop a water conservation ordinance and educate the public on water conservation techniques.
Applicable Goal Statement:	Protect the health, safety, and welfare of residents.
Estimated Cost:	$5,000
Benefits:	Help ensure water supply to protect life and property of community.
Plan for Implementation	
Responsible Organization/Department:	Public Works
Action/Project Priority:	43/High
Timeline for Completion:	3 Years
Potential Fund Sources:	SEMA, FEMA, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	EOP
Progress Report	
Action Status	New
Report of Progress	
Completed by:	Jeremy Mantz

Action Worksheet	
Name of Jurisdiction:	City of Perryville
Risk / Vulnerability	
Problem being Mitigated:	Prevent property damage from sinkholes and land erosion.
Hazard(s) Addressed:	Sinkholes
Action or Project	
Action/Project Number:	Perryville- 2.6
Name of Action or Project:	Sinkhole Development
Action or Project Description:	Develop Sinkhole monitoring capabilities by installing monitors and structures for surface runoff to drain into.
Applicable Goal Statement:	Protect the health, safety, and welfare of residents.
Estimated Cost:	$20,000-$50,000
Benefits:	Prevent erosion from damaging homes and property.
Plan for Implementation	
Responsible Organization/Department:	Public Works
Action/Project Priority:	35/High
Timeline for Completion:	3 Years
Potential Fund Sources:	SEMA, FEMA, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	Storm Water Plan
Progress Report	
Action Status	New
Report of Progress	
Completed by:	Jeremy Mantz

Action Worksheet	
Name of Jurisdiction:	Perryville
Risk / Vulnerability	
Problem being Mitigated:	Tornado, Earthquake, Winter Weather, Severe Thunderstorm, Flooding
Hazard(s) Addressed:	Inadequate equipment for emergency response
Action or Project	
Action/Project Number:	Perryville-2.1
Name of Action or Project:	Emergency Equipment
Action or Project Description:	Purchase emergency generators and portable shelters for hazard response.
Applicable Goal Statement:	Protect the health, safety, and welfare of residents.
Estimated Cost:	$10,000-$100,000
Benefits:	Keep services operational and relevant during and after an event
Plan for Implementation	
Responsible Organization/Department:	Police Department, Emergency Management
Action/Project Priority:	31/High
Timeline for Completion:	5 years
Potential Fund Sources:	General Revenue, FEMA, Homeland Security
Local Planning Mechanisms to be Used in Implementation, if any:	EOP
Progress Report	
Action Status	Ongoing
Report of Progress	Continuing- Not started
Completed by:	Jeremy Mantz

Action Worksheet	
Name of Jurisdiction:	Bois Brule Levee and Drainage District
Risk / Vulnerability	
Problem being Mitigated:	Flooding and Levee Overtopping
Hazard(s) Addressed:	Flooding and Levee Failure
Action or Project	
Action/Project Number:	BBLD 1.1
Name of Action or Project:	Maintain and Inspect the Levee
Action or Project Description:	Maintain and repair pump stations and levee infrastructure to prevent overtopping in a flood.
Applicable Goal Statement:	Protect public and private property
Estimated Cost:	$500,000-$650,000
Benefits:	Reduce the Risk of Flooding and Overtopping
Plan for Implementation	
Responsible Organization/Department:	Bois Brule Levee and Drainage District, USACE
Action/Project Priority:	High/47
Timeline for Completion:	On-going
Potential Fund Sources:	Levee Assessments, USACE
Local Planning Mechanisms to be Used in Implementation, if any:	N/A
Progress Report	
Action Status	On-going
Report of Progress	In the process of pump rehabilitation
Completed by:	Kristi Hagan

Action Worksheet	
Name of Jurisdiction:	Perry Co. School Dist. NO 32
Risk / Vulnerability	
Problem being Mitigated:	Lack of safe locations for students
Hazard(s) Addressed:	Tornado, Severe Weather
Action or Project	
Action/Project Number:	PCSD 32-1.1
Name of Action or Project:	Construct Safe Room
Action or Project Description:	Construct a safe room on school property
Applicable Goal Statement:	Protect the health, safety, and welfare of the residents and students.
Estimated Cost:	$5-$10 million
Benefits:	Provide a safe location for students to take shelter during a tornado or severe weather
Plan for Implementation	
Responsible Organization/Department:	Facilities Dept.
Action/Project Priority:	28/Medium
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA Grant, General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	Continuous School Improvement Plan
Progress Report	
Action Status	Continuing – not started
Report of Progress	No – Funding Constraints
Completed by:	Garrett L Schott – Safety Director

Action Worksheet	
Name of Jurisdiction:	Perry Co. School Dist. NO 32
Risk / Vulnerability	
Problem being Mitigated:	Loss of power and response capabilities
Hazard(s) Addressed:	Tornado, Earthquake, Winter Storm, Severe Weather
Action or Project	
Action/Project Number:	PCSD 32-2.1
Name of Action or Project:	Emergency Generators
Action or Project Description:	Purchase and install emergency generators at school facilities.
Applicable Goal Statement:	Ensure the operation of critical facilities and services.
Estimated Cost:	$50,000-$1 million
Benefits:	Keep facilities and services operational during and after an event.
Plan for Implementation	
Responsible Organization/Department:	Facilities Dept.
Action/Project Priority:	26/Medium
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA Grant/General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	Continuous School Improvement Plan
Progress Report	
Action Status	Continuing Not Started
Report of Progress	No, funding constraints
Completed by:	Garrett L Schott – Safety Director 573-547-7500 x1467

Action Worksheet	
Name of Jurisdiction:	Perry Co. School Dist. NO 32
Risk / Vulnerability	
Problem being Mitigated:	Loss of power and response capabilities
Hazard(s) Addressed:	Tornado, Earthquake, Winter Storm, Severe Thunderstorms
Action or Project	
Action/Project Number:	PCSD 32-2.2
Name of Action or Project:	Bury Power Lines
Action or Project Description:	Bury overhead power lines throughout the property
Applicable Goal Statement:	Ensure the operation of critical facilities and services.
Estimated Cost:	$50,000-$100,000
Benefits:	Keep facilities and services operational during and after an event.
Plan for Implementation	
Responsible Organization/Department:	Facilities Dept.
Action/Project Priority:	26/Medium
Timeline for Completion:	2-3 years
Potential Fund Sources:	General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	Continuous School Improvement Plan
Progress Report	
Action Status	Continuing – not started
Report of Progress	None, Funding constraints
Completed by:	Garrett L Schott – Safety Director

Action Worksheet	
Name of Jurisdiction:	Perry Co. School Dist. NO 32
Risk / Vulnerability	
Problem being Mitigated:	Weather notification for school and staff
Hazard(s) Addressed:	Tornado, Earthquake, Winter Storm, Severe Thunderstorm
Action or Project	
Action/Project Number:	PCSD 32-2.3
Name of Action or Project:	Weather Alert
Action or Project Description:	Purchase a weather system with live camera for up to date storm tracking
Applicable Goal Statement:	Effective weather monitoring during incoming storms.
Estimated Cost:	$10,000-$20,000
Benefits:	Improve the communication between all personnel during an emergency
Plan for Implementation	
Responsible Organization/Department:	Facilities Dept
Action/Project Priority:	26/Medium
Timeline for Completion:	2-3 years
Potential Fund Sources:	General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	Continuous School Improvement Plan
Progress Report	
Action Status	Continuing – not started
Report of Progress	No, Funding Constraints
Completed by:	Garrett L Schott – Safety Director

Action Worksheet	
Name of Jurisdiction:	Perry Co. School District No. 32
Risk / Vulnerability	
Problem being Mitigated:	Tornado, Earthquake, Winter Storm, Severe Thunderstorm
Hazard(s) Addressed:	Upgrade radio communication during an emergency.
Action or Project	
Action/Project Number:	PCSD 32-2.4
Name of Action or Project:	Radio/ Repeater New Upgrade
Action or Project Description:	Purchase/Upgrade radios and repeater for communication used by all administrative staff, including principals, secretaries, and directors, across campus. The repeater will extend its range, allowing communication across the county for bus travel.
Applicable Goal Statement:	Effective Communication during emergency operations.
Estimated Cost:	$10,000-$20,000
Benefits:	Improve the communication between all personnel during an emergency
Plan for Implementation	
Responsible Organization/Department:	Facilities Department
Action/Project Priority:	26/Medium
Timeline for Completion:	2-3 years
Potential Fund Sources:	General Revenue
Local Planning Mechanisms to be Used in Implementation, if any:	Continuous School Improvement Plan
Progress Report	
Action Status	Continuing- Not Started
Report of Progress	No, Funding Constraints
Completed by:	Garret L Schott- Safety Director

Appendix C *STAPLEE Worksheets*

1.1 Perry County.....1.1

1.2 City of Perryville..... 1.1

1.3 Bois Brule Levee and Drainage District..... 1.2

1.4 Perryville School District No.32..... 1.3

Action Title: **Construct Safe Room**	**Jurisdiction: Perry County**
Action ID: 1.1	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		2
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		2
L: Is there Legal authority to implement?		2
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		0
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 26

Priority Level: ☐High (30+ points) ☒Medium (25-29 points) ☐Low (less than 25 points)

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

Action Title: **Construct Emergency Warning Sirens**	**Jurisdiction: Perry County**
Action ID: 1.2	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		2
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		2
L: Is there Legal authority to implement?		2
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		0
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 26

Priority Level: ☐High (30+ points) ☒Medium (25-29 points) ☐Low (less than 25 points)

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

Action Title: **Emergency Generators**	**Jurisdiction: Perry County**
Action ID: 2.1	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		2
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		2
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		0
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 27

Priority Level: ☐High (30+ points) ☒Medium (25-29 points) ☐Low (less than 25 points)

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

Action Title: **Low Water Crossings**	**Jurisdiction: Perry County**
Action ID: 2.2	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		2
A: Does the jurisdiction have the administrative capacity to execute this action?		2
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		2
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		0
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 26

Priority Level: ☐High (30+ points) ☒Medium (25-29 points) ☐Low (less than 25 points)

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

Action Title: **Wildfire Hazard Identification**	**Jurisdiction: Perry County**
Action ID: 3.5	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	YES	3
T: Is it Technically feasible and potentially successful?	YES	3
A: Does the jurisdiction have the administrative capacity to execute this action?	YES	3
P: Is it Politically acceptable?	YES	3
L: Is there Legal authority to implement?	YES	3
E: Is it Economically beneficial?	YES	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	YES	3
Will historic structures be saved or protected?	YES	2
Could it be implemented quickly?	YES	2
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	9
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	9
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 43

Priority Level: X ☐High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Thomas Grayson/Emergency Management Director/573-547-4000

Action Title: **County Development Policy**	**Jurisdiction:Perry County**	
Action ID: 3.4		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	YES	2
T: Is it Technically feasible and potentially successful?	YES	2
A: Does the jurisdiction have the administrative capacity to execute this action?	YES	2
P: Is it Politically acceptable?	YES	3
L: Is there Legal authority to implement?	YES	3
E: Is it Economically beneficial?	YES	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	YES	3
Will historic structures be saved or protected?	NO	1
Could it be implemented quickly?	YES	3
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	6
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	6
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 34

Priority Level: X☐High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Thomas Grayson/Emergency Management Director/573-547-4000

Action Title: **Emergency Operations Plan For Dam Failure**	**Jurisdiction: Perry County**
Action ID: 3.3	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Yes	3
T: Is it Technically feasible and potentially successful?	Yes	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Yes	2
P: Is it Politically acceptable?	Yes	3
L: Is there Legal authority to implement?	Yes	2
E: Is it Economically beneficial?	Yes	2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Yes	3
Will historic structures be saved or protected?	Yes	2
Could it be implemented quickly?	Yes	2
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 34

Priority Level: X☐High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Thomas Grayson/ Perry County Emergency Management Director/ 573-547-4000

Action Title: **NFIP Participation**	**Jurisdiction: Perry County**
Action ID: 1.3	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		2
L: Is there Legal authority to implement?		2
E: Is it Economically beneficial?		3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		2
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 30

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

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

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Contract with NIXLE	**Jurisdiction:** Perry County
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	YES	3
T: Is it Technically feasible and potentially successful?	YES	3
A: Does the jurisdiction have the administrative capacity to execute this action?	YES	3
P: Is it Politically acceptable?	YES	3
L: Is there Legal authority to implement?	YES	3
E: Is it Economically beneficial?	YS	2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	YES	2
Will historic structures be saved or protected?	NO	0
Could it be implemented quickly?	YES	3
STAPLEE Score		**22**

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	7
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	7
Mitigation Effectiveness Score		**14**

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 36

Priority Level: X☐High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Thomas Grayson/ Perry County EMD/ 573-547-4000

Action Title: **Water Conservation**	**Jurisdiction: Perry County**
Action ID: 3.6	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Yes	3
T: Is it Technically feasible and potentially successful?	Yes	2
A: Does the jurisdiction have the administrative capacity to execute this action?	Yes	2
P: Is it Politically acceptable?	Yes	3
L: Is there Legal authority to implement?	Yes	3
E: Is it Economically beneficial?	Yes	2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Yes	3
Will historic structures be saved or protected?	No	0
Could it be implemented quickly?	Yes	2
STAPLEE Score		**20**

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	3
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	1
Mitigation Effectiveness Score		**4**

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 24

Priority Level: ☐ High (30+ points) ☐ Medium (25-29 points) X ☐ Low (less than 25 points)

Completed by (name/title/phone #): **Thomas Grayson/Perry County EMD/573-547-4000**

Action Title: **Radio Acquisition**	**Jurisdiction: City of Perryville**
Action ID: 2.2	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		1
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		3
Will historic structures be saved or protected?		0
Could it be implemented quickly?		1
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 30

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Jeremy Mantz, Emergency Services Manager, 573-517-1802

Action Title: **Emergency Generators**	**Jurisdiction: City of Perryville**
Action ID: 2.3	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		3
Will historic structures be saved or protected?		0
Could it be implemented quickly?		0
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 30

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Jeremy Mantz, Emergency Services Manager, 573-517-1802

Action Title: **Stormwater System Improvements**	**Jurisdiction: City of Perryville**
Action ID: 2.4	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		1
A: Does the jurisdiction have the administrative capacity to execute this action?		2
P: Is it Politically acceptable?		2
L: Is there Legal authority to implement?		2
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		0
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 24

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Jeremy Mantz, Emergency Services Manager, 573-517-1802

Action Title: **NFIP Participation**	**Jurisdiction: City of Perryville**
Action ID: 1.2	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		1
E: Is it Economically beneficial?		1
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		1
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 27

Priority Level: ☐High (30+ points) ☒Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Jeremy Mantz, Emergency Services Manager, 573-517-1802

Action Title: **Construct Safe Room**	**Jurisdiction: City of Perryville**
Action ID: 1.3	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		1
A: Does the jurisdiction have the administrative capacity to execute this action?		2
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		2
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		3
Will historic structures be saved or protected?		0
Could it be implemented quickly?		0
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 27

Priority Level: ☐High (30+ points) ☒Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Jeremy Mantz, Emergency Services Manager, 573-517-1802

Action Title: Weather Instrumentation	**Jurisdiction: City of Perryville**
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		1
E: Is it Economically beneficial?		3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		3
Will historic structures be saved or protected?		0
Could it be implemented quickly?		1
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 35

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Jeremy Mantz, Emergency Services Manager, 573-517-1802

Action Title: Wildland Management	**Jurisdiction: City of Perryville**
Action ID: 1.4	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		1
E: Is it Economically beneficial?		3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		3
Will historic structures be saved or protected?		2
Could it be implemented quickly?		0
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	8
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 39

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Jeremy Mantz, Emergency Services Manager, 573-517-1802

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Water Conservation	**Jurisdiction: City of Perryville**
Action ID: 2.5	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		3
Will historic structures be saved or protected?		2
Could it be implemented quickly?		2
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	8
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 43

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Jeremy Mantz, Emergency Services Manager, 573-517-1802

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Sinkhole Development	**Jurisdiction: City of Perryville**
Action ID: 2.6	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		2
Could it be implemented quickly?		1
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	7
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	8
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 37

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Jeremy Mantz, Emergency Services Manager, 573-517-1802

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: **Emergency Equipment**	**Jurisdiction: City of Perryville**
Action ID: 2.1	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		2
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		3
Will historic structures be saved or protected?		0
Could it be implemented quickly?		2
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 31

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Jeremy Mantz, Emergency Services Manager, 573-517-1802

Action Title: Maintain and Inspect Levee and Levee Equipment	Jurisdiction: Bois Brule Levee and Drainage District
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Definitely Yes	3
T: Is it Technically feasible and potentially successful?	Definitely Yes	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Definitely Yes	3
P: Is it Politically acceptable?	Definitely Yes	3
L: Is there Legal authority to implement?	Definitely Yes	3
E: Is it Economically beneficial?	Definitely Yes	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Definitely Yes	3
Will historic structures be saved or protected?	Definitely Yes	3
Could it be implemented quickly?	Definitely Yes	3
STAPLEE Score		**27**

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	10
Mitigation Effectiveness Score		**20**

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 47

Priority Level: ☒High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by: Kristi Hagan, Secretary/Treasurer (573)517-1960 & Mark Gremaud, Board President, 573-517-2005

Action Title: Construct Safe Room	Jurisdiction: Perry County School District
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Yes	3
T: Is it Technically feasible and potentially successful?	Yes	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Yes	3
P: Is it Politically acceptable?	Yes	3
L: Is there Legal authority to implement?	Yes	3
E: Is it Economically beneficial?	Yes	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Yes	3
Will historic structures be saved or protected?	Yes	3
Could it be implemented quickly?	Maybe	2
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 41

Priority Level: ☐High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Safety Director Garrett L Schott

Action Title: Emergency Generators	Jurisdiction: Perry County School District
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Yes	3
T: Is it Technically feasible and potentially successful?	Yes	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Yes	3
P: Is it Politically acceptable?	Yes	3
L: Is there Legal authority to implement?	Yes	3
E: Is it Economically beneficial?	Yes	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Yes	3
Will historic structures be saved or protected?	Yes	3
Could it be implemented quickly?	Maybe	2
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 41

Priority Level: ☐High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Safety Director Garrett L Schott

Action Title: Bury Power Lines	Jurisdiction: Perry County School District
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Yes	3
T: Is it Technically feasible and potentially successful?	Yes	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Yes	3
P: Is it Politically acceptable?	Yes	3
L: Is there Legal authority to implement?	Yes	3
E: Is it Economically beneficial?	Yes	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Yes	3
Will historic structures be saved or protected?	Yes	3
Could it be implemented quickly?	Maybe	2
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 41

Priority Level: ☐High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Safety Director Garrett L Schott

Action Title: Weather Alert	Jurisdiction: Perry County School District
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Yes	3
T: Is it Technically feasible and potentially successful?	Yes	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Yes	3
P: Is it Politically acceptable?	Yes	3
L: Is there Legal authority to implement?	Yes	3
E: Is it Economically beneficial?	Yes	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Yes	3
Will historic structures be saved or protected?	Yes	3
Could it be implemented quickly?	Maybe	2
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 41

Priority Level: ☐High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Safety Director Garrett L Schott

Action Title: Radio /Repeater Upgrade	Jurisdiction: Perry County School District
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Yes	3
T: Is it Technically feasible and potentially successful?	Yes	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Yes	3
P: Is it Politically acceptable?	Yes	3
L: Is there Legal authority to implement?	Yes	3
E: Is it Economically beneficial?	Yes	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Yes	3
Will historic structures be saved or protected?	Yes	3
Could it be implemented quickly?	Maybe	2
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	10
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 41

Priority Level: ☐High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): Safety Director Garrett L Schott

Appendix D *Adoption Resolutions*

1.1 Perry County..... 1.1

1.2 City of Perryville..... 1.1

1.3 Bois Brule Levee and Drainage District..... 1.2

1.4 Perryville School District No.32..... 1.3

Model Resolution

Resolution # _____

Adopting the Perry County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Perry County School District 32, recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the Perry County School District 32 fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Perry County School District 32 desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Perry County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Perry County School District 32 demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

Now, therefore, be it resolved, that the Perry County School District 32 adopts the "Perry County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan; and

Be it further resolved, the Perry County School District 32 will submit the updated plan along with this Adoption Resolution to the Missouri State Emergency Management Agency and Federal Emergency Management Agency Region VII officials to enable the plan's final approval.

Date: 9-11-24

Certifying Official: Lara Jones

RESOLUTION NO. 2024-70

A RESOLUTION OF THE CITY OF PERRYVILLE, MISSOURI, ADOPTING THE PERRY COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

WHEREAS, the City of Perryville recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

WHEREAS, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the City of Perryville fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

WHEREAS, the City of Perryville desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Perry County Multi-Jurisdictional Local Hazard Mitigation Plan; and

WHEREAS, adoption by the governing body for the City of Perryville demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND BOARD OF ALDERMEN OF THE CITY OF PERRYVILLE, MISSOURI THAT:

The City of Perryville adopts the "Perry County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan; and

BE IT FURTHER RESOLVED, the City of Perryville will submit the updated plan along with this Adoption Resolution to the Missouri State Emergency Management Agency and Federal Emergency Management Agency Region VII officials to enable the plan's final approval.

PASSED AND APPROVED this 1st day of October 2024, by a vote of 6 ayes, 0 nays, 0 abstentions, and 0 absent.

CITY OF PERRYVILLE, MISSOURI

By: _____
Mayor

ATTEST

By: _____
City Clerk

RESOLUTION

Adopting the Perry County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Bois Brule Levee and Drainage District recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the Bois Brule Levee and Drainage District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Bois Brule Levee and Drainage District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Perry County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Bois Brule Levee and Drainage District demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

Now, therefore, be it resolved, that the Bois Brule Levee and Drainage District adopts the "Perry County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan; and

Be it further resolved, the Bois Brule Levee and Drainage District will submit the updated plan along with this Adoption Resolution to the Missouri State Emergency Management Agency and Federal Emergency Management Agency Region VII officials to enable the plan's final approval.

Date: October 3, 2024

President

Secretary

COUNTY OF PERRY, MISSOURI

A RESOLUTION OF THE COUNTY OF PERRY, MISSOURI ADOPTING THE SHOW-ME COUNTY MULTI—JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN.

Whereas, the County of Perry, Missouri recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the County of Perry, Missouri fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the County of Perry, Missouri desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Show-Me County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the County of Perry, Missouri demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

Now, therefore, be it resolved, that the County of Perry, Missouri adopts the "Show-Me County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan; and

Be it further resolved, the County of Perry, Missouri will submit the updated plan along with this Adoption Resolution to the Missouri State Emergency Management Agency and Federal Emergency Management Agency Region VII officials to enable the plan's final approval.

DULY READ AND PASSED THIS 10th DAY OF October, 2024.

PASSED AND APPROVED this 10th day of October, 2024, by a vote of 2 ayes, — nays, — abstentions, and 1 absent.

COUNTY OF PERRY, MISSOURI

(SEAL)

COUNTY COMMISSION SEAL PERRY COUNTY, MO

Presiding Commissioner
Mike J. Sauer

Associate Commissioner, Dist. 1
Jay P. Wengert

Associate Commissioner, Dist. 2
Keith A. Hoehn

ATTEST:

Jared W. Kutz, County Clerk

Appendix E *Meeting Materials*

PERRY COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE
KICKOFF MEETING—SIGN-IN SHEET

Project:	Perry County, Missouri Multi-jurisdictional Hazard Mitigation Plan Update	**Meeting Date/Time:**	July 30th, 2024 3:00PM
Facilitator:	Southeast Regional Planning Commission	**Place/Room:**	SEMO RPC

Name	Title	Department/Agency	Email	Phone #	Signature
Garrett Schott	Safety Director- SRO	Perry County School Dist	gschott@pcsd32.com	573-946-0960	G Schott
Jeremy Mantz	Emergency Services Manager	City of Perryville	jeremymantz@perryville.mo.gov	573-587-1802	Jeremy Mantz
*(online) Brent Buerck	City admin	City of Perryville			(filled out by Sarah)
Sarah Brown	GIS Specialist [redacted]	SEMORPC			

PERRY COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE
MEETING #1 –SIGN-IN SHEET

Project:	Perry County, Missouri Multi-jurisdictional Hazard Mitigation Plan Update	**Meeting Date/Time:**	August 13th,2024 3:00PM
Facilitator:	Southeast Regional Planning Commission	**Place/Room:**	SEMO RPC

Name	Title	Department/Agency	Email	Phone #	Signature
Jeremy Mantz	Emergency Services Manager	City of Perryville	jeremymantz@perryvillemo.gov	573-517-1862	
Jeremy Tanz	Exec Dir.	SEMO RPC	jtanz@semorpc.org	573-547-8357	
Kristi Hagan	Secretary/ ~~Director~~ Treasurer	BBLD	klhaganlevee@gmail.com	5735171960	
Mark Gremaud	Board President	BBLD	mark.gremaud@gmail.com	573-517-2005	
GARRETT Schott	Safety Director	Perry County School District 32	gschott@pcsd32.com	573 946-0960	
Brent Buek	City Admin	City of Perryville	brentbuek@perryville.mo.gov	~~751~~ 547-2594	
MIKE SAUER	PERRYCOUNTY PRESIDING COMMISSIONER	PERRY COUNTY	MSAUER@PERRYCOUNTYMO.US	573-768-6167	
* TOM GRAYSON	Perry Cnty EMD Director	Perry County EMD	tgrayson@perrycountymo.gov	573-768-0911	

PERRY COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE
MEETING #2 –SIGN-IN SHEET

Project:	Perry County, Missouri Multi-jurisdictional Hazard Mitigation Plan Update	**Meeting Date/Time:**	August 13th,2024 3:00PM 27
Facilitator:	Southeast Regional Planning Commission	**Place/Room:**	SEMO RPC

Name	Title	Department/Agency	Email	Phone #	Signature
MARK Gremaud	President	Bois Brule Levee Dist	mark.gremaud@gmail.com	573-517-2005	
Kristi Hagan	Secretary/ Treasurer	Bois Brule Levee District	klhagan@levee@gmail.com	573-517-1960	
Fara Jones	Superintendent	Perry Co Dist 32	fjones@pcsd32.com	573-318-5959	
Tom Grayson	Perry County Emergency Manager		tgrayson@perrycountymo.gov	573-547-4000	
Brent Buek	City Administrator	City of Perryville	brentbuek@cityofperryville.com	573-547-2594	
* Jeremy Mantz		Fire Dist.			
* Jennifer France					
*					
*					

*online

PUBLIC MEETING NOTICE

Perry County and Participating Jurisdictions, along with the Southeast Missouri Regional Planning Commission (SEMO RPC), are **seeking public input** for the

2024 Perry County Hazard Mitigation Plan.

Public meetings will be held at the SEMO RPC office at 1 W. Saint Joseph St. in Perryville on:
7/30/2024
8/13/2024, and
8/27/2024
All meetings will begin at 3:00 p.m.

Public participation will help develop the best plan possible. The previous and current draft plans can be found at: http://www.semorpc.org/hazard_mitigation_planning.html

For more information or to provide comments or feedback on the draft, please contact:

Alexandra Rios
Environmental Planner
Southeast Missouri Regional Planning Commission
1 W. St. Joseph Street
P.O. Box 366 Perryville, MO 63775
Phone: 573-547-8357
Fax: 573-547-7283
arios@semorpc.org
www.semorpc.org

PerryCounty
Hazard Mitigation Plan

Plan Update Kick-off Meeting

July 30th, 2024





Agenda

- Hazard Mitigation Planning Purpose
- Grant Programs Linked to Approved Plan
- Planning Tasks / Multi-jurisdictional Approach
- Participation Requirements
- Public Involvement
- Data Collection Questionnaires
- Discussion of Hazards
- Critical Facility Inventory
- Next Steps in the Planning Process

What Is Mitigation?

- Sustained action taken to reduce or eliminate long-term risk to human life and property from hazard events

- Mitigation planning is a process for communities to:
  - **Identify the hazards to which they are at risk;**
  - **Assess the potential impacts of those hazards;**
  - **Develop goals, objectives, and actions to reduce impacts; and**
  - **Prioritize and implement mitigation actions.**

Disaster Mitigation Act of 2000 (DMA 2K)

- Requires local governments to adopt a natural hazard mitigation plan to maintain eligibility for FEMA mitigation funds.
- Plan must be updated and approved by FEMA every 5 years.
- This is an update to the 2019 Perry County Hazard Mitigation Plan.



Presidential Major Disaster Declarations including Perry County Since 2010

Number	Declared	Description
4741	9/21/23	Severe Storms, Straight-line Winds
4490	3/26/2020	Biological
3482	3/13/2020	Biological
4451	7/9/2019	Severe Storm
4435	5/20/2019	Flood
4317	6/2/2017	Flood
4250	1/21/2016	Flood
3374	1/2/2016	Flood
4238	8/7/2016	Severe Storm
4130	7/18/2013	Severe Storm
1980	5/9/2011	Severe Storm
3317	2/3/2011	Severe Storm

Approved Hazard Mitigation Plan Establishes Eligibility for FEMA HMA Grants

- **Hazard Mitigation Grant Program**
- **Pre-Disaster Mitigation Program**
- **Flood Mitigation Assistance Program**
  - Repetitive Loss Program
  - Severe Repetitive Loss Program



9 Tasks to Complete the Plan Update

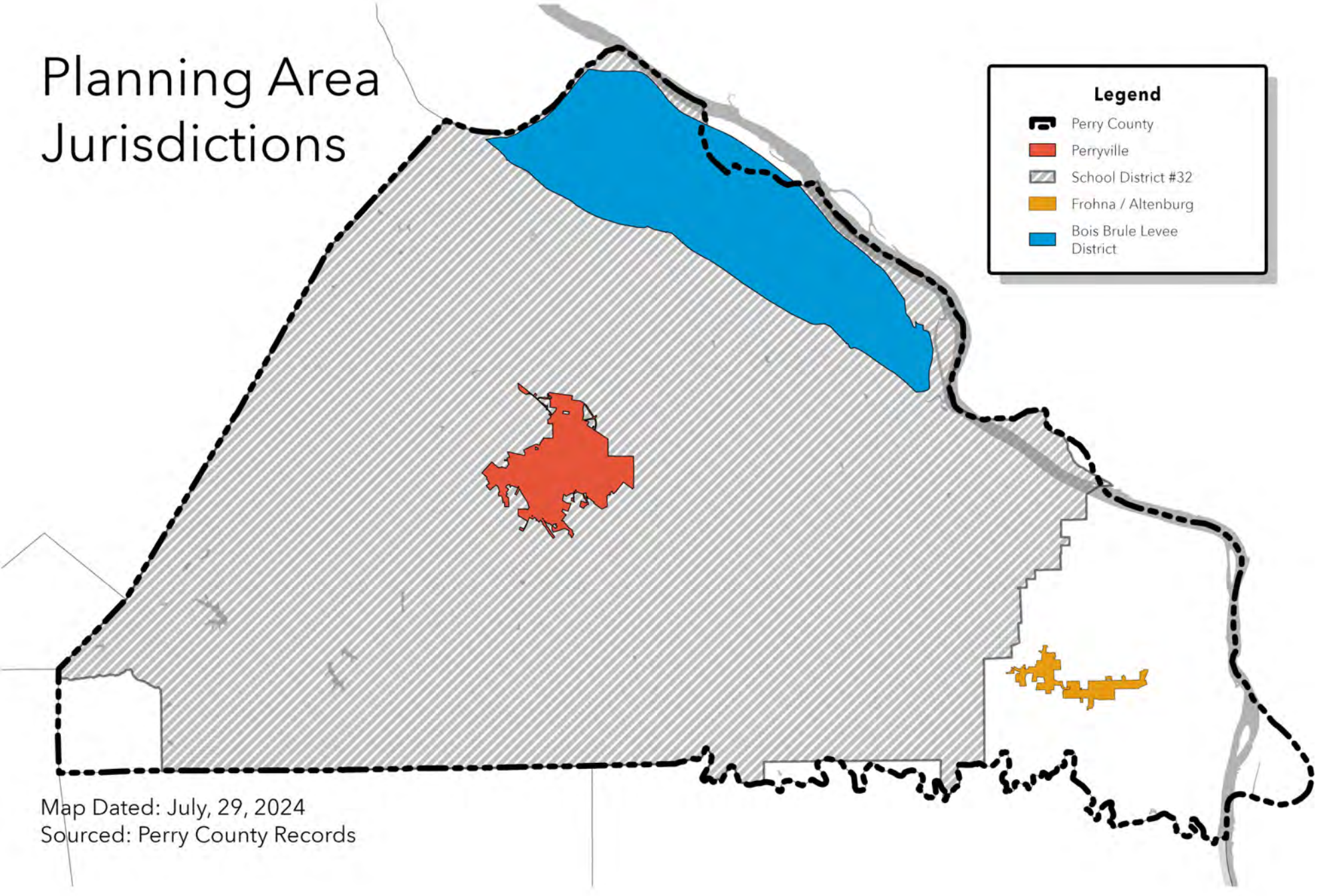
- Task 1: Determine the Planning Area and Resources
- Task 2: Build the Planning Team
- Task 3: Create an Outreach Strategy
- Task 4: Review Community Capabilities
- Task 5: Conduct a Risk Assessment
- Task 6: Develop a Mitigation Strategy
- Task 7: Review and Adopt the Plan
- Task 8: Keep the Plan Current
- Task 9: Create a Safe and Resilient Community

Multi-Jurisdictional Plan Approach
Task 1: Determine the Planning Area

Jurisdictions:

- Perry County
- Perryville
- Perry County School District #32
- Frohna
- Levee District
- Altenburg

Planning Area Jurisdictions



Map Dated: July, 29, 2024
Sourced: Perry County Records

Hazard Mitigation Planning Committee
Task 2: Build the Planning Team

Jurisdictions

- Emergency Responders
- County Clerks
- City Clerks
- Elected Officials
- Public Works Directors
- Floodplain Managers
- Stormwater Mangers
- County And City Planners
- Economic Development Directors
- GIS Staff
- School Principals
- School Facilities Directors
- School Superintendents

Stakeholders

- Business Partners
- Private-non-profits
- State Agencies
  - SEMA
  - Missouri Department of Natural Resources
  - Missouri Department of Transportation
- Federal Agencies
  - Federal Emergency Management Agency
- Academia
- Local/Regional Agencies

Benefits of Participating in a Multi-jurisdictional Plan

- Enables comprehensive approach to mitigate hazards that affect multiple jurisdictions;
- Shares costs and resources;
- Avoids duplication of efforts;
- Improves coordination/communication among local jurisdictions; and
- Imposes external framework/schedule on process.

Requirements for Each Participating Jurisdiction

- Designate a representative to serve on the Hazard Mitigation Planning Committee, which will meet three times during the planning process;
- Provide data for and assist in the development of the updated risk assessment that describes how various hazards impact your jurisdiction;
- Provide data to describe current capabilities;
- Develop/update mitigation actions (at least one) specific to your jurisdiction;
- Provide comments on plan drafts as requested;
- Inform the public, local officials, and other interested parties about the planning process and provide opportunities for them to comment on the plan; and
- Formally adopt the mitigation plan.

What Happens if My Jurisdiction Chooses Not to Participate in the Plan?

Jurisdictions (including public school districts) that have not participated in a FEMA-approved mitigation plan will not be eligible applicants for FEMA Hazard Mitigation Assistance grants.

Public Involvement Requirements
Task 3: Creating an Outreach Strategy

- 1. During Drafting Stage
  - **Public Survey—sample survey in your packet!**
    - **Survey Monkey**
    - **Link on RPC Website**
- 2. Prior to approval
  - **Draft Available via RPC Website**
  - **Hard Copies-at least two public locations**
- Other Ideas/Events to Inform the Public?

Data Collection Questionnaires

Task 4: Reviewing Community Capabilities
Task 5: Conduct Risk Assessment

- Separate forms for local govts. and schools
- **Due by August 6th, 2024**
    - Send to Alex or Sarah
    - **Capability Assessment Section**
        - **Existing Plans/Policies/Ordinances;**
        - **Administrative/Technical Capabilities; and**
        - **Fiscal Resources.**
    - **Additional Questions**
    - **Historic Hazard Events**
- Electronic copy will be provided in MS Word

10 Minute Break

- Look through Data Collection Guide
- Complete Survey
- Complete what you can
- Write down any questions
- Questions will be answered after break

Hazard Identification and Risk Assessment

- Hazard Profile
  - Hazard Description
  - Geographic Location
  - Severity/Magnitude/Extent
  - Previous Occurrences
  - Probability of Future Occurrence
- Vulnerability Assessment
  - Vulnerability Overview
  - Potential Losses to Existing Development
  - Future Development
  - Hazard Summary by Jurisdiction
- Problem Statement

Based on existing plan, additional information from planning committee, additional research/analysis

Natural Hazards for Consideration

- Dam Failure
- Drought
- Earthquakes
- Extreme Heat
- Fires (Urban/Structural and Wild)
- Flooding (Flash and River)
- Land Subsidence/Sinkholes
- Levee Failure
- Thunderstorm/High Winds/Lightning/Hail
- Tornado
- Winter Weather/Snow/Ice/Severe Cold

Dam Failure

- 39 identified Dams in the County
- 20 Dams are classified as having “High Hazard Potential”
- There have been no recorded of Dam Failures

Concerns:

- **Piping**: Internal erosion caused by embankment leakage, foundation leakage and deterioration of pertinent structures appended to the dam.
- **Erosion**: Inadequate spillway capacity causing overtopping of the dam, flow erosion, and inadequate slope protection.
- **Structural Failure**: Caused by an earthquake, slope instability or faulty construction.

Drought

Defined as a condition of moisture levels significantly below normal for an extended period 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:

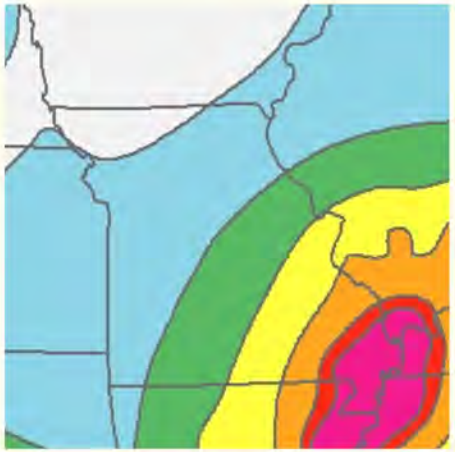
1. Meteorological: This type of drought happens when a region doesn't get as muc rain as it normally does over a certain period. It's all about how dry it is compared to the usual weather for that area.
2. Hydrological: This type of drought affects the water levels in rivers, lakes, and underground areas. It happens when low rainfall affects the water supply, but it takes a while to notice because it impacts larger water systems.
3. Agricultural: This type of drought affects crops and soil. It happens when there isn't enough water for plants to grow. This depends on the weather, the type of plants, their growth stage, and the soil's ability to hold water.
4. Socioeconomic: This type of drought occurs when a water shortage starts to impact people and the economy. For example, it might lead to higher food price or water restrictions.

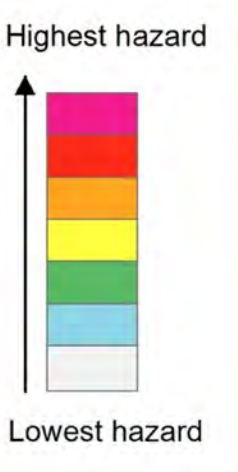
- The 2019 Plan determined “Moderate Vulnerability” and about 32% annual chance of occurrence.

Earthquake

Risks:

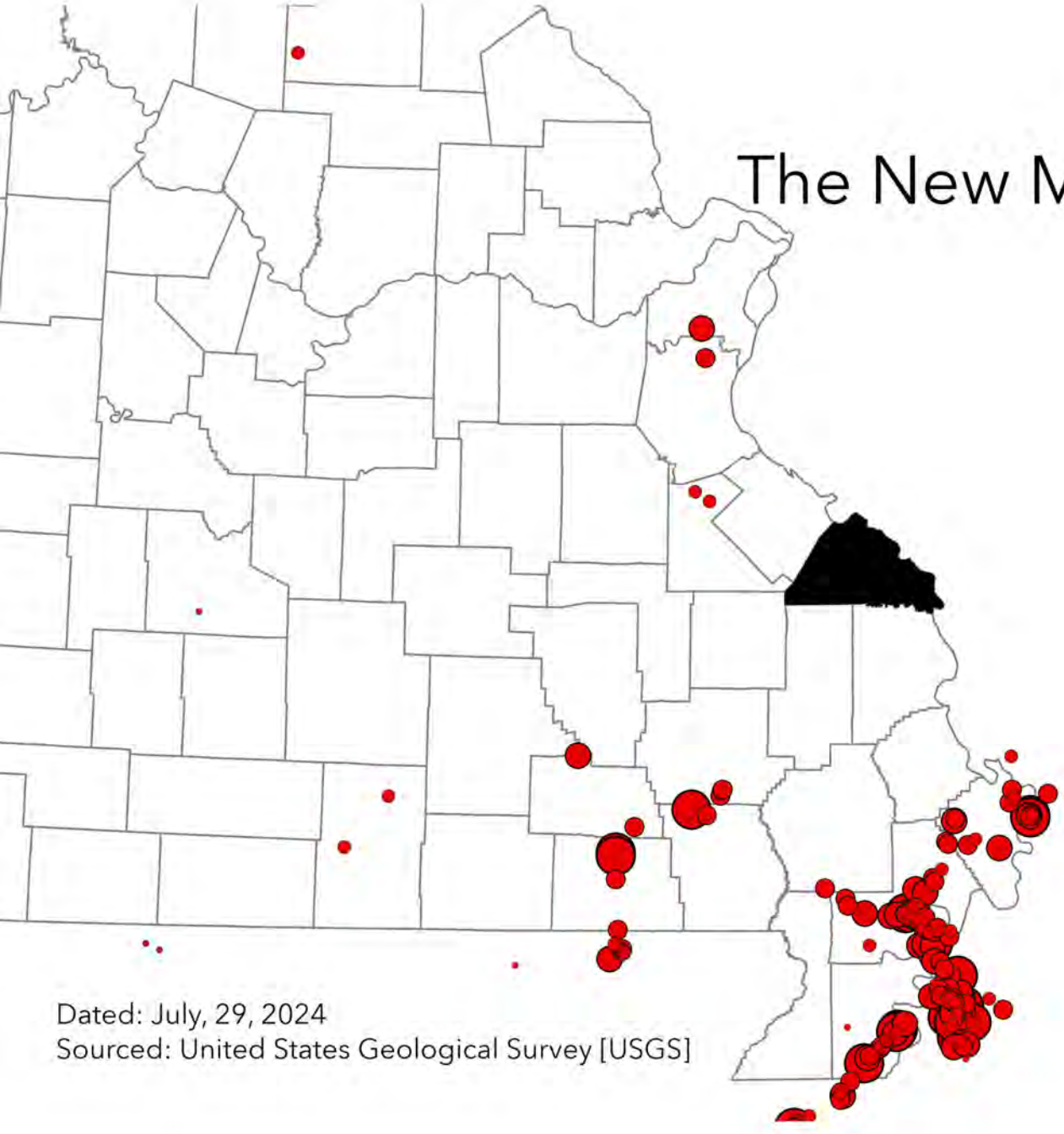
- Perry County is located approximately 80 miles northwest of the New Madrid Fault.
- Frequent yet small seismic activity in the region
- The last Major Earthquake was in 1811
- Risk Index 90.7 (Relatively Low)



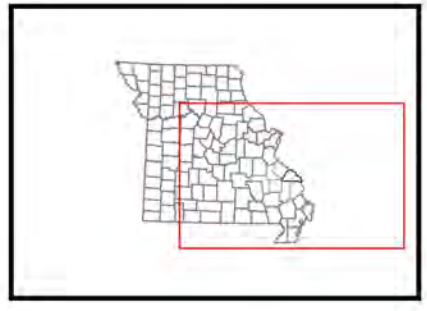


Earthquakes & The New Madrid Seismic Zone

[10 Year History]



Dated: July, 29, 2024
Sourced: United States Geological Survey [USGS]



Extreme Heat

- 34 Heat-related deaths recorded in MO
- CDC reports that heat-related deaths are rising yearly

Heat Index

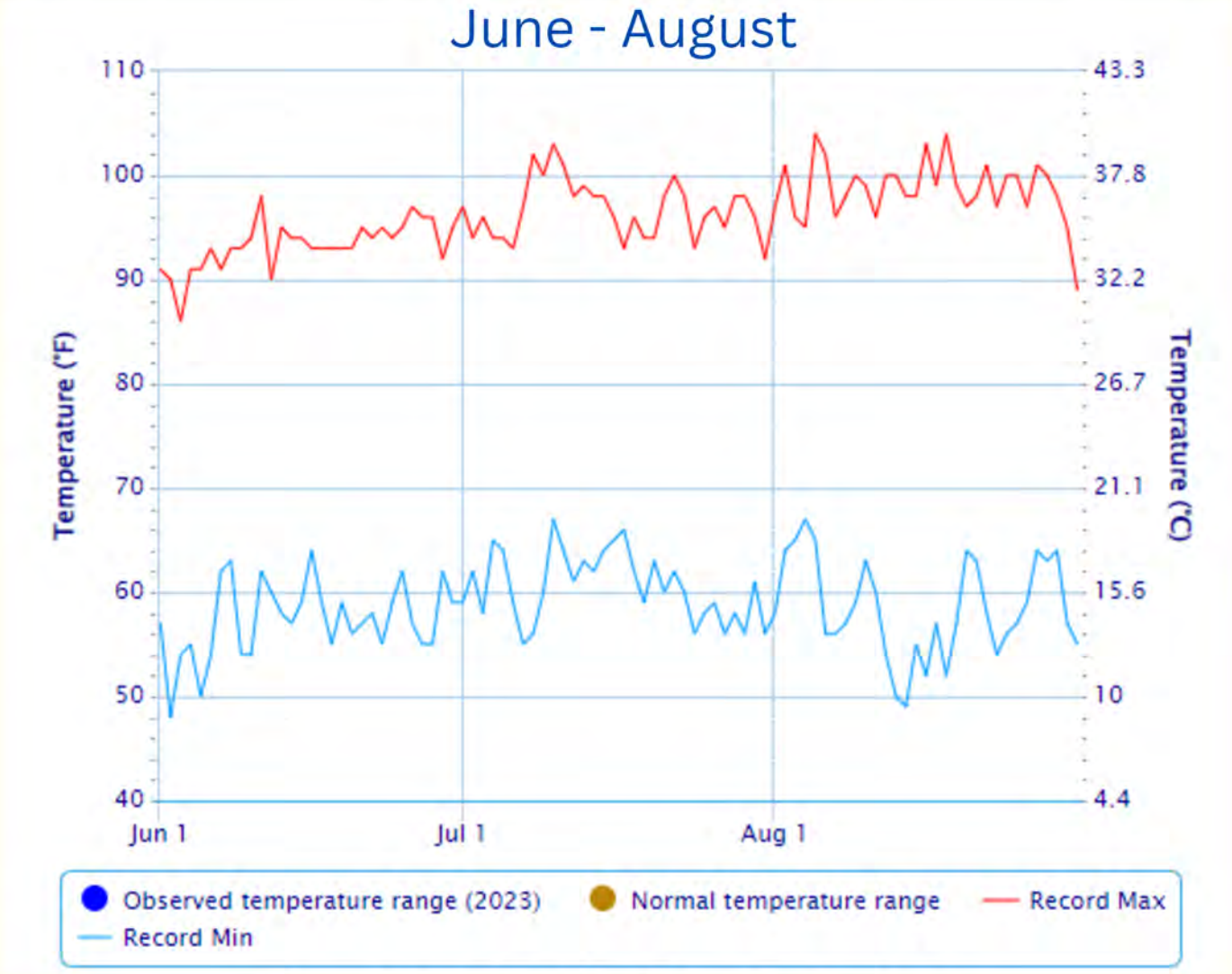
- Populations at risk:
  - **Elderly**
  - **Children**
  - **Unhoused**
  - **Those with Low-Income**
  - **Labor Intensive Jobs in the Outdoors**

Additional Concerns:

- **Power Outages**
- **Crop Loses**

*No reported crop or property damages within the last 5 years

Summer Weather Trends



Record Highs & Lows

Source: National Oceanic and Atmospheric Administration [NOAA]

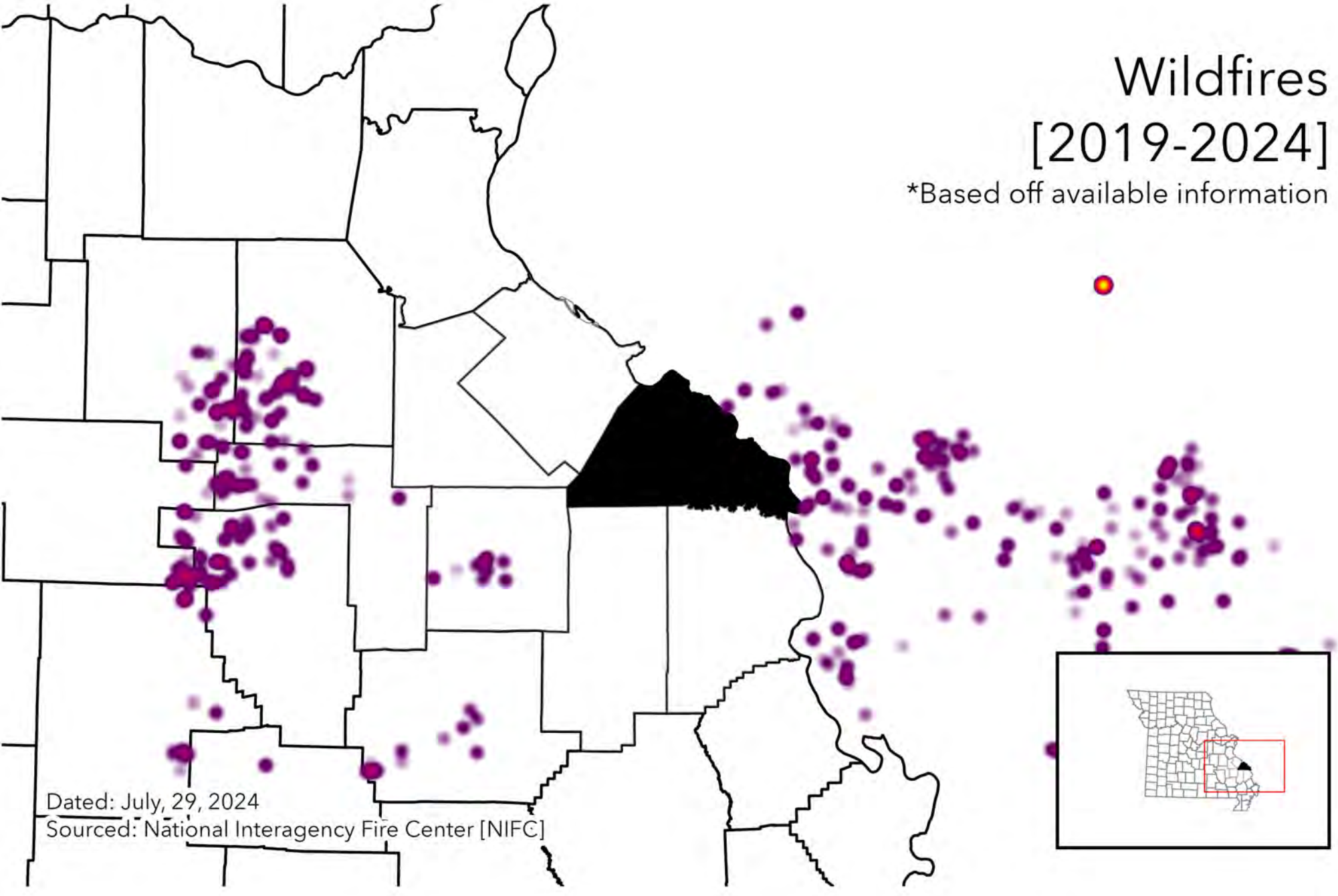
Fires (Urban/Structural/Wild)

- Most wildfires are adjacent to Perry County, across the Mississippi River
- Overall risk is relatively low
- Fire outbreaks are most directly/indirectly caused by individuals &/or accidents



Wildfires [2019-2024]

*Based off available information



Dated: July, 29, 2024
Sourced: National Interagency Fire Center [NIFC]

Flooding (Flash and River)

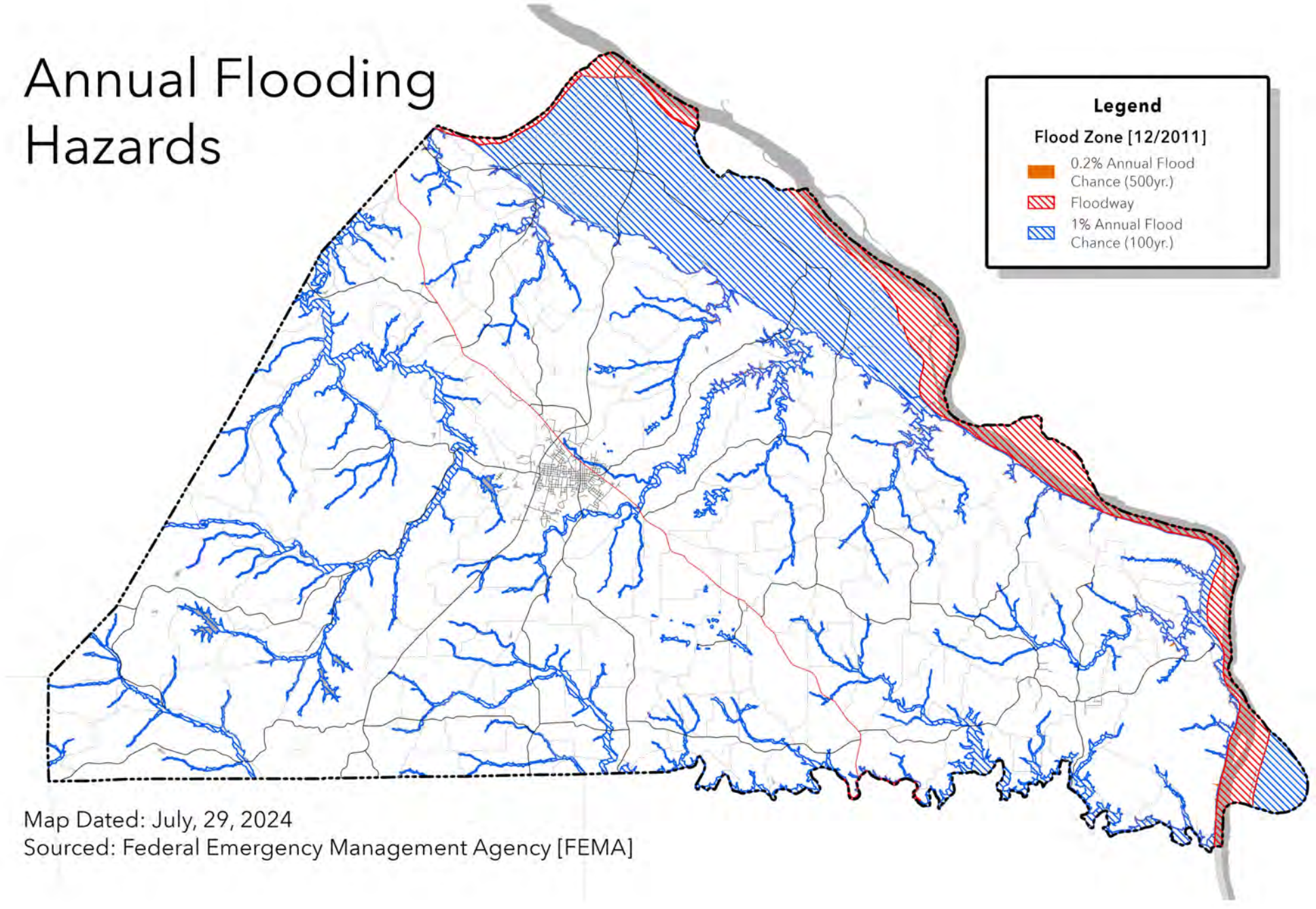
- 3 reports of flash flooding since 2019, no reported damages
- 4 recorded events;$20,000 in property and $100,000 in crop damages

*Flooding is the least reported weather events; the only weather related event to have reported crop damage in the last 5yr. period

- Addresses currently residing in in flood zones:

~15 within the 0.2% annual chance
~224 within the 1% annual chance

Annual Flooding Hazards



Map Dated: July, 29, 2024
Sourced: Federal Emergency Management Agency [FEMA]

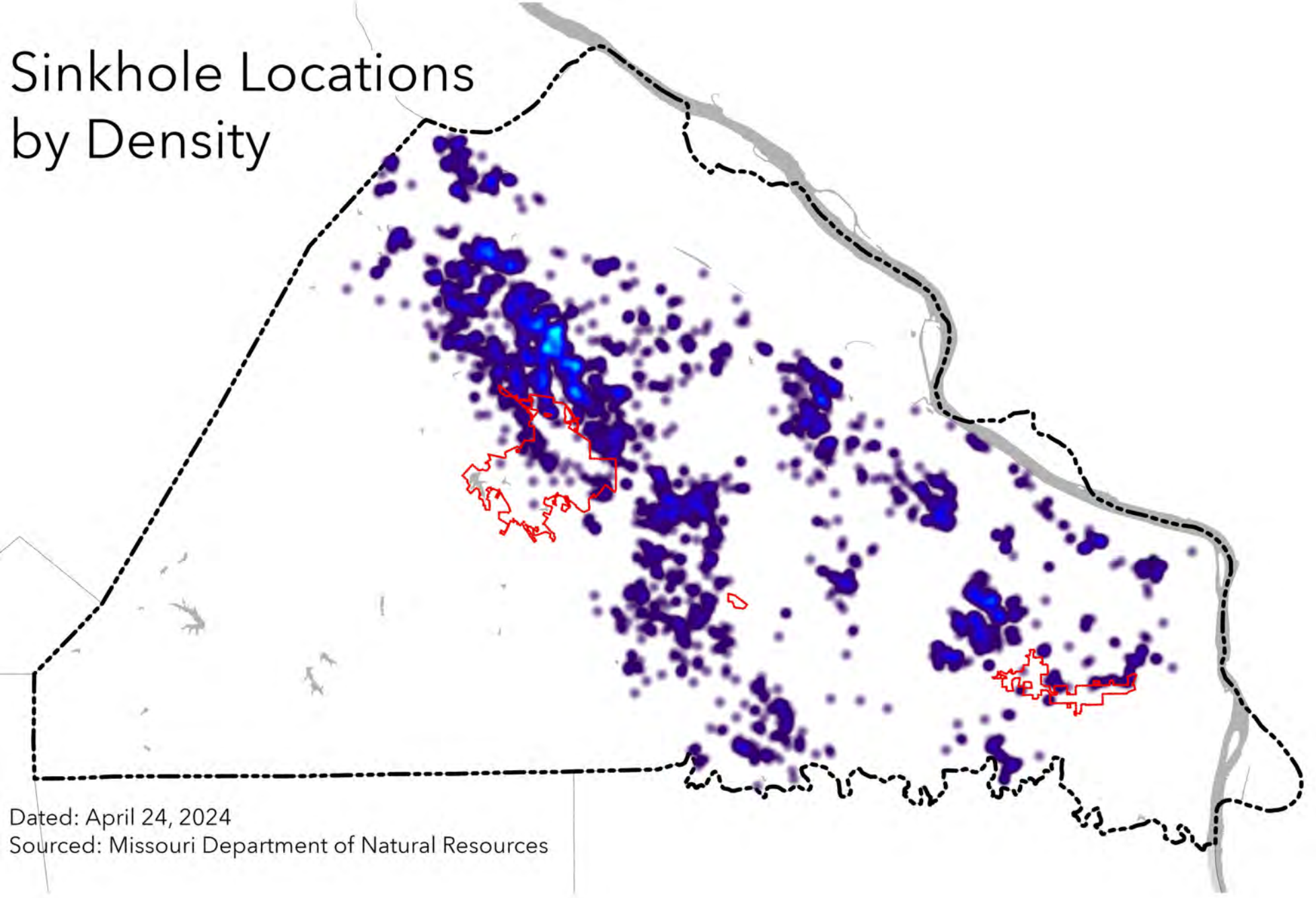
Land Subsidence/Sinkholes

- Perry County contains 2,622 individual Sinkholes spanning 5,057.03 acres [calculated]

- Sinkhole ranges currently intersect ~61 county homes

*Numbers for property and crop damages will need additional research & sources

Sinkhole Locations by Density



Dated: April 24, 2024
Sourced: Missouri Department of Natural Resources

Levee Failure

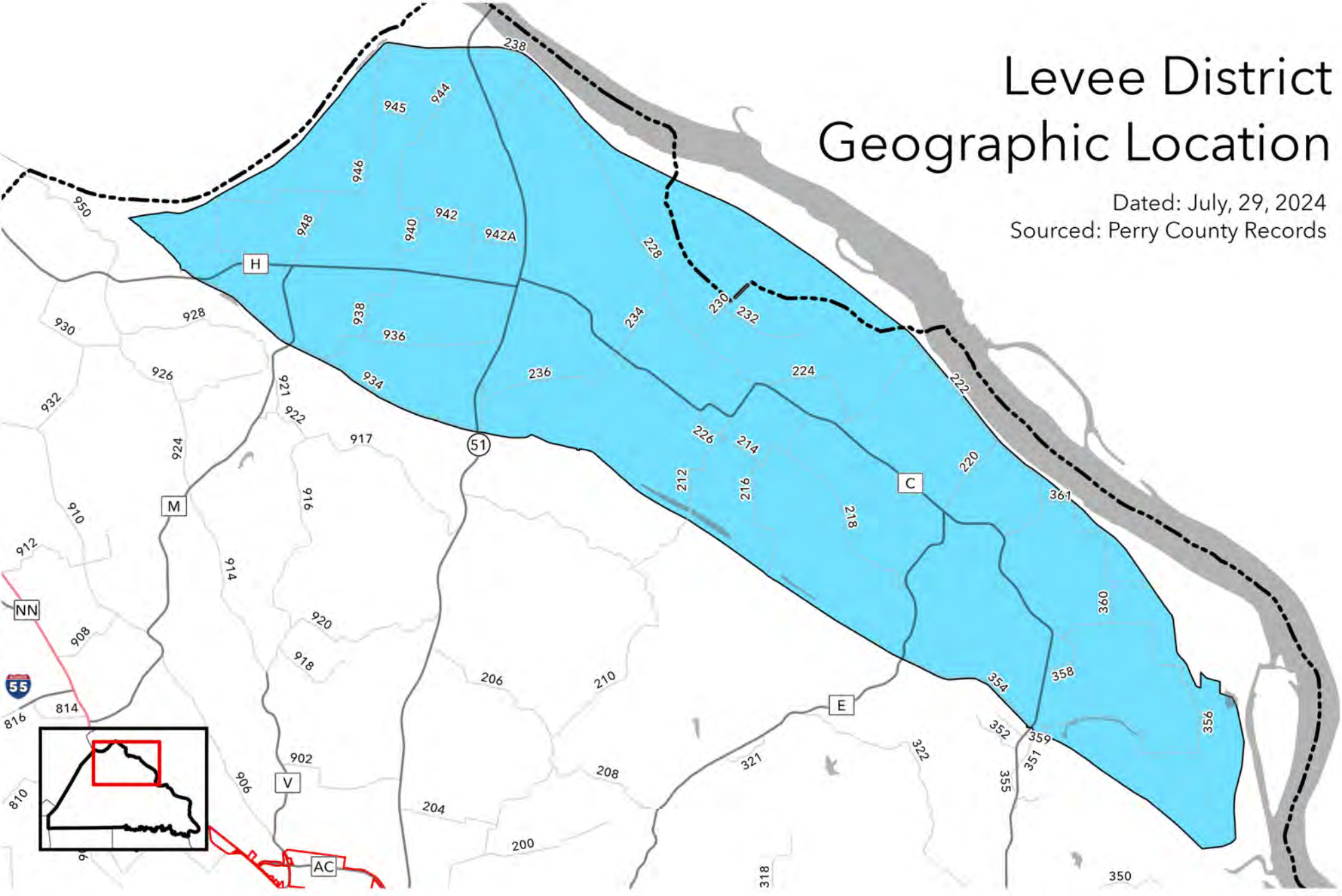
Accredited levees

- ### Non-accredited levees protecting populations

- The Bois Brule Levee and Drainage District was established in 1976 after a reorganization of the Perry County Drainage and Levee
- The District covers 26,966.78 Acres [calculated] containing ~85 addresses as of 2024

Levee District Geographic Location

Dated: July, 29, 2024
Sourced: Perry County Records



Thunderstorm/High Winds/Lightning/Hail

- **Strong winds, hail, and thunderstorms are the most frequent types of recorded weather events**
- **Dense fog can become a hazard with minimal visibility [22 events]**

- **Previous 5 year summary with recorded property damages**
  - Strong winds; 27 recorded totaling $27,000
  - Thunderstorms; 14 recorded totaling $120,000

*No records of crop damage



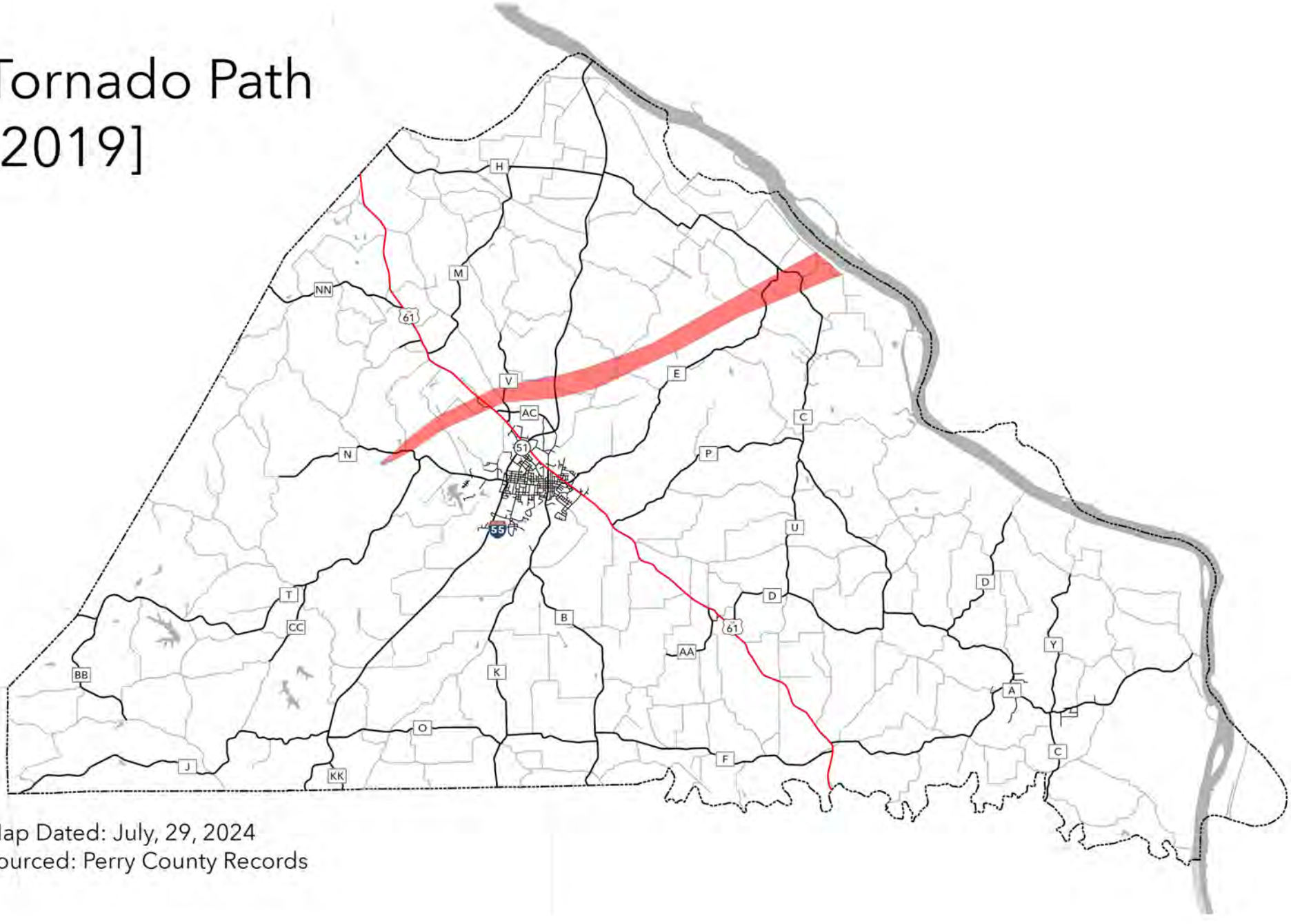
Tornados

- **Since 2019, 3 Tornados contributed to the highest number of property damages [$240,000.00]**

*No records of crop damage

- **One tornado classified as an EF2 in 2021 [Wind speeds range ~111 to 135mph]; of the three recorded tornados, intensity has increased over a 5 year period**
- **The last Tornado to cause significant damage was back in 2017; the path intersected approx. 117 homes & spanned over 4,989.91 acres**

Tornado Path [2019]

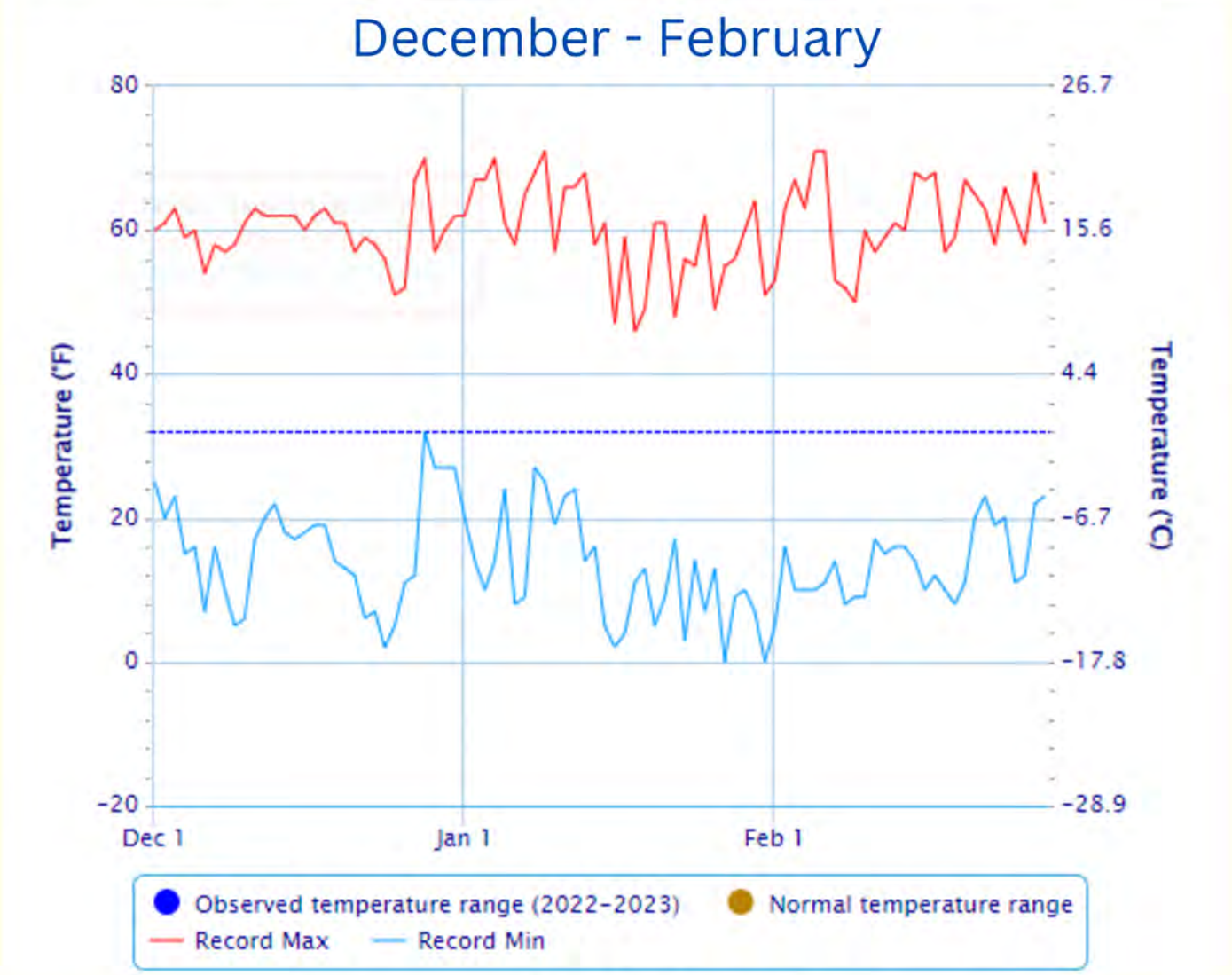


Map Dated: July, 29, 2024
Sourced: Perry County Records

Winter Weather/Snow/Ice/Severe Cold

- Most frequently reported types are Frost/Freeze [15] and Winter Weather Advisory [13]
- Reported damages:
  - Heavy snow caused $50,000 in property damages over a 5 year period
- Populations at risk are comparable to those listed in extreme heat

Winter Weather Trends



Record Highs & Lows

Source: National Oceanic and Atmospheric Administration [NOAA]

Critical Facilities

- Critical Facility—essential in providing utility or direction either during the response to an emergency or during the recovery operation.
  - **Essential Facility—if damaged would have devastating impacts on disaster response and/or recovery.**
  - **High Potential Loss Facility—if damaged would have a high loss or impact on the community.**
  - **Transportation/Lifeline Facility—assets critical for transport and provision of necessary utilities**

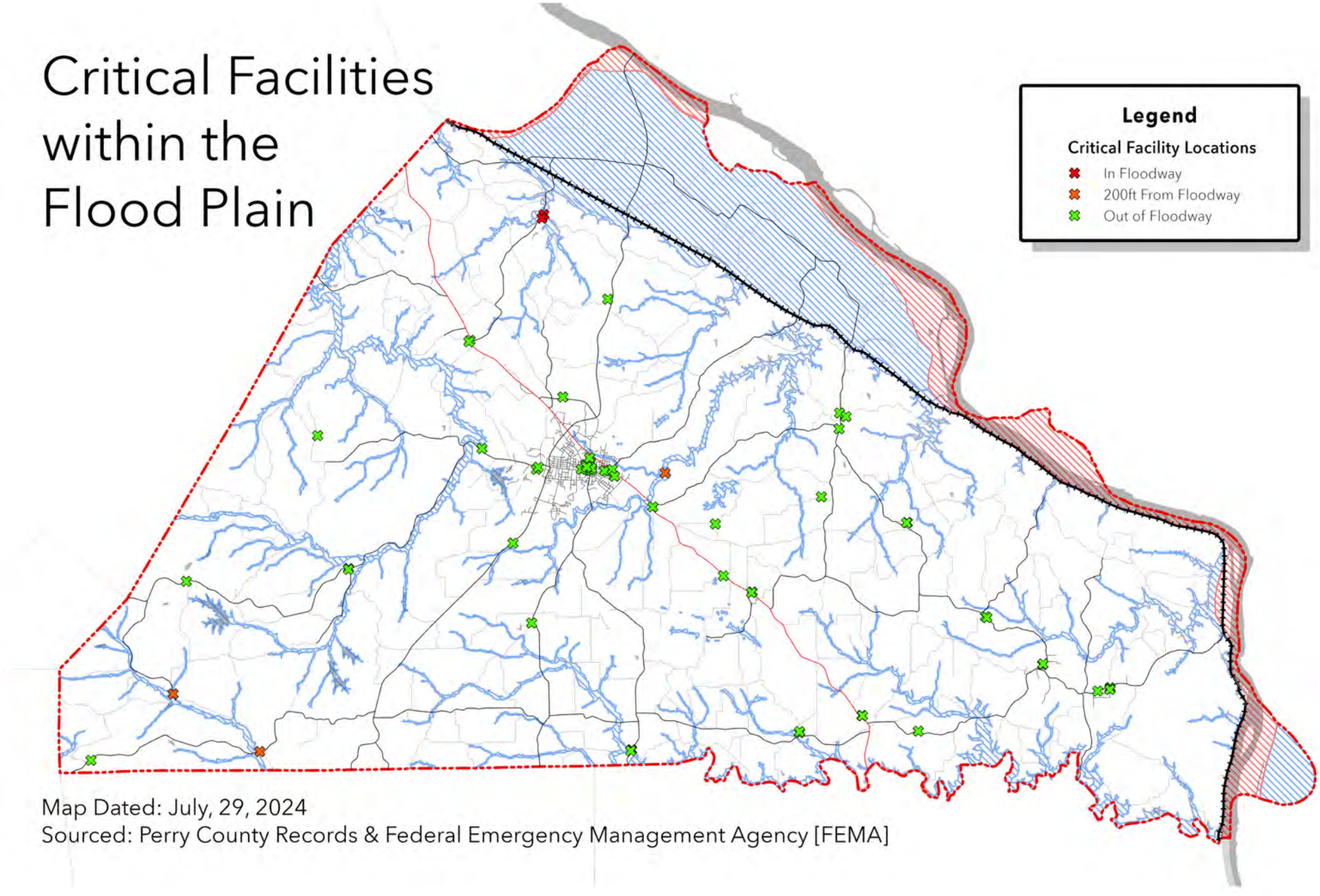
Examples of a Critical Facility

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

Analysis of Critical Facilities

- Impacts of some hazards will be considered for critical facilities
  - **Estimated ~4 facilities fall within or are in close proximity to the floodplain, mostly churches**
  - **Perryville's Wastewater Treatment Plant falls within a 200ft Buffer of the Flood Zone**

Critical Facilities within the Flood Plain



Map Dated: July, 29, 2024
Sourced: Perry County Records & Federal Emergency Management Agency [FEMA]

Next Steps in the Planning Process

- **August 6th—Data Collection Guides Due**
- **August 13th @ 3PM—2nd Planning Meeting**
  - Risk Assessment Update Results
    - Critical Facility Analysis Results
  - Review/Update Mitigation Goals
  - Begin Status Updates for Previous Mitigation Actions
- **August 27th @ 3PM —3rd/Final Planning Meeting**
  - Status Update Summary of Previous Mitigation Actions
  - Brainstorm / Discuss Potential New Mitigation Actions
  - Mitigation Action Implementation Plans for Continuing and New Actions
  - Discuss Plan Maintenance

Perry County Hazard Mitigation Plan Update

Meeting 2: Risk Assessment



Agenda

- Brief Review
- Discuss Participation Requirements/Status
- Plan Update Format
- Review Hazards
- Update Mitigation Goals
- Discuss Mitigation Action Updates
- Next Steps

Disaster Mitigation Act of 2000

- Requires local governments to adopt a natural hazard mitigation plan to maintain eligibility for FEMA Hazard Mitigation Assistance funds

- This Plan Update is for a Multi-jurisdictional Hazard Mitigation Plan covering the Unincorporated County, participating Incorporated Cities, and Public School Districts



Participation Requirements

- Appoint a representative to the Hazard Mitigation Planning Committee (meets three times).
- Provide data for and assist in updating the risk assessment for your jurisdiction.
- Supply data on current capabilities.
- Develop or update at least one mitigation action specific to your jurisdiction.
- Provide feedback on plan drafts when requested.
- Inform the public, local officials, and others about the planning process and gather their comments.
- Formally adopt the mitigation plan.

Plan Update Format

- Executive Summary
- Chapter 1—Planning Process
- Chapter 2—Jurisdiction Profiles
- Chapter 3—Risk Assessment
- Chapter 4—Mitigation Strategy
- Chapter 5—Plan Maintenance
- Appendices



Review of Hazards



Things to keep in mind:

- What has changed since the last plan?
- What actions are currently in place?
- What actions should be considered?

Risk Assessment Process

- Hazard Profile
  - Hazard Description
  - Geographic Location
  - Severity/Magnitude/Extent
  - Previous Occurrences
  - Probability of Future Occurrence
- Vulnerability Assessment
  - Vulnerability Overview
  - Potential Losses to Existing Development
  - Future Development
  - Hazard Summary by Jurisdiction
- Problem Statement

Presidential Major Disaster Declarations including Perry County Since 2010

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4238	8/7/2016	Severe Storm
4130	7/18/2013	Severe Storm
1980	5/9/2011	Severe Storm
3317	2/3/2011	Severe Storm

Dam Failures

- 39 identified Dams in the County
- 20 Dams are classified as having “High Hazard Potential”
- There have been no recorded of Dam Failures
- About 40 Building in the County Vulnerable
- Potential Loss about $3.7 Million for State Regulated Dams
- Population and Development Density Low across Dam Sites



Concerns:

- Piping: Internal erosion caused by embankment leakage, foundation leakage and deterioration of pertinent structures appended to the dam.
- Erosion: Inadequate spillway capacity causing overtopping of the dam, flow erosion, and inadequate slope protection.
- Structural Failure: Caused by an earthquake, slope instability or faulty construction.

Drought

It is defined as a condition of moisture levels significantly below normal for an extended period that adversely affects plants, animal life, and humans. A drought period can last for months, years, or even decades.

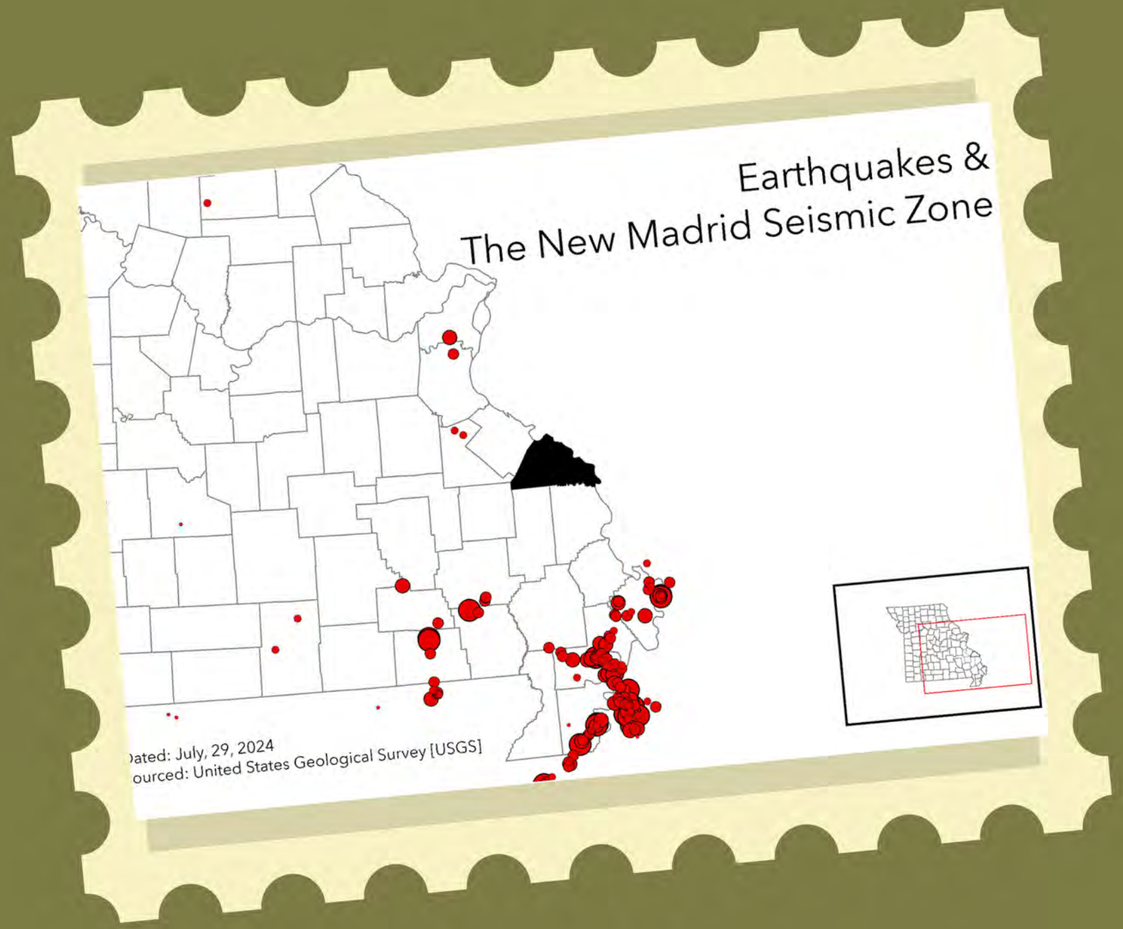
There are four types of drought conditions: **Meteorological, Hydrological, Agricultural, and Socioeconomic.**

- Since 1993 there are have been about 8 significant occurrences within the county.
- There is 32% Annual Chance of Drought
- The 2013 Missouri State Hazard Mitigation Plan indicates the county has had $531,517 in annualized crop insurance claims due to drought from 1998-2012 and is rated with a Medium-Low crop loss ratio
- Moderate Vulnerability



Earthquakes

- Perry County is located approximately 80 miles northwest of the New Madrid Fault.
- Frequent yet small seismic activity in the region
- The last Major Earthquake was in 1811
- Risk Index 90.7 (Relatively Low)
- The county experiences about 1 event each year (2.5 3.0), and the probability of a 5.0 earthquake or greater is about 10% annually
- Projected Loss about $756 million
- All Jurisdictions at equal risk



Extreme Heat

- 34 Heat-related deaths recorded in MO
- CDC reports that heat-related deaths are rising yearly

Heat Index

- Populations at risk:
  - **Elderly**
  - **Children**
  - **Unhoused**
  - **Labor Intensive Jobs in the Outdoors**

Additional Concerns:

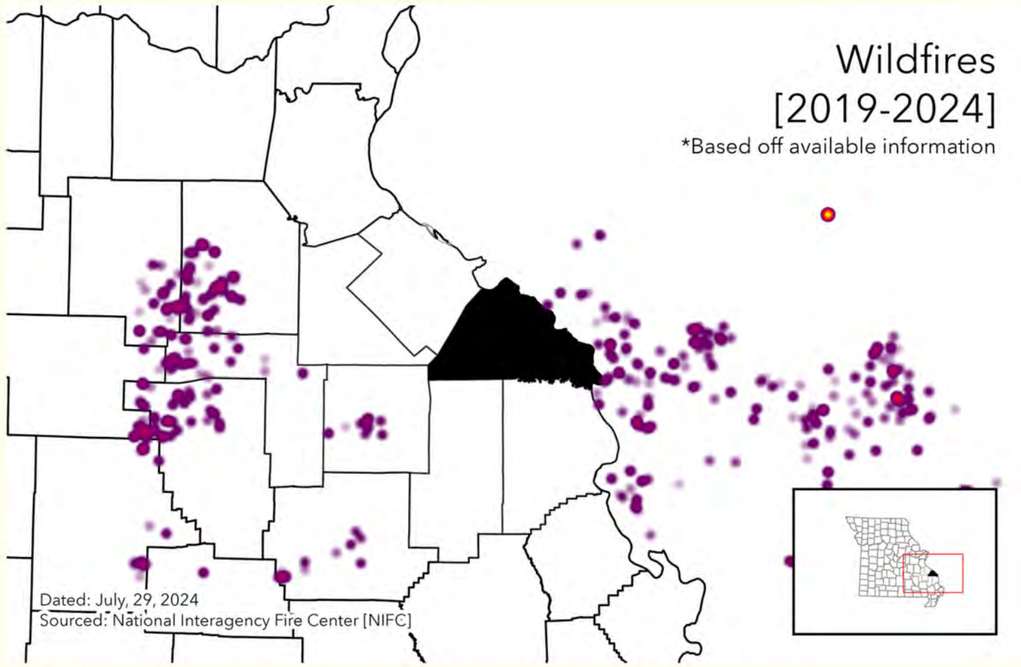
- **Power Outages**
- **Crop Loses**

*No reported crop or property damages within the last 5 years



Fires (Urban/Structural and Wild)

- Most wildfires are adjacent to Perry County, across the Mississippi River
- Overall risk is relatively low
- Fire outbreaks are most directly/indirectly caused by individuals &/or accidents





Flooding

- 3 reports of flash flooding since 2019, no reported damages
- 4 recorded events;$20,000 in property and $100,000 in crop damages

*Flooding is the least reported weather events; the only weather related event to have reported crop damage in the last 5yr. period

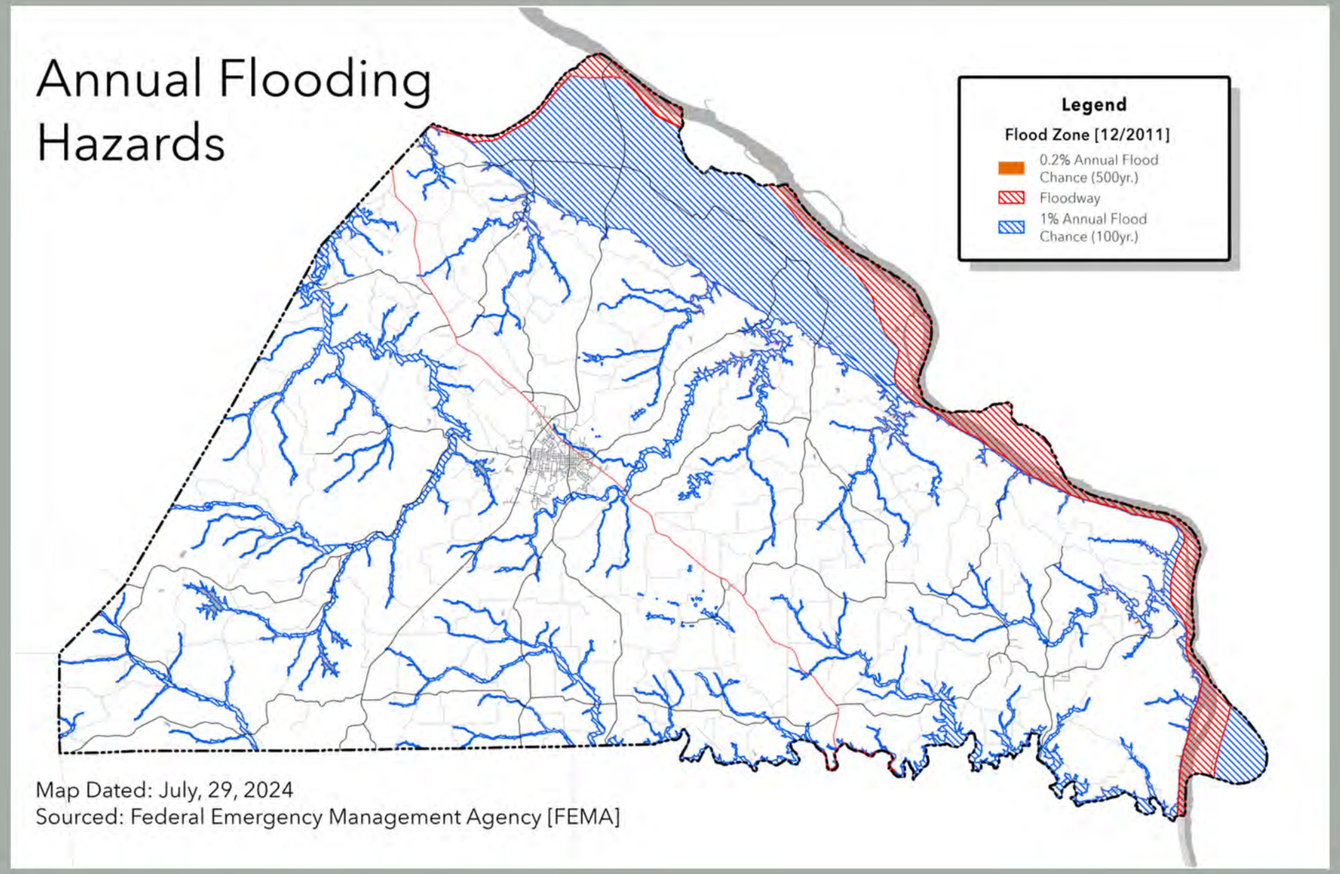
- Addresses currently residing in in flood zones:

~15 within the 0.2% annual chance
~224 within the 1% annual chance

Table 3.21. Maximum Potential Flood Losses

Jurisdiction	Building Count	Building Exposure	Contents Exposure	Total Exposure
Unincorporated County	551	$ 70,223,026	$ 46,844,546	$ 117,067,572
Perryville	48	$ 5,799,721	$ 4,165,575	$ 9,965,296
Total	599	$ 76,022,747	$ 51,010,120	$ 127,032,868

Sources: Population, 2016 Census; Building Count, SEMO RPC data; Building Exposure, HMPC and SEMO RPC data; Contents Exposure derived by applying multiplier to Building Exposure based on HAZUS MH 2.1 standard contents multipliers per usage type as follows: Residential (50%), Commercial (100%), Industrial (150%), Agricultural (100%).

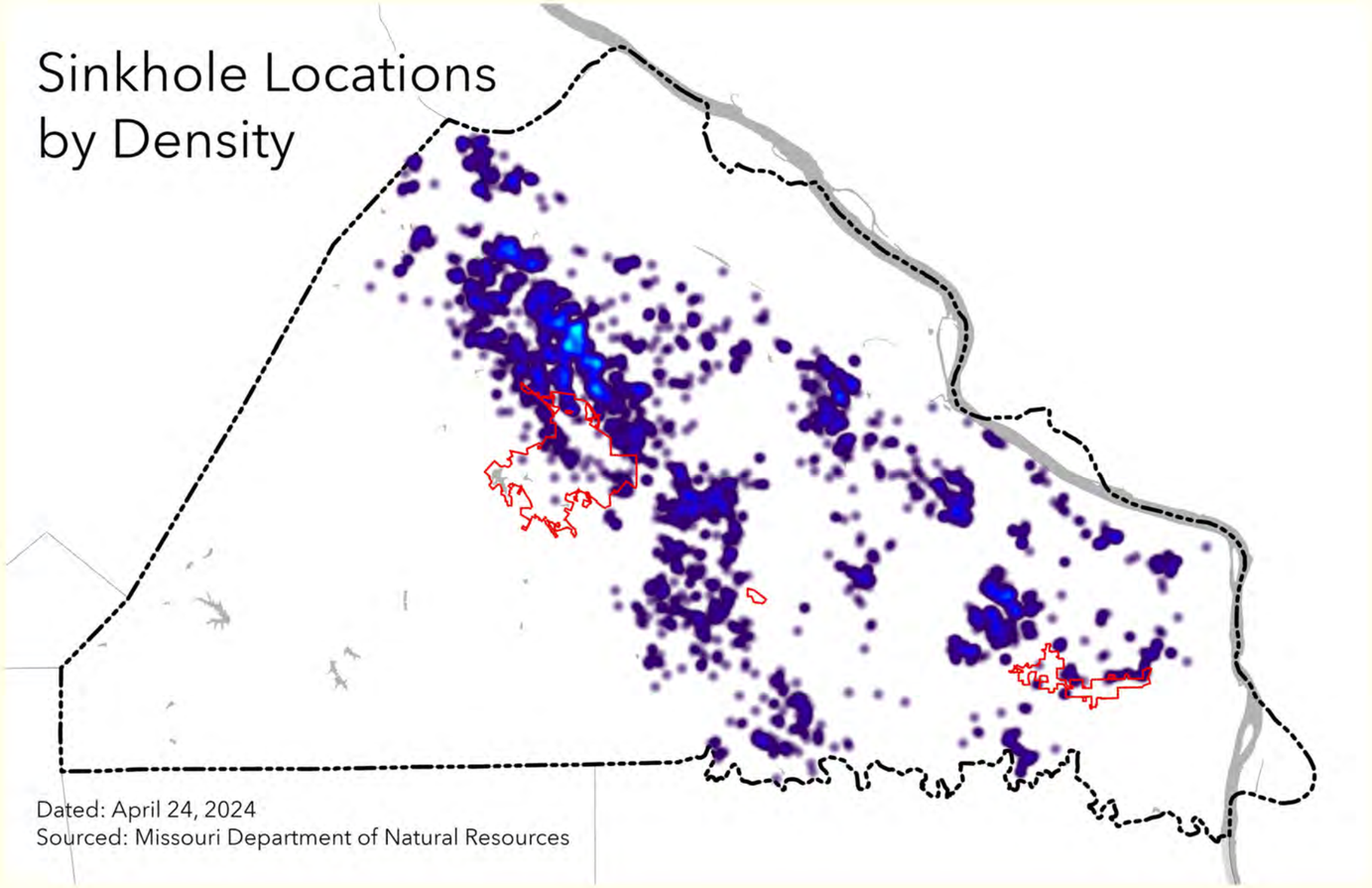


Land Subsidence & Sinkholes

- Perry County contains 2,622 individual Sinkholes spanning 5,057.03 acres [calculated]

- Sinkhole ranges currently intersect ~61 county homes

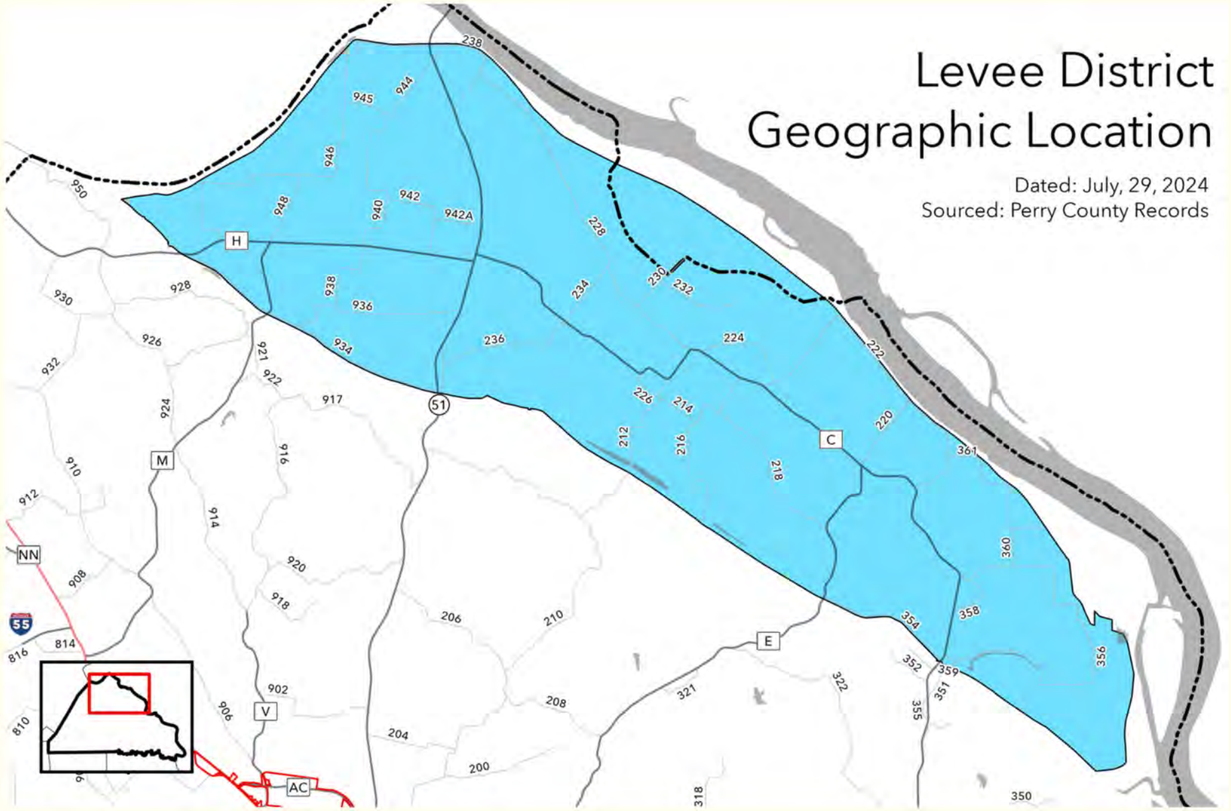
*Numbers for property and crop damages will need additional research & sources



Levee Failures

There are two levees listed in the USACE NLD in the County:

- The Bois Brule Levee and Drainage District, which protects the "Bottoms" area of the county, and
- The Grand Tower/Degognia Levee protects a small, uninhabited section of the county.



- Levee failied 1993 due to underseepage, causing the entire district to be flooded with 20 feet of water
- The District covers 26,966.78 Acres [calculated] containing ~85 addresses as of 2024
- Annual Probability is about 4%, but may vary as levee failures are linked to flood events

Thunderstorms

(High Winds, Lightning, & Hail)

- Strong winds, hail, and thunderstorms are the most frequent types of recorded weather events
- Dense fog can become a hazard with minimal visibility [22 events]

- Previous 5 year summary with recorded property damages
  - Strong winds; 27 recorded totaling $27,000
  - Thunderstorms; 14 recorded totaling $120,000

*No records of crop damage

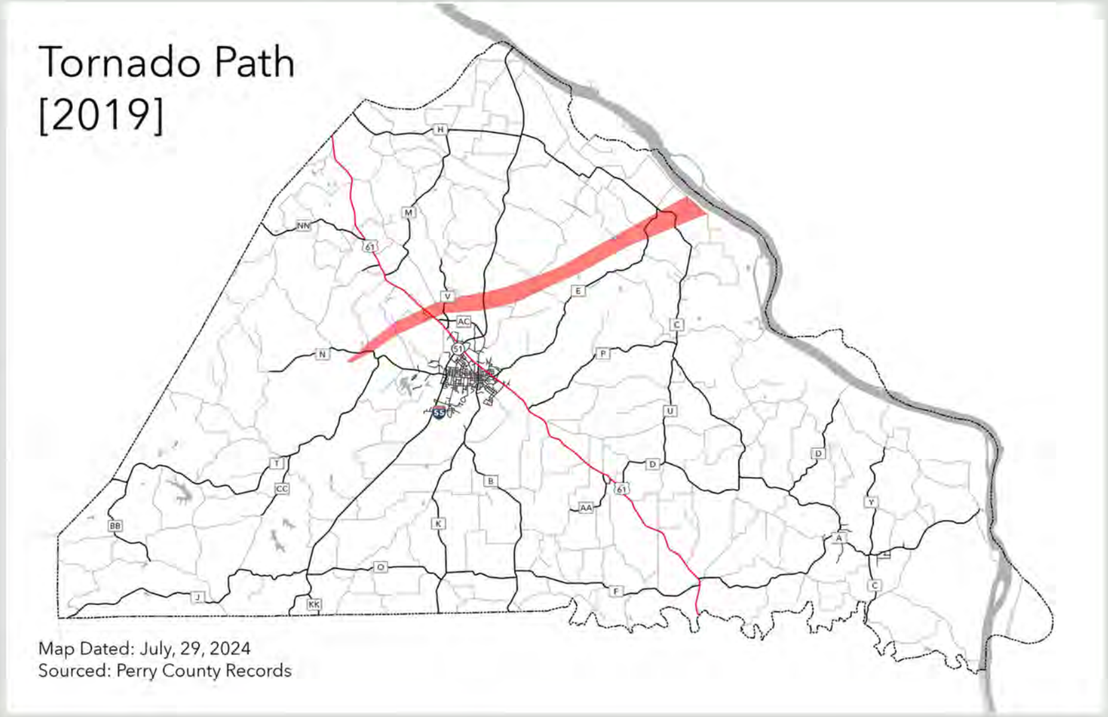


Tornados

- Since 2019, 3 Tornados contributed to the highest number of property damages [$240,000.00]

*No records of crop damage

- One tornado classified as an EF2 in 2021 [Wind speeds range ~111 to 135mph]; of the three recorded tornados, intensity has increased over a 5 year period
- The last Tornado to cause significant damage was back in 2017; the path intersected approx. 117 homes & spanned over 4,989.91 acres



Winter Weather
(Snow, Ice, & Severe Cold)

- Most frequently reported types are Frost/Freeze and Winter Weather Advisory
- Reported damages:
  - Heavy snow caused $50,000 in property damages over a 5 year period
- Populations at risk are comparable to those listed in extreme heat
- County projected to experience 6 Winter Storms every 5 years
- County Annual Loses about $396,000 (2019)



New Hazard Considerations

- **Public Health Emergencies**
- Special Events
- Structural and Urban Fires
- Terrorism
- CBRNE Attack
- Utilities (Interruptions and System Failures)
- Civil Disorder
- Cyber Disruption
- **Environmental Health Emergencies**
- Hazardous Materials
- Mass Transportation Accidents
- Nuclear Power Plants

Result and Comments

Risk Assessment Results will be available by August 20th

Comments Due by: August 23, 2024

If you have not submitted, your questionnaire please do so ASAP

Mitigation Goals and Actions

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

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

Previous Goals

- 1. Protect the health, safety, and welfare of residents and students.
- 2. Ensure the operation of critical facilities and services.
- 3. Protect public and private property.
- 4. Enhance informed decision making of mitigation actions.

Preparedness and Response

On Going Actions:

- Perry County: 5 Actions
- Perryville: 6 Actions
- Perry Co School District No. 32: 3 Actions

Group Discussion

- Form 3–4 Groups
- Review Action Worksheets
    - Use STAPLEE
- Determine Action Needs
- Determine Any New Goals
- Report Suggestions to Group

Next Steps

- Risk Assessment Comments Due (8/23)
- Final Meeting (8/27)
- Mitigation Action Forms
- Plan Adoption (10/4)
- Sumbit Plan to FEMA (10/4)

Thank You for Your Partcipation

Next Meeting August 27th @3PM

Contact Us

Alex Rios – arios@semorpc.org
Sarah Brown– sbrown@semorpc.org
Drew Christian– dchristian@semorpc.org

Meeting 3:
Updating the Mitigation Strategy
August 27, 2024



MEETING PURPOSE

- Review Purpose/Requirements
- Risk Problem Statements
- Updating the Mitigation Strategy
  - Review Updated Plan Goals
  - Status of Previous Actions
  - Development of New Actions
  - Prioritization of Mitigation Actions
- Hazard Mitigation Assistance Grants
- Plan Maintenance
- Next Steps

Disaster Mitigation Act of 2000

- Requires local governments to adopt a natural hazard mitigation plan to maintain eligibility for FEMA Hazard Mitigation Assistance funds
- This Plan Update is for a Multi-jurisdictional Hazard Mitigation Plan covering the Unincorporated County, participating Incorporated Cities, and Public School Districts



9 TASKS TO COMPLETE THE PLAN UPDATE

- Task 1: Determine the Planning Area and Resources
- Task 2: Build the Planning Team
- Task 3: Create an Outreach Strategy
- Task 4: Review Community Capabilities
- Task 5: Conduct a Risk Assessment
- Task 6: Develop a Mitigation Strategy
- Task 7: Review and Adopt the Plan
- **Task 8: Keep the Plan Current**
- **Task 9: Create a Safe and Resilient Community**

Participating Jurisdictions—Review Requirements

- Designate a representative to serve on the Hazard Mitigation Planning Committee, which will meet three times during the planning process;
- Provide data for and assist in the development of the updated risk assessment that describes how various hazards impact your jurisdiction;
- Provide data to describe current capabilities;
- Develop/update mitigation actions (at least one) specific to your jurisdiction;
- Provide comments on plan drafts as requested;
- Inform the public, local officials, and other interested parties about the planning process and provide opportunities for them to comment on the plan; and
- Formally adopt the mitigation plan.

UPDATING THE MITIGATION STRATEGY

MITIGATION STRATEGY

- Goals are general guidelines that explain what you want to achieve. They are long-term, broad, policy-type statements.

- Mitigation Actions are specific actions that help achieve goals.

PLAN GOALS—UPDATED AT MEETING #2

1. Protect the health, safety, and welfare of residents and students.
2. Ensure the operation of critical facilities and services.
3. Protect public and private property.
4. Enhance informed decision making of mitigation actions.

MITIGATION ACTIONS

- Losses from hazards can be reduced if communities take action before the next disaster
- Actions have long term and cumulative benefits
- Some may be low-cost initiatives readily adopted
- Others may be dependent on available funding or best implemented following a disaster
- Relevant to your Jurisdiction
- Focus on Mitigation-not a response plan
- Not all actions identified through this planning process will be eligible for FEMA grants

UPDATING/DEVELOPING MITIGATION ACTIONS

- Previous Actions—status updates required for ALL actions from previous plan (FEMA will not approve without this)
- New Actions—add new actions, as appropriate
  - FEMA's Mitigation Ideas Booklet
  - Review Problem Statements from Risk Assessment
  - State Priorities for Hazard Mitigation Assistance Grants
-



PROBLEM STATEMENTS FROM RISK ASSESSMENT / PREVIOUS ACTIONS

- Dam & Levee Failure
- Drought
- Earthquake
- Extreme Heat
- Flooding
- Severe Thunderstorms
- Severe Winter Weather
- Sinkholes
- Tornadoes



Any gaps between problems identified in risk assessment and actions addressed for your jurisdiction?

DAM & LEVEE FAILURE PROBLEM STATEMENTS



Dam failures primarily impact sparsely populated areas in the county, lowering the risk to life but posing a threat to homes and farms. Continuous dam inspections and mapping flood zones will aid in safeguarding vulnerable structures.

A levee failure in the county would flood the "bottoms" area, impacting farmland, the city's airport, a food processing plant, and access to the Chester Bridge. Despite previous repairs, recent threats persist. Enhanced mapping and real-time data aid authorities in responding to potential failures during floods.

DAM/LEVEE FAILURE ACTIONS

- No previous actions have been taken regarding this hazard.

Action Ideas:

- Developing an early detection and warning system for impending dam failures.
- Improving the design and maintenance of dams and levees.
- Establishing a system to monitor dam and levee conditions and report any problems.
- Developing a plan to evacuate people and property in the event of a dam or levee failure.

DROUGHT PROBLEM STATEMENTS

While droughts have regional impacts, within the county the most vulnerable areas are the agricultural assets in the unincorporated county. Droughts have little to no impact on the school district, and the City of Perryville has had no issues with water source depletion in recent history.

DROUGHT ACTION IDEAS:

- Assess Vulnerability to Drought Risk
- Monitor Drought Conditions
- Monitor Water Supply
- Plan for Drought
- Require Water Conservation During Drought
- Prevent Overgrazing
- Retrofit Water Supply Systems
- Enhance Landscaping and Design Measures
- Educate on Water Saving Techniques
- Educate Farmers on Soil and Water Conservation
- Purchase Crop Insurance

EARTHQUAKES PROBLEM STATEMENTS

Earthquakes pose a significant threat to infrastructure and services, potentially causing extensive damage and disruptions. Mitigation strategies like seismic retrofitting and emergency generators can help reduce the impact but may come with challenges such as cost implications and potential impact on city growth.

EARTHQUAKES PREVIOUS CONTINUING ACTIONS

- PCSD 2.2: Bury Power Lines
- PCSD 2.1: Emergency Generators
- Perryville 2.1: Emergency Equipment
- Perryville 2.2: Radio Acquisition
- Perryville 2.3: Emergency Generators
- Perry Co 2.1: Emergency Generators

EXTREME HEAT PROBLEM STATEMENTS

Extreme heat is especially problematic for the elderly and youth in the county. Schools provide a temporary escape for students who may not have air conditioning at home, and the senior center offers a cool refuge for older residents during extreme heat.

EXTREME HEAT ACTIONS IDEAS

- Reduce Urban Heat Island Effect
- Increase Awareness of Extreme Temperature Risk and Safety
- Assist Vulnerable Populations

FLOODING PROBLEM STATEMENTS

Flood-prone areas in the county are mainly along the Mississippi River, affecting agricultural structures, an industrial facility, and the Perryville airport. Measures are in place to handle flooding. The closure of Highway 51 impacts business access between Perryville and Chester, IL. Plans for a new bridge and approach are underway for replacement within 5-10 years.

FLOODING PREVIOUS CONTINUING ACTIONS

- Perry Co 1.3: NFIP Participation
- Perry Co 2.2: Low Water Crossings
- Perryville 2.1: Emergency Equipment
- Perryville 2.2: Radio Acquisition
- Perryville 2.4: Stormwater System Improvements
- Perryville 1.2: NFIP Participation

SINKHOLES PROBLEM STATEMENTS

Sinkholes are common in the county, particularly between I-55 and the Mississippi River's flood-prone areas. While new sinkholes are likely to develop, their locations and sizes are unpredictable. Perryville has mapped and protected all known sinkholes within the city, and the county is working to map sinkholes in other areas.

SINKHOLES PREVIOUS CONTINUING ACTIONS

There are no Previous Actions for this Hazard. Some Actions for consideration include:

- Map and Assess Vulnerability
- Manage Development in High-Risk Areas
- Monitoring Sinkhole Risk Factors
- Removing Structures in High-Risk Areas
- Educate Residents about Subsidence

Refer to FEMA Mitigation Ideas p.61

THUNDERSTORMS PROBLEM STATEMENTS

These events primarily cause property damage, including debris, fallen trees, and hail damage. Advanced warnings usually keep residents indoors, reducing the risk of injuries and loss of life. While all areas can be affected, the city and county experience the most impact due to their size. The city is particularly vulnerable because of its higher density and concentration of valuable properties.

THUNDERSTORMS PREVIOUS CONTINUING ACTIONS

- Perry Co 2.1: Emergency Generators
- Perryville 2.1: Emergency Equipment
- Perryville 2.2: Radio Acquisition
- Perryville 2.3: Emergency Generators
- PSCD 2.1: Emergency Generators
- PCSD 2.2: Bury Power Lines

TORNADO PROBLEM STATEMENTS

Anyone can be affected by a tornado, but the city is most exposed due to its high population and development density. The school district is also at risk when in session. To address this, the school district has built one safe room and is constructing another. The city and county use early warning sirens to alert residents of approaching tornadoes. Because of the county's low population density, safe rooms are generally not cost-effective unless built on county property within the city.

TORNADO PREVIOUS CONTINUING ACTIONS

- Perry Co 1.1: Construct Safe Room
- Perry Co 1.2: Construct Emergency Sirens
- Perry Co 2.1: Emergency Generators
- Perryville 2.1:Emergency Equipment
- Perryville 2.2: Radio Acquisition
- Perryville 2.3: Emergency Generators
- Perryville 1.1: Construct Emergency Sirens
- Perryville 1.3: Contruct Safe Room
- PCSD 1.1: Contruct Safe Rooms
- PCSD 2.1: Emergency Generators
- PCSD 2.2: Bury Power Lines

WINTER WEATHER PROBLEM STATEMENTS

Winter weather can impact all areas, but each experiences it differently. The school district typically closes during severe weather, but unexpected storms can still endanger students, especially during transportation, and may cause power outages. The city, with its higher population density, faces greater exposure to these hazards, yet residents have better access to emergency services than those in the county. As a result, the impacts of winter weather vary across the different jurisdictions.

WINTER WEATHER PREVIOUS CONTINUING ACTIONS

- Perry Co 2.1: Emergency Generators
- Perryville 2.1: Emergency Equipment
- Perryville 2.2: Radio Acquisition
- Perryville 2.3: Emergency Generators
- PCSD 2.1: Emergency Generators
- PCSD 2.2: Bury Power Lines

ADDITIONAL RESOURCES

- FEMA's Mitigation Ideas Booklet
- Can be downloaded at: https://www.fema.gov/media-library/assets/documents/30627?id=6938



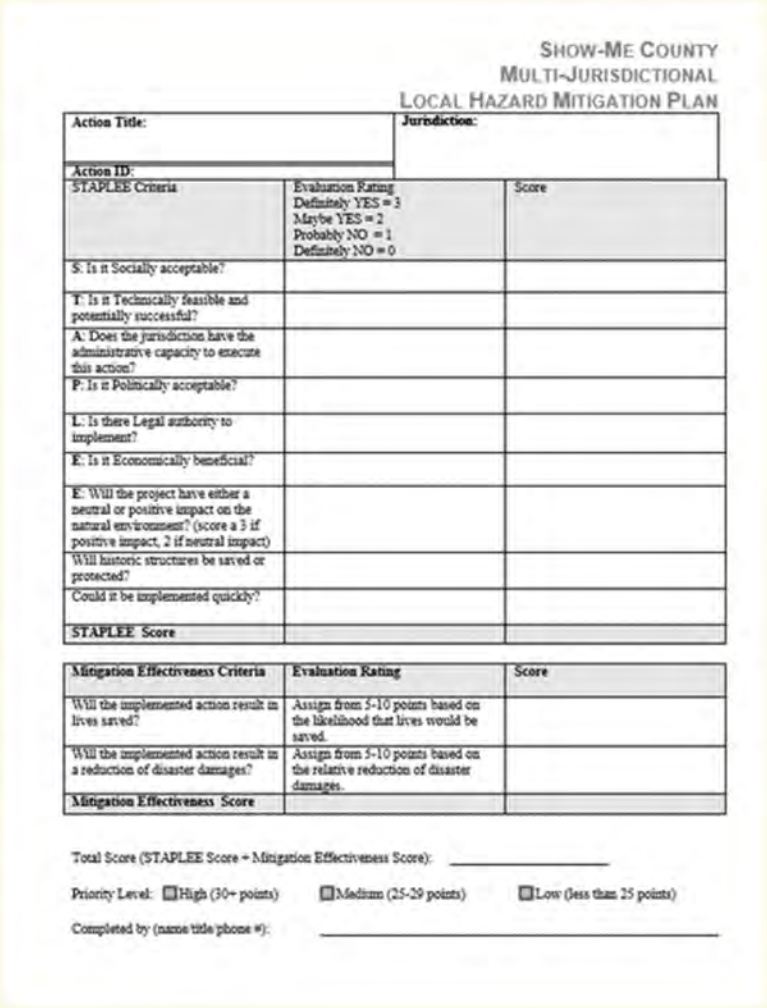
MITIGATION ACTION PLANS

- Complete for Continuing and New actions
- Provides details for each action

Action Worksheet	
Name of Jurisdiction:	
Risk / Vulnerability	
Problem being Mitigated:	
Hazard(s) Addressed:	
Action or Project	
Action/Project Number:	
Name of Action or Project:	
Action or Project Description:	
Applicable Goal Statement:	
Estimated Cost:	
Benefits:	
Plan for Implementation	
Responsible Organization/Department:	
Action/Project Priority:	
Timeline for Completion:	
Potential Fund Sources:	
Local Planning Mechanisms to be Used in Implementation, if any:	
Progress Report	
Action Status	
Report of Progress	
Completed by:	

PRIORITIZING MITIGATION ACTIONS

- STAPLEE Worksheet (handout):
  - Social
  - Technical
  - Administrative
  - Political
  - Legal
  - Economical
  - Environmental



SHOW-ME COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN

Action Title:	**Jurisdiction:**
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		
T: Is it Technically feasible and potentially successful?		
A: Does the jurisdiction have the administrative capacity to execute this action?		
P: Is it Politically acceptable?		
L: Is there Legal authority to implement?		
E: Is it Economically beneficial?		
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		
Will historic structures be saved or protected?		
Could it be implemented quickly?		
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): _____

Priority Level: ☐ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name title phone #): _____

BREAKOUT GROUPS

- Sit with others from your jurisdiction / area of interest
- Select at least one action that applies to your jurisdiction that has a “Continuing or New” status
- Complete Mitigation Action Plan and STAPLEE Worksheet
- Begin completing status column for remaining applicable actions
- Any Questions?

PLAN MAINTENANCE

PLAN MAINTENANCE

- FEMA Regulations require complete plan update every 5 years.
- FEMA requires a formal plan maintenance process to ensure that the mitigation plan remains an active and relevant document
- Who, how, and when will plan be monitored, evaluated, and updated?
- How will public be involved in plan maintenance process?
- How will mitigation strategy be incorporated into other planning mechanisms?

PLAN IMPLEMENTATION AND MAINTENANCE–HMPC CONSENSUS NEEDED

- Who, how, and when will plan be monitored, evaluated, and updated?
  - Annual Review?, After hazard events?
  - Who will organize?, Who will participate?
  - Update Status of Mitigation Actions?
- How will public be involved in plan maintenance process?
  - Press Release on annual reviews?
  - Other ideas?

PLAN IMPLEMENTATION AND MAINTENANCE–HMPC CONSENSUS NEEDED

- How will mitigation strategy be incorporated into other planning mechanisms?
  - Review Mitigation Plan during planning process to update other plans?
    - Comprehensive Plans
    - Capital Improvement Plans
    - School Infrastructure Plans
    - School Emergency Plans
  - After review of Mitigation Plan, forward strategy with updates for consideration in other planning mechanisms?

COMPLETED ACTION FORMS DUE 9/6/24

- Work with others in your jurisdiction to determine final actions to submit for the plan
  - Other Departments
  - Private Non-Profit Organizations

- Provide Completed Forms as email attachment to:

  Alex Rios
  arios@semorpc.org

HAZARD MITIGATION ASSISTANCE GRANTS:

Missouri State Emergency Management Agency

- Hazard Mitigation Grant Program-HMGP
- Pre-Disaster Mitigation Grants-PDM
- Flood Mitigation Assistance Grants-FMA

Contact
Haley Campbell
State Hazard Mitigation Officer
Haley.Campbell@sema.dps.mo.gov
573-526-9251

OTHER FUNDING SOURCES

- USDA
  - Rural Development Grants
  - Emergency Watershed Protection Program
- U.S. Dept of Commerce
  - Public Works and Economic Dev. Facilities Assistance
- U.S. Dept of Housing and Urban Development
  - Community Development Block Grants
- U.S. Army Corps of Engineers
  - Studies
  - Projects

THANK YOU

