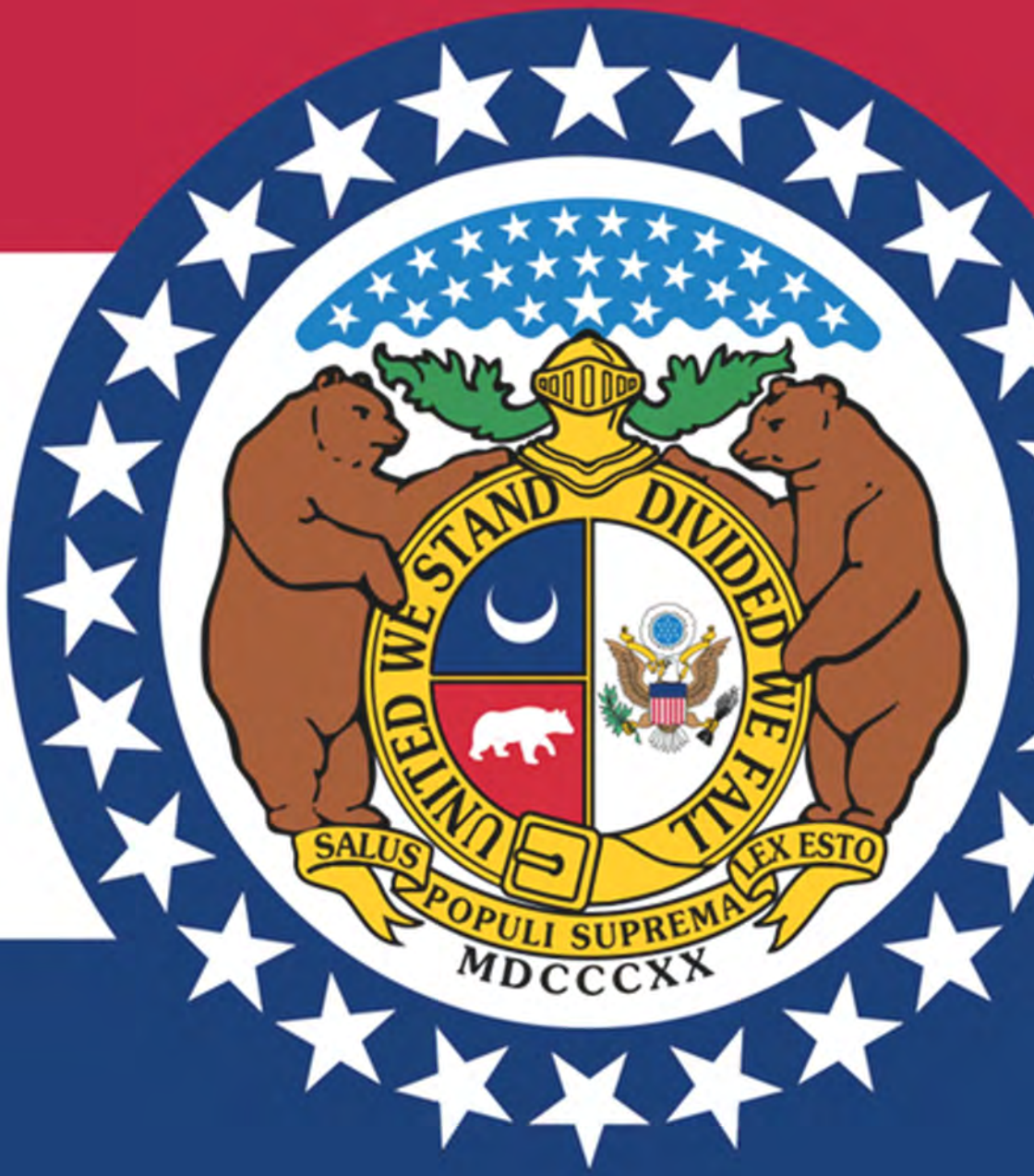
Wright County, Missouri



Multijurisdictional Hazard Mitigation Plan

Prepared by: South Central Ozark Council of Governments
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Wright County, Missouri Hazard Mitigation Planning Committee

Jurisdictional Representatives

Name	Title	Department	Jurisdiction/Agency /Organization
Zach Williams	Presiding Commissioner	County	Wright County
Carla Spooner	Clerk	City	City of Hartville
Steven Jarrett	Mayor	City	City of Norwood
Tim Schook	City Administrator	City	City of Mtn. Grove
Allen Pritchard	Public Works Director	City	City of Mansfield
Mark Piper	Superintendent	School	Hartville R-II
Christy Chadwell	Superintendent	School	Norwood R-I
Mary Holder	Superintendent	School	Manes R-V
Denver Mitchell	Superintendent	School	Mountain Grove R-III
Richard Wylie	Superintendent	School	Mansfield R-IV

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

(1) Protect the lives and property of all citizens of Wright County;
(2) Preserve functioning of civil government during natural disasters; and
(3) Maintain economic activities essential to the survival and recovery from natural disasters.

To advance the identified goals, the MPC developed recommended mitigation actions, which are detailed in Chapter 4 of this plan. 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

Stakeholder Representatives

Name	Title	Department	Jurisdiction/Agency/ Organization
Lori Allen	Clerk	City	City of Norwood
Randy Pamperien	Associate Commissioner	County	Wright County
Tommy Kingery	Associate Commissioner	County	Wright County
Tracy Davis	Clerk	City	City of Mansfield
Robert MacLeod	Planner	City	City of Mountain Grove
Trent Courtney	Coordinator/Planner	Regional Planning	Regional Homeland Security
Matt Miller	Civil Engineer	Private	Toth & Associates
David Garrett	Civil Engineer	Private	Toth & Assoctiates

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EXECUTIVE SUMMARY

The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. Wright County and participating jurisdictions and school/special districts developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses from hazard events to the County and its communities and school/special districts. The plan is an update of a plan that was approved on 1/19/2017. The plan and the update were prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 to result in eligibility for the Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grant Programs.

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

Wright County	Hartville R-II
City of Hartville	Manes R-V
City of Mansfield	Mansfield R-IV
City of Mountain Grove	Mountain Grove R-III
City of Norwood	Norwood R-I

Wright County and the entities listed above developed a Multi-Jurisdictional Hazard Mitigation Plan that was approved by FEMA on January 19, 2017 (hereafter referred to as the *2017 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 Wright County and the participating jurisdictions within. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to Wright County and analyzed jurisdictional vulnerability to these hazards. The MPC also examined the capabilities in place to mitigate the hazard damages, with emphasis on changes that have occurred since the previously approved plan was adopted. The MPC determined that the planning area is vulnerable to several hazards that are identified, profiled, and analyzed in this plan. Riverine and flash flooding, winter storms, severe thunderstorms/hail/lightning/high winds, and tornadoes are among the hazards that historically have had a significant impact.

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

(1) Protect the lives and property of all citizens of Wright County;

(2) Preserve functioning of civil government during natural disasters; and

(3) Maintain economic activities essential to the survival and recovery from natural disasters.

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
Wright1	Purchase and install a backup generator at the county courthouse which serves various governmental functions	Wright County	20	Goal 2	Thunderstorm/High Winds/Lightning/Hail	x		
Hartville1	Install new outdoor warning sirens in the community	City of Hartville	19	Goal 1	Tornado	x		
Hartville2	Develop a coordinated plan to test outdoor warning sirens on a consistent basis	City of Hartville	15	Goal 2	Tornado	x		
Hartville3	The city will attempt to improve floodplain management by identification of map amendments/updates	City of Hartville	16	Goal 3	Flooding (Flash and River)	x		x
HartvilleSchool1	Construct a 361 design tornado saferoom on the school campus	Hartville School District	18	Goal 1	Tornado		x	
Mansfield1	Reconstruct the sidewalks along Commercial Street to improve drainage	City of Mansfield	20	Goal 1	Flooding (Flash and River)	x		
Mansfield2	Install at new outdoor warning sirens in the community	City of Mansfield	18	Goal 1	Tornado	x		
Mansfield3	Develop a coordinated plan to test outdoor warning sirens on a consistent basis	City of Mansfield	15	Goal 2	Tornado	x		
Mansfield4	Purchase and install a backup generator at the city's water well	City of Mansfield	19	Goal 1	Tornado	x		
Mansfield5	The city will attempt to improve floodplain management by identification of map amendments/updates	City of Mansfield	20	Goal 1	Tornado	x		x

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
ManesSchool1	Construct a 361 design tornado saferoom on the school campus	Manes School District	19	Goal 1	Tornado		x	
MansfieldSchool1	Construct a 361 design tornado saferoom on the school campus	Mansfield School District	19	Goal 2	Tornado		x	
MtnGrove1	Construct a 361 design tornado saferoom on city owned property	City of Mountain Grove	16	Goal 3	Flooding (Flash and River)		x	
MtnGrove2	Develop a coordinated plan to test outdoor warning sirens on a consistent basis	City of Mountain Grove	21	Goal 1	Tornado	x		
MtnGrove3	The city will attempt to improve floodplain management by identification of map amendments/updates	City of Mountain Grove	21	Goal 1	Tornado	x		x
MGShelter	Construct a 361 design tornado saferoom on city owned property	Mountain Grove School District	20	Goal 3	Tornado		x	
NorwoodSchool1	Construct a 361 design tornado saferoom on the school campus	Norwood School District	19	Goal 1	Tornado		x	
Wright2	Continuously identify funding sources to update buildings and infrastructure to ensure that community assets are resilient to natural disaster	Countywide	20	Goal 1	Tornado	x		

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

This plan has been reviewed by and adopted with resolutions or other documentation of adoption by all participating jurisdictions and schools/special districts. The documentation of each adoption is included in Appendix D, and a model resolution is included below. The jurisdictions listed in the Executive Summary participated in the development of this plan and have adopted the multi-jurisdictional plan.

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

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

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

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

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

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

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

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

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

ADOPTED by a vote of_____in favor and_____against, and_____abstaining, this_____day of _____, _____.

By (Sig):
Print name:

ATTEST:
By (Sig.):
Print name:

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

1 INTRODUCTION AND PLANNING PROCESS

1.1 PURPOSE

Hazard Mitigation is the process of preparing for and taking action in order to reduce the long- term risk of natural disasters to financial and human consequences. Mitigation actions may be implemented prior to, during, or after a hazard event. However, it has been demonstrated that hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs (http://www.fema.gov/what-mitigation).

By participating in the planning process and meeting the necessary requirements to do so, communities, school districts, and other special districts become eligible to apply for mitigation grant funding. FEMA has implemented the various hazard mitigation provisions through the Code of Federal Regulations (CFR) at 44 CFR Part 201. The CFR provisions set forth the mitigation plan requirements for local and tribal governments as a condition of receiving FEMA hazard mitigation assistance. Local governments, schools, or other publicly funded districts that do not participate or adopt a hazard mitigation plan will not be eligible to apply for grants as stated under 44 CFR §201.6. Section 322 of the Robert T. Stafford Relief and Emergency Assistance Act (P.L. 93-288), as amended by the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390), provides for States, Tribes and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning.

1.2 BACKGROUND AND SCOPE

As required by 44 CFR §201.6(d)(3), a local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts and changes in priorities, and resubmit it for approval every five (5) years in order to continue to be eligible for mitigation project grant funding. The 2022 Wright County Multi-Jurisdictional Natural Hazard Mitigation Plan, from here on referred to as the Plan, is a revision of the previous five-year update approved by FEMA during 2017, which was the first five-year update of the original countywide hazard mitigation plan completed in 2007.

The Plan is a major rewrite of the 2017 Plan and reflects changes in priorities and development, and the continued commitment of local governments to mitigate the impact of natural hazards in Wright County. Local jurisdictions that participated in the 2017 Plan and are continuing participation in this 2022 Plan include:

- Wright County
- City of Hartville
- City of Mansfield
- City of Mountain Grove
- City of Norwood
- Hartville R-II
- Manes R-V
- Mansfield R-IV
- Mountain Grove R-III
- Norwood R-I

All jurisdictions received letter and email communications notifying representatives of upcoming meetings and participation requirements. Jurisdictions listed above were represented during the planning process and met the minimum participation requirements.

The local mitigation plan is the representation of the jurisdictions' commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Information in the Plan will be used to help guide and coordinate mitigation activities and decisions for local land use policy in the future.

1.3 PLAN ORGANIZATION

The Plan is organized into five chapters. The 2017 Plan included a chapter dedicated to local jurisdiction capabilities. This information has been incorporated into the Planning Area Profile and Capabilities Chapter. The format of the Plan was changed to conform to the local hazard mitigation plan outline template released by the Missouri State Emergency Management Agency (SEMA) in September, 2017. The Plan chapters include:

- 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 on the following page summarizes the changes made in the Plan by chapter:

Table 1.1. Changes Made in Plan Update

Plan Chapter	Summary of Changes Made
Introduction	• General Format Changes
Profile & Capabilities	• Added Geological and Karst features map • Critical features moved to Ch. 3 • Added table showing Unemployment, Poverty, education, and language percentages • Historic Sites and endangered species list moved to Ch. 3. • Added table showing FEMA HMA grants approved.
Risk Assessment	• General format updates • Expanded introduction section • Added Assets at Risk of exposure to current population and structures • Added Critical Facilities inventory of all included jurisdictions • Added inventory of parks, historical sites, and endangered species. • Added table for agricultural-related jobs and information and Major employers • Added Land Use Development section for development since previous plan and future land use expected. • Expanded Community profiles for each jurisdiction. • Added low-water crossing information
Mitigation Strategy	• Updated mitigation actions development process • Included actions eliminated and reason for removal • Updated progress made towards mitigation goals from earlier plan • Updated cost benefit review method using STAPLEE and simple scores • Discussed funding sources, lead agencies and status of continuing, revised and new actions
Plan Maintenance	• Updated the responsibilities for plan monitoring, evaluation, and implementation.

1.4 PLANNING PROCESS

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

For the update of the 2017 Wright County Hazard Mitigation Plan, the County and SEMA has contracted with the South Central Ozark Council of Governments (SCOCOG) and has participated fully in the update process. Once this plan receives final approval from the Federal Emergency Management Agency, Wright County, and the participating cities and school districts within will be eligible for future mitigation assistance from FEMA and will be able to more effectively carry out the identified mitigation activities in an effort to lessen the adverse impact of future natural disasters that take place in the county.

SCOCOG's role as contractor includes the following elements:

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

The plan update process followed a methodology prescribed by FEMA, which began with the formation of a Mitigation Planning Committee (MPC) comprised of representatives from Wright County and participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to the County and analyzed jurisdictional vulnerability to these hazards. The MPC also directed the planner-in-charge to analyze the capabilities in place to mitigate the hazard damages, with emphasis on changes that have occurred since the previously approved plan was adopted. The planner-in-charge determined that the planning area is vulnerable to several hazards that are identified, profiled, and analyzed in this plan. Flash flooding, winter storms, and tornadoes are among the hazards that historically have had the most significant impact.

Table 1.2. Jurisdictional Representatives of Wright County Mitigation Planning Committee

Name	Title	Department	Jurisdiction/Agency /Organization
Zach Williams	Presiding Commissioner	County	Wright County
Carla Spooner	Clerk	City	City of Hartville
Steven Jarrett	Mayor	City	City of Norwood
Tim Schook	City Administrator	City	City of Mtn. Grove
Allen Pritchard	Public Works Director	City	City of Mansfield
Mark Piper	Superintendent	School	Hartville R-II
Christy Chadwell	Superintendent	School	Norwood R-I
Mary Holder	Superintendent	School	Manes R-V
Dakota Mitchell	Superintendent	School	Mountain Grove R-III
Richard Wylie	Superintendent	School	Mansfield R-IV

Table 1.3. below demonstrates the expertise of the Wright County MPC members in the six mitigation categories (Preventive Measures, Property Protection, Natural Resource Protection, Emergency Services, Structural Flood Control Projects and Public Information.

Table 1.3. MPC Capability with Six Mitigation Categories[1(b)]

Office	Preventive Measures	Structure and Infrastructure Projects		Natural Resource Protection	Public Information	Emergency Services
		Property Protection	Structural Flood Control Projects			
Presiding Commissioner	✓	✓	✓	✓	✓	
Police Chief/EMD	✓		✓			✓
Mayor	✓			✓		
EMD/Fire Chief	✓		✓			✓
Superintendent	✓	✓			✓	
Superintendent	✓	✓			✓	
Superintendent	✓	✓			✓	
Superintendent	✓	✓			✓	

1.4.1 Multi-Jurisdictional Participation

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

The South Central Ozark Council of Governments, on behalf of Wright County, invited all incorporated cities, all school districts, and many non-profit entities located within the county to participate in the Wright County Hazard Mitigation Plan update planning meetings. FEMA accepts multi-jurisdictional plans which meet all the requirements of 44CFR §201.6(a)(3):

- The risk assessment must assess each jurisdiction's risk where they may vary from the risks facing the entire planning area.
- There must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.
- Each jurisdiction requesting approval of the plan must document that itself has formally adopted the plan.

DMA 2000 further requires that jurisdictions represented within a multi-jurisdictional hazard mitigation plan participate in the planning process in addition to formally adopting the completed plan. Each participating jurisdiction was required to meet planning participation requirements as defined by SCOCOG at the beginning of the update process. Minimum participation requirements were defined as follows:

Provide information to support the plan update through at least two of the following methods:

- Completion of jurisdiction questionnaire;
- Attendance at public meetings;
- Alternately scheduled meetings for data collection purposes;
- Email correspondence with SCOCOG staff for data collection purposes; and
- Formally adopt the hazard mitigation plan

SCOCOG was contracted by Wright County to revise and update the 2017 Hazard Mitigation Plan and coordinate planning efforts between the municipalities and school districts of the County. SCOCOG planning staff led the development of the plan update by forming the planning committee, calling and facilitating meetings, compiling data, composing and reviewing drafts, issuing public notices, and drafting correspondence. All of the jurisdictions listed as participants in the plan update met the minimum participation requirements as indicated in the following tables. Documentation of meeting attendance is included in *Appendix A: Planning Participation Documentation*.

Participating jurisdictions include Wright County (unincorporated), the incorporated cities of Hartville, Mansfield, Mountain Grove and Norwood, and the school districts of Hartville, Manes, Mansfield, Mountain Grove, and Norwood. In the 2017 iteration of the Wright County Hazard Mitigation Plan, all jurisdictions participated fully. Other jurisdictions which participated in the planning process as stakeholders, but are not seeking independent adoption and approval are: local police departments, electric cooperatives, emergency management agencies.

The Plan serves as a written document of the planning process. Active participation of local jurisdiction representatives and stakeholders in the hazard mitigation planning process is essential if the Plan is to have value. To be eligible for mitigation funding, local governments and school districts must adopt the FEMA-approved update of the Plan. The participation of the local government stakeholders in the planning process is considered critical to successful implementation of this plan. Each jurisdiction that is seeking approval for the plan must have its governing boy adopt the updated plan, regardless the degree of modifications. SCOCOG collaborated with the local governments in Wright County to assure participating in the planning process to the greatest extent possible and the development of the plan that represents the needs and interests of Wright County and its local jurisdictions.

The planning engagement took to the form of individual meetings with each of the participating jurisdictions, who reviewed findings from the updated Risk Assessment and completed a hazard mitigation data collection questionnaire (DCQ) that was developed in tandem with the Missouri SEMA planning outline template. This approach is different from previous plan updates, when county-wide planning meetings were held in an attempt to get input from all jurisdictions in one central location. From these meetings, goal refinement and potential mitigation actions were identified and MPC representatives were decided.

The public was engaged at two points during the development of the plan update. First, a public survey was posted on the SCOCOG website and advertised in the Wright County Standard Journal, the newspaper of widest circulation in the county. Second, the availability of the draft plan for review and comment was announced in the same newspaper in June of 2022. Documentation for both public engagement efforts and results of the public survey are included in Appendix C.

Table 1.4. Jurisdictional Participation in Planning Process

Jurisdiction	Kick-off Meeting	Meeting #2	Data Collection Questionnaire Response	Update/Develop Mitigation Actions
Wright County	X	X	X	X
City of Hartville	X	X	X	X
City of Mansfield	X	X	X	X
City of Mountain Grove	X	X	X	X
City of Norwood	X	X	X	X
Hartville R-II	X	X	X	X
Manes R-V	X	X	X	X
Mansfield R-IV	X	X	X	X
Mountain Grove R-III	X	X	X	X
Norwood R-I	X	X	X	X

1.4.2 The Planning Steps

FEMA's Local Mitigation Planning Handbook (March 2013), Local Mitigation Plan Review Guide (October 2013), and Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials (March 2013) were used as sources for development the Plan update process. The development of the plan followed the 10-step planning process adapted from FEMA's Community Rating System (CRS) and Flood Mitigation Assistance Programs. The 10-step process allows the Plan to meet funding eligibility requirements of the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Community Rating System, and Flood Migration Assistance Program. Table 1.4 shows how the CRS process aligns with the Nine Task Process outlined in the 2013 Local Mitigation Planning Handbook.

Table 1.5. County Mitigation Plan Update Process

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

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

The Council of Governments planners began the plan update process by contacting local stakeholders that were identified as key officials who would be valuable to the update of the mitigation plan. County commissioners, city officials, and emergency management personnel were targeted as potential members of the MPC. During an introductory conference call in June 8, 2021, the scope of the plan update was discussed, including planning participation requirements and general methodology. A timeline for completion the update was established and planning meetings were scheduled and given 'tentative' dates.

The Data Collection Questionnaires for the county's school districts and municipalities were distributed at the very beginning of the update process via email along with a follow up phone call to explain the procedure, the need for the data collection, how the data would be used, and to answer any questions the Superintendents may have had regarding the contents of the Data Collection Questionnaires. All participating jurisdictions were informed of an upcoming planning meetings throughout the county where SCOCOG planners would gather and review the questionnaire responses and help shore up any gaps in the data.

Table 1.6. Schedule of Planning Meetings

Meeting	Participation	Method	Date
Kick-off Meeting	9:00 a.m. • Prospective participants and stakeholders identified • Raising awareness for mitigation strategy/increase countywide resilience to natural hazards • Natural hazard vulnerability • Local plan participation • Project timeline	Teleconference	June 2021
Hartville R-II	Superintendent, Principal, SCOCOG Planner	In Person	8/25/21
Mountain Grove	Mayor, Council, Clerk, SCOCOG Planner, City Planner	In Person	9/7/21
Mansfield R-IV	Superintendent, SCOCOG Planner	Teleconference	9/22/21
City of Hartville	City Staff, SCOCOG Planner	In Person	9/23/21
Wright County	County Commissioners, SCOCOG Planner	In Person	9/23/21
City of Norwood	Mayor, City Staff, SCOCOG Planner	In Person	9/23/21
City of Mansfield	City Staff, SCOCOG Planner	In Person	9/24/21
Manes R-V	Superintendent, SCOCOG Planner	Teleconference	9/29/21
Mountain Grove R-III	Superintendent, SCOCOG Planner	Teleconference	1/18/22
Norwood R-I	Superintendent, SCOCOG Planner	Teleconference	7/1/22
MPC Planning Meeting #2	Jurisdictions represented: All, various times and locations • Review of 2017 Mitigation Goals, Objectives and Actions • Review of completed Jurisdictional Risk Assessment • Identification of new mitigation actions • STAPLEE Prioritization • Completion of Data Collections Questionnaire, identifying capabilities, assets, vulnerability	Various	7/1 – 7/15 2022

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

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

Options for soliciting public input on the Plan update were discussed at the Planning Kickoff Meeting held on June 8, 2021. SCOCOG staff explained the importance of public involvement during the planning process.

A plan to engage the public in the plan update process was developed in accordance with 44 CFR Requirement 201.6(b), ensuring the opportunity for the public to comment on the plan during the drafting stage and prior to FEMA approval. The consensus of the group was to (**1**) develop an online survey instrument which would be publicized in the Wright County Standard Journal and ran concurrent to the drafting of the plan update and (**2**) post the draft plan on the website of the South Central Ozark Council of Governments for public review and comment, and announce its availability in the Standard Journal prior to the plan's submittal to the State Emergency Management Agency

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

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

There are many organizations that are 'regional' in nature whose interest's interface with hazard mitigation planning in Wright County. These groups were engaged via telephone calls and direct mail letters to invite interested parties to the June 8,, 2021 planning meeting. The agencies and interest groups who were invited to take part in the hazard mitigation plan update are listed below:

- Red Cross
- Community Foundation of the Ozarks
- Texas County Presiding Commissioner Scott Long
- Douglas County Presiding Commissioner Lance Stilling
- Texas County EMD Jack Watson
- Howell County EMD Mike Coldiron
- Northern Wright Volunteer Fire Department
- Grovespring Volunteer Fire Department
- Mansfield Volunteer Fire Department
- Missouri Department of Conservation
- Missouri Department of Transportation (Southeast District)

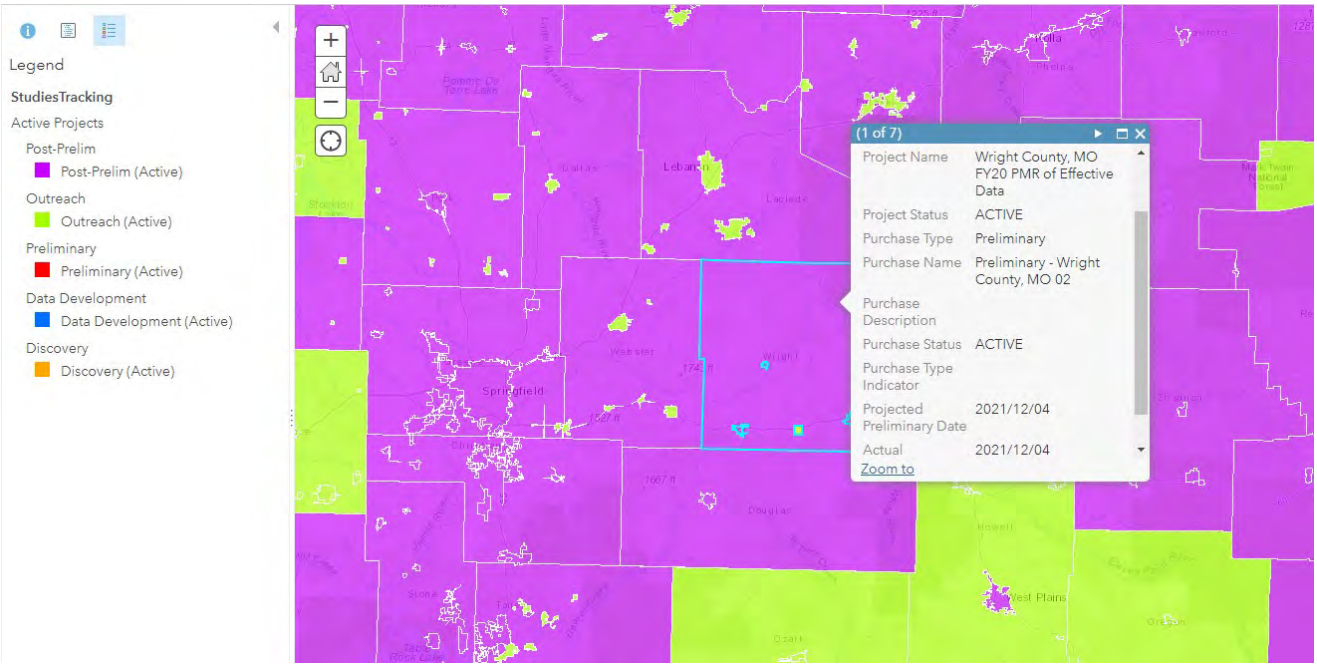
Integration of Other Data, Reports, Studies, and Plans

A review of the most current data, reports, studies and Plans relating to hazard mitigation planning in Wright County were reviewed in order to provide the latest "snapshot" of existing conditions to inform the development of the 2017 Plan. Local planning documents that were reviewed were the Region G Threat Hazard Risk Assessment (THIRA), the Comprehensive Economic Development Strategy, the South Central Regional Transportation Plan, The State Transportation Plan, and the Wright County Local Emergency Operations Plan. Where available, information from these Plans was integrated into the planning meeting discussions and into the Hazard Mitigation Plan narrative itself.

Coordination with FEMA Risk MAP Project

Risk Mapping, Assessment, and Planning (Risk MAP) is the Federal Emergency Management Agency (FEMA) Program that provides communities with flood information and tools they can use to enhance their mitigation plans and take action to better protect their citizens. Through collaboration with State, Tribal, and local entities, Risk MAP delivers quality data that increases public awareness and leads to action that reduces risk to life and property. As depicted in the following Figure 1.1., Wright County is currently within the active Outreach phase of Risk MAP activities:

Figure 1.1. Map of RiskMAP projects



Wright County Emergency Operations Plan (EOP)

Wright County emergency management is set up along the following functional segments: direction and control; communications and warning; emergency public information; damage assessment; law enforcement; fire and rescue; civil disorder; hazardous materials response; public works; evacuation; in-place sheltering; reception and care; health and medial terrorism response; and resources and supply. This plan also defines lines of succession for the continuity of government operations during a disaster as well as the preservation of records and the logistics of administrative functions such as procedures for obtaining temporary use of facilities. The Wright County Emergency Operations Plan was last updated in 2020.

South Central Ozark Regional Transportation Plan (RTP)

SCOCOG maintains and updates annually the Regional Transportation Plan (RTP) as part of a work agreement with the Missouri Department of Transportation. The RTP begins with the statewide Long Range Transportation Plan's goals then refines them to fit the unique nature of the South Central region. The local planning process involves prioritization of transportation projects and defining broad transportation improvement strategies, including hazard mitigation (primarily roadway flooding and dangerous low-water crossings, economic development, safety, and expansion of multimodal opportunities.

Comprehensive Economic Development Strategy (CEDS)

The regional Comprehensive Economic Development Strategy was updated in 2019 following an extensive regional planning process. A dozen planning meetings were held throughout the seven county region to identify economic development goals and strategies, gain input on the function and effectiveness of the regional planning commission's services, and identify vital economic development projects & programs for every jurisdiction in the region. The CEDS provides detailed information on social and economic data, and an overview of funding programs available to local governments and not-for-profit agencies.

Community, economic, and human resources development projects continue to be implemented across Wright County. All three incorporated communities, and the county itself are very active in these areas. Wright County acknowledged some of their emergency management and response needs in the Community Improvement Project List contained in the 2019 Comprehensive Economic Development Strategy. Projects listed by municipalities in Wright County in the CEDS relating to emergency management are listed on the next page:

- Community tornado safe room in Norwood
- Community tornado safe room in Mountain Grove
- Backup generator at the Wright County Administration Office
- Water and Wastewater Improvement Projects in Mountain Grove and Mansfield

A wide variety of technical data gathered from a number of state and federal agencies was integrated to the 2017 Plan to develop the Risk Assessment portion of the plan. Federal Emergency Management Agency DFIRM maps were utilized to delineate flood hazard areas and at risk structures in the county. NOAA data was used to compile event history for hazard profiles. Data from Missouri Department of Transportation, Missouri Department of Natural Resources, and Missouri Economic Resource Information Center (MERIC) were utilized to define the county's vulnerability to natural hazard events.

National datasets such as the National Agriculture Imagery Program, the National Inventory of Dams, the SILVIS Lab housed at the University of Wisconsin-Madison, and the 2020 U.S. Census were referenced in the updated Risk Assessment.

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

The hazard profiles contained within the 2017 Wright County Hazard Mitigation Plan were reassessed during the kickoff planning meeting in June. During the remainder of the planning meetings in the county, attendees were provided the latest hazard data via the research conducted by the South Central Ozark Council of Governments. The attendees provided to SCOCOG their input on hazard events from the DCQs completed by each participating jurisdiction. By consensus the participants identified the natural hazards that are not considered a threat to their own jurisdiction and eliminated those disasters from consideration in the Risk Assessment process. A Hazard Vulnerability Sheet was completed by each participating jurisdiction to help determine the perceived threat faced by their respective jurisdictions for inclusion in the Hazard Mitigation Plan.

Step 5: Assess the Problem: Identify Assets and Estimate Losses

Identified assets in the planning area include population, structures, critical facilities and infrastructure, and other important assets that may be at risk to hazards. The inventory of assets for each jurisdiction were derived from GIS layers identified structures by use in the county and the local jurisdiction and school district data collection questionnaires, and FEMA DFIRM data. Potential losses to existing development were estimated on hazard event scenarios and annualized losses. In most cases the county assessor's valuations were used to estimate structure losses in impacted areas by structure occupancy type. The methodology for estimating losses varies by hazard. Loss estimates are included in each hazard profile contained in the Risk Assessment chapter.

Step 6: Set Goals (Handbook Task 6)

The Mitigation Planning Committee reviewed the goals from the 2017 Wright County Plan during the kickoff planning meeting in June 2021. The MPC opted to carry over the Mitigation Goals from the previous iteration of the plan, as they were determined to still be applicable:

Goal 1: Protect the Lives and Property of all Citizens of Wright County

- Identify and provide sufficient emergency shelters
- Review and maintain current warning systems for sufficient coverage

Goal 2: Preserve the Functioning of Civil Government During Natural Disasters

- Implement proper maintenance and necessary upgrades of critical buildings and infrastructures in the county
- Improve the efficiency, timing, and effectiveness of response and recovery efforts for natural hazard disasters

Goal 3: Maintain Economic Activities Essential to the Survival and Recovery from Natural Disasters

- Periodically review chain of command of government organizations for emergency situations and keep up-to-date
- Continuously review communications systems and keep in good working order

Step 7: Review Possible Mitigation Actions and Activities

The Mitigation Planning Committee and representatives from participating jurisdictions reviewed the mitigation actions from the 2017 Plan during the June kickoff meeting, as well as subsequent planning meetings with participating jurisdictions. It was decided that a couple of the actions from the previous plan were vague or unclear in their intent and the consensus of the group was that the mitigation actions needed to be more individualized in nature. New actions were identified, potential costs were discussed, lead agencies and staff were identified. Actions were prioritized using the STAPLEE methodology during the second planning meetings with participating jurisdictions. The FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013)* was used as a primary source to guide the action formulation process. Participants were encouraged to focus on mitigation efforts that could be reasonably be attained in the next five-to-ten years

Step 8: Draft an Action Plan

Progress in implementing the mitigation actions will be reviewed annually by the regional planner housed at the South Central Ozark Council of Governments. Additionally, as potential grant funding becomes available, SCOCOG planners will work with the jurisdictions of Wright County to develop applications when a viable project arises.

Step 9: Adopt the Plan (Handbook Task 8)

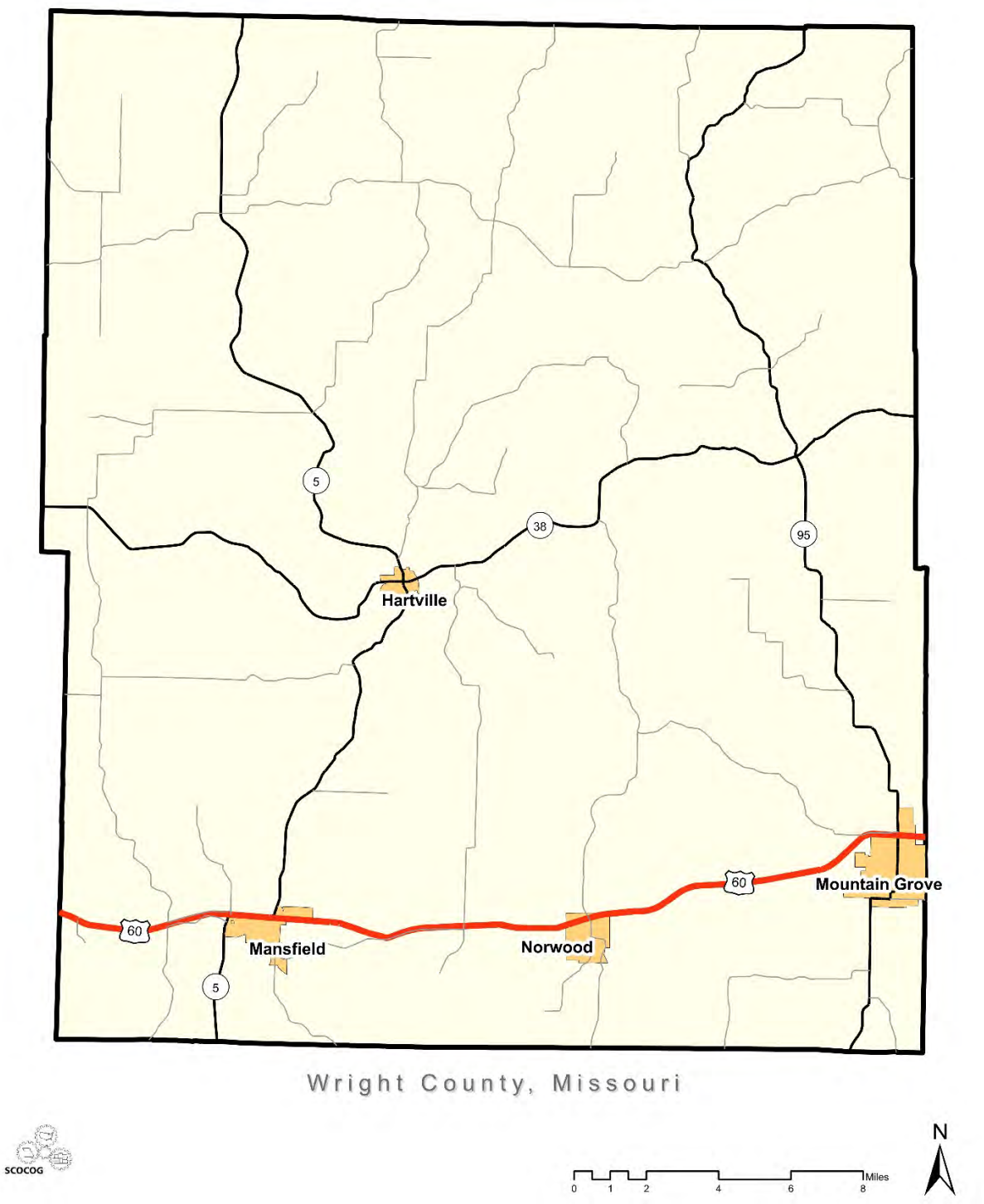
The jurisdictions will be asked to adopt the plan after SEMA's initial plan review to ensure that no wholesale changes are being required within the planning document. Upon approval of the draft Plan by SEMA staff, the SCOCOG planners will work with participating jurisdictions to facilitate the Plan Adoption process.

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

During the planning kickoff meeting it was decided that the implementation the mitigation actions will be reviewed annually and revised (as needed) by the regional planner housed at the South Central Ozark Council of Governments. Additionally, as potential grant funding becomes available, SCOCOG planners will work with the jurisdictions of Wright County to develop applications when a viable project arises. The process for Plan Maintenance is detailed in Chapter 5 of this document.

2.1 Wright County Planning Area Profile

Figure 2.1. Map of Wright County



According to the 2020 American Community Survey Census Estimates, the 2020 population of Wright County was 18,256, which represented a decrease from the County's 2010 census population of 18,565. This represents a decrease of 309 residents or 1.6% decline since the 2010 census. The State of Missouri's population increased 7.5% during the same time period.

The median household income for Wright County rose from $29,212 in 2010 to $36,711 in the 2020 ACS Estimates, yet family income still lags far behind the state and national figures of $49,600 and $53,292, respectively.

The median home value in Wright County in 2020 was $109,100, an increase of nearly 22% since 2010.

2.1.2 Geography, Geology and Topography

Wright County is located in the south-central region of Missouri, in an area referred to as the Ozark Plateau. This part of Missouri is characterized by one of the most karstic regions in the continental United States. A region with outstanding water resources, numerous springs, sinkholes, losing streams, caves and hollows.

The underground and surface water resources found in Wright County are very much connected as a result of the karst topography of the county and region. There are seven unique watershed in the county, each having their own unique drainage feature—creek or river—that flows south-southwest toward larger rivers and final destinations in Arkansas to the south.

Watershed	General Location in Wright County	Tributary to:
Upper Gasconade River	Central	Missouri River
Beaver Creek	Eastern	Gasconade River
Osage Fork	Northeast	Gasconade River
Whetstone Creek	South	Gasconade River
Bryant Creek	Southwest	North Fork River
Fox Creek	South	Bryant Creek
North Fork of the White	Southeast	White River

Wright County, Missouri is comprised of 437,034 acres. Farmland in Wright County totals just over 317,000 acres, or approximately 72%, according to the 2012 US Census of Agriculture. The remainder of the land in the county is made up of incorporated communities, state and federally owned forest properties, highways and other public owned lands.

Elevations in Wright County rand from approximately 1,740 feet located in the southwest corner of the county two miles west of Mansfield, to the lowest elevation above sea level of about 1,000 feet, located about five miles west of the northeast corner of the county along the Gasconade River.

2.1.2 Climate

Wright County's average annual precipitation through the reporting years of 1971-2020 was 44.91 inches. The average annual temperature for the county is 56 degrees Fahrenheit. On average, the hottest month of the year in Wright County is July, with a mean temperature of 78.6 degrees. The coldest month is January, with a mean temperature of 32.2 degrees

2.1.3 Demographics

Table 2.1. Wright County Population 2000-2020 by Community

Jurisdiction	Total Population 2010	Population Estimate 2020	2010-2020 # Change	2000-2020 % Change
Wright County	18,565	18,256	-309	-1.6%
City of Hartville	607	640	+33	4%
City of Mansfield	1,158	1,257	+99	0.9%
City of Mountain Grove	4,704	4,703	-1	----
City of Norwood	636	680	+44	+8.2%

Source: U.S. Bureau of the Census, 2020 ACS estimates

Table 2.2. Unemployment, Poverty, Education, and Language Percentage Demographics

Jurisdiction	Percent of Population 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 (spoken language other than English)
Wright County	50.1	6.3	15.3	41.3	11	5.2
City of Hartville	49.2	14	19.1	57	2.3	0.3
City of Mansfield	48.1	4.2	18.8	86.7	11.6	0.2
City of Mountain Grove	39.6	5.5	20.8	77.8	9.2	2.5
City of Norwood	52.7	16.5	27.3	84.6	10.3	0.3
State	3,005,604	8.4	11.1	88.0	26.7	6.1

Source: U.S. Census, 2020 American Community Survey, 5-year Estimates.

2.1.4 History

Wright County is bordered by Laclede County on the north, Texas County on the east, Douglas County on the south, and Webster County on the west. Formed from part of Pulaski County on February 28, 1841, Wright County was named in honor of Silas Wright, a prominent New York Democrat. The county seat, Hartville, was probably named after Hartsville, TN, from which many early settlers arrived. Wright County lost part of its land in 1845 to Texas County, in 1849 to Laclede, and in 1855 a big chunk to Webster.

It appears there were no Indian settlements early in the area, although the wandering Delawares, Shawnees, and Piankashaw did come through. Early white settlers were in the county in1836 and were probably hunters. The earliest known settlers (by 1840) were Samuel Thompson, Robert Montgomery, Benjamin Stephens, Jams Young, William Franklin, Isham Pool, and the Tuckers, according to Goodspeed. A good sized portion of the county is located in the Mark Twain National Forest. The Gasconade River and its tributaries flow through the county, allowing for great recreational opportunities.

The early settlers homesteaded the fertile valleys and soon log cabins dotted the county. Small family farms are still a major part of the landscape. The pioneer raised his own provisions and with his trusty gun he could shoot various wild game. He hunted, trapped and sold furs to traveling buyers. Livestock was limited. In the early 1900's farmers grew small crops, a few cattle, hogs, etc. It is now beef and dairy country with some feeder pig production. Early social activities centered on church and school. Community activities included old time hoedowns, candy pullings, corn huskings, barn warmings, quilting bees, and log rolling. Arts and crafts continue to enter into lives of many. People still gather f or church activities, auctions, musicals, square dancing and sports of all kinds. Like the early pioneers, fishing and floating our rivers are very much a part of living in our

county. Hunting is enjoyed by many and the county is one of the leading counties statewide for deer and turkey. Small game is abundant.

Education has always been very important to county residents. The rural one room school houses have vanished. Students are transported to one of the ten school districts serving the county. College courses are offered in our communities. Wright County with its moderate climate has become a place many people come to retire. Its rural environment, fine education systems, good churches, great hunting and fishing, community spirit, businesses, industry, and the beauty of the area make this a desirable place to live. Source: www.historicmarkers.com/mo/

2.1.5 Occupations

Table 2.3. Occupation Statistics, Wright County, Missouri

Place	Management, Business, Science, and Arts Occupations	Service Occupations	Sales and Office Occupations	Construction, extraction, installation, maintenance, and repair occupations	Production, Transportation, and Material Moving Occupations
Wright County					
Hartville	39.2	18.8	18.0	8.6	14.7
Mansfield	18.0	22.4	23.7	12.9	23.0
Mountain Grove	37.3	12.3	21.4	4.4	21.0
Norwood	23.9	23.0	16.9	8.0	23.5

Source: U.S. Census, 2020 American Community Survey, 5-year Estimates.

2.1.6 Agriculture

According to the 2016 Census of Agriculture, Wright County is home to 1,246 farms, consisting of 293,996 acres. The average market value of products sold per farm is $37,913, a 9% decrease in value from 2010. The top crop in the county is Forage-land, the top livestock item is cattle and calves. The farming sector is a significant part of the county's economy with an estimated 23.3% of workers employed as a farm owner or farm worker. This figure is slightly higher than the overall 19.8% for the seven county South Central Missouri region.

2.1.7 FEMA Hazard Mitigation Assistance Grants in Planning Area

Table 2.4. FEMA HMA Grants in County from 1993-2020

Project Type	Sub applicant	Award Date	Project Total
Emergency Power Generation	Wright County Commission	2018	$55,000
Tornado Safe Room	Hartville School District	2021	$2,405,065
Total	-	-	**$2,460,065.00**

Source: SCOCOG

2.1.8 FEMA Public Assistance (PA) Grants in Planning Area

Since 2002, jurisdictions in Wright County have received over twenty million dollars in public assistance due to natural hazard damages. **Table 2.5** shows all the public assistance payouts received by jurisdictions, as well as the project type and disaster declaration.

Table 2.5. PA Grants in Wright County, Missouri 2002 - 2020

Disaster Number	Incident Type	Damage Category	Project Size	Project Amount ($)	Federal Share ($)
1412	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	1521.49
1412	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	14716.73
1412	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	19335
1412	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	24246.61
1412	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	21708.06
1412	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	13646.53
1412	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	21667
1631	Severe Storm(s)	A - Debris Removal	Debris Removal	Small	4506.52
1631	Severe Storm(s)	B - Protective Measures	Protective Measures	Small	1381.19
1631	Severe Storm(s)	E - Public Buildings	Public Buildings	Small	500
1631	Severe Storm(s)	B - Protective Measures	Protective Measures	Small	726.15
1676	Severe Ice Storm	A - Debris Removal	Debris Removal	Small	17250
1676	Severe Ice Storm	A - Debris Removal	Debris Removal	Small	3264
1676	Severe Ice Storm	F - Public Utilities	Public Utilities	Small	5544.23
1676	Severe Ice Storm	F - Public Utilities	Public Utilities	Large	73237.76
1676	Severe Ice Storm	B - Protective Measures	Protective Measures	Small	7657.34
1676	Severe Ice Storm	F - Public Utilities	Public Utilities	Small	45361.83
1676	Severe Ice Storm	A - Debris Removal	Debris Removal	Small	17145.7
1748	Severe Ice Storm	A - Debris Removal	Debris Removal	Small	2965.75
1748	Severe Ice Storm	A - Debris Removal	Debris Removal	Large	66589.24
1748	Severe Ice Storm	B - Protective Measures	Protective Measures	Small	1604.16
1748	Severe Ice Storm	B - Protective Measures	Protective Measures	Small	22663.03
1748	Severe Ice Storm	A - Debris Removal	Debris Removal	Small	53829.62
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	8467.11
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	3082.02
1749	Severe Storm(s)	B - Protective Measures	Protective Measures	Small	6981.46
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	12906.72
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	3266.82
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	4335.4
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	2295.32
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	5918.11
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	2547.63
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	3374.02
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	3208.77
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	20013.41

Disaster Number	Incident Type	Damage Category	Project Size	Project Amount ($)	Federal Share ($)
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	16831.12
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	18139.46
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	18017.83
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	4171.89
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	4098.09
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	3010.13
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	4700.17
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	4812.01
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	10503.61
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	20583.53
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	15617.36
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	6809.93
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	8291.25
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	11434.29
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	18965.5
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	8990.88
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	11034.62
1749	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	16515.07
1809	Severe Storm(s)	A - Debris Removal	Debris Removal	Small	1499.38
1809	Severe Storm(s)	B - Protective Measures	Protective Measures	Small	1142.93
1809	Severe Storm(s)	E - Public Buildings	Public Buildings	Small	38239
1809	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	63441.57
1809	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	6556.39
1847	Severe Storm(s)	B - Protective Measures	Protective Measures	Small	9811.8
1847	Severe Storm(s)	A - Debris Removal	Debris Removal	Small	45365.79
1980	Severe Storm(s)	A - Debris Removal	Debris Removal	Small	3317.47
1980	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	8381.06
1980	Severe Storm(s)	F - Public Utilities	Public Utilities	Small	14326
1980	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	5818.64
1980	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	15479.1
1980	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	11393.49
1980	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	8415.25
1980	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	26068.19
1980	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	13048.44
1980	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	10006.41
1980	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	10089.47
1980	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	9237.31
4144	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Large	123431.78
4144	Severe Storm(s)	A - Debris Removal	Debris Removal	Small	3037.31
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	18693.97
4238	Severe Storm(s)	A - Debris Removal	Debris Removal	Small	0
4238	Severe Storm(s)	G - Recreational or Other	Recreational or Other	Small	3693.39

Disaster Number	Incident Type	Damage Category	Project Size	Project Amount ($)	Federal Share ($)
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	24081.7
4238	Severe Storm(s)	A - Debris Removal	Debris Removal	Small	6618.25
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	26711.97
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	12738.15
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	21309.36
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	21194.45
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	11136.47
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	24028.61
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	24703.89
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	17004.06
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	14047.22
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	14760.41
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	12388.63
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	23052.4
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	16290.88
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	19806.44
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	31476.89
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	24938.39
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	11683.33
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	12929.79
4238	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	27116.12
4317	Flood	C - Roads and Bridges	Roads and Bridges	Small	81104.06
4317	Flood	C - Roads and Bridges	Roads and Bridges	Small	54112.98
4317	Flood	C - Roads and Bridges	Roads and Bridges	Small	61506.11
4317	Flood	C - Roads and Bridges	Roads and Bridges	Small	54749.15
4317	Flood	C - Roads and Bridges	Roads and Bridges	Small	0
4317	Flood	C - Roads and Bridges	Roads and Bridges	Small	68931.33
4317	Flood	C - Roads and Bridges	Roads and Bridges	Small	21258.02
4451	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	114533.7
4451	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	70171.84
4451	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	83364.21
4451	Severe Storm(s)	A - Debris Removal	Debris Removal	Small	19642.11
4451	Severe Storm(s)	B - Protective Measures	Protective Measures	Small	11145.96
4451	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	46258.7
4451	Severe Storm(s)	C - Roads and Bridges	Roads and Bridges	Small	95771.83
4451	Severe Storm(s)	Z - State Management	State Management	Small	438.39
4490	Biological	B - Protective Measures	Protective Measures	Small	26289.19

2.2 Jurisdictional Profiles and Mitigation Capabilities

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

2.2.1 Unincorporated Wright County, Missouri

Wright County's jurisdiction includes all unincorporated areas within the county boundaries. Wright is identified as a third-class county in the State of Missouri. The governing body of the County is the County Commission. The Commission consists of a Presiding Commissioner, a northern Commissioner and a southern Commissioner.

The County's elected governing body; the Board of County Commissioners directs the general administration of County Government. The Commission sets broad operating policies, enacts ordinances and establishes budgets as mandated by State law. The County enters into contracts with other public and private agencies to ensure the smooth flow of services including law enforcement, construction and maintenance of public roads, bridges and the operations of county offices, equipment and services. The departments of the County government include:

- Board of Commissioners
- County Assessor
- County Attorney
- County Auditor
- County Recorder
- County Sheriff
- County Treasurer
- County Coroner
- County Clerk
- Emergency Management

Mitigation Initiatives and Capabilities

Staff capabilities to mitigate the impact of natural hazards include the local emergency management officials and local law enforcement members who are involved in mitigation planning, response and recovery processes. Efforts in coordinating with local government officials and cooperating with private organizations to: 1) prevent avoidable disasters and reduce the vulnerability of the residents to any disaster that may strike; 2) establish capabilities for protecting citizens from the effects of disasters; 3) respond effectively to the actual occurrences of disasters; and 4) provide for recovery in the aftermath of any emergency involving extensive damage within the county. The Emergency Management Director (EMD) is responsible for the development and maintenance of the Local Emergency Operations Plan.

Table 2.6 provides information about the mitigation capabilities and policies for the unincorporated county based on responses from the Mitigation Planning Data Collection Questionnaire.

Table 2.6. Unincorporated Wright County Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	None
Capital Improvement Plan	None
Local Emergency Operations Plan	2018
Local Recovery Plan	None
Local Mitigation Plan	Yes, 2016
Economic Development Plan	Yes, 2019
Transportation Plan	Yes, 2019
Land-use Plan	None
Watershed Plan	None
Firewise or other fire mitigation plan	No
Open Space/Recreation Plan	Yes, 12/2015
Policies/Ordinance	
Zoning Ordinance	None
Building Code	None
Floodplain Ordinance	None
Subdivision Ordinance	None
Tree Trimming Ordinance	None
Nuisance Ordinance	None
Storm Water Ordinance	None
Drainage Ordinance	None
Site Plan Review Requirements	None
Historic Preservation Ordinance	None
Landscape Ordinance	None
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
NFIP Participant	No
CRS Participating Community	No
Hazard Awareness Program	Yes, 12/2015
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	No
Economic Development Program	No

Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Mutual Aid Agreements	No
Studies/Reports/Maps	
Flood Insurance Maps	Yes, 2008
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	Yes, 2011
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	Yes
Emergency Management Director	Yes
NFIP Floodplain Administrator	No
Emergency Response Team	Yes – HSRT
Hazardous Materials Expert	Yes – HSRT
Local Emergency Planning Committee	No
Transportation Department	No
Housing Authority	No
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	No
Impact fees for new development	No
Ability to incur debt through GO bonds	Yes
Ability to incur debt through special tax bonds	Yes

Source: Data Collection Questionnaire, 2021

2.2.2 City of Hartville

The City of Hartville is located in the central portion of Wright County at the intersection of State Highway 38 and State Highway 5. Hartville serves as the Wright County seat. The governing body of Hartville includes the Mayor and six (6) Aldermen. Hartville is the second fastest growing community (by percentage) in Wright County. At the time of the 2010 Census the population in Hartville was 607. The 2020 ACS estimates reported the City's population as 640, which equals a 4% growth in population. The City of Hartville participated in the last update of the County-wide plan; however, specific mitigation activities undertaken by the City have been limited since 2017. City departments include:

- Mayor/Board of Aldermen
- City Clerk
- Water and Sewer
- City Maintenance
- Police Department

According to 2020 Estimates, the median year built for structures in Hartville is 1961. Additionally, 17.6% of the population were over the age of 65, median household income was $18,646 and 25% of the families in Hartville were living below the poverty level. Mitigation capabilities in Hartville include:

- Two (2) outdoor warning sirens
- Mutual aid agreements with local governments/law enforcement
- One (1) part-time building inspector/code official

Table 2.7. City of Hartville Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	None
Capital Improvement Plan	None
Local Emergency Operations Plan	2018
Local Recovery Plan	None
Local Mitigation Plan	Yes, 2017
Economic Development Plan	Yes, 2014
Transportation Plan	Yes, 2015
Land-use Plan	None
Watershed Plan	None
Firewise or other fire mitigation plan	None
Open Space/Recreation Plan	None
Policies/Ordinance	
Zoning Ordinance	None
Building Code	None
Floodplain Ordinance	Yes
Subdivision Ordinance	None
Tree Trimming Ordinance	None
Nuisance Ordinance	None
Storm Water Ordinance	None
Drainage Ordinance	None
Site Plan Review Requirements	None
Historic Preservation Ordinance	None
Landscape Ordinance	None
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No

NFIP Participant	Yes
CRS Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	Yes - 8
Economic Development Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Mutual Aid Agreements	No
Studies/Reports/Maps	
Flood Insurance Maps	Yes, 2011
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	Yes, 2011
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	Yes – Part Time
Emergency Management Director	No
NFIP Floodplain Administrator	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
Transportation Department	No
Housing Authority	No
Local Funding Availability	
Ability to apply for CDBG Grants	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes - Water
Impact fees for new development	No
Ability to incur debt through GO bonds	Yes
Ability to incur debt through special tax bonds	Yes

Source: Data Collection Questionnaire 2021

2.2.3 City of Mansfield

The City of Mansfield is located in the southwestern portion of Wright County along US Highway 60 near the Webster and Douglas County borders. The governing body of Mansfield includes the Mayor and four Aldermen. Mansfield's population growth has slightly increased according to figures between the years 2010 and 2020. At the time of the 2010 census the population in Mansfield was 1,158. The 2020 ACS Estimates reported the City's population as 1,257, which equals a 0.9 percent increase in population. The City of Mansfield participated in the last update of the county-wide plan; however, specific mitigation activities undertaken by the City have been limited since 2017. City departments include:

- Mayor/Board of Aldermen
- City Clerk
- Water and Sewer
- City Maintenance
- Police Department

According to 2020 ACS Estimates, the median year built for structures in in Mansfield is 1965. Additionally, 15.3% of the population were over the age of 65, median household income was $20,558, and 15.4% of the families in Mansfield were living below the poverty level. Mitigation capabilities in Mansfield include:

- Two (2) outdoor warning sirens
- Mutual aid agreements with local governments/law enforcement

Table 2.8. City of Mansfield Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	Yes, 2016
Capital Improvement Plan	Yes, 2022
Local Emergency Operations Plan	2018
Local Recovery Plan	Yes, 2015
Local Mitigation Plan	Yes, 2017
Economic Development Plan	Yes, 2014
Transportation Plan	Yes, 2015
Land-use Plan	Yes, 2016
Watershed Plan	None
Firewise or other fire mitigation plan	Yes, 2012
Open Space/Recreation Plan	Yes, 2016
Policies/Ordinance	
Zoning Ordinance	Yes
Building Code	Yes, 2018
Floodplain Ordinance	Yes, 2016
Subdivision Ordinance	Yes
Tree Trimming Ordinance	Yes
Nuisance Ordinance	Yes
Storm Water Ordinance	Yes
Drainage Ordinance	Yes
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	None
Landscape Ordinance	None
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
NFIP Participant	Yes

CRS Participating Community	Yes
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	Yes
ISO Fire Rating	Yes, 4
Economic Development Program	Yes
Public Education/Awareness	Yes
Property Acquisition	Yes
Planning/Zoning Boards	Yes
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Flood Insurance Maps	Yes, 2021
FEMA Flood Insurance Study (Detailed)	Yes, 2011
Evacuation Route Map	Yes
Critical Facilities Inventory	Yes, 2011
Vulnerable Population Inventory	No
Land Use Map	Yes, 2016
Staff/Department	
Building Code Official	Yes
Building Inspector	Yes
Mapping Specialist (GIS)	Yes
Engineer	Yes
Development Planner	Yes
Public Works Official	Yes
Emergency Management Director	Yes
NFIP Floodplain Administrator	Yes
Emergency Response Team	Yes
Hazardous Materials Expert	Yes
Local Emergency Planning Committee	No
Transportation Department	Yes
Housing Authority	No
Local Funding Availability	
Ability to apply for CDBG Grants	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 GO bonds	Yes
Ability to incur debt through special tax bonds	Yes

2.2.4 City of Mountain Grove

The City of Mountain Grove is located in the southeastern portion of Wright County along US Highway 60, straddling the border of Wright and Texas Counties. The governing body of Mountain Grove includes the Mayor and four (6) Aldermen. Mountain Grove's population has remained level during the last decade. At the time of the 2010 census the population in Mountain Grove was 4,704. The 2020 ACS Estimates reported the City's population as 4,703. The City of Mountain Grove participated in the last update of the county-wide plan; however, specific mitigation activities undertaken by the City have been limited since 2017. City departments include:

- Mayor/Board of Aldermen
- City Clerk
- Water and Sewer
- City Maintenance
- Emergency Management
- Fire Department
- Police Department

According to 2020 Estimates, the median year built for structures in Mountain Grove is 1970. Additionally, 9.2% of the population were over the age of 65, median household income was $25,407, and 15.9% of the families in Mountain Grove were living below the poverty level. Mitigation capabilities in Mountain Grove include:

- Two (2) outdoor warning siren
- Mutual aid agreements with local governments/law enforcement
- One (1) part-time inspection & building code official

Table 2.9. City of Mountain Grove Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	2004
Capital Improvement Plan	2015
Local Emergency Operations Plan	2018
Local Recovery Plan	2015
Local Mitigation Plan	2017
Economic Development Plan	2014
Transportation Plan	2015
Land-use Plan	2005
Watershed Plan	None
Firewise or other fire mitigation plan	2012
Open Space/Recreation Plan	2005
Policies/Ordinance	
Zoning Ordinance	YES
Building Code	2006 INTERNATIONAL
Floodplain Ordinance	2011
Subdivision Ordinance	2005
Tree Trimming Ordinance	N
Nuisance Ordinance	Y
Storm Water Ordinance	Y
Drainage Ordinance	N
Site Plan Review Requirements	N
Historic Preservation Ordinance	N
Landscape Ordinance	N
Program	
Zoning/Land Use Restrictions	Y
Codes Building Site/Design	Y

NFIP Participant	Y
CRS Participating Community	N
Hazard Awareness Program	Y
National Weather Service (NWS) Storm Ready	N
Building Code Effectiveness Grading (BCEGs)	N
ISO Fire Rating	4 -2015
Economic Development Program	N
Public Education/Awareness	Y
Property Acquisition	N
Planning/Zoning Boards	Y
Mutual Aid Agreements	Y
Studies/Reports/Maps	
Flood Insurance Maps	Y
FEMA Flood Insurance Study (Detailed)	Y
Evacuation Route Map	N
Critical Facilities Inventory	Y
Vulnerable Population Inventory	N
Land Use Map	Y
Staff/Department	
Building Code Official	Y
Building Inspector	Y
Mapping Specialist (GIS)	Y
Engineer	N
Development Planner	Y
Public Works Official	Y
Emergency Management Director	Y
NFIP Floodplain Administrator	Y
Emergency Response Team	Y
Hazardous Materials Expert	N
Local Emergency Planning Committee	Y
Transportation Department	Y
Housing Authority	N
Local Funding Availability	
Ability to apply for CDBG Grants	Y
Authority to levy taxes for a specific purpose	Y
Fees for water, sewer, gas, or electric services	Y
Impact fees for new development	Y
Ability to incur debt through GO bonds	Y
Ability to incur debt through special tax bonds	Y

2.2.5 City of Norwood

The City of Norwood is located in the south-central portion of Wright County along US Highway 60. The governing body of Norwood includes the Mayor and four (4) Aldermen. The community's population growth rate was 8.2% according to census data between the years 2010 and 2020. City departments include:

- Mayor/Board of Aldermen
- City Clerk
- Water and Sewer
- City Maintenance

According to 2020 Estimates, the median year built for structures in Norwood is 1971. Additionally, 11.9% of the population were over the age of 65, median household income was $34,205, and 27.3% of the families in Norwood were living below the poverty level. Mitigation capabilities in Norwood include:

- Two (2) outdoor warning sirens
- Mutual aid agreements with local governments/law enforcement

Table 2.10. City of Norwood Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	2004
Capital Improvement Plan	2015
Local Emergency Operations Plan	2018
Local Recovery Plan	2015
Local Mitigation Plan	2017
Economic Development Plan	2014
Transportation Plan	2015
Land-use Plan	2005
Watershed Plan	None
Firewise or other fire mitigation plan	2012
Open Space/Recreation Plan	2005
Policies/Ordinance	
Zoning Ordinance	YES
Building Code	2009 INTERNATIONAL
Floodplain Ordinance	2011
Subdivision Ordinance	2005
Tree Trimming Ordinance	N
Nuisance Ordinance	Y
Storm Water Ordinance	Y
Drainage Ordinance	N
Site Plan Review Requirements	N
Historic Preservation Ordinance	N
Landscape Ordinance	N
Program	
Zoning/Land Use Restrictions	Y
Codes Building Site/Design	Y
NFIP Participant	Y
CRS Participating Community	N
Hazard Awareness Program	Y
National Weather Service (NWS) Storm Ready	N
Building Code Effectiveness Grading (BCEGs)	N
ISO Fire Rating	4 -2015

Economic Development Program	N
Public Education/Awareness	Y
Property Acquisition	N
Planning/Zoning Boards	Y
Mutual Aid Agreements	Y
Studies/Reports/Maps	
Flood Insurance Maps	Y
FEMA Flood Insurance Study (Detailed)	Y
Evacuation Route Map	N
Critical Facilities Inventory	Y
Vulnerable Population Inventory	N
Land Use Map	Y
Staff/Department	
Building Code Official	Y
Building Inspector	Y
Mapping Specialist (GIS)	Y
Engineer	N
Development Planner	Y
Public Works Official	Y
Emergency Management Director	Y
NFIP Floodplain Administrator	Y
Emergency Response Team	Y
Hazardous Materials Expert	N
Local Emergency Planning Committee	Y
Transportation Department	Y
Housing Authority	N
Local Funding Availability	
Ability to apply for CDBG Grants	Y
Authority to levy taxes for a specific purpose	Y
Fees for water, sewer, gas, or electric services	Y
Impact fees for new development	Y
Ability to incur debt through GO bonds	Y
Ability to incur debt through special tax bonds	Y

Table 2.11. Municipal Mitigation Capabilities Summary Table

CAPABILITIES	Wright County	Hartville	Mansfield	Mountain Grove	Norwood
Planning Capabilities					
Comprehensive Plan	N	None	2004	Yes, 2016	2004
Capital Improvement Plan	N	None	2015	Yes, 2016	2015
Local Emergency Operations Plan	Y, 2018	Yes 2018	2018	Yes, 2018	2018
Local Recovery Plan	N	None	2015	Yes, 2015	2015
Local Mitigation Plan	Y, 2017	Yes, 2017	2017	Yes, 2017	2017
Economic Development Plan	Y, 2014	Yes, 2014	2014	Yes, 2014	2014
Transportation Plan	Y, 2015	Yes, 2015	2015	Yes, 2015	2015
Land-use Plan	N	None	2005	Yes, 2016	2005
Watershed Plan	N	None	None	None	None
Firewise or other fire mitigation plan	Y, 2013	None	2012	Yes, 2012	2012
Open Space/Recreation Plan	N	None	2005	Yes, 2016	2005
Policies/Ordinance					
Zoning Ordinance	N	None	YES	Yes	YES
Building Code	N	None	2009 INTERNATIONAL	Yes, 2012	2006 INTERNATIONAL
Floodplain Ordinance	N	None	2011	Yes, 1979	2011
Subdivision Ordinance	N	None	2005	Yes	2005
Tree Trimming Ordinance	N	None	N	Yes	N
Nuisance Ordinance	N	None	Y	Yes	Y
Storm Water Ordinance	N	None	Y	Yes	Y
Drainage Ordinance	N	None	N	Yes	N
Site Plan Review Requirements	N	None	N	Yes	N
Historic Preservation Ordinance	N	None	N	None	N

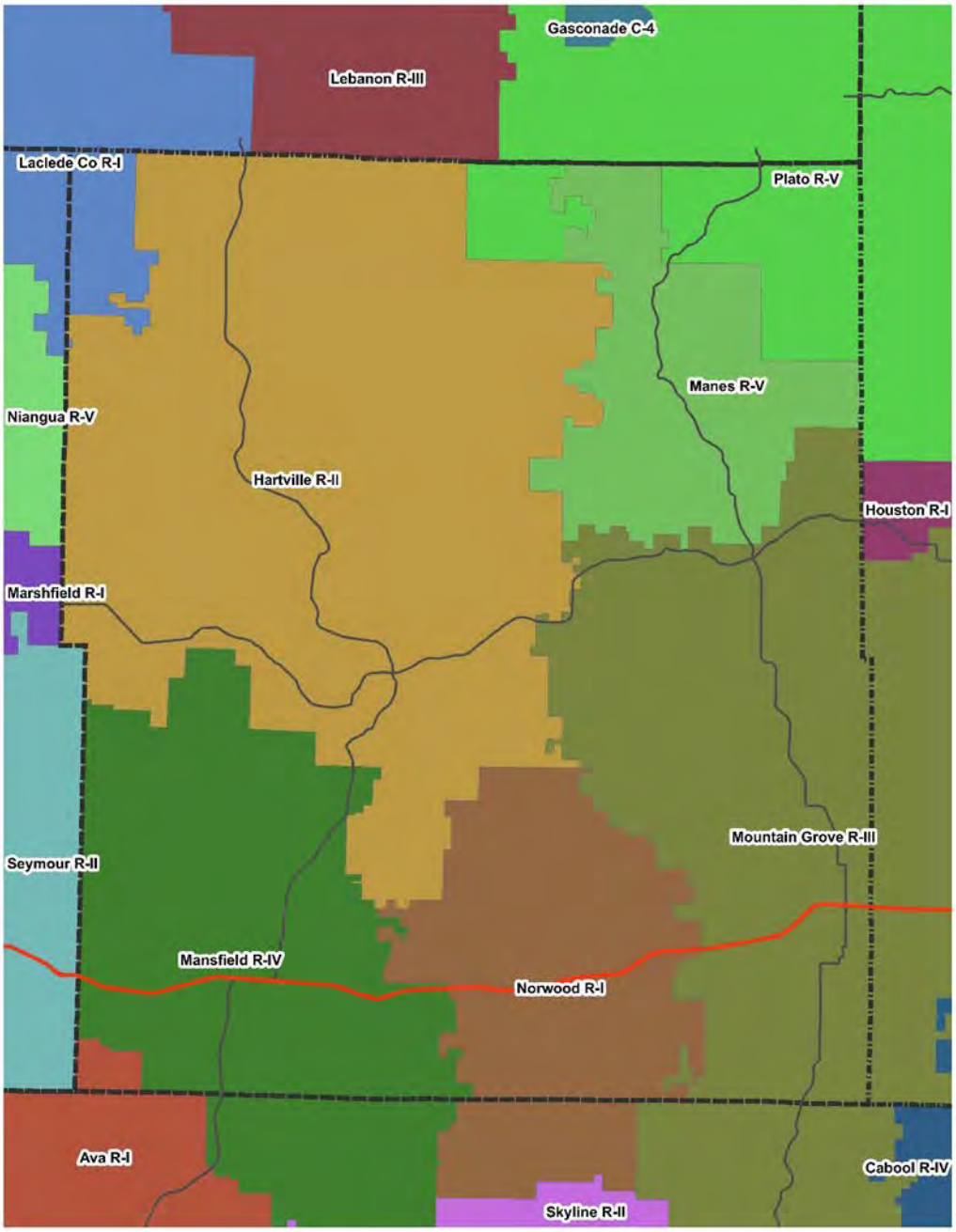
CAPABILITIES	Wright County	Hartville	Mansfield	Mountain Grove	Norwood
Landscape Ordinance	N	None	N	None	N
Program					
Zoning/Land Use Restrictions	N	No	Y	Yes	Y
Codes Building Site/Design	N	No	Y	Yes	Y
NFIP Participant	N	No	Y	Yes	Y
CRS Participating Community	N	No	N	Yes	N
Hazard Awareness Program	Y	No	Y	No	Y
National Weather Service (NWS) Storm Ready	Y	No	N	No	N
Building Code Effectiveness Grading (BCEGs)	N	No	N	Yes	N
ISO Fire Rating	Multiple rural departments averaging 6-9 ISO	Yes - 8	4	Yes, 4	4
Economic Development Program	N	No	N	Yes	N
Public Education/Awareness	Y	No	Y	Yes	Y
Property Acquisition	N	No	N	Yes	N
Planning/Zoning Boards	N	No	Y	Yes	Y
Mutual Aid Agreements	Y	No	Y	Yes	Y
Studies/Reports/Maps					
Flood Insurance Maps	Y	Yes, 2019	Y	Yes, 2019	Y
FEMA Flood Insurance Study (Detailed)	Y	No	Y	Yes, 2019	Y
Evacuation Route Map	N	No	N	Yes	N
Critical Facilities Inventory	Y,2017	Yes, 2017	Y	Yes, 2017	Y
Vulnerable Population Inventory	N	No	N	No	N
Land Use Map	N	No	Y	Yes, 2016	Y
Staff/Department					
Building Code Official	N	No	Y	Yes	Y
Building Inspector	N	No	Y	Yes	Y

CAPABILITIES	Wright County	Hartville	Mansfield	Mountain Grove	Norwood
Mapping Specialist (GIS)	Y	No	Y	Yes	Y
Engineer	N	No	N	Yes	N
Development Planner	N	No	Y	Yes	Y
Public Works Official	Y	Yes – Part Time	Y	Yes	Y
Emergency Management Director	Y	No	Y	Yes	Y
NFIP Floodplain Administrator	N	No	Y	Yes	Y
Emergency Response Team	Y	No	Y	Yes	Y
Hazardous Materials Expert	Y	No	N	Yes	N
Local Emergency Planning Committee	Y	No	Y	No	Y
Transportation Department	Y	No	Y	Yes	Y
Housing Authority	N	No	N	No	N
Local Funding Availability					
Ability to apply for CDBG Grants	Y	Yes	Y	Yes	Y
Authority to levy taxes for a specific purpose	Y	Yes	Y	Yes	Y
Fees for water, sewer, gas, or electric services	Y	Yes - Water	Y	Yes	Y
Impact fees for new development	N	No	Y	Yes	Y
Ability to incur debt through GO bonds	N	Yes	Y	Yes	Y
Ability to incur debt through special tax bonds	Y	Yes	Y	Yes	Y

2.2.6 Public School District Profiles and Mitigation Capabilities

This section provides general information about participating school districts in the Plan. There are eight school districts based in Wright County. Other school district boundaries include areas of Wright County include Laclede Co. R-I but is not headquartered and do not have facilities within the county. Figure 2.2 is a map of school district boundaries in Wright County.

Figure 2.2. Wright County School Districts



2.2.7 Hartville R-II School District

All of Hartville R-II School District facilities are within the city limits of the county seat Hartville, MO. Table 2.12 provides building and enrollment information

Table 2.12.

Building Name	Address	Building Occupants
Hartville High School	1 Eagle Landing Parkway	348
Hartville Elementary	1 Eagle Landing Parkway	302
Grovespring Elementary	9530 Highway 5, Grovespring	68

Hartville R-II Schools are governed by a Board of Education consisting of the Board President and four board members. The District serves over 700 students and employees approximately 75 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

The District has submitted a notice of intent for grant funding for a tornado saferoom at the Hartville campus. Table 2.13 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.13. Hartville R-II School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	N	
Capital Improvement Plan	N	
School Emergency Plan	Y	2020
Weapons Policy	Y	2014
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	Bldg. Principal
Emergency Manager	Y	Bldg. Principal
Grant Writer	Y	Bldg. Principal
Public Information Officer	N	
Information Technology	Y	Staff
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	N	
Special Tax Bonds	N	
Private Activities Donations	N	
State and Federal Grant Funds	Y	
Other		**Status Including Date of Document or Policy**
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	Y	
Public Address/EAS	Y	
NOAA Weather Radios	Y	
Tornado Shelter/Saferoom	Y	
Campus Police	N	

Source: Data Collection Questionnaire

2.2.8 Manes R-V School District

All of Manes R-V School District Facilities are located in unincorporated Wright County in the northeast section of the County along State Route 95. Table 2.14 provides building and enrollment information

Table 2.14.

Building Name	Address	Building Occupants
Manes Elementary	8939 Hwy 95, Mountain Grove	55

Manes R-V Schools are governed by a Board of Education consisting of the Board President and four board members. The District serves 43 students and employs 12 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

The District has submitted a notice of interest for grant funding for a tornado saferoom to be constructed at their campus. Table 2.15 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.15. Manes R-V School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	N	
Capital Improvement Plan	N	
School Emergency Plan	Y	2019
Weapons Policy	Y	2009
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	Principal
Emergency Manager	N	
Grant Writer	N	
Public Information Officer	Y	Superintendent
Information Technology	N	
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	N	
Special Tax Bonds	N	
Private Activities Donations	Y	
State and Federal Grant Funds	Y	
Other		**Status Including Date of Document or Policy**
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	Y	
Public Address/EAS	Y	
NOAA Weather Radios	N	
Tornado Shelter/Saferoom	Y	
Campus Police	N	

Source: Data Collection Questionnaire

2.2.9 Mansfield R-IV School District

All of Mansfield R-IV School District Facilities are located in the City of Mansfield in southwestern Wright County. Table 2.16 provides building and enrollment information

Table 2.16.

Building Name	Address	Building Occupants
Mansfield High School	315 W. Ohio St. Mansfield	283
Mansfield Junior High School	316 W. Ohio St. Mansfield	162
Wilder Elementary	414 W. Ohio St. Mansfield	228

Mansfield R-IV Schools are governed by a Board of Education consisting of the Board President and six board members. The District serves approximately 700 students and employees approximately 80 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

. Table 2.17 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.17. Mansfield R-IV School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	N	
Capital Improvement Plan	Y	2015
School Emergency Plan	Y	2021
Weapons Policy	Y	2021
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	Superintendent
Emergency Manager	Y	Superintendent
Grant Writer	Y	Superintendent
Public Information Officer	Y	Superintendent
Information Technology	N	
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	Y	
Special Tax Bonds	N	
Private Activities Donations	N	
State and Federal Grant Funds	Y	
Other		**Status Including Date of Document or Policy**
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	Y	
Public Address/EAS	Y	
NOAA Weather Radios	y	
Tornado Shelter/Saferoom	N	
Campus Police	N	

Source: Data Collection Questionnaire

2.2.10 Mountain Grove R-III School District

All of Mountain Grove R-III School District Facilities are located in the City of Mountain Grove, in the southeastern portion of Wright County. Table 2.18 provides building and enrollment information

Table 2.18.

Building Name	Address	Building Occupants
Mountain Grove Elementary	320 E. Ninth Street	668
Mountain Grove Middle School	400 E. 17th Street	460
Mountain Grove High School	420 N. Main Street	418

Mountain Grove R-III Schools are governed by a Board of Education consisting of the Board President and six board members. The District serves over 1,560 students and employees approximately 130 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

The District is currently in the process of applying for a hazard mitigation grant to construct a FEMA saferoom. Table 2.19 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.19. Mountain Grove R-III School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	N	
Capital Improvement Plan	N	
School Emergency Plan	Y	2020
Weapons Policy	Y	2019
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	Principal
Emergency Manager	Y	Principal
Grant Writer	Y	Principal
Public Information Officer	Y	Superintendent
Information Technology	Y	Staff
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	N	
Special Tax Bonds	N	
Private Activities Donations	N	
State and Federal Grant Funds	Y	
Other		**Status Including Date of Document or Policy**
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	Y	
Public Address/EAS	Y	
NOAA Weather Radios	Y	
Tornado Shelter/Saferoom	Y	
Campus Police	N	

Source: Data Collection Questionnaire

2.2.11 Norwood R-1 School District

All of Norwood R-I School District Facilities are located within the City of Norwood, in the south-central portion of Wright County along US Highway 60. Table 2.20 provides building and enrollment information

Table 2.20.

Building Name	Address	Building Occupants
Norwood Elementary	675 North Hawk Ave.	198
Norwood High School	675 North Hawk Ave.	181

Norwood R-I Schools are governed by a Board of Education consisting of the Board President and four board members. The District serves 43 students and employs 13 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

The District has submitted a notice of interest for grant funding for a tornado saferoom to be constructed at their campus. Table 2.21 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.21. Norwood R-V School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	N	
Capital Improvement Plan	N	
School Emergency Plan	Y	2020
Weapons Policy	Y	2020
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	Principal
Emergency Manager	N	
Grant Writer	N	
Public Information Officer	Y	Superintendent
Information Technology	N	
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	N	
Special Tax Bonds	N	
Private Activities Donations	Y	
State and Federal Grant Funds	Y	
Other		**Status Including Date of Document or Policy**
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	Y	
Public Address/EAS	Y	
NOAA Weather Radios	N	
Tornado Shelter/Saferoom	Y	
Campus Police	N	

Source: Data Collection Questionnaire

Table 2.22. School Districts – Summary of Mitigation Capabilities

Capability	Hartville	Manes	Mansfield	Mountain Grove	Norwood
Planning Elements					
Master Plan/ Date	N	N	N	Y	Y
Capital Improvement Plan/Date	N	N	N	Y	Y
School Emergency Plan / Date	Y	Y	Y	Y	Y
Weapons Policy/Date	Y	Y	Y	Y	Y
Personnel Resources					
Full-Time Building Official	Y	Y	Y	Y	Y
Emergency Manager	Y	N	Y	Y	Y
Grant Writer	Y	N	Y	N	N
Public Information Officer	N	Y	Y	Y	N
Information Technology	Y	N	Y	Y	N
Financial Resources					
Capital Improvements Project Funding	Y	Y	Y	N	Y
Local Funds	Y	Y	Y	Y	N
General Obligation Bonds	N	N	N	Y	N
Special Tax Bonds	N	N	N	Y	N
Private Activities/Donations	N	Y	N	Y	N
State And Federal Funds/Grants	Y	Y	Y	Y	Y

Data Collection Questionnaires, 2021

3 RISK ASSESSMENT

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

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

This chapter is divided into four main parts:

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

3.1 HAZARD IDENTIFICATION

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

The Plan profiles all natural hazards that can affect Wright County. The natural hazards that can affect the county have been identified in the 2021 Wright County Plan and the 2018 Missouri State Plan. Natural hazards are naturally occurring climatological, hydrological, or geologic events that have a negative effect of people and the built environment. Natural hazards identified include:

- Riverine and Flash Flood
- Dam Failure
- Earthquake
- Land Subsidence/ Sinkholes
- Drought
- Extreme Temperatures
- Severe Thunderstorm/ High Winds/ Lightning/ Hail
- Severe Winter Weather
- Tornado
- Wildfire

No new natural hazards have been identified since the adoption of the previous plan. The Missouri State Hazard Mitigation Plan also addresses human-caused and technological hazards; however, these will not be included in this plan update.

3.1.1 Review of Existing Mitigation Plans

The Plan profiles all natural hazards that affect Wright County. The hazards identified in the 2021 Wright County Plan are identified in the 2018 Missouri State Plan. The State Plan also includes levee failure. Levee failure was excluded from the mitigation planning process as there are no mapped levees nor associated levee protected areas within or immediately upstream of Wright County.

Human-caused and technological hazards identified in the State Plan include:

- CBRNE Attack
- Civil Disorder
- Cyber Disruption
- Structural and Urban Fires
- Hazardous Materials
- Mass Transportation Accidents
- Nuclear Power Plants
- Public Health Emergencies/Environmental Issues
- Special Events
- Terrorism
- Utility Interruptions and System Failures

In Missouri, local plans customarily include only natural hazards, as only natural hazards are required by federal regulations to be included. It was determined to include only natural hazards. The MPC Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type…of all natural hazards that can affect the jurisdiction. The MPC agreed that human-caused and technological hazards are addressed in a Regional Homeland Security Oversight Committee (RHSOC) Threat and Hazard Identification Risk Assessment (THIRA) and that including only natural hazards would meet the needs of local entities participating in the plan update.

Levee failure was excluded from the mitigation planning process as there are no mapped levees nor associated levee protected areas within or immediately upstream of Wright County.

3.1.2 Review Disaster Declaration History

From 1990 to present, Wright County has experienced a number of severe storms, severe ice storms, and floods. Federal and/or state declarations may be granted when the severity and magnitude of an event surpasses the ability of a 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.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act, (PL 100-707) requires that all requests for a declaration by the President must be made by the governor of the affected state. State and federal officials conduct a Preliminary Damage Assessment (PDA) to show that the disaster is of such severity and magnitude that effective response is beyond state and local capabilities. Based on the governor's request, the president may declare that a major disaster or emergency exists, thus activating federal programs to assist in the response and recovery effort. Not all programs are activated for every disaster. Some declarations will provide only individual assistance or public assistance, while others provide both.

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

Since 1993, Wright County has experienced twenty-two (22) disaster events that triggered federal declarations. The most recent occurred in June of 2020 (Severe Storms/Tornadoes).

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

Disaster Number	IH Program Declared	IA Program Declared	PA Program Declared	Declaration Date	Disaster Type	Title
4552	No	No	Yes	**6/9/2020**	DR	SEVERE STORMS, TORNADOES, STRAIGHT LINE WINDS, AND FLOODING
4490	No	Yes	Yes	**3/26/2020**	DR	COVID-19 PANDEMIC
3482	No	No	Yes	**3/13/2020**	EM	COVID-19
4451	No	Yes	Yes	**6/9/2019**	DR	SEVER STORMS, TORNADOES, AND FLOODING
4317	Yes	Yes	Yes	**6/2/2017**	DR	SEVER STORMS, TORNADOES, STRAIGHT LINE WINDS, AND FLOODING
4250	Yes	No	Yes	**1/21/2016**	DR	SEVERE STORMS, TORNADOES, STRAIGHT-LINE WINDS, AND FLOODING
3374	No	No	Yes	**1/2/2016**	EM	SEVERE STORMS, TORNADOES, STRAIGHT-LINE WINDS, AND FLOODING
4238	No	No	Yes	**8/7/2015**	DR	SEVERE STORMS, TORNADOES, STRAIGHT-LINE WINDS, AND FLOODING
4144	No	No	Yes	**9/6/2013**	DR	SEVERE STORMS, STRAIGHT-LINE WINDS AND FLOODING
1980	Yes	No	Yes	**5/9/2011**	DR	SEVERE STORMS, TORNADOES, AND FLOODING
3317	No	No	Yes	**2/3/2011**	EM	SEVERE WINTER STORM
1847	Yes	No	Yes	**6/19/2009**	DR	SEVERE STORMS, TORNADOES, AND FLOODING
3303	No	No	Yes	**1/30/2009**	EM	SEVERE WINTER STORM
1809	Yes	No	Yes	**11/13/2008**	DR	SEVERE STORMS, FLOODING, AND A TORNADO
1749	Yes	Yes	Yes	**3/19/2008**	DR	SEVERE STORMS AND FLOODING
1748	No	No	Yes	**3/12/2008**	DR	SEVERE WINTER STORMS AND FLOODING
3281	No	No	Yes	**12/12/2007**	EM	SEVERE WINTER STORMS
1676	No	No	Yes	**1/15/2007**	DR	SEVERE WINTER STORMS AND FLOODING
1631	Yes	Yes	Yes	**3/16/2006**	DR	SEVERE STORMS, TORNADOES AND FLOODING
3232	No	No	Yes	**9/10/2005**	EM	HURRICANE KATRINA EVACUATION
1412	No	Yes	Yes	**5/6/2002**	DR	SEVERE STORMS, TORNADOES AND FLOODING
995	No	Yes	Yes	**7/9/1993**	DR	SEVERE STORMS & FLOODING

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

3.1.3 Research Additional Sources

A variety of sources were researched for data on natural hazards. Primary sources included FEMA, State Emergency Management Agency (SEMA), National Centers for Environmental Information (NCEI) and National Oceanic and Atmospheric Administration (NOAA). The U.S. Geological Survey (USGS) and the Center for Earthquake Research and Information (CERI) were major sources for earthquake information. The Missouri Department of Natural Resources (MDNR) Dam Safety Division provided information concerning dams and the Missouri Department of Conservation (MDC). Other information sources included county officials; existing city, county, regional and state plans; and information from local officials. The additional sources of data on locations and past impacts of hazards in Wright County include:

- Missouri Hazard Mitigation Plans (2013 and 2018)
- Previously approved planning area Hazard Mitigation Plan (2017)
- Federal Emergency Management Agency (FEMA)
- Missouri Department of Natural Resources (MDNR)
- 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
- National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI);
- Pipeline and Hazardous Materials Safety Administration
- County and local Comprehensive Plans to the extent available
- County Emergency Management
- County Assessors Data
- County Flood Insurance Rate Map, FEMA
- SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin
- U.S. Army Corps of Engineers
- United States Geological Survey (USGS)

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 January 2022, 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

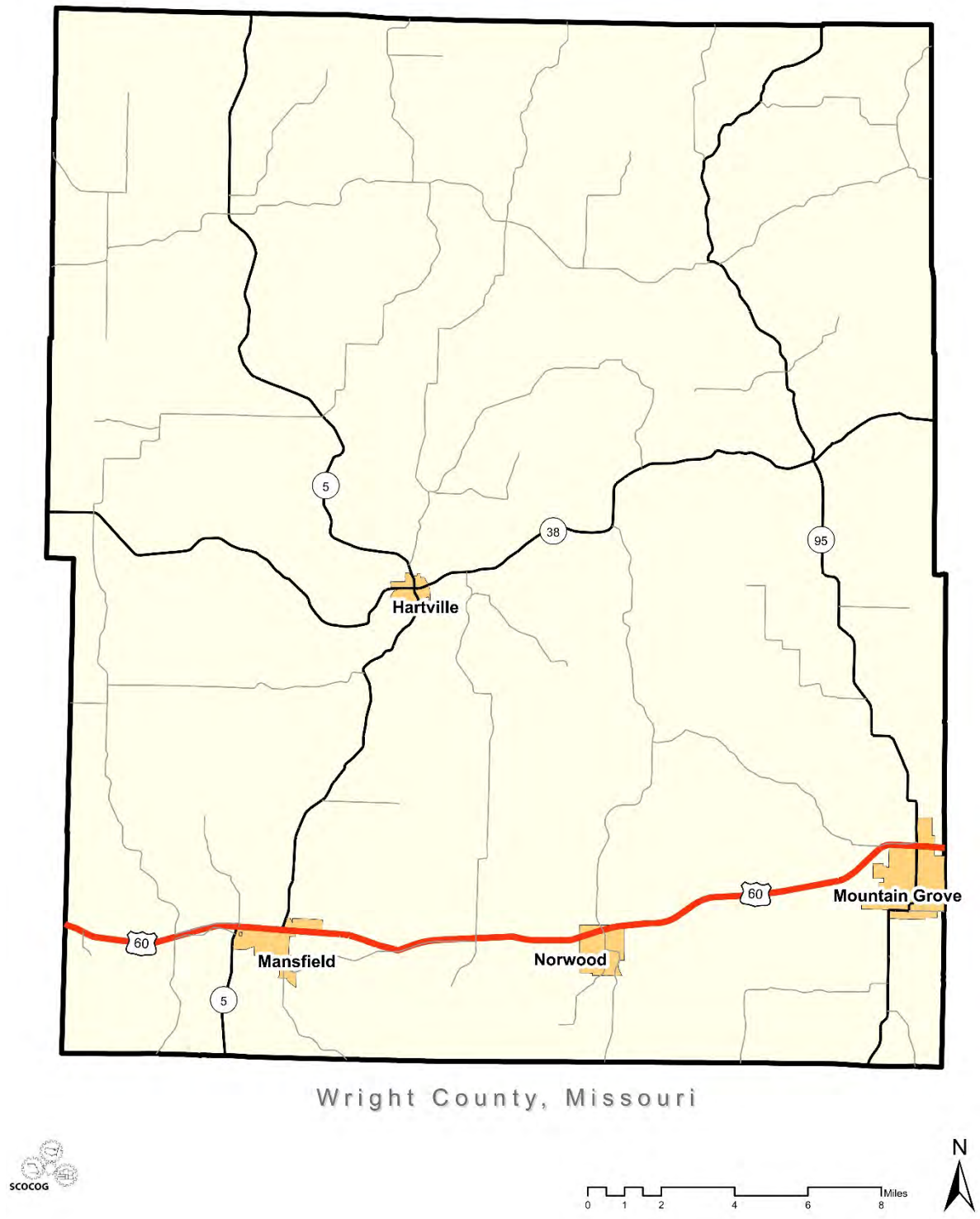
The natural hazards that may impact or have affected Wright County are profiled below. All hazards do not necessarily affect every jurisdiction participating in the same way. Table 3.2 provides a summary of the jurisdictions that may be affected by each hazard. An "x" in the table indicates that jurisdiction is affected by the hazard, and a "-" indicates the hazard is not applicable to that jurisdiction.

Table 3.2. Hazards Identified for Each Jurisdiction

Jurisdiction	Dam Failure	Drought	Earthquake	Extreme Heat	Wildfire	Flooding (River and Flash)	Land Subsidence/Sinkholes	Severe Winter Weather	Thunderstorm/Lightning/Hail/High Wind	Tornado
Wright County	X	X	X	X	X	X	X	X	X	X
City of Hartville	X	X	X	X	X	X	X	X	X	X
City of Mansfield	-	X	X	X	X	X	X	X	X	X
City of Mountain Grove	X	X	X	X	X	X	X	X	X	X
City of Norwood	-	X	X	X	X	X	X	X	X	X
Hartville R-II	-	X	X	X	X	-	-	X	X	X
Manes R-V	-	X	X	X	X	-	-	X	X	X
Mansfield R-IV	-	X	X	X	X	-	-	X	X	X
Mountain Grove R-III	-	X	X	X	X	-	-	X	X	X
Norwood R-I		X	X	X	X	-	-	X	X	X

3.1.5 Multi-Jurisdictional Risk Assessment

Figure 3.1. Map of Planning Area



The risk assessment assesses each participating jurisdiction's vulnerability to each hazard that may affect Wright County. Many of the hazards identified in the risk assessment have the same probability of occurrence throughout Wright County. The hazards that vary across Wright County in terms of risk include dam failure, flash flood, grass or wildland fire, river flood, and sinkholes/land subsidence. These differences are detailed in each hazard profile under geographic location and vulnerability.

Wright County has a continental climate with mild winters and hot summers. The Cities of Mountain Grove, Mansfield and Hartville are the most urbanized, experiencing more construction and development than most other portions of the county. Naturally, the urbanized areas of Wright County have a greater density of important assets, which are more vulnerable to weather-related hazards. These communities plan to continue to grow and expand City boundaries, which will increase vulnerability to natural hazards. This increase in vulnerability, however, can be mitigated through updated building codes and code enforcement, as well as land use planning.

Agricultural uses are primarily located in rural, unincorporated Wright County. These areas are especially vulnerable to hail damages or drought.

These capabilities and resources to mitigate the impact of natural hazards vary across jurisdictions in Wright County. These differences will be discussed in greater detail in the vulnerability sections of each hazard.

3.2 ASSETS AT RISK

This section assesses Wright County population, structures, critical facilities and infrastructure, and other important assets that may be at risk to hazards. The inventory of assets for each jurisdiction were derived from parcel data from the Wright County Assessor, the Wright County Structures dataset downloaded from Missouri Spatial Data information Service (MSDIS), and local jurisdiction data collection questionnaires. The Missouri Mitigation Viewer was also referenced to ensure that total counts looked accurate.

3.2.1 Total Exposure of Population and Structures

Missouri Spatial Data Information Service (MISDIS) data was used for structure points and paired with Wright County Assessors data for values.

Unincorporated County and Incorporated Cities

In the following three tables, population data is based on 2021 ACS data. Building counts and building exposure values are based on parcel data provided by the State of Missouri Geographic Information Systems (GIS) database and Wright County Assessor.

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.

Table 3.4 that follows provides the building value exposures for the county and each city in the planning area broken down by usage type.

Table 3.5 provides the building count total for the county and each city in the planning area broken out by building usage types (residential, commercial, industrial, and agricultural). To accommodate for mixed-use parcels, the data has been based on the lowest class of use for each parcel (e.g. residential-agricultural mixture is considered residential). Wright County assessor data does not recognize any parcel in the county as industrial, though a small amount of buildings in Hartville, Mansfield, Mtn. Grove and Norwood are identified as industrial in the Missouri structure point data. Assessor data classifies these parcels as commercial. Estimates below consolidate commercial and industrial values

Table 3.3. Maximum Population and Building Exposure by Jurisdiction

Jurisdiction	2020 Annual Population Estimate	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
Unincorporated Wright County	11,313	7.176	76,287,610	48,903,805	125,191,415
City of Hartville	727	284	3,342,150	2,321,845	5,663,995
City of Norwood	680	249	2,149,367	1,504,557	3,653,924
City of Mansfield	1,185	622	10,945,770	8,793,235	19,919,005
City of Mountain Grove	4,704	1.964	35,817,040	26,087,430	61,904,470
Totals	**18,609**	**1164.14**	**128,541,937**	**87,610,872**	**216,332,809**

Source: U.S. Bureau of the Census, Annual population estimates/ 5-Year American Community Survey 2020; Building Count and Building Exposure, Missouri GIS Database from SEMA Mitigation Management; Contents Exposure derived by applying multiplier to Building Exposure based on Hazus MH 2.1 standard contents multipliers per usage type as follows: Residential (50%), Commercial (100%), Industrial (150%), Agricultural (100%). For purposes of these calculations, government, school, and utility were calculated at the commercial contents rate.

Table 3.4. Building Values/Exposure by Usage Type

Jurisdiction	Residential	Commercial	Agricultural	Total
Unincorporated Wright County	63,586,992.80	16,691,586	3,179,350	**83,457,928.8**
City of Hartville	2,413,240.50	104,924	594,567	**3,112,731.5**
City of Norwood	1,698,000	322,405	128,962	**2,149,367**
City of Mansfield	8,802,707	2,699,497	352,108	**11,854,312**
City of Mountain Grove	28,467,597	10,771,523	1,154,092	**40,393,212**
Totals	**104,968,537.3**	**30,589,935**	**5,409,079**	**140,967,551.3**

Source: Missouri GIS Database, SEMA Mitigation Management Section

Table 3.5. Building Counts by Usage Type

Jurisdiction	Residential Counts	Commercial Counts	Ag./ Industrial Counts	Total
Unincorporated Wright County	5780	217	1228	**7225**
City of Hartville	201	81	9	**291**
City of Norwood	197	37	15	**249**
City of Mansfield	473	132	25	**630**
City of Mountain Grove	1510	469	61	**2040**
Totals	**8,161**	**936**	**1,338**	**10,435**

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 ($)
Hartville R-II	710	3	$ 20,246,875.00	$ 1,012,343.75	$ 21,259,218.75
Norwood R-I	362	2	$ 13,424,825.54	$ 671,241.28	$ 14,096,066.81
Manes R-V	55	1	$ 1,397,165.00	$ 69,858.25	$ 1,467,023.25
Mansfield R-IV	673	3	$ 29,865,055.00	$ 1,493,252.75	$ 31,358,307.75
Mountain Grove R-III	1,537	4	$ 40,755,000.00	$ 2,037,750.00	$ 42,792,750.00

Source: http://mcds.dese.mo.gov/quickfacts/Pages/District-and-School-Information.aspx., select the file for the most recent year called "2020 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.

Wright County Courthouse, Hartville

Table 3.7 below 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:

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	Highway Bridge	Hospital/Health Care	Military	Natural Gas Facility	Nursing Homes	Police Station	Potable Water Facility	Rail	Sanitary Pump Stations	School Facilities	Tier II Chemical Facility	Wastewater Facility	TOTAL
Wright County	4	0	1	25	6	0	3	0	70	0	0	0	0	0	1	1	1	2	0	1	**115**
City of Hartville	0	1	2	0	0	2	1	2	3	1	0	0	1	2	1	0	1	1	0	1	**19**
City of Norwood	0	0	0	3	1	0	1	2	1	0	0	0	1	0	1	1	1	2	0	1	**15**
City of Mansfield	0	1	3	0	1	0	1	1	4	1	0	0	1	1	1	1	1	2	0	1	**20**
City of Mountain Grove	0	1	5	1	1	1	2	1	2	3	0	0	2	1	1	1	1	6	0	1	**30**
Totals	**4**	**3**	**11**	**29**	**9**	**3**	**8**	**6**	**80**	**5**	**0**	**0**	**5**	**4**	**5**	**4**	**5**	**13**	**0**	**5**	**199**

Source: Missouri 2018 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 3.2. Wright County Bridges

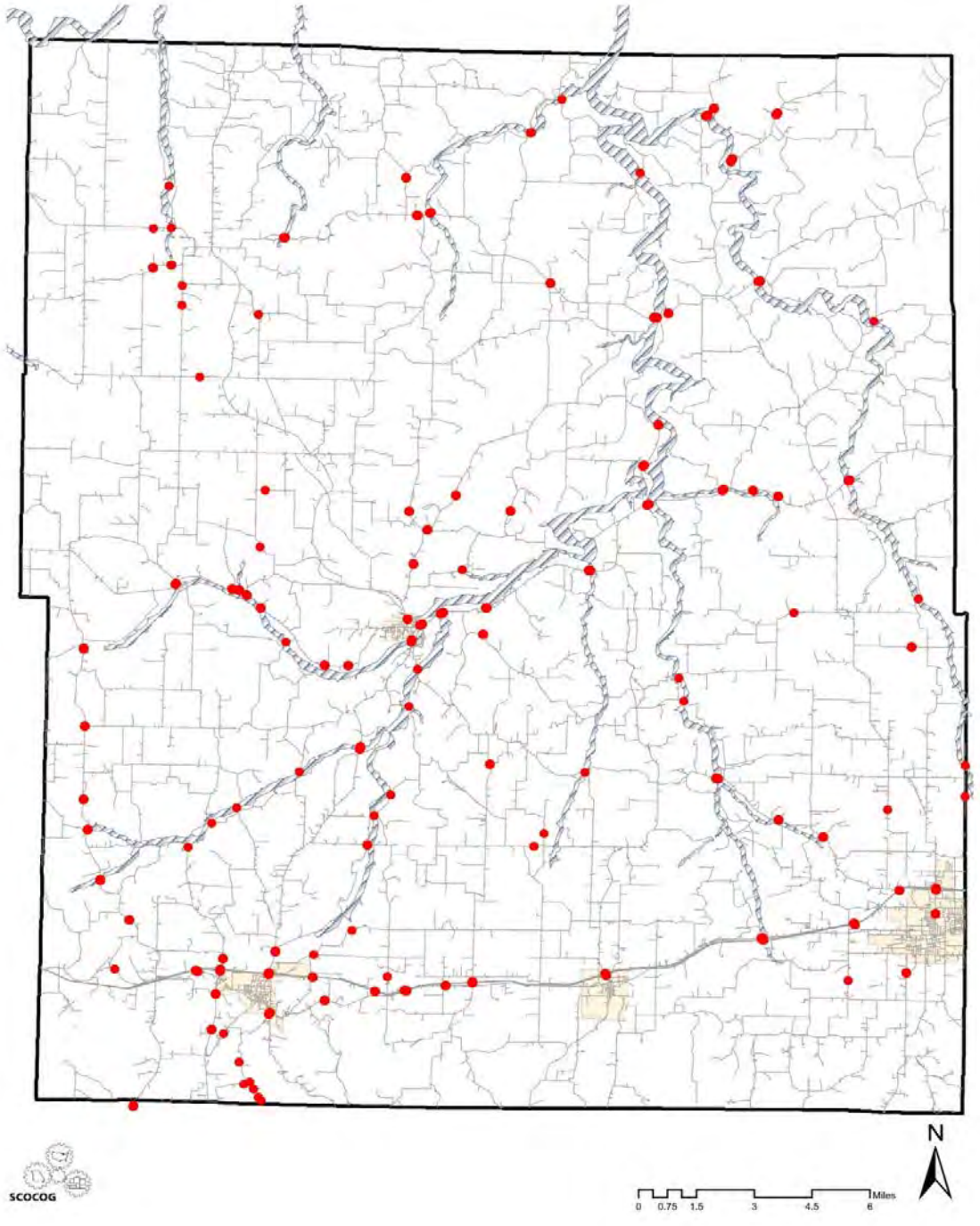
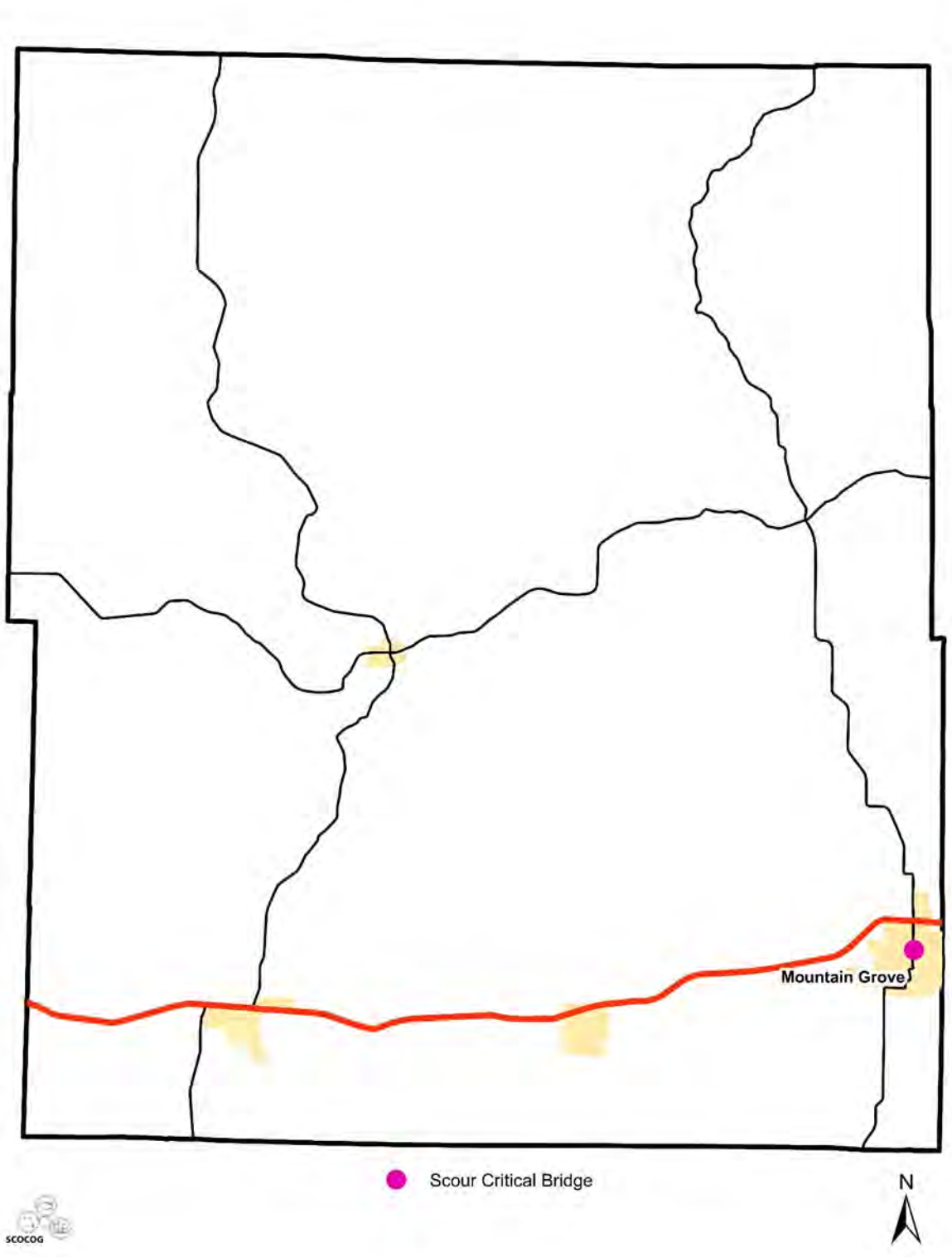


Figure 3.3. Wright County Scour Critical Bridges



A bridge's scour index 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. Below is a list of the "scour critical" bridges in Wright County, Missouri.

Travelway	Body of Water	Classification	Scour Index
Ninth Street	Whetstone Creek	Non State Bridge	3

3.2.3 Other Assets[5(d)]

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 Wright County

Common Name	Scientific Name	Status
Gray Bat	Myotis grisescens	Endangered
Indiana Bat	Myotis sodalist	Endangered
Northern Long-Eared Bat	Myotis septentrionalis	Threatened
Ozark Hellbender	Cryptobranchus alleganiensis bishopi	Endangered
Scaleshell	Leptodea leptodon	Endangered
Virginia Sneezeweed	Helenium virginicum	Threatened

Source: U.S. Fish and Wildlife Service, http://www.fws.gov/midwest/Endangered/lists/missouri-cty.html; see also https://ecos.fws.gov/ipac/ and select 'Get Started" > Step '1 Find Location', choose select by state or county and enter the county name, selecting the appropriate community > follow remaining on-screen instructions.

Table 3.9. Conservation Areas and Parks in Wright County

Park / Conservation Area	Address	City
Allen Memorial CA	Radford Drive	Hartville
Cedar Gap CA	Route O	Mansfield
Fuson CA	Parks Creek Road	Hartville
Casador Lake Park	Steele Bluff Road	Hartville
City Park	N. Lincoln Street	Mansfield
Mayberry Park	W. Clouse Street	Mountain Grove
Green's Park	N. Wall Street	Mountain Grove
Mountain Grove Swimming Pool	N. Forrest Street	Mountain Grove
City Partk	N. Eagle Avenue	Norwood

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

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

Table 3.10. Wright County - Properties on the National Register of Historic Places

Property	Address	City	Date Listed
Administration Building, MSU Fruit Experimentation Station	N. of Mountain Grove off Rte. 95	Mountain Grove	1/15/1979
Kelton House	MO 38 & Church Street	Hartville	10/2/1986
Mountain Grove Bandstand	Main & 2nd	Mtn. Grove	1/19/1989
Mountain Grove City Hall	301 E. 1st St.	Mtn. Grove	2/28/2012
Laura Ingalls Wilder House	E. of Mansfield on Bus. 60	Mansfield	5/19/70 NHL: 7/17/91

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

Table 3.11. Major Non-Government Employers in Wright County

Employer Name	Main Locations	Product or Service	Employees
Wal-Mart Supercenter	Mtn. Grove	Retail	200+
Mans-Steel Foundry	Mansfield	Manufacturing	200+
Hutchens Industries	Mansfield	Manufacturing	200+
YMCA	Mtn. Grove	Service	50-99
Rocky Ridge Manor	Mansfield	Nursing	50-99
Mtn. Grove Bottling	Mtn. Grove	Warehousing	50-99

Source: Data Collection Questionnaires; local Economic Development Commissions

Agricultural Assets

Table 3.12. Agriculture-Related Sales in Wright County

Value of Sales by Commodity Group	State Rank (out of 114)
Milk from cows	2
Fruits, tree nuts, and berries	8
Cattle and Calves	17
Vegetables, melons, potatoes, and sweet potatoes	21

Source: 2016 Missouri Agricultural Census

Table 3.13. Top Livestock Inventories in Wright County

Livestock Inventory	State Rank (out of 114)
Rabbits, live	3
Cattle and calves	8
Goats, all	10
Horses and ponies	20

Source: 2016 Missouri Agricultural Census

3.3 LAND USE AND DEVELOPMENT

3.3.1 Development Since Previous Plan Update[5(e)]

Wright County has overall experienced slight population decline since 2010-2020. It is likely that this trend continued since the previous plan update. Some communities have seen minimal new construction or development, but as a whole Wright County and the incorporated jurisdictions have had minimal development since the previous plan update in 2017.

Table 3.14. County Population Growth, 2010-2020

Jurisdiction	Total Population 2010	Population Estimate 2020	2010-2020 # Change	2000-2020 % Change
Wright County	18,565	18,256	-309	-1.6%
City of Hartville	607	640	+33	4%
City of Mansfield	1,158	1,257	+99	0.9%
City of Mountain Grove	4,704	4,703	-1	----
City of Norwood	636	680	+44	+8.2%

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

Table 3.15. Change in Housing Units, 2010-2020

Jurisdiction	Housing Units 2010	Housing Units 2020	2010-2020 # Change	2000-2020 % Change
Wright County	8,247	8,691	5.1	8.4
City of Hartville	305	391	22.7	23.8
City of Mansfield	646	662	2.4	4.8
City of Mountain Grove	2,290	2,439	6.1	16.1
City of Norwood	277	255	-8.1	1.9

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

3.3.2 Future Land Use and Development[5(e)]

The City of Hartville

The City of Hartville currently has no comprehensive plan. Hartville experienced a four percent increase in population from 2010 to 2020. The majority of the community's growth has occurred on the western edge of the community and on the southern end of the community south of Casador Lake. The Hartville School District has been awarded FEMA funding to construct a tornado saferoom on the school campus. It is expected that additional growth in the community will continue to occur in the same pattern as in recent decades (west and south).

The City of Mansfield

The City of West Plains last updated their comprehensive plan in 1999. The City experienced a 0.9% population increase between the years of 2010 to 2020. The city has experience very little growth or development in the past decade. The community is home to the Laura Ingalls Wilder Historic Home Site, so there is a relatively large tourist presence in the area. Any future growth in the community is expected to occur north of US60 along State Route 5 and east of the city along Commercial Street (Business Route 60).

The City of Mountain Grove

The City of Mountain Grove has a Comprehensive Plan that was last updated in 2003. The City's administration has approached the regional planning commission about updating the Plan, but the process has not begun as of June 2022. The City experienced stagnant population growth between the years 2010 to 2020, with census data showing a decline of one citizen. Commercial and industrial growth is planned to take place along Business Route 60 through the entirety of the city. Residential development is expected to occur on the northern and southern sides of town, with north of US60 being the primary residential growth center. The city has had some problems with flooded roadways in the residential areas on the west side of the community, perhaps requiring future mitigating actions. The City has submitted a notice of interest for funding to FEMA to construct a community tornado safe room.

The City of Norwood

The City of Norwood currently has no comprehensive plan. Hartville experienced an 8.2 percent increase in population from 2010 to 2020. What little growth the city has experienced since the last plan iteration has occurred along the US Highway 60 corridor in the northern portion of the community. The Norwood School District has recently submitted a notice of interest for funding to FEMA to construct a tornado saferoom on its campus. It is expected that additional growth in the community will continue to occur in the same pattern as in recent decades (along US Highway 60).

School District's Future Development

Hartville School District

The Hartville School District does not have plans for future development. A community safe room is currently under construction that will be capable of holding students and faculty and nearby residents of the community. The district expects a decrease of approximately 5% in enrollment over the next five years.

Mansfield School District

The Mansfield School District does not anticipate any future developments, renovations, employment growth or decline, facility improvements, or significant changes in enrollment over the next five years. The district uses the basements of both school buildings as safe rooms.

Mountain Grove School District

The Mtn. Grove School District does not have plans for future development. The school currently has a safe room that can house students and faculty, however, the facility was not constructed using FEMA 361 design standards. The district expects an increase of approximately 5% in enrollment over the next five years.

Norwood School District

The Norwood School District does not anticipate any future developments, renovations, employment growth or decline, facility improvements, or significant changes in enrollment over the next five years. The district currently has an NOI submitted for funding of a FEMA-361 safe room.

3.4 HAZARD PROFILES, VULNERABILITY, AND PROBLEM STATEMENTS

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

Hazard Profiles

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

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

- **Hazard Description:** This section consists of a general description of the hazard and the types of impacts it may have on a community or school/special district.
- **Geographic Location:** This section describes the geographic areas in the planning area that are affected by the hazard. Where available, use maps to indicate the specific locations of the planning area that are vulnerable to the subject hazard. For some hazards, the entire planning area is at risk.
- **Strength/Magnitude/Extent:** This includes information about the strength, magnitude, and extent of a hazard. For some hazards, this is accomplished with description of a value on an established scientific scale or measurement system, such as an EF2 tornado on the Enhanced Fujita Scale. 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 was 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 is 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 is 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:** Changing future conditions are also considered, including the effects of long-term changes in weather patterns and climate on identified hazards
- .

Vulnerability Assessments

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

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

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

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

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

Following the hazard profile for each hazard will be the vulnerability assessment. The vulnerability assessment further defines and quantifies populations, buildings, critical facilities, and other community assets at risk to damages from natural hazards. The vulnerability assessments are based on the best available data, including data that was collected for the 2018 State Hazard Mitigation Plan Update.

The vulnerability assessments in this Wright County plan are also 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.

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

- **Vulnerability Overview:** An overall summary of each jurisdiction's vulnerability to the identified hazards. The overall summary of vulnerability identifies structures, systems, populations or other community assets as defined by the community that are susceptible to damage and loss for hazard events.
- **Potential Losses to Existing Development:** Includes the types and numbers of building and critical facilities.
- **Previous and Future Development:** This section will include information on how changes in development have impacted the community's vulnerability to this hazard. It also includes a description of how changes in development that occurred in known hazard prone areas since the previous plan have increased or decreased the community's vulnerability, and any anticipated future development in the county, and how that would impact hazard risk in Wright County.
- **Hazard Summary by Jurisdiction:** For hazard risks that vary by jurisdiction, this section will provide an overview of the variation and the factual basis for that variation. For example, a community that has adopted more recent building codes and constructed safe rooms would be less vulnerable to the impact of tornados.

Problem Statements

Each hazard analysis will conclude with a brief summary of the problems created by the hazard in Wright County, and possible ways to resolve those problems. Jurisdiction-specific information in those cases where the risk varies across Wright County is included

3.4.1 Dam Failure

Hazard Description[4(a)(2)]

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:

- Overtopping - inadequate spillway design, debris blockage of spillways or settlement of the dam crest.
- 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.

According to the State Plan, Missouri had some 5,423 recorded dams in 2013, the largest number of man-made dams of any state in the country. Missouri topography allows lakes to be built easily and inexpensively, which accounts for the high number of dams. Despite the large number of dams, there are only 682 (about 13 percent) state regulated dams, with an additional 66 federally regulated dams. Federal dams in Missouri are primarily regulated by two federal agencies; the US Army Corps of Engineers (USACE) and the US Department of Agriculture Forest Service. The remaining 4,495 dams are unregulated.

Dams that fall under state regulation are non-federally regulated dams that are more than 35 feet in height. Most nonfederal dams are privately owned structures built either for agricultural, water supply or recreational use. The Department of Natural Resources (MDNR) Water Resources Center maintains the Dam and Reservoir Safety Program in Missouri. The program ensures that dams over 35 feet in height are safely constructed, operated, and maintained pursuant to Chapter 236 of the Revised Statutes of Missouri.

The Department of Natural Resources provided information about regulated and unregulated dams in Missouri. The information includes details of the dam dimensions, date of construction, approximate reservoir volume, contributing drainage basin area and hazard classification. In addition, USACE maintains the National Inventory of Dams (NID). The information in the NID database matches the list from the MDNR website with some additional details for dams in Wright County. Although both agencies proved a hazard classification for dams, the dam classification systems differ.

The Missouri Dam and Reservoir Safety Council Rules and Regulations uses three classes of downstream environmental zones used when considering permits. The downstream environment zone is the area below the damn that would become inundated should the dam fail. Inundation is defined as water two feet or more over the submerged ground outside of the stream channel. These classes are based on the number of structures and types of development contained within the inundation area as presented in Table 3.16. The downstream environment zone classification is also used to prescribe the frequency of inspection.

Table 3.16. MDNR Dam Hazard Classification Definitions

Hazard Class	Definition
Class I	The area downstream from the dam that would be affected by inundation contains ten (10) or more permanent dwellings or any public building. Inspections of these dams must occur every two years.
Class II	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	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

Dams in the NID are classified according to hazard potential, an indicator of the consequences of dam failure. A dam's hazard potential classification, presented in Table 3.17 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 3.17. NID Dam Hazard Classification Definitions

Hazard Class	Definition
Low Hazard	Failure results in only minimal property damage
Significant Hazard	Failure could possibly result in the loss of life and appreciable property damage
High Hazard	If the dam were to fail, lives would likely be lost and extensive property damage would result

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 States Classes I and II are considered NID High Hazard Dams.

Geographic Location

According to the MDNR there are 12 total dams in Wright County and one regulated dams (Freebird). MDNR lists five dams as hazard class 2: D&R Lower Dam, D&R Upper Dam, Freebird Dam, Lehar Lake Dam and Sparlin Lake Dam, and seven dams as hazard class 3: Casador Lake Dam, Casebeer Lake Dam, Freddie's Lake Dam, Leascher Lake Dam, Mononame Dam, Porter Lake Dam and Sparlin Lake Dam 2.

NID data also indicated that there are 12 total dams in the county, six (6) listed as low hazard potential, one (1) listed as significant hazard potential, and five (5) listed as high hazard potential.

Dams in Planning Area

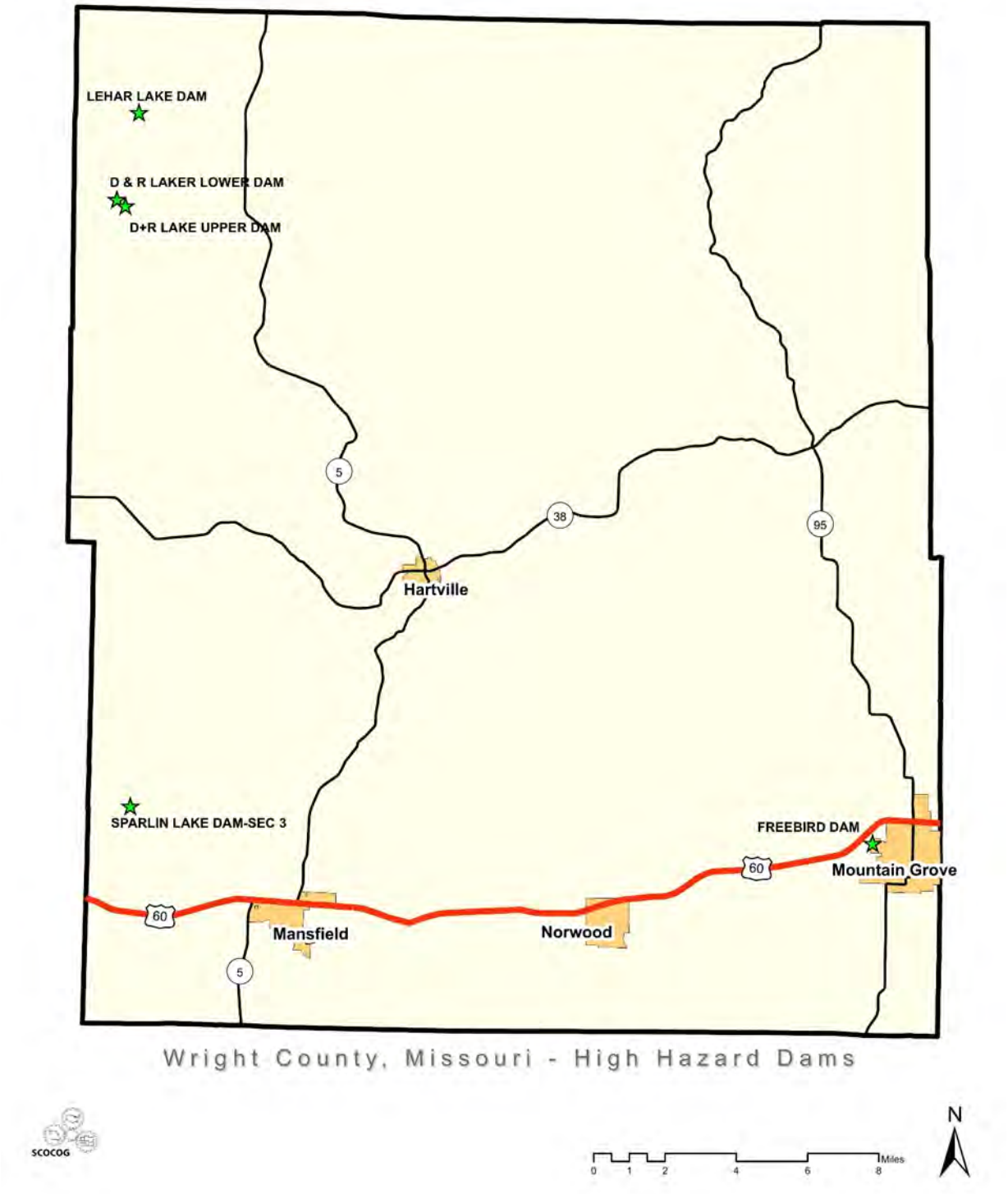
Table 3.18 lists the names, locations, and other pertinent information for all high hazard dams in the planning area.

Table 3.18. High Hazard (NID) Dams in the Wright 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
Sparlin Lake Dam 3	N/A	25	80	N/A	Tr-Rippee Creek	Hartville	12	Darrell Sparlin
Freebird Dam	N/A	40	365	8/26/09	Sanders Creek	None	-	Michael Macpherson
D & R Lake Lower	N/A	19	93	N/A	Tr. Rocky Hollow	Grovespring	3	Mr. James McKee
D & R Lake Upper	N/A	25	54	N/A	Tr. Parks Creek	Grovespring	3	Mr. James McKee
Lehar Lake Dam	N/A	25	40	N/A	Tr. Smith Branch	Morgan	5	Rudy Lehar

Sources: Missouri Department of Natural Resources, http://dnr.mo.gov/env/wrc/dam-safety/statemap.htm and National Inventory of Dams, http://nid.usace.army.mil/cm_apex/f?p=838:12By the end of 2015, the Missouri DNR anticipates having Emergency Action Plans, including inundation maps for all state-regulated Class 1 and Class 2 dams. Contact the DNR Dam and Reservoir Safety Program at 800-361-4827 to request the inundation maps for your county to show geographic locations at risk, extent of failure and to perform GIS analysis of those assets at risk to dam failure.

Figure 3.4. High Hazard Dams in Wright County



Upstream Dams Outside the Planning Area

Cedar Gap Dam is located in Webster County, across the extreme southwestern border of Wright County. This is the only dam located in an area that can be considered as upstream of the Wright County Jurisdiction. The dam is listed as MO30138, is privately owned, and is classified as a low hazard dam.

Severity/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.

Actual dam failure can result not only in loss of life, but also considerable loss of capital investment, loss of income, and property damage. Loss of the reservoir itself can cause hardship for those dependent on it for their livelihood or water supply.

Previous Occurrences

There are no records of dam failure in Wright County. Since there are zero recorded events in the planning area, a calculation of a probability percent is not possible. According to information from the 2018 State Plan, Missouri's percentage of high hazard dams in the MDNR inventory puts the State at about the national average for that category. However, if development occurs downstream of dams the percentage of high hazard dams will increase. Additionally, the probability of dam failure increases as many of the smaller and privately owned dams continue to deteriorate without the benefit of further regulation or improvements. Regular inspection and maintenance schedules for dams greatly reduces the probability of dam failure. The last inspection of a high hazard dam in Wright County was 35 years ago.

Probability of Future Occurrence

There are no records of damn failure in Wright County. Since there are zero recorded events in the planning area, a calculation of a probability percent is not possible. According to information from the 2018 State Plan, Missouri's percentage of high hazard dams in the DNR inventory puts the State at about the national average for that category. However, if development occurs downstream of dams the percentage of high hazard dams will increase. Additionally, the probability of dam failure increases as many of the smaller and privately owned dams continue to deteriorate without the benefit of further regulation or improvements. Regular inspection and maintenance schedules for dams greatly reduces the probability of dam failure.

Vulnerability

Vulnerability to dam failure in Wright County is limited to structures and critical infrastructure located in dam inundation zones. One dam located in an incorporated jurisdiction. Freebird Lake is located in northwestern portion of Mountain Grove. The remaining four high hazard dams are located in the unincorporated areas of the county. There is one regulated dam in the county, and no existing inundation zone maps for any dams in Wright County. Also, there are no EAPs for dams in the county. The following figures 3.5 to 3.8 depict the expected flow direction of water in the event of dam failure.

Figure 3.5. D & R Lake, Upper and Lower Dams

Figure 3.6. Freebird Lake Dam

Figure 3.7. Lehar Lake Dam

Figure 3.8. Spurlin Lake Dam Sec. 3

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

Fortunately, the eight high hazard dams located in Wright County are located in areas where there is no significant development in downstream areas. In the absence of MDNR inundation zone maps and Emergency Action Plans, it is difficult to determine the exact areas where inundation would occur, but in reviewing recent aerial photography, it can be stated that the risk to human life, and the risk for property damage in the event of a failure of one of the eight high hazard dams in Wright County would be minimal.

Impact of Future Development

The planning area, specifically, the areas downstream of Wright County's high hazard dams are rural in nature. However, growth in the county is moderately strong and any future development in potential inundation areas will increase vulnerability to dam failure hazards. However, due to the amount and affordability of developable land, it is unlikely that residential structures will be developed in a location that is inside an inundation zone.

Hazard Summary by Jurisdiction

Unincorporated Wright County is the one of two jurisdictions in the Plan that is vulnerable to dam failure. The two jurisdictions containing high hazard dams are Unincorporated Wright County and Mountain Grove. There are no mapped inundation areas or potential inundation areas within cities. No school district facilities are located near potential inundation areas or downstream environments from existing dams.

Problem Statement

There are five dams in the county with high hazard potential. However, none of the dams have mapped inundation zones or EAPs therefor it is difficult to gauge the vulnerability of downstream environments. The development of inundation zone maps by MDNR would help the citizenry of Wright County become more familiar with the risk they face due to the potential for dam failure. Additionally, the inspection rate of the high hazard dams in Wright County seems to be lacking. Of the five high hazard dams, only one is listed as ever having been inspected. The MPC feels it would be beneficial if these dams were considered for inspection more regularly.

3.4.2 Drought

Hazard Profile

Hazard Description[4(a)(2)]

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 2018 State Plan, which are as follows.

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

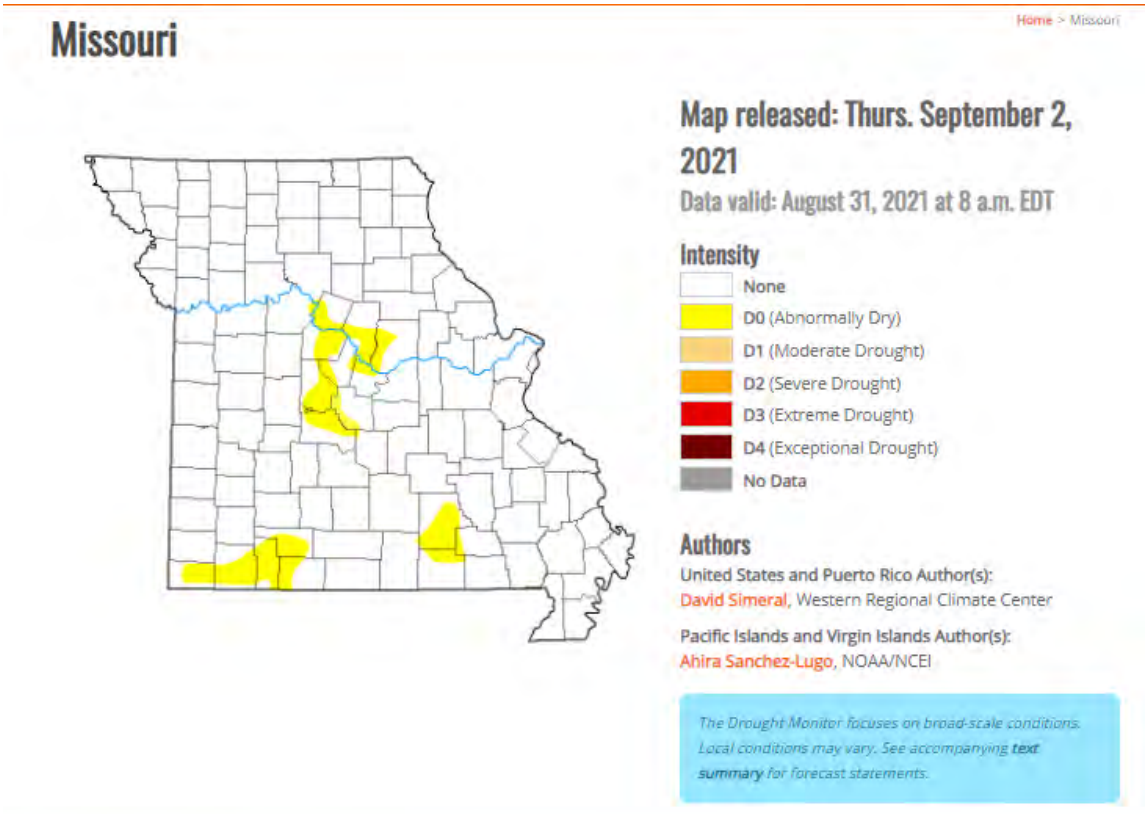
Geographic Location

Droughts are regional climatic events that can impact large areas and multiple counties. The entire county is as risk to the impacts of drought. However, drought most directly impacts the agricultural sector, so areas within the county where there is extensive agricultural land use can experience significant impacts. As noted previously in the plan, Wright County is home to intensive livestock production. All incorporated communities in the county rely on wells for water supply. The impact of drought on deeper public wells would not be significant unless the drought was of such historic severity to reduce groundwater levels.

Severity/Magnitude/Extent

Figure 3.9 is a recent map from the US Drought Monitor and an example of the size of the geographic area that could be in drought conditions at any given moment in time. The map is only a snapshot of conditions at a given time and indicates the severity of drought conditions.

Figure 3.9. U.S. Drought Monitor Map of Missouri on 9-7-2021



Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
Current	2021-08-31	93.26	6.74	0.00	0.00	0.00	0.00	7
Last Week	2021-08-24	95.17	4.83	0.00	0.00	0.00	0.00	5
3 Months Ago	2021-06-01	96.40	3.60	0.00	0.00	0.00	0.00	4
Start of Calendar Year	2020-12-29	55.47	44.53	10.22	0.00	0.00	0.00	55
Start of Water Year	2020-09-29	63.43	36.57	10.96	3.34	0.00	0.00	51
One Year Ago	2020-09-01	76.70	23.30	5.42	0.75	0.00	0.00	29

Source: U.S. Drought Monitor, http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?MO.

The most commonly used indicator of drought severity is the Palmer Drought Severity Index (PDSI), jointly published by the NOAA and the United States Department of Agriculture. 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.

According to the MDNR Missouri Drought Plan revised in 2002, Missouri Drought Response System is divided into four phases based on Palmer Index values:

- **Phase I: Advisory Phase**—Requires a drought monitoring and assessment system to provide enough lead time for state and local planners to take appropriate action;
- **Phase II: Drought Alert**—When the PDSI reads -1.0 to -2.0, and stream flows, reservoir levels, and groundwater levels are below normal over a several month period, or when the Drought Assessment Committee (DAC) determines that Phase II conditions exist based on other drought determination methods;
- **Phase III: Conservation Phase**—When the PDSI reads -2.0 to -4.0, and stream flows, reservoir levels, and groundwater levels continue to decline, along with forecasts indicating an extended period of below-normal precipitation, or when the DAC determines that Phase III conditions exist based on other drought determination models;
- **Phase IV: Drought Emergency**—When the PDSI is lower than -4.0, or when the DAC determines that Phase IV conditions exist based on other drought determination methods.

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

The USDA's Risk Management Agency provides insure crop loss payments in the county as a result of drought from 1948 to present. The 2018 State Plan states that Wright County is categorized as "low" in crop loss ration ratings. Data indicates that from 1998 through 2020 there were zero dollars in insured crop loss payments with annualized losses of $0.

Previous Occurrences

The NCEI database shows zero (0) drought events occurring in Wright County from 2017 through 2021.

Table 3.19. Previous Drought Occurrences 2017-2021

Drought Year	Duration	Property Damage	Crop Damage
2017	n/a	$0	$0
2018	n/a	$0	$0
2019	n/a	$0	$0
2020	n/a	$0	$0
2021	n/a	$0	$0

Probability of Future Occurrence

While NCEI data for the five-year period between 2017 and 2021 shows no drought events, the ten-year period from 2011 to 2021 shows severe to exceptional drought conditions from July through October 2012. The calculated risk percent from the number of months of drought over the ten-year period equates to the annual average percentage of 3.33% probability of drought occurrence in the county.

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

Vulnerability

Vulnerability Overview

The agriculture sector is particularly vulnerable to drought. Periods of dry weather can reduce stock ponds and force the early sale of livestock. Crop production can be disrupted and vegetative diseases can spread, reducing yields. Cities that operate water wells can experience water shortages during persistent drought periods like the seven month drought period in 2012. Those that rely on private wells are more likely to be impacted by reductions in the groundwater supply due to the fact that public wells are far deeper than private wells.

Potential Losses to Existing Development

The 2018 State Plan states that from 1998 through 2022 there or $0 in insured crop loss payments in Wright County. The absence of payment could be due to the absence of crop insurance. There are no anticipated structural losses, loss of life, or injuries associated with this hazard. In addition, according to the NCEI estimates there were $0 in crop losses from 2017-2022.

Impact of Future Development

Increases in acreage planted with crops would add to exposure to drought-related agricultural losses. In addition, increases in population result in increased demand for treated water, adding additional strain on natural water supply systems.

Impact of Climate Change

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

The Natural Resources Defense Council developed a new water supply sustainability index. The risk to water sustainability is based on the following criteria:

- Projected water demand as a share of available precipitation
- Groundwater use as a share of projected available precipitation
- Susceptibility to drought
- Projected increase in freshwater withdrawals
- Projected increase in summer water deficit

The risk to water sustainability for counties meeting two of the criteria are classified as “moderate”, while those meeting three of the criteria are classified as “high”, and those meeting four or more are classified as “extreme”. Counties meeting less than two criteria are considered to have low risk to water sustainability. According to the Natural Resources Defense Council, without climate change the water sustainability index for Wright County is “low”. With climate change, the water supply sustainability index is “low”.

Hazard Summary by Jurisdiction

Although the probability of drought is the same for the entire county, farming and livestock enterprises in the unincorporated parts of the county would feel the greatest impact. These impacts can be mitigated somewhat by the purchase of crop insurance. The existence of private farms and ranches are more concentrated in the western and southern portion of the county where the land is not under government ownership. The communities of Hartville, Mansfield, Mountain Grove and Norwood each utilize groundwater wells for public water supply and could potentially be impacted during water shortages due to the reliance on these limited source wells.

Problem Statement

Although drought most likely will not cause structure damage, the impact is greatest on the agriculture sector and if persistent enough, could cause reductions in groundwater and water shortages in communities that provide potable water services. Potential solutions to mitigate the impact of drought would be for communities to develop an ordinance to restrict the use of public water resources for non-essential usage, such as landscaping, washing cars, filling swimming pools, etc. during extreme drought periods. School districts can also implement water conservation measures at all district facilities.

3.4.3 Earthquakes

Hazard Profile

Hazard Description

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

The subterranean faults were formed many millions of years ago on or near the surface of the earth. Subsequent to that time, these ancient faults subsided, while the areas adjacent were pushed up. As this fault zone (also known as a rift) lowered, sediments filled in the lower areas. Under pressure, the sediments hardened into limestones, sandstones, and shales – thus burying the rifts. The pressures on the North American plan and the movements along the San Andreas Fault by the Pacific plate have reactivated the buried rift(s) in the Mississippi embayment. This rift system is called the Reelfoot Rift and underlies the New Madrid Seismic Zone. (Braile et al., 1986)

Geographic Location

The greatest hazard from earthquakes in Wright County comes from the New Madrid Seismic Zone situated in the boot heel area of southeast Missouri. The potential of high magnitude earthquakes occurring along the New Madrid fault presents risk that does not vary across the planning area. The Nemaha uplift is central Kansas is also prone to seismic activity, however the center of the Humbolt fault zone near the Nemeha Uplift is approximately 300-350 miles west/northwest of Wright County and lower magnitude seismic events that will not impact jurisdictions in Wright County.

The 2014 USGS National Seismic Hazard Maps display earthquake ground motions for various probability levels across the United States and are applied in seismic provisions of building codes, insurance rate structures, risk assessments and other public policy. The updated maps represent an assessment of the best available science in earthquake hazards and incorporate new findings on earthquake ground shaking, faults, seismicity, and geodesy. The USGS National Seismic Hazard Mapping Project developed these maps by incorporating information on potential earthquakes and associated ground shaking obtained from interaction in science and engineering workshops involving hundreds of participants, review by several science organizations and State surveys, and advice from expert panels and a Steering Committee. Figure 3.10 is a USGS map illustrating seismicity in the United States. A star showing the general location of Wright County has been inserted on the map.

Severity/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 a follows.

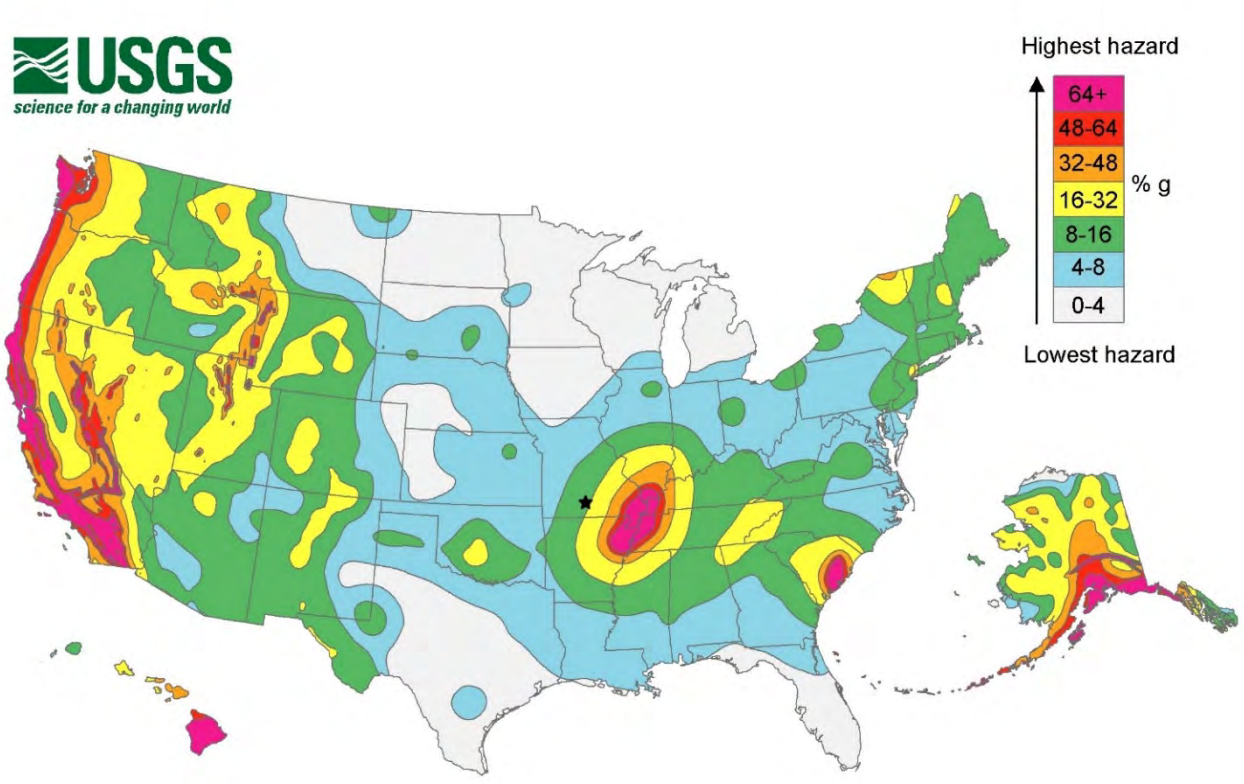
Richter Magnitude Scale

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

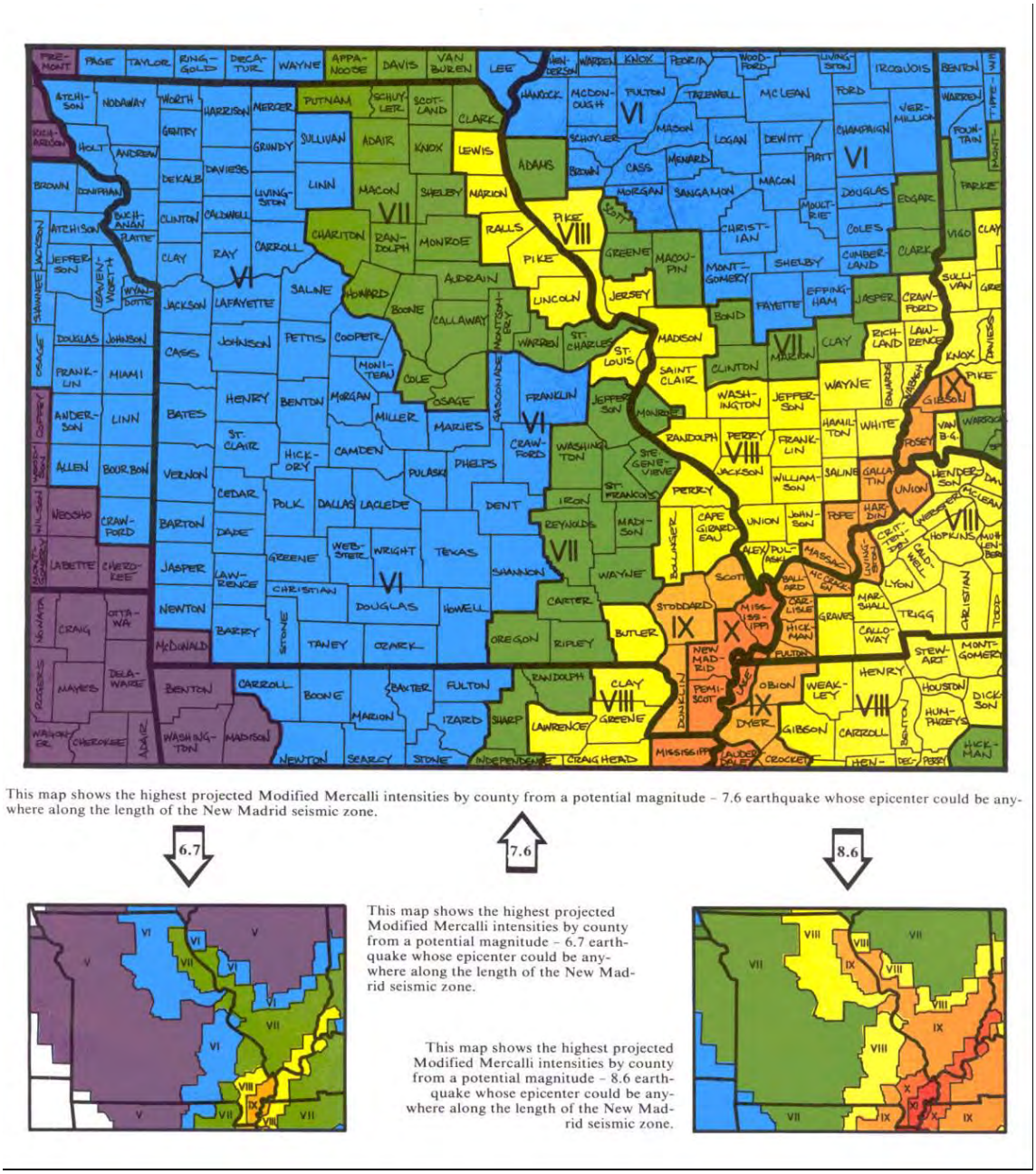
The intensity of an earthquake is measured by the effect of the earthquake on the earth's surface. The intensity scale is based on the responses to the quake, such as people awakening, movement of furniture, damage to chimneys, etc. The intensity scale currently used in the United States is the Modified 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. USGS Earthquake Hazard Map



Source: United States Geological Survey at http://earthquake.usgs.gov/hazards/products/conterminous/2014/HazardMap2014_lg.jpg

Figure 3.11. 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

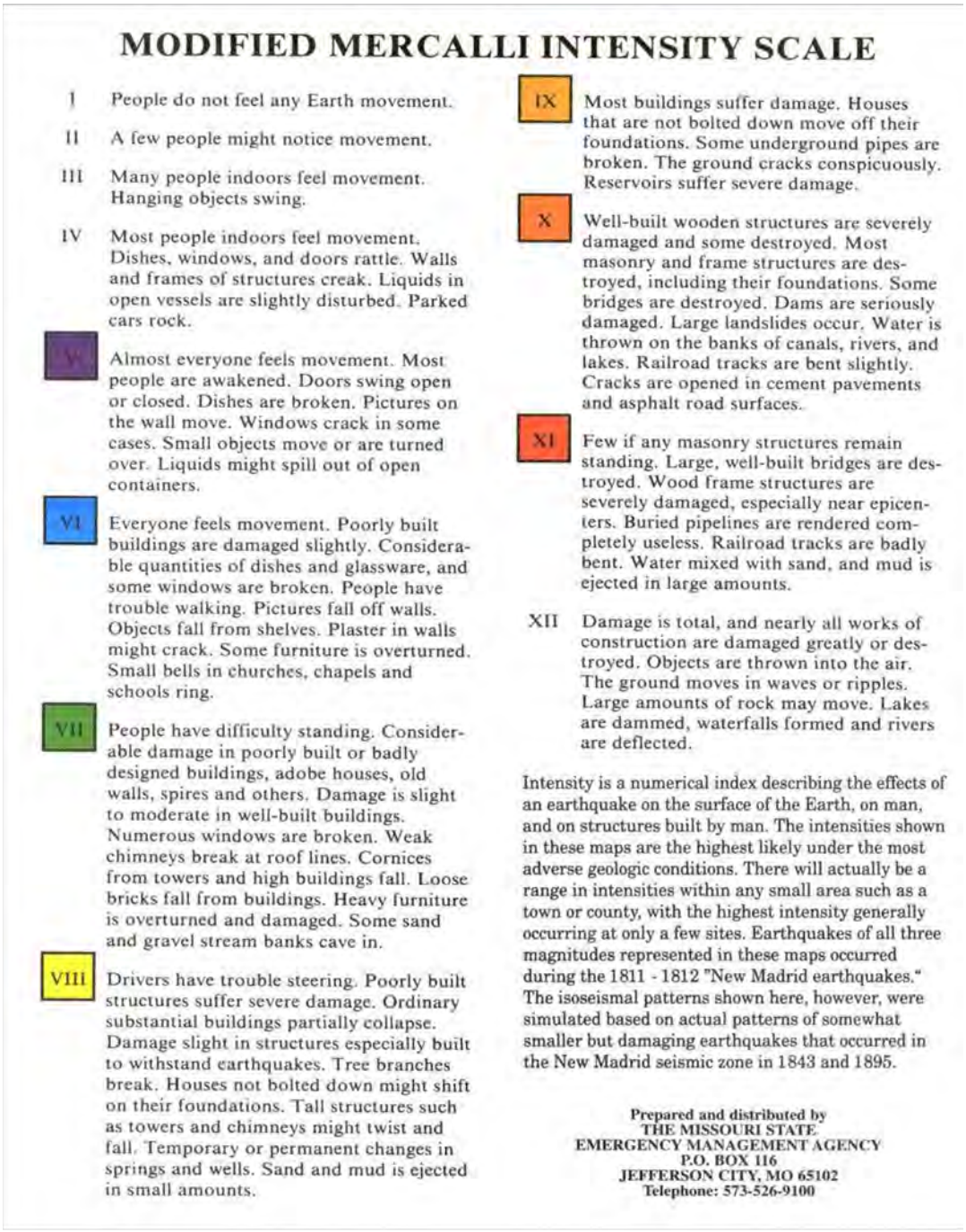
This map shows the highest projected Modified Mercalli intensities by county from a potential magnitude – 6.7 earthquake whose epicenter could be anywhere along the length of the New Madrid seismic zone.

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: http://sema.dps.mo.gov/docs/programs/Planning,%20Disaster%20&%20Recovery/State%20of%20Missouri%20Hazard%20Analysis/2012-State-Hazard-Analysis/Annex_F_Earthquakes.pdf

Figure 3.11 (above) 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 the figure above show the same regional intensities for 6.7 and 8.6 earthquake, respectively. Wright County is located in zone VI from a potential magnitude 7.6 earthquake along the New Madrid fault.

Figure 3.12. Projected Earthquake Intensities

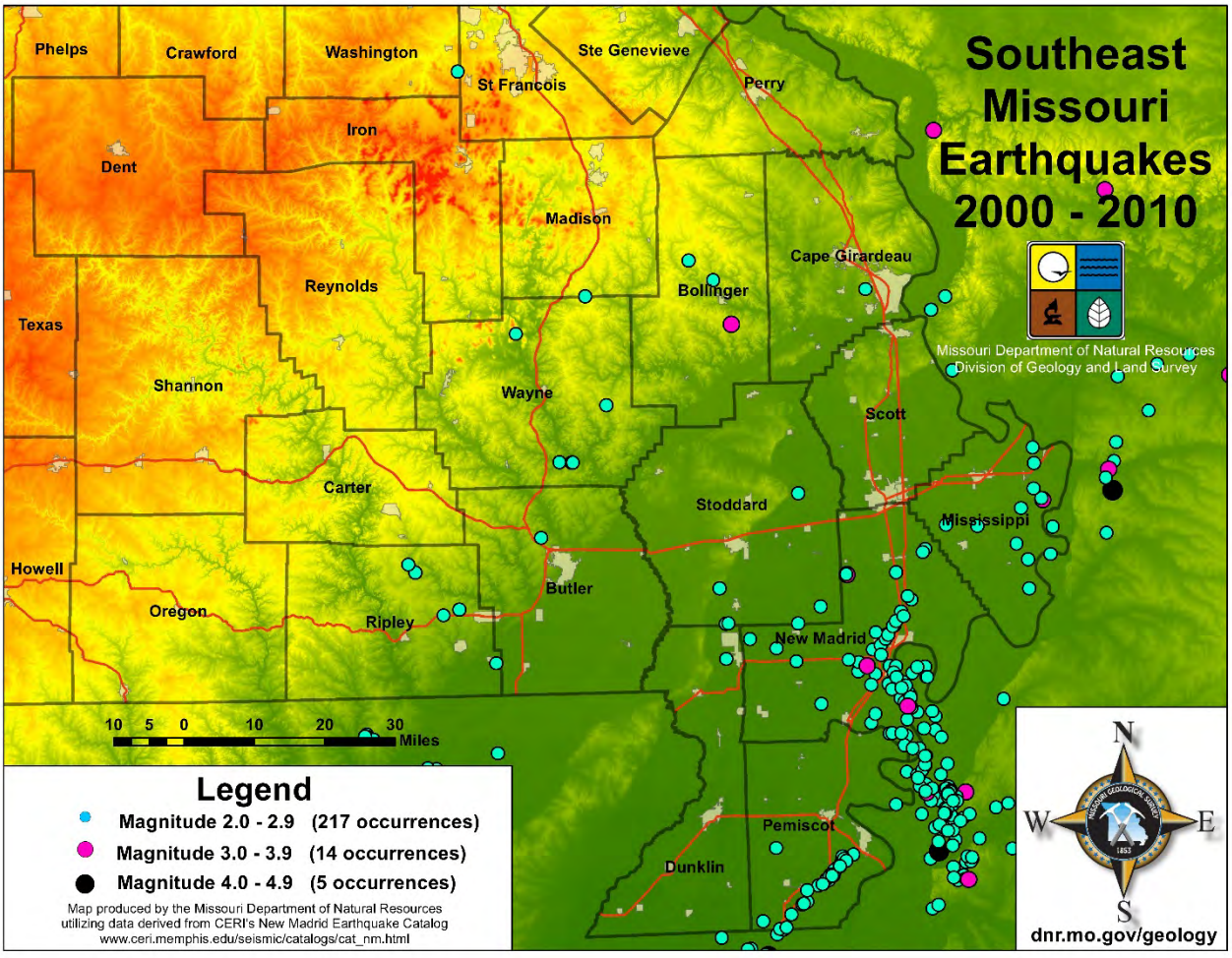


Previous Occurrences

There is no record of recent earthquake occurrence within Wright County (2000-2021). The southeastern portion of Missouri is most susceptible to earthquakes because it overlies the New Madrid Seismic Zone. No area of Missouri is immune from the danger of earthquakes. Minor, but potentially damaging earthquakes can occur anywhere in the state. (SEMA, 2018)

Figure 3.13 provides the latest and best data from the MDNR regarding earthquake occurrence in southeast Missouri.

Figure 3.13. Earthquakes of Southeast Missouri



Probability of Future Occurrence

Without a historical record for earthquakes in Wright County it is not possible to calculate a precise probability of earthquake occurrence. The Center for Earthquake Research and Information (CERI) at the University of Memphis has computed conditional probabilities of a magnitude 6.0 earthquake in the New Madrid Seismic Zone. According to a fact sheet prepared by SEMA in 2003, the probability for a magnitude 6.0 to 7.5 earthquake along the New Madrid Fault is 25 to 40 percent chance of occurrence over the next 50 years. At the 25% level, the likelihood of an earthquake happening in a given year is 1.0%. At the 40% level, the likelihood of an earthquake happening in a given year is 1.6%. The previous map (Figure 3.13. indicates the potential severity for Wright County of a 6.7, 7.6, and 8.6 magnitude earthquake anywhere along the New Madrid Fault.

Hazard Summary by Jurisdiction

Earthquake intensity is not likely to vary greatly throughout the planning area, the risk of occurrence is the same throughout. However, damages will differ where there are variations in the planning area based on percentage of structures build prior to 1939. For example, if one community has a high percentage of residences built prior to 1939 than the other participants, that community is likely to experience higher damages. Table 3.20 lists the number and percentage of housing units built in 1939 or earlier

Table 3.20. Percent of Housing Units Built in 1939 or Earlier

Jurisdiction	Built in 1939 or earlier #	Built 1939 or earlier %
Wright County	1,099	12.7
City of Hartville	86	22.0
City of Mansfield	91	13.7
City of Mountain Grove	139	5.7
City of Norwood	28	11.0

Source: Missouri Census Data Center (2014) ACS Profiles

Census data indicates that the City of Hartville has the highest number of housing units built prior to 1939, therefore Hartville is the most vulnerable by this measure.

School districts with facilities constructed prior to 1939 could suffer more damages than newer facilities, however, the majority of the currently utilized school facilities in the district have been constructed after 1939 and are considered well-built structures and therefore, less vulnerable to potential ground shaking.

Impact of Future Development

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

Vulnerability

Vulnerability Overview

Ground shaking is the most damaging effect from earthquakes. Ground shaking will impact all structures and critical infrastructure such as roads and electrical transmission systems. Although Nearby Ripley County experienced a 3.3 magnitude earthquake there were no document damages associated with this low magnitude event. The greatest earthquake risk to Wright County is the New Madrid Fault in the bootheel region of Missouri. A 7.6 magnitude earthquake would result in people have difficulty standing; Considerable damage in poorly built or badly designed buildings, adobe houses, old walls, and spires; Damage is slight to moderate in well-built buildings; Numerous windows are broken; Weak chimneys break at rooflines; 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. In addition, some underground utilities would likely be damaged. Some injuries may occur but fatalities are unlikely.

Potential Losses to Existing Development

In Wright County, 7.6 magnitude earthquake along the New Madrid Fault could be expected to result in everyone feeling ground shaking; poorly built buildings are damaged slightly; considerable quantities of dishes, glassware and windows are broken; people have trouble walking; pictures fall off walls; objects fall from shelves; plaster in walls might crack; some furniture is overturned; and small bells in churches, chapels, and schools will ring. In addition, some underground utilities would likely be damaged. Injuries may occur but are unlikely

A smaller yet still significant 6.7 quake along the fault line in would likely result in almost everyone feeling movement. Most people will be awakened if sleeping; 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.

Problem Statement

Based on likely damage from a 7.6 magnitude earthquake along the New Madrid fault, it is clear that the downtowns and historic districts of communities in Wright County are at risk to significant damage. These older structures could perhaps be retrofitted with earthquake resistance measures to ensure their stability in the event of an earthquake of severe magnitude. Potential damages to future development can be mitigated by adopting and enforcing IBC 2012 building codes. Currently, only the City of Mountain Grove enforces such codes. Updating and enforcing building codes in other jurisdictions would mitigate the impact on future development from an earthquake event.

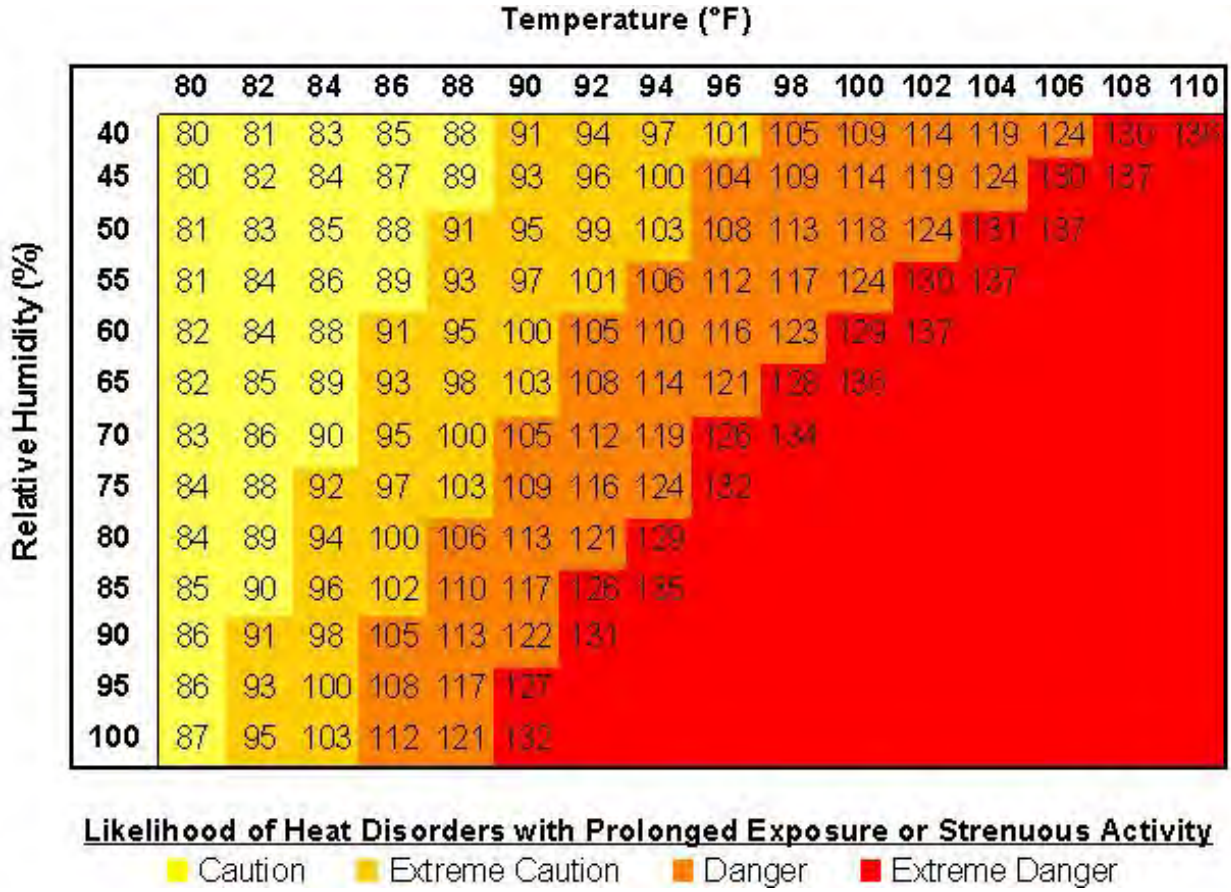
3.4.4 Extreme Temperatures

Hazard Profile

Hazard Description

Extreme temperature events, both hot and cold, can impact human health and mortality, natural ecosystems, agriculture, and other economic sectors. According to information provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Ambient air temperature is one component of heat conditions, with relative humidity being the other. The relationship of these factors creates what is known as the apparent temperature. The Heat Index chart shown in **Figure 3.14** uses both factors to produce a guide for the apparent temperature or relative intensity of heat conditions.

Figure 3.14. Heat Index (HI) Chart



Source: National Weather Service (NWS)
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.

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

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

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

Geographic Location

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

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.

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

Table 3.21 lists typical symptoms and health impacts due to exposure to extreme heat.

Table 3.21. Typical Health Impacts of Extreme Heat

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

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

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

Previous Occurrences

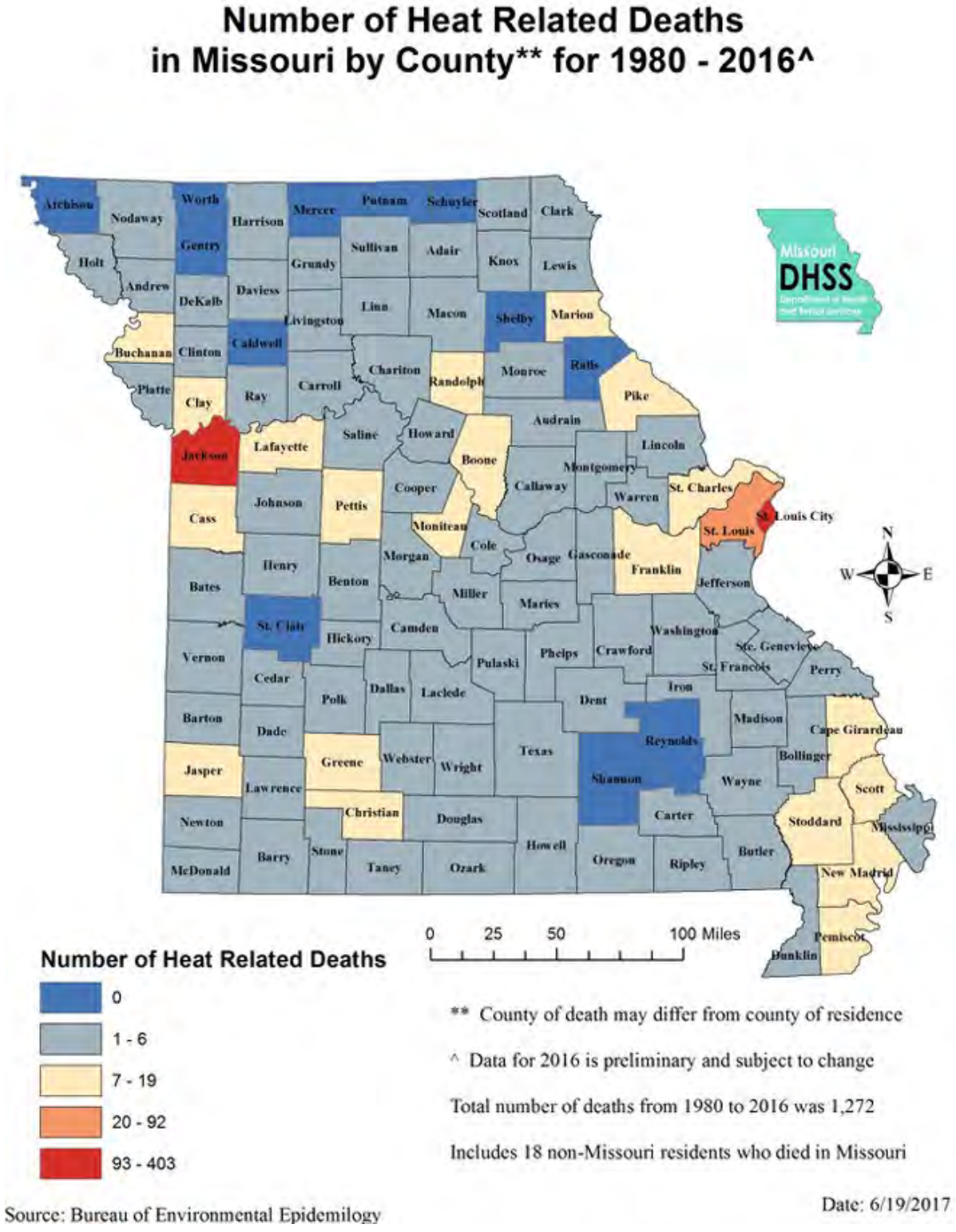
There are zero (0) recorded extreme heat events in the National Centers for Environmental Information (NCEI) database from 2017 to 2021 for Wright County.

There is one (1) Extreme Cold/Wind Chill event in the National Centers for Environmental Information (NCEI) database from 2017 to 2021 for Wright County with no resulting deaths, injuries or damages reported. The event narratives describe the episode as follows:

An extended period of unseasonably cold weather gripped central and southwest Missouri between February 7 and February 18. The coldest temperatures and wind chills occurred from February 14 through February 16. Record to near record low temperatures were common on the mornings of February 15 and 16th with subzero lows and highs just in the single digits and teens above zero. In addition, wind chill readings between -20 and -30 were reported across the area.

> Along with the bitter cold, widespread snow occurred across central and southwest Missouri from the early morning hours of February 14 into the late afternoon hours of February 15. This created widespread snow-covered roads and the cold and snow combined resulted in numerous if not all schools being closed.
>
> An extended period of unseasonably cold weather gripped central and southwest Missouri between February 7 and February 18. The coldest temperatures and wind chills occurred from February 14 through February 16. Record to near record low temperatures were common on the mornings of February 15 and 16th with subzero lows and highs just in the single digits and teens above zero. In addition, wind chill readings between -20 and -30 were reported across the area. Along with the bitter cold, widespread snow occurred across central and southwest Missouri from the early morning hours of February 14 into the late afternoon hours of February 15. This created widespread snow covered roads and the cold and snow combined resulted in numerous if not all schools being closed.
>
> A minimum wind chill of -28 degrees was reported by Mesonet station FW6072 3 miles west northwest of Mansfield the morning of February 15th. In addition, morning lows February 16th ranged from -6 degrees in Mountain Grove to -13 degrees in Mansfield.

Figure 3.15. Heat Related Deaths in Missouri



Probability of Future Occurrence

The probability that an extreme cold/wind chill event will occur in Wright County in any given year is 20%. This equates to dividing the one (1) year with an event period by the total number of years in the record period from 2017 to 2021 (5) and multiplying by 100.

Heat advisories and warnings are issued for shorter periods of extreme heat nearly every year and may not meet the threshold for consecutive days in the NCEI database. This data limitation indicates that extreme heat events could be underreported in the NCEI.

Vulnerability

Vulnerability Overview

High humidity, which often accompanies heat in Missouri, can make the effects of heat even more harmful. While heat-related illness and death can occur from exposure to intense heat in just one afternoon, heat stress on the body has a cumulative effect. Consequently, the persistence of a heat wave increases the threat to public health. The people most at risk are children under five years of age and adults over the age of 65 as well as people who work outdoors. The agriculture sector can also suffer crop loss during periods of extreme heat. Extreme heat may also cause buckling of roads.

Potential Losses to Existing Development

Based on the information in the 2018 State Plan and DHSS, one-to-three heat related deaths have occurred in Wright County in the past 13 years. While the likelihood of heat related death is unlikely, the possibility of occurrence should not be completely ruled out.

Impact of Future Development

Population growth can result in increases in the age groups that are most vulnerable to extreme heat. Population growth also increases the strain on electricity infrastructure, as more electricity is needed to accommodate the growing population. All jurisdictions in the county exhibit very slow population growth, or decline.

Hazard Summary by Jurisdiction

Those at greatest risk for heat-related illness and deaths include children up to five years of age, people 65 years of age and older, people who are overweight, and people who are ill or on certain medications. To determine jurisdictions within the planning area with populations more vulnerable to extreme heat, demographic data was obtained from the 2020 US Census estimates identifying the 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 3.22** 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 3.22. County Population Under Age 5 and Over Age 65, 2020 ACS Data

Jurisdiction	Population Under 5 yrs.	Population 65 yrs. and over
City of Hartville	17/2.7	178/27.8
City of Mansfield	61/4.9	208/16.5
City of Mountain Grove	467/9.9	659/26.2
City of Norwood	59/87	43/11.6
Wright County	1,142/6.1%	3,352/18%

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

Problem Statement

Older and younger segments of the population are more vulnerable to the impact of extreme heat. In addition people living below the poverty level may be more vulnerable during periods of extreme heat hue to lack of air conditions or proper utilities in their homes. Wright County is among the oldest and poorest counties in the State. Institutionalized populations such as those living in nursing homes become more vulnerable to extreme heat due to power outages. This problem would best be mitigated by installation of emergency generators at these institutional facilities. Provision and advertisement of cooling centers in the county would help mitigate the impact on vulnerable populations in the planning area.

3.4.5 Flooding (Riverine and Flash)

Hazard Profile

Hazard Description[4(a)(2)]

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

Flooding caused by dam failure is discussed in Section 3.4.1 above, it will not be further 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[4(a)(1)]

Riverine and Flash flooding is most likely to occur in Special Flood Hazard Areas (SFHAs) where the 1% chance floodplain has been mapped. According to NCEI storm event data from 2017 through 2021, there were 41 riverine flood events and 19 flash flood events recorded in the county during this period. These events are typically regional in nature and affect rivers, streams and tributaries across a wide area.

Wright County NCEI Flood Events by Location, 2017-2021

Location	# of Events
Wright County	41
City of Hartville	1
City of Mansfield	17
City of Mountain Grove	0
City of Norwood	0
Total Unique Events	**41**

Source: National Centers for Environmental Information, 2021

The NCEI storm event data lists flash flood events according to the nearest community or place. Most of these events cover larger areas than the smaller geographic areas reported in the data. Although some events may not be inside the corporate limits of the community identified in the narrative, they are in such proximity that the community named would be the most affected by impassible roads. It is safe to assume that numerous low water crossings would be impacted by heavy rains that exacerbate flash flooding across the county. In addition, multiple records are related to the same event and vice versa.

Wright County Flash Flooding Events by Location, 2017-2021

Location	# of Events
Wright County	19
City of Hartville	2
City of Mansfield	5
City of Mountain Grove	1
City of Norwood	2
Total Unique Events	**19**

Source: National Centers for Environmental Information, 2021

Figures 3.16, 3.17, and 3.18 below are maps showing FEMA Special Flood Hazard Areas in three of the counties incorporated communities. The City of Norwood's corporate limits do not contain any designated SFHAs.

Figure 3.16. City of Hartville SFHA

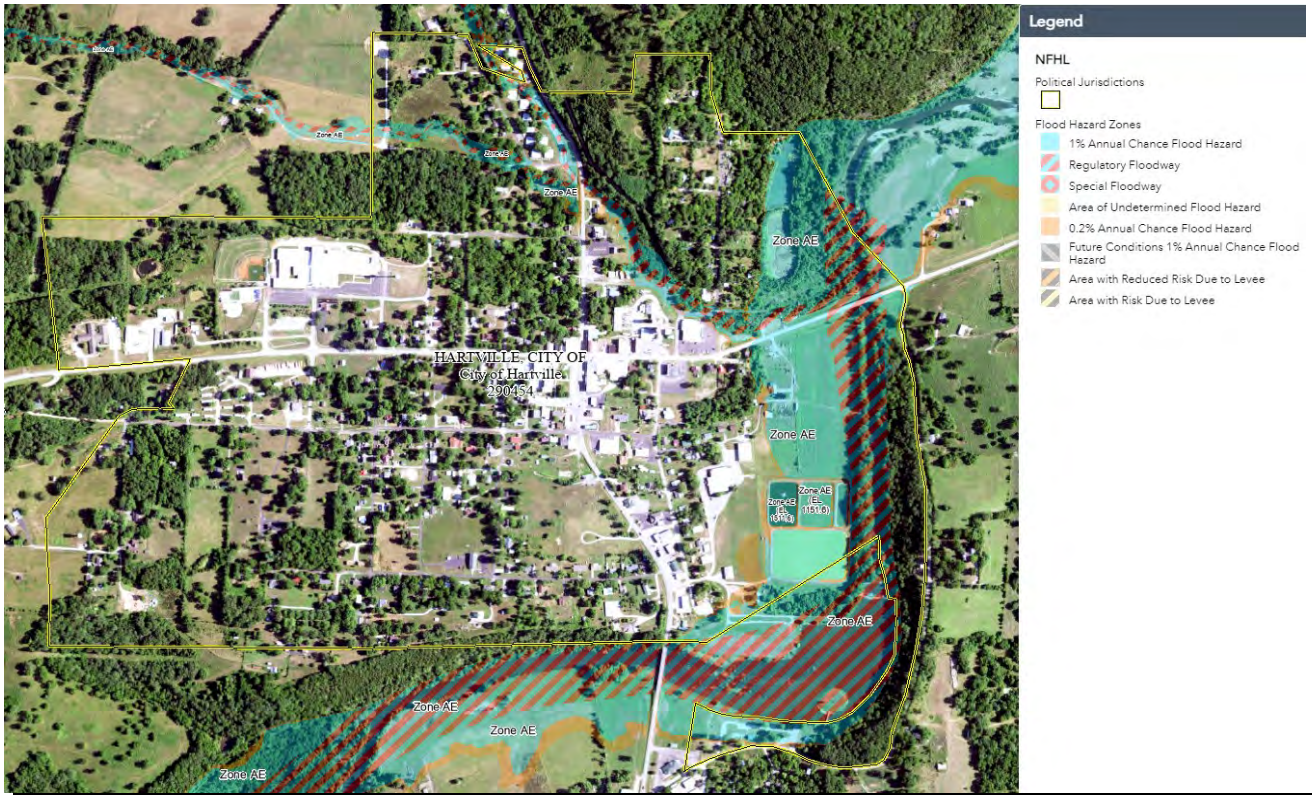
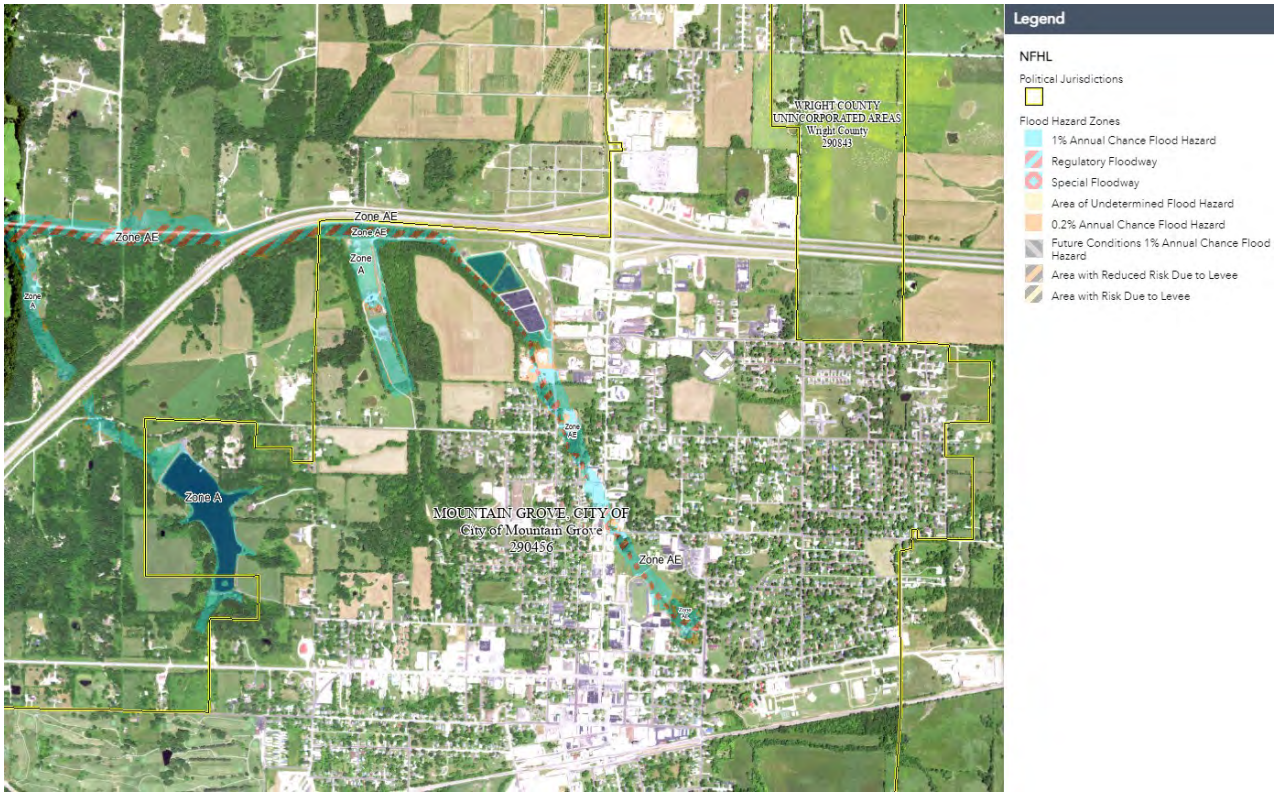


Figure 3.17. City of Mansfield SFHA

Figure 3.18. City of Mountain Grove SFHA



Severity/Magnitude/Extent

Missouri has a long and active history of flooding over the past century, according to the 2018 State Hazard Mitigation Plan. Flooding along Missouri's major rivers generally results in slow-moving disasters. River crest levels are forecast several days in advance, allowing the communities located 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[5(c)]

Table 3.23. NFIP Participation in Wright County

Community ID #	Community Name	NFIP Participant (Y/N/Sanctioned)	Current Effective Map Date	Regular-Emergency Program Entry Date
290843A	Wright County, Unincorporated	S	1/22/20	4/17/85
290454A	City of Hartville	Y	1/22/20	3/4/85
290455A	City of Mansfield	Y	1/22/20	6/16/81
290456A	City of Mountain Grove	Y	1/22/20	9/1/86
-	City of Norwood	N	1/22/20	-

Source: NFIP Community Status Book, Date; BureauNet, http://www.fema.gov/national-flood-insurance-program/national- flood-insurance-program-community-status-book; M= No elevation determined – all Zone A, C, and X: NSFHA = No Special Flood Hazard Area; E=Emergency Program

Table 3.24. NFIP Policy and Claim Statistics as of July 1, 2022

Community Name	Policies in Force	Insurance in Force	Closed Losses	Total Payments
Wright County, Unincorporated	0	-	-	-
City of Hartville	2	$490,000	0	$0
City of Mansfield	0	-	-	-
City of Mountain Grove	4	$322,000	6	$73,111
City of Norwood	0	-	-	-

Source: NFIP Community Status Book, [insert date]; BureauNet, http://bsa.nfipstat.fema.gov/reports/reports.html; *Closed Losses are those flood insurance claims that resulted in payment.

Only the City of Mountain Grove has experienced NFIP damage payments.

Repetitive Loss/Severe Repetitive Loss Properties[5(c)]

Repetitive Loss Properties are those properties with at least two flood insurance payments of $1,000 or more in a 10-year period. A severe repetitive loss 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.

According to the Flood Insurance Administration, jurisdictions included in the planning area have repetitive or severe repetitive loss properties.

Previous Occurrences[4(a)(3)]

According to NCEI storm even data, there have been nineteen (19) flash flood events recorded in Wright County from 2017 through 2021. One of these events, occurring on April 30, 2017, resulted in reported property damage of $2,000,000 and is described in NCEI narratives as follows:

> Multiple rounds of severe thunderstorms and extremely heavy rainfall over several days led to historic and devastating flash floods, record breaking river levels, large hail, wind damage, and at least one tornado across the Missouri Ozarks region. Most counties across the Missouri Ozarks region were declared a federal disaster from the President and FEMA.

At least 22 homes and business sustained severe flood damage across Wright County. Numerous roads and bridges were severely damaged or washed away across the county. This report will contain the total dollar estimate for flood damage to infrastructure, businesses, and homes across Wright County.

Table 3.25 summarizes flash flood events by year from 2017 to 2021 in Wright County.

Table 3.25. NCEI Wright County Flash Flood Events Summary, 2017 to 2021

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2017	4	0	0	$2,000,000	0
2018	4	0	0	$0	0
2019	3	0	0	$0	0
2020	4	0	0	$0	0
2021	4	0	0	$0	0
TOTAL	**19**	**0**	**0**	**$2,000,000**	**0**

Source: NCEI, 2021

Table 3.26. NCEI Wright County Riverine Flood Events Summary, 2017 to 2021

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2017	6	0	0	$0	$0
2018	7	0	0	$0	$0
2019	6	0	0	$0	$0
2020	17	0	0	$0	$0
2021	5	0	0	$0	$0
TOTAL	**41**	**0**	**0**	**$0**	**$0**

Source: NCEI, 2021

Table 3.26 above summarizes riverine flood events listed in the NCEI in Wright County by year. The data contains record of 41 events from 2017 to 2021.

Probability of Future Occurrences

There have been a total of 60 unique flood events in Wright County from 2017 to 2021 in the NCEI storm event database. Of those, 19 have been flash floods and the remaining 41 have been considered riverine flooding. Using a five period of record, this equates to 12 flood events per year and a 100% probability of occurrence in the county in any given year. Using the same period of record, the probably of occurrence of riverine flooding inside Wright County is 100%.

Changing Future Conditions Considerations[4(c)]

With changing climate conditions comes more uncertainty and less predictability for hazard events. An overall increasing global temperature is likely to lead to increased precipitation and intense rainstorms. Over the last fifty-years, the average annual precipitation in most of the Midwest has increased by 5-10%; however, rainfall during the four wettest days of the year has increased nearly 35%. The amount of water flowing in most streams during the worst flood of the year has increased by more than 20%.

The National Climate Assessment states that extreme rainfall events and flooding have increased in the last century and that those trends are expected to continue. Heavy rain events are likely to cause erosion, diminished water quality, and negative impacts on transportation, agriculture, human health, and infrastructure.

Vulnerability[5(b); 5(d)]

Vulnerability Overview

Flooding has been included in 10 of the 16 presidential natural disaster declarations that have included Wright County. Periods of heavy rain falling at the rate of one inch per hour floods low water crossings throughout the county making many roads impassable. This creates a severe threat to motorists that attempt to drive through flood waters over the roadway. Riverine flooding occurs less frequently than flash flooding. Spaces in low lying areas outsides the identified floodplain are frequently flooding. Street flooding over roadways has been reported in the Cities of Hartville, Mansfield and Mountain Grove, and in unincorporated portions of the County. There are no school district facilities in SFHAs in Wright County. Increases in development add to surface runoff and can potentially exacerbate flash flooding in areas that previously have not experienced flooding.

Potential Losses to Existing Development

Flood loss estimates were developed using a GIS methodology. A county-wide structures layer development by the University of Missouri in partnership with regional planning commissions across the state was overlaid on FEMA DFIRM maps to show number of structures and structure types situated inside Special Flood Hazard Areas. An average valuation from the Wright County Assessor for each structure type: Residential, Commercial, or Agriculture was applied to the structures in identified SFHAs. A review of GIS data indicate that no school district facilities in Howell County are located in the FEMA SFHA.

Table 3.27. Potential Flood Losses for Building Types by Jurisdiction

Jurisdiction	Residential	Commercial	Agricultural	Total Building Count
Wright County	3	0	37	40
City of Hartville	3	0	0	1
City of Mansfield	4	3	0	7
City of Mountain Grove	2	12	2	16
City of Norwood	0	0	0	0

Table 3.27 provides the total exposure for structures and contents by building type and jurisdiction. Losses were estimated by applying a 5% damage factor to total exposure. A 5% damage factor was used under the assumption that not all at-risk structures in the county would be affected simultaneously during a flooding event, nor would the individual structures sustain catastrophic damage.

Table 3.28. Total Flood Exposure and Estimated Losses by Jurisdiction (in dollars)

Jurisdiction	Residential	Commercial	Agricultural	Estimated Exposure	Estimated Loss
Wright County	85,026	0	33,746	118,772	5,939
City of Hartville	183,969	0	0	183,969	9,198
City of Mansfield	162,274	107,947	0	270,221	13,511
City of Mountain Grove	64,831	276,420	11,769	353,020	17,651

Impact on Future Development [4(c); 5(f)]

Future development could impact flash flooding and riverine flooding in the planning area. Development in low-lying areas near rivers and streams or where interior drainage systems are not adequate to provide drainage during heavy rainfall events will be at risk to flash flooding. Future development would also increase impervious surfaces causing additional water run-off and drainage problems during heavy rainfall events. Not all jurisdictions in the county participate in the NFIP. Not all jurisdictions in the county have identified SFHAs. Zoning regulations that prohibit development in SFHAs and violations of floodplain management regulations are effective mitigation strategies in participating municipalities.

Hazard Summary by Jurisdiction

All local governments in the county are not equally at risk to flood hazards. Table 3.28 above details the exposure of assets near SFHAs and how it varies by jurisdiction. Many parts of the county are vulnerable to street and road flooding during periods of heavy rainfall. In particular, Highway 38 in northeastern Wright County is extremely vulnerable to closure during flash flooding events. The greatest impact of flooding is felt in the City of Mountain Grove and in unincorporated part of the county. Due to the topography and many streams in the county, numerous low water crossings are damaged and create a significant hazard to public safety during flood events. This heightens the risk and exposure to infrastructure maintained by the Wright County Commission. There is no heightened risk to school district facilities due to flood as no facilities are located inside FEMA SFHAs. No previous damage to school facilities by flooding was reported on the Data Collection Questionnaires used in the planning process.

Problem Statement

Floods are frequent events and have been listed in 9 out of 13 presidential disaster declarations that have included Wright County. Historic flooding that occurred within a month of the development of this plan produced approximately $250,000 in damages throughout the county – a figure that many believe to be largely under-reported. Numerous water rescues have occurred in the county since 2002. Significant debris accumulation and damages at low water crossings have become regular occurrences due to flash flooding events.

The County Commission is in the process of developing a low water crossing inventory and improvement priority list for inclusion in their ongoing maintenance and management efforts. It is desired that warning signs, gauges, and perhaps warning lights be installed at frequently flooded low water crossings. The county is focusing on the replacements of frequently damaged crossings. Hazard awareness programs and education, such as “turn around, don’t drown” messages during and prior to flood events in the county broadcast by local media can mitigate future risks to motorists at low water crossings.

3.4.6 Land Subsidence/Sinkholes[4(b)(1)c; 4(b)(2,3)]

Hazard Profile

Hazard Description

Sinkholes are depressed or collapsed areas formed by dissolution of carbonate bedrock or collapse of underlying caves. They range in size from several square yards to hundreds of acres and may be very shallow or hundreds of feet deep. Sinkholes are part of what is called karst topography, which also includes caves, springs and losing streams. 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. Land subsidence may also result from human activities such as, underground mining, groundwater or petroleum withdrawal, and drainage of organic soils.

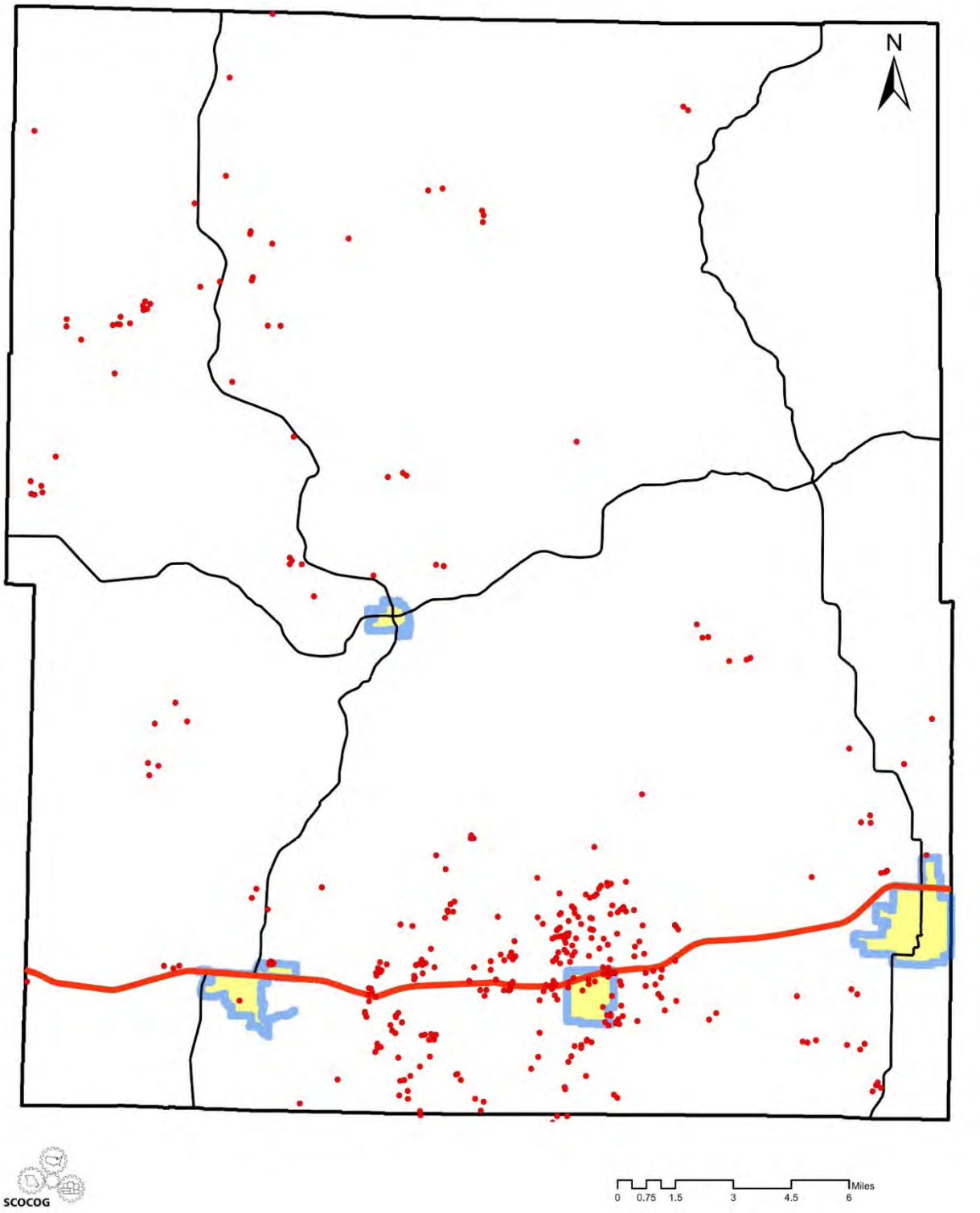
In the case of sinkholes, the rock below the surface is rock that has been dissolving by circulating groundwater. As the rock dissolves, spaces and caverns form, and ultimately the land above the spaces collapse. In Missouri, sinkhole problems are usually a result of surface materials above openings 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. 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 a change in stormwater runoff patterns resulting from an increase in impervious surfaces from land development.

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

Geographic Location

According to spatial data from Missouri Geological Survey, there are 357 sinkhole formations have been identified in Wright County. Figure 3.19, below, provides the location of known sinkholes in the county. Although the risk of sinkhole formation exists countywide, the map shows that the unincorporated areas of the county and in particular locales in the south central part of the county have an elevated risk to sinkhole formation more so than other communities in the county.

Figure 3.19. Known Sinkholes in Wright County



Severity/Magnitude/Extent

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

Previous Occurrences

The 2018 State Plan includes only seven documented sinkhole notable events statewide where property damage has occurred. The plan stated that sinkholes are common to Missouri and the probability is high that they will occur in the future. 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.

Probability of Future Occurrence

Based on local information and the 2018 Missouri State Hazard Mitigation Plan, there have been zero documented sinkhole formations or expansions in the county during an eleven year period from 2006-2015. This equates to a 0% probability of a sinkhole formation in any given year in the county. However, in considering the large number of known sinkholes in Wright County, it is likely that unreported sinkhole formation occurs every year.

Vulnerability

Vulnerability Overview

Sinkholes in Missouri are a common feature where limestone and dolomite outcrop. Dolomite is a rock similar to limestone with magnesium as an additional element with the calcium normally present in the minerals that form the rocks. While some sinkholes may be considered a slow changing nuisance; other more sudden catastrophic collapses can destroy property, delay construction projects, contaminated groundwater resources, and damage underground utilities. The entire county is underlain with limestone and dolomite bedrock.

Potential Losses to Existing Development

A 75 foot buffer zone was created in GIS then overlaid on the Wright County Structures layer to identify structures located in close proximity to known sinkholes. The results of this operation show that in Wright County there are two (2) structures located within 75 feet of a known sinkhole. Both located just outside the corporate boundaries of the City of Norwood in south central Wright County.

Impact of Future Development

Future development in areas of known risk to sinkhole formation in the planning area will increase vulnerability to this hazard. Population and development in these areas, specifically in the Norwood area and southern Wright County will increase exposure to sinkhole occurrence. While no building codes currently restrict construction within a certain distance of known sinkholes, in is encouraged that local officials explore options to implement this regulatory condition.

Hazard Summary by Jurisdiction

The risk of sinkhole damage for individual communities and school districts is limited to the amount of exposure of buildings and infrastructure. The entire county is at risk for potential sinkhole development, however, the Cities of Norwood and Mansfield are located in areas with high density of known sinkholes. This indicates that the subsurface conditions are currently favorable for the development of sinkhole features. It is unlikely that school districts will be greatly affected by sinkholes due to the localized nature of their exposure.

Problem Statement

It is likely that more sinkholes will occur as development occurs within the county. Sinkholes can be remediated with fill material. Once a sinkhole has been remediated, building should be prohibited at the site. Existing sinkholes can expand if surface runoff erodes the edges of the sinkhole. Best efforts to divert stormwater runoff from known sinkholes should be made. Wright County has a high density of sinkholes and the effects of collapse sinkholes on the built environment should be noted as a public service to the county's residents.

3.4.7 Severe Thunderstorms

Including High Winds, Hail, and Lightning

Hazard Profile

Hazard Description

Thunderstorms

A thunderstorm is defined as a storm that contains lightning and thunder which is caused by unstable atmospheric conditions. When cold upper air sinks and warm moist air rises, storm clouds or 'thunderheads' develop resulting in thunderstorms. This can occur singularly, as well as in clusters or lines. The National Weather Service defines a thunderstorm as "severe" if it includes hail that is one inch or more, or wind gusts that are at 58 miles per hour or higher. At any given moment across the world, there are about 1,800 thunderstorms occurring. Severe thunderstorms most often occur in Missouri in the spring and summer, during the afternoon and evenings, but can occur at any time. Other hazards associated with thunderstorms are heavy rains resulting in flooding (discussed separately in Section 3.4.6) and tornadoes (discussed separately in Section 3.4.9).

High Winds

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

Lightning

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

Hail

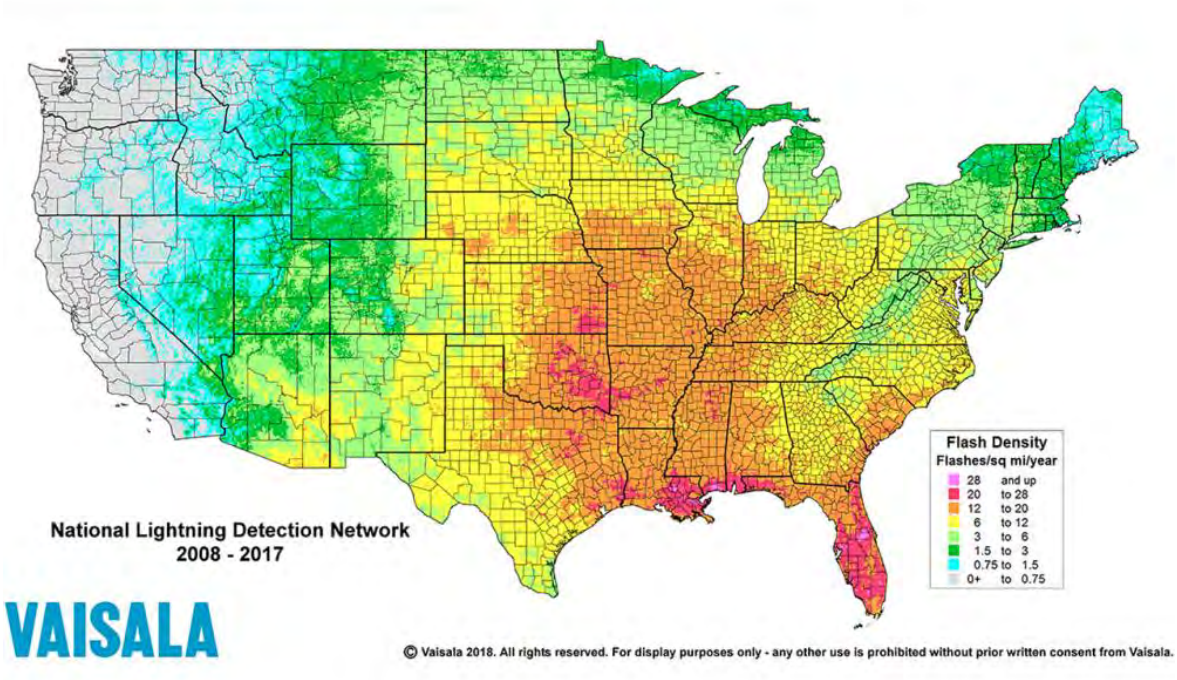
According to the National Oceanic and Atmospheric Administration (NOAA), hail is precipitation that is formed when thunderstorm updrafts carry raindrops upward into extremely cold atmosphere causing them to freeze. The raindrops form into small frozen droplets. They continue to grow as they come into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

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

Geographic Location

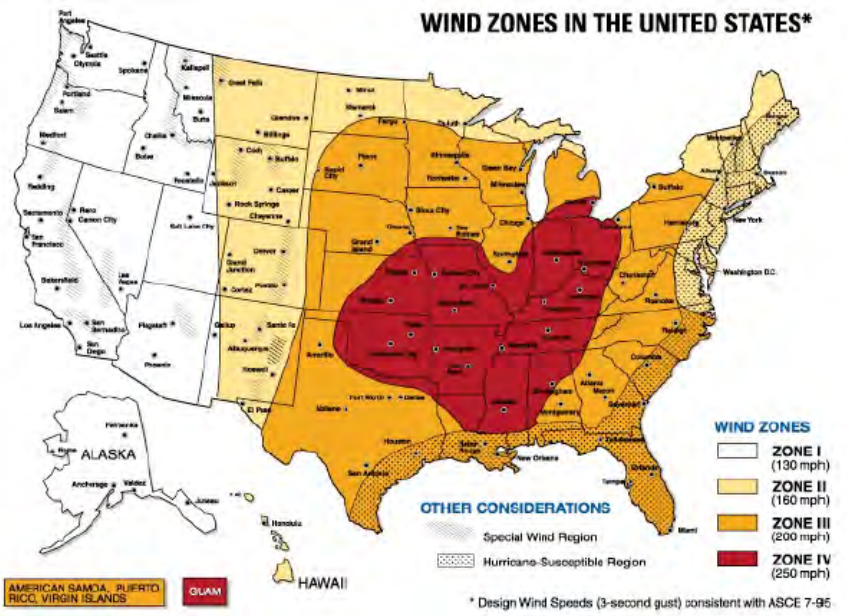
Thunderstorms/high winds/hail/lighting events are an area-wide hazard that can happen anywhere in the county. Although these events occur similarly throughout the planning area, they are more frequently reported in the incorporated communities. In addition, damages are more likely to occur in more densely developed parts of the county. Figure 3.20 shows lightning frequency in the state. Wright County is located in the 6 to 8 flash density zone on the map.

Figure 3.20. Location and Frequency of Lightning in Missouri



Source: National Weather Service, http://www.vaisala.com/en/products/thunderstormandlightningdetectionsystems/Pages/NLDN.aspx

Figure 3.21. 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 3.29** below describes typical damage impacts of the various sizes of hail.

Table 3.29. 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

Thunderstorm Wind

There are thirty (30) Thunderstorm Wind events reported to the NCEI from 2017-2021. Eleven (11) of these events resulted in reported property damages. The total damages from these events include $544,000 in property damages with average losses per damaging event totaling $49,455. One (1) event resulted in reported crop damage with losses totaling $20,000.

The costliest event occurred on May 4, 2020 and is described as follows in NCEI narratives:

> The first of three rounds of storms occurred as a front interacted with very unstable air to produce numerous severe thunderstorms that caused extensive hail and wind damage over portions of the area. Hail larger than golf balls was reported over the south side of Springfield. As the storms moved from west to east across the area, they transitioned from primarily hail producers to wind producers after passing the Highway 65 corridor.
>
> The second round of storms developed near Topeka, KS and roared southeastward into east-central Missouri in the early afternoon. These storms then impacted the eastern Ozarks during the late afternoon hours, producing substantial straight-line wind damage. The Lebanon Airport anemometer recorded a wind speed of 89 mph before going offline. There were several reports of tornadoes associated with this second line of storms but none could be confirmed.
>
> The final round of severe storms developed in the late afternoon and evening along a warm front over southeast Kansas and far southwest Missouri, producing primarily large hail. Numerous large trees were reported from Mansfield to Mountain Grove as strong straight-line winds moved across the County. Just east of Mansfield several buildings suffered roof damage. Significant roof damage occurred to the Mansfield High School. Near Mountain Grove a recreational vehicle was flipped and significantly damaged.

Table 3.30. NCEI T-Storm Wind Events in Wright County 2017-2021

Location	# of Events	Deaths	Injuries	Property Damage	Crop Damage
Unincorporated Wright County	13	0	0	$56,000	$0
Hartville	1	0	0	$0	$0
Mansfield	5	0	0	$402,000	$20,000
Mountain Grove	7	0	0	$86,000	$0
Norwood	4	0	0	$0	$0
Total	**30**	**0**	**0**	**$544,000**	**$20,000**

Source, NCEI, 2021

Hail

There are 22 Hail events reported to the NCEI from 2017-2021. The largest magnitude event was on March 27, 2020 when hailstones 2.5 inches in diameter were reported in Hartville. This event resulted in a reported $250,000 in damages and is described as follows in NCEI narratives:

> Numerous large trees were reported from Mansfield to Mountain Grove as strong straight-line winds moved across the County. Just east of Mansfield several buildings suffered roof damage. Significant roof damage occurred to the Mansfield High School. Near Mountain Grove a recreational vehicle was flipped and significantly damaged.
>
> A swath of hail from ping pong ball to tennis ball size was reported as a storm moved through Hartville to the east. Numerous vehicles, businesses and residential roofs sustained damage as the storm proceeded from just west of town to the east with the last report of hail occurring near the intersection of Highway 38 and Lawson Road.

Table 3.31. NCEI Hail Events in Wright County 2017-2021

Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Hartville	3/27/2020	2.5 in.	0	0	$250,000	0
TOTALS	-	-	**0**	**0**	**$250,000**	**0**

Source: NCEI, 2021

Lightning

Limitation 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. There are four (4) lightning events recorded in the NCEI data from 2017-2021. All four of these events included reported property damages. The two costliest events occurred on August 29, 2018 and February 7, 2019. These events are described in NCEI narratives as follows:

August 29, 2018
Lightning struck a motor home resulting in a fire off Highway 95 and Nettleton Drive, just north of Mountain Grove, Mo. The time of the strike was estimated from radar and lightning plots.

February 7, 2019
A home was struck by lightning just north of Mountain Grove. The home suffered damage to a couple of rooms by fire and smoke.

Table 3.32. NCEI Lightning Events in Wright County 2017-2021

Location	# of Events	Deaths	Injuries	Property Damage	Crop Damage
Unincorporated Wright County	3	0	0	$13,000	$0
Hartville	0	0	0	$0	$0
Mansfield	0	0	0	$0	$0
Mountain Grove	1	0	0	$10,000	$0
Norwood	0	0	0	$0	$0
Total	**4**	**0**	**0**	**$23,000**	**$0**

Source: NCEI, 2021

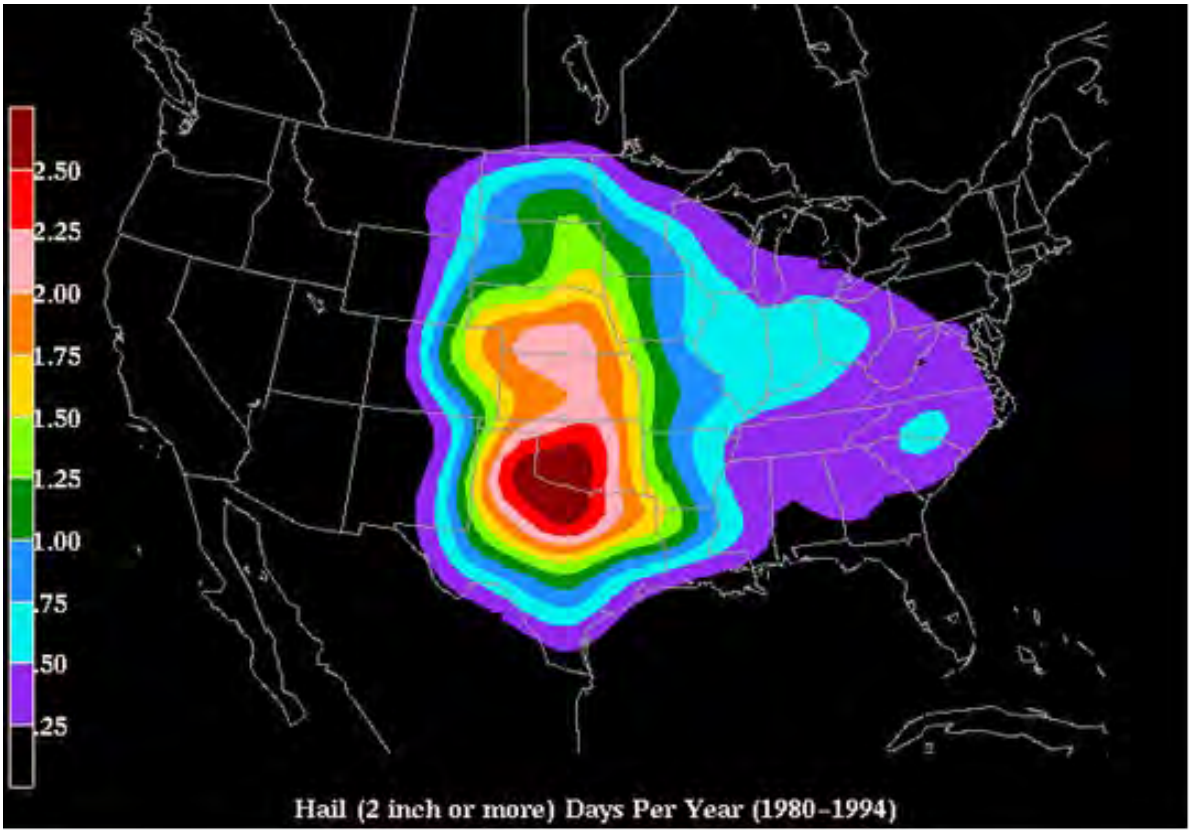
Probability of Future Occurrence

Thunderstorm Wind
There have been 30 recorded unique thunderstorm wind events over a 5-year period from 2017-2020. This equates to six (6.0) thunderstorm wind occurrences in any given year with a 100% probability of occurrence. There were twelve (12) events that resulted in $564,000 in property and crop damage. This equates to an average of 2.4 damaging events per year with average annual losses of $112,800.

Hail
There have been 22 recorded hail events over a 5-year period from 2017-2021. This equates to 4.4 hail events in any given year with a 100% probability of occurrence. There was one event resulting in property damages totaling $250,000. Based on NCEI data from 2017-2021, average annual losses over the five-year period from damaging hail events is $50,000 per year.

Lightning
There have been four (4) recorded lightning events over the 5-year period from 2017-2021. This equates to an 80% probability of occurrence. The four events resulted in a total of $23,000 of property damage. Annualized losses from lightening events are $4,600 per year.

Figure 3.22. Annual Hailstorm Probability (2'' diameter or larger), 1980- 1994



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

Changing Future Conditions Considerations

Increases in temperature and more frequent droughts will accelerate the evaporation of water into the atmosphere, which will produce higher water concentrations. Elevated levels of moisture raise the likelihood of severe thunderstorms and tornadoes. Lives and property are endangered when the risk of these events increases, especially in jurisdictions that do not have a community safe room or the funds to construct one. This kind of event also possesses the threat of increasing the magnitude and frequency of other hazard events like riverine flooding, sinkhole occurrence, and flash flooding, putting residents in even greater danger.

Vulnerability

Vulnerability Overview

Severe thunderstorm losses are usually attributed to the associated hazards of hail, downburst winds, lightning and heavy rains. Losses due to hail and high wind are typically insured losses that are localized and do not result in presidential disaster declarations. However, in some cases, impacts are severe and widespread and assistance outside state capabilities is necessary. Hail and wind also can have devastating impacts on crops. Severe thunderstorms/heavy rains that lead to flooding are discussed in the flooding hazard profile. Hailstorms cause damage to property, crops, and the environment, and can injure and even kill livestock. In the United States, hail causes more than $1 billion in damage to property and crops each year. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are also commonly damaged by hail. Hail has been known to cause injury to humans, occasionally fatal injury.

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

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

Potential Losses to Existing Development

The average annual loss determined from historical losses for thunderstorms, high wind, hail and lightning are indicators of the potential losses to existing development. Thunderstorm wind events in the county have damaged critical facilities, schools, local governments, and private property. Potential annual losses throughout Wright County are Thunderstorm - $544,000; Hail - $250,000. Potential annual losses from high winds and lightning are not calculable but should be expected to occur and cause damages in the future. For example, the City of Mountain Grove has reported that a pump station is consistently struck by lighting and requires repair.

Impact of Previous and Future Development

Growth in Wright County is occurring at a slow rate, with Norwood currently seeing the most growth in terms of population percent, and Mansfield in terms of housing built. Additional development in these areas results in the exposure of more households and businesses vulnerable to damages from high winds, hail, and lightning.

Hazard Summary by Jurisdiction

Although thunderstorms, high winds, lightning, hail events are area-wide, communities with a greater percentage of structures built prior to 1939 are more vulnerable to the impact of high wind and hail damage. All of Wright County's jurisdictions, except for Mtn. Grove, have at least 10% of structures built prior to 1939. The unincorporated county is also above 10%. New construction and population growth would increase the exposure and risk to this hazard; however, the communities in Wright County with building codes will assist in mitigating the effects of strong storms.

Problem Statement

Poorly built structures, barns, and outbuildings are more vulnerable to the impact of high winds during thunderstorms. High winds can topple utility poles and lead to power outages. Both high winds and hail can damage roofs. Hail can also damage crops and dent cars and trucks. People are also at risk to injury and death during high wind events. Crop insurance mitigates the risk to farmers and the agriculture sector within the county. Lightning events have caused structural fires, can strike electrical utilities leading to power outages, or strike municipal water systems causing water supply outages.

The risk of property damage, injury, and death in the county can be mitigated by identifying safe refuge areas in public buildings, nursing homes and other facilities that house vulnerable populations that do not have a safe room. The purchasing and installation of NOAA weather radios in schools, government buildings and public areas may assist in providing early warning to allow for public to seek shelter during high wind events. Education and hazard awareness programs in public schools would also increase public safety in the event of severe thunderstorm events. Additionally, school systems with existing alert systems may utilize for severe weather notifications and the County may investigate a county-wide alert system to provide important severe weather information.

3.4.8 Tornado

Hazard Profile

Hazard Description

The NWS defines a tornado as "a violently rotating column of air extending from a thunderstorm to the ground." It is usually spawned by a thunderstorm and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. Often, vortices remain suspended in the atmosphere as funnel clouds. When the lower tip of a vortex touches the ground, it becomes a tornado.

High winds not associated with tornadoes are profiled separately in this document in Section 3.4.8, Thunderstorm/High Wind/Hail/Lightning.

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 due to its unique geography and presence of the jet stream. The jet stream is a high-velocity stream of air that 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.

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

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

Geographic Location

Tornadoes can occur anywhere in the planning area.

Severity/Magnitude/Extent

Tornadoes are the most violent of all atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 miles per hour and damage paths can be more than one mile wide and 50 miles long. Tornadoes have been known to lift and move objects weighing more than 300 tons a distance of 30 feet, toss homes more than 300 feet from their foundations, and siphon millions of tons of water from water bodies. Tornadoes also can generate a tremendous amount of flying debris or "missiles," which often become airborne shrapnel that causes additional damage. If wind speeds are high enough, missiles can be thrown at a building with enough force to penetrate windows, roofs, and walls. However, the less spectacular damage is much more common.

Tornado magnitude is classified according to the EF- Scale (or the Enhance Fujita Scale, based on the original Fujita Scale developed by Dr. Theodore Fujita, a renowned severe storm researcher). The EF- Scale, table 3.33 below, 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 3.33. Enhanced F Scale for Tornado Damage

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

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

The wind speeds for the EF scale and damage descriptions are based on information on the NOAA Storm Prediction Center as listed in table 3.34, 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.

Table 3.34. 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 3.35 includes NCEI reported tornado events and damages since 2017 in the planning area. There are limitations to the use of NCEI tornado data that must be noted. For example, one tornado may contain multiple segments as it moves geographically. A tornado that crosses a county line or state line is considered a separate segment for the purposes of reporting to the NCEI. Also, a tornado that lifts off the ground for less than 5 minutes or 2.5 miles is considered a separate segment. If the tornado lifts off the ground for greater than 5 minutes or 2.5 miles, it is considered a separate tornado. Tornadoes reported in Storm Data and the Storm Events Database are in segments.

Table 3.35. Recorded Tornadoes in Wright County, 2017-2021

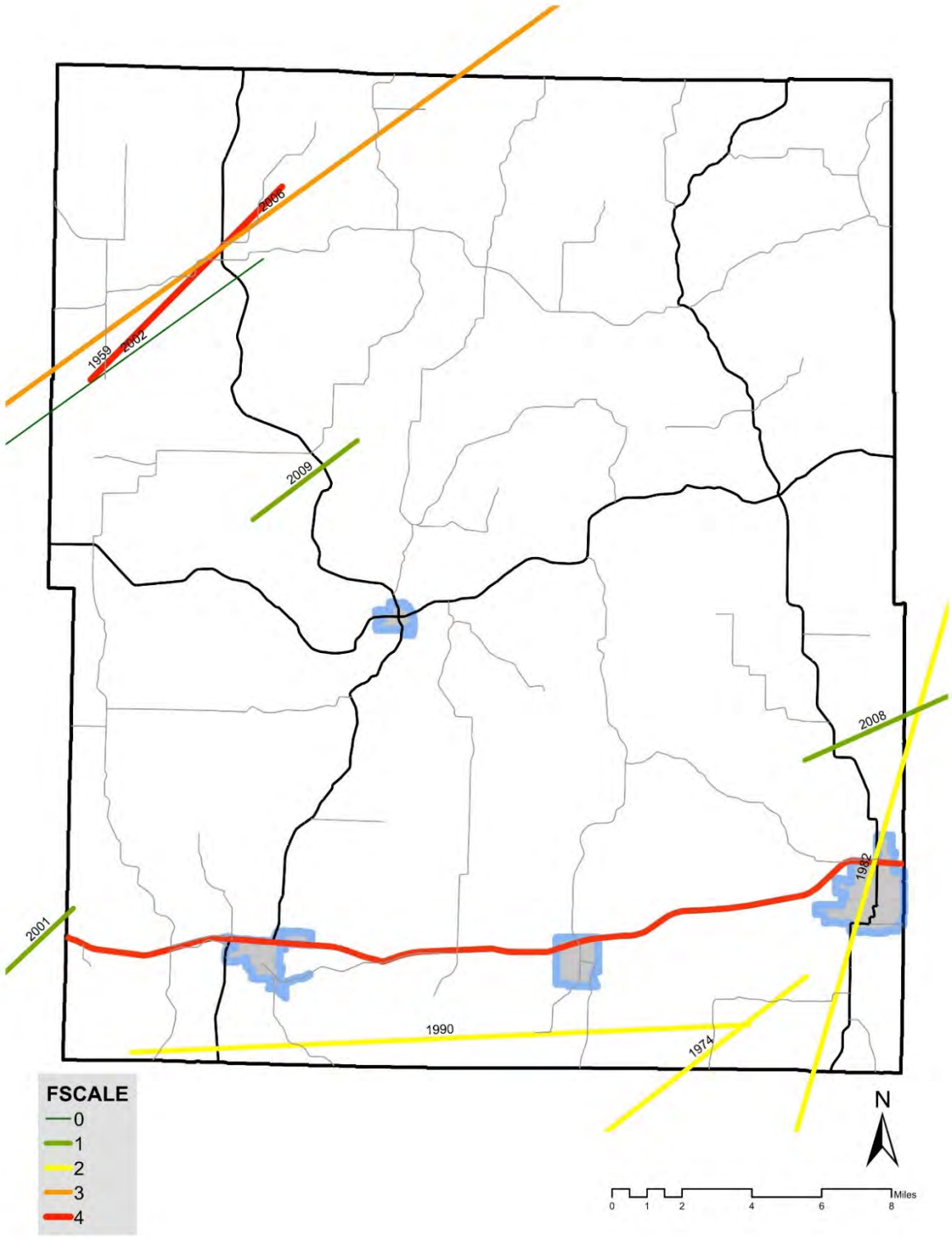
Date	Beginning Location	Ending Location	Length (miles)	Width (yards)	F/EF Rating	Death	Injury	Property Damage	Crop Damages
5/19/2017	Dawson	Dawson	0.25	50	EF0	0	0	$5,000	$0
4/13/2018	Macomb	Owens	9.0	100	EF2	0	0	$300,000	$0
4/13/2018	Dawson	Graff	5.0	75	EF1	0	0	$25,000	$0
12/01/2018	Boyer	Boyer	0.28	50	EF0	0	0	$0	$0
4/30/2019	Wright County	Wright County	1.43	75	EF1	0	0	$250,000	$0
4/30/2019	Wright County	Wright County	2.41	100	EF0	0	0	$100,000	$0
4/30/2019	Wright County	Wright County	2.17	100	EF1	0	0	$60,000	$0
5/21/2019	Cedar Gap	Manes	23.75	200	EF1	0	0	$5,000,000	$0
	Total	**-**	**-**	**-**	**-**	**0**	**0**	**$5,740,000**	**0**

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

Probability of Future Occurrence

According to the NCEI, eight (8) tornadoes have occurred during the 5-year period from 2017-2021. This equates to 1.4 tornado events of any magnitude in the planning area in any given year with a 100% probability of occurrence.

Figure 3.23. Wright County Map of Historic Tornado Events



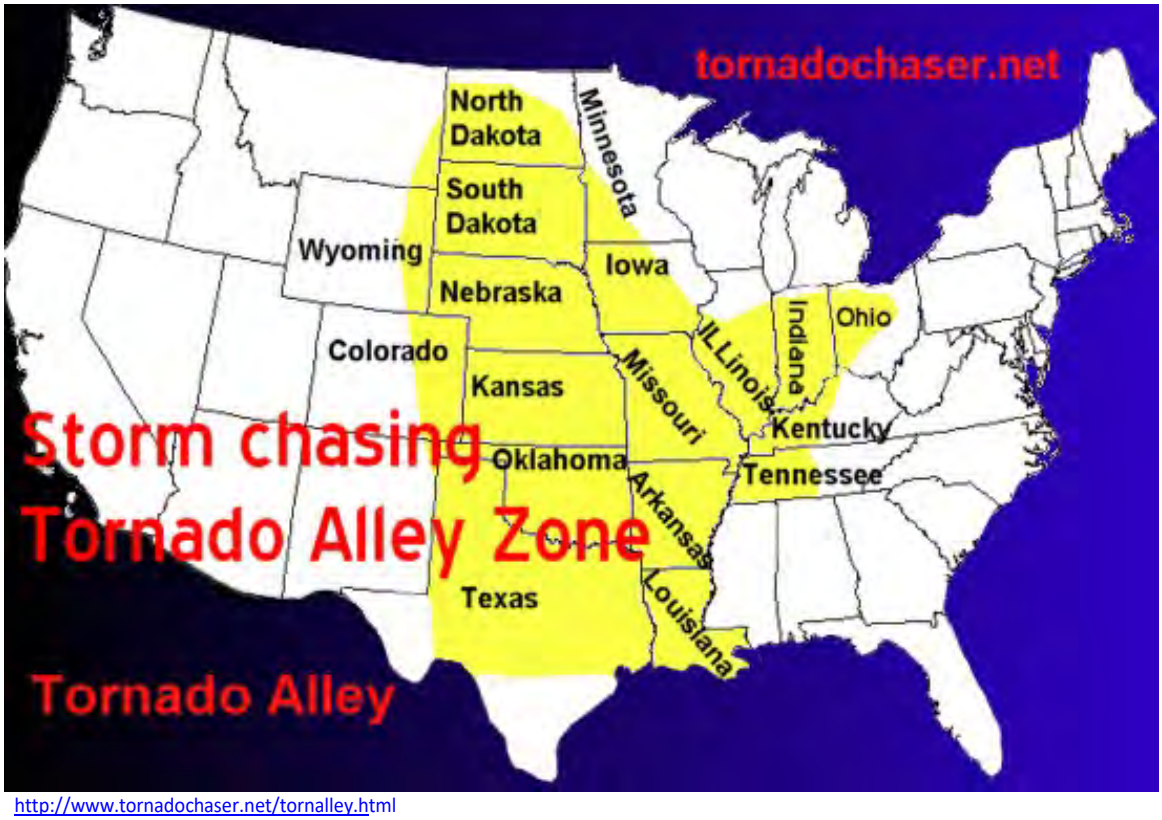
Source: Missouri Tornado History Project, http://www.tornadohistoryproject.com/tornado/Missouri

Vulnerability

Vulnerability Overview

Wright County is located in a region of the United States with high frequency of dangerous and destructive tornadoes referred to as "Tornado Alley" as is the entire State of Missouri. Figure 3.24 illustrates the areas where dangerous tornadoes historically have occurred.

Figure 3.24. Tornado Alley in the U.S.



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

The 2018 State Plan applies a certain methodology to each county in the state to determine each county's vulnerability to tornadoes. While this approach attempts to prioritize tornado vulnerable counties, it does not identify any particular geographic patters to tornado risk. The state's analysis combines annualized losses and frequency of occurrence to determine the greatest likelihood of being impacted by a tornado. The state's vulnerability rating ranged from very high, high, and moderate. The vulnerability for Wright County was rated as Moderate.

Potential Losses to Existing Development

During the five-year period from 2017 through 2021, a total of **$5,740,000** in property losses equates to $1,148,000 in average annual losses countywide. This value indicates that potential future losses in the county will remain significant. The most common tornado events recorded in the county are EF0 magnitude. The average magnitude for tornado events in the county is 0.84 on the Enhanced Fujita Scale.

Future Development

Wright County as whole is experiencing moderate growth. The City of Mansfield in southwestern Wright County is the only jurisdiction that is experienced a decline in population. The remainder of the communities in the county and the unincorporated parts of the county are showing slow to moderate growth. The US 60 corridor in southern Wright County is expected to be the focal point for growth and development in the coming years. Additional population growth and development will increase exposure and risk to tornado events due to the area-wide geographic nature of this hazard.

Hazard Summary by Jurisdiction

Although tornado events are area-wide hazards, communities with a greater percentage of structures built prior to 1939 are more vulnerable to the impact of tornadoes. The City of Hartville is home to the highest percentage of structures built prior to 1939 at 22%, followed by Mansfield (13.7%), Unincorporated Wright County (12.7%), the City of Norwood (11%) and the City of Mountain Grove (5.7%). The county's school districts have mostly modernized facilities and are considered well-built structures. However, most districts have outbuildings used for storage and maintenance that may be at higher risk to high wind and hail events.

School district facilities are at risk to the damages of tornadoes. School districts in South Central Missouri have been highly successful in securing grant funding to construct FEMA-standard tornado safe rooms, unfortunately as of this time there are no FEMA standard safe rooms in Wright County. In response to federal disaster 4250, all five school districts in the county (Hartville, Manes, Mansfield, Mountain Grove and Norwood) have submitted Notices of Interest for grant funds to construct safe rooms.

Problem Statement

Tornadoes are the most violent of all atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 miles per hour and damage paths can be more than one mile wide and 50 miles long. Significant tornado events in Wright County since 1950 have resulted in numerous injuries (12) and millions of dollars in property damage ($6.033MM). Information in the 2018 State Plan indicates that Wright County has a moderate vulnerability to tornadoes based on frequency of occurrence and previous damages.

The risk of property damage, injury and death in the county can be mitigated by constructing FEMA standard saferooms in facilities that house vulnerable populations such as nursing homes, government buildings, and schools. In addition, identifying safe refuge areas in public buildings, nursing homes and other facilities with protective filming of windows and installation of blast proof doors will provide more protection for students and staff and school facilities that are not served by FEMA standard saferooms. Additional warnings and alerts will also provide the public and schools more time to take cover during tornado warnings. Aldo, public safety fairs and expos in the county hosted by communities provide an opportunity to disseminate information to homeowners about individual saferoom construction in residences.

Cities can adopt or update and enforce IBC 2012 building codes that include construction techniques such as roof tie down straps to mitigate damage to future development.

3.4.9 Wildfire

Hazard Profile

Hazard Description

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

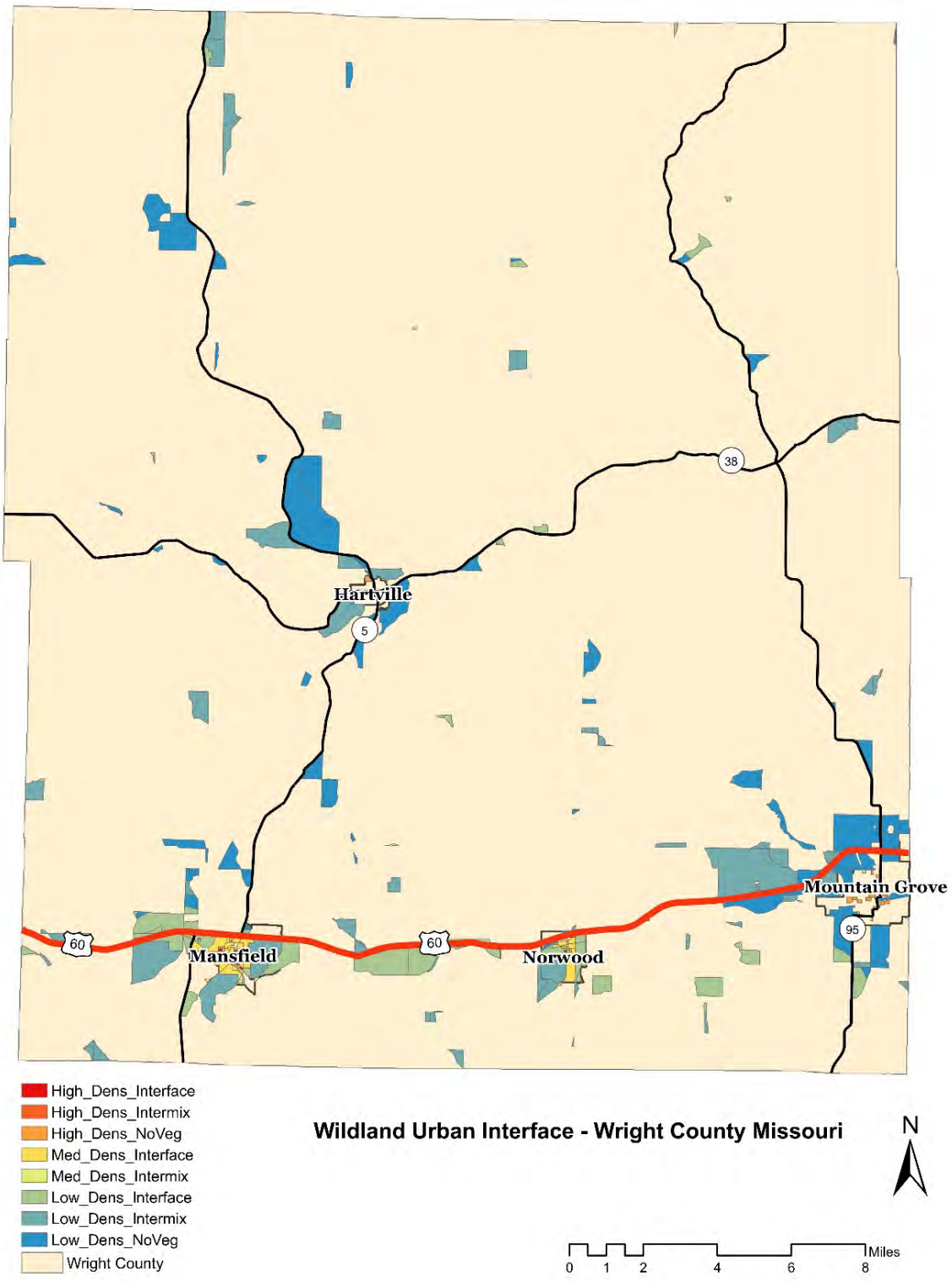
The Forestry Division of the Missouri Department of Conservation (MDC) is responsible for protecting privately owned and state-owned forests and grasslands from wildfires. To accomplish this task, eight forestry regions have been established in Missouri for fire suppression. The Forestry Division works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

Most of Missouri fires occur during the spring season between February and May. The length and severity of wildland fires depend largely on weather conditions. Spring is 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 pastures 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 accumulation. Therefore, spring months are the more 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

Absent demographic information indicating otherwise, the risk of structural fire probably does not vary widely across the planning area. However, damages due to wildfires would 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. Figure 3.25 below shows WUI areas in Wright County.

Figure 3.25. Wright County Wildland Urban Intermix, Interface



Severity/Magnitude/Extent

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

Wildland fires in Missouri have been mostly a result of human activity rather than lightning or some other natural event. Wildfires in Missouri are usually surface fires, burning the dead leaves on the ground or dried grasses. They do sometimes "torch" or "crown" out in certain dense evergreen stands like eastern red cedar and shortleaf pine. However, Missouri does not have the extensive stands of evergreens found in the western US that fuel the large fire storms seen on television news stories. While very unusual, crown fires can and do occur in Missouri native hardwood forests during prolonged periods of drought combined with extreme heat, low relative humidity, and high wind. Tornadoes, high winds, wet snow and ice storms in recent years have placed a large amount of woody material on the forest floor that causes wildfires to burn hotter and longer. These conditions also make it more difficult for fire fighters suppress fires safely. See *http://www.firewisemissouri.org/wildfire-in-missouri.html*

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

Previous Occurrences

According to MDC Wildfire Data, there have been eighty-one (81) wildfires reported in Wright County from 2017 through 2021. A total of 990.28 acres were burned as a result of these reported wildfires. In addition, eight (8) buildings were destroyed, four (4) structures were damaged, and thirty-three (33) structures were threatened due to wildfires in the county.

Table 3.36. Wright County Wildfires 2017-2021

Year	# Wildfires	Buildings Destroyed	Buildings Damaged	Buildings Threatened	Acres Burned
2017	60	7	2	23	382.62
2018	7	0	0	3	410.96
2019	5	0	0	1	22.77
2020	5	1	2	6	70.22
2021	4	0	0	0	103.71
Total	81	8	4	33	990.28

There are no records from school districts and special districts about previous wildfire events and the damages resulting from them.

Probability of Future Occurrence

Based on the last five (5) years of fire reporting statistics from the Missouri Department of Conservation (MDC) in Table 3.36, there were a total of 81 reported wildfires from 2017-2021. This equates to an average of 16.2 wildfire events annually and a 100% probability of occurrence in any given year.

Vulnerability

Vulnerability Overview

Wildfires occur throughout wooded and open vegetation areas of Missouri. They can occur any time of year, but mostly occur during long, dry hot spells. Any small fire, if not quickly detected and suppressed, can get out of control. Most wildfires are caused by human carelessness or negligence. However, some are precipitated by lightning strikes, and in rare instances, spontaneous combustion. Structures and people in Wildland-Urban Interface areas in the county and cities are more vulnerable to the impact of wildfires due to the level of fuel mixed with structures.

Potential Losses to Existing Development

In looking at the statistics over the last five years, an average of 1.6 buildings are destroyed every year, and 0.8 buildings per year are damaged. Another 6.6 structures are threatened per year with an average of 198 acres burned annually.

Impact of Future Development

It is anticipated that there will be future development in WUI areas throughout incorporated and unincorporated areas of the county. Future growth in WUI areas of the county will increase the risk and exposure to wildfires.

Hazard Summary by Jurisdiction

The vulnerability to wildfire damages are greatest near the communities of Mansfield and Norwood. Areas identified as WUI, but with lower associated risk are around the communities of Hartville and Mountain Grove. These areas include US Highway 60 and State Route 5. All school district campuses in the county are located outside areas identified as interface and/or intermix.

Problem Statement

Wildfire occurrence is frequent within Wright County. These events can destroy, damage, and threaten structures in hazard prone areas. Populations and structures in WUI areas of the county have an increased risk to wildfires due to the level of fuel mixed with built environments. Cities have not adopted landscape ordinances that could potentially include fire safe landscape design requirements. The unincorporated areas of the county have the highest risk and exposure to wildfires. Thankfully, many of these areas are sparsely population. However, when new construction is occurring promoting the use of fire-resistant construction materials is highly advisable. More information about these materials and techniques are available in the MDC publication *Living with Wildfire*.

3.4.10 Severe Winter Weather

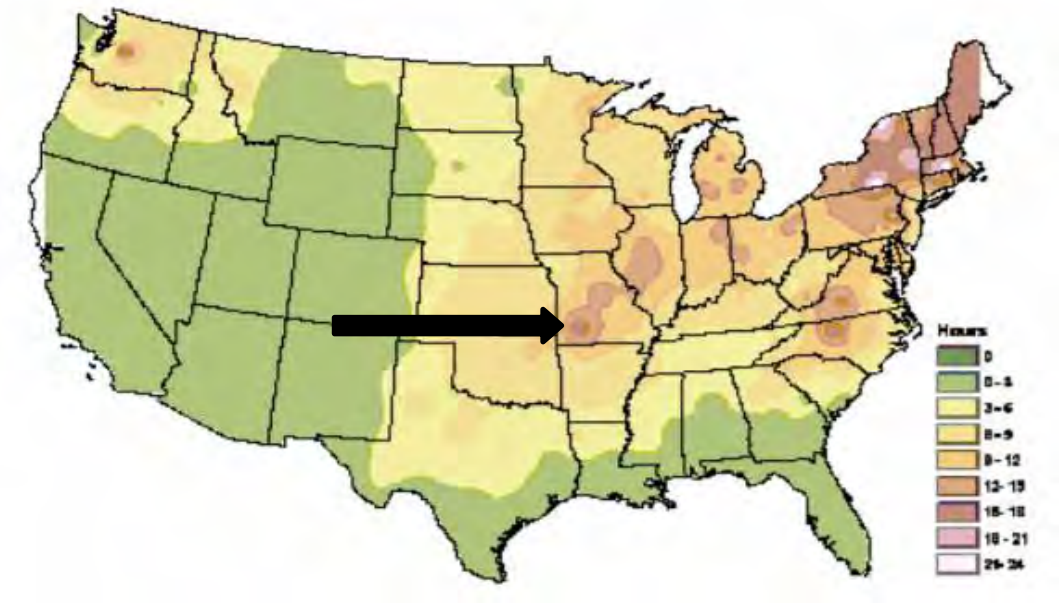
Hazard Profile

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

- **Blizzard**—Winds of 35 miles per hour or more with snow and blowing snow reducing visibility to less than ¼ mile for at least three hours.
- **Blowing Snow**—Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- **Snow Squalls**—Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
- **Snow Showers**—Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Freezing Rain**—Measurable rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Most freezing-rain events are short lived and occur near sunrise between the months of December and March.
- **Sleet**—Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects.

Geographic Location: The entire county is vulnerable to heavy snow, ice, extreme cold temperatures, and freezing rain. **Figure 3.26** depicts the average number of hours per year with freezing rain. Wright County is in a zone that can expect 18 – 21 hours of freezing rain per year.

Figure 3.26. NWS Statewide Average Number of Hours per Year with Freezing Rain



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

Strength/Magnitude/Extent

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

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

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

Previous Occurrences

Table 3.37 summarizes the Winter Weather events in Wright County from 2017-2021

Table 3.37. NCEI Wright County Winter Weather Events Summary, 2017-2021

Type of Event	Inclusive Dates	# of Injuries	Property Damages	Crop Damages
Heavy Snow	n/a	0	0	0
Ice Storm	1/13/2017	0	0	0
Ice Storm	1/11/2019	0	0	0
Winter Storm	1/1/2021	0	$25,000	0
Total	--	0	**$25,000**	0

Source: NCEI, 2021

Of the four (4) events listed in the NCEI data, two were Ice Storms and one was listed as a Winter Storm.

Ice Storm

The most significant Ice Storm event in terms of regional impact was the January 2019 event described in the NCEI narrative as follows:

> A winter storm that started as rain as it moved into central and southern Missouri, then turned to a wintry mix of sleet, freezing rain and snow before changing over to all snow in some areas. Heavy snow fell across central Missouri with accumulations between 6 and 12 inches. Portions of south-central Missouri saw significant ice accumulations that resulted in power outages and numerous trees and limbs down. As the precipitation was winding down, areas of freezing drizzle persisted through the overnight hours of January 12. Ice accumulation across Wright County resulted in trees down and power outages in Mountain Grove.

Winter Storm

On January 1, 2021, a Winter Storm event resulted in a reported $25,000 in damages and is described as follows in the NCEI narratives:

> A storm system lifted northward through Arkansas and into Missouri from New Years Eve into New Years Day. Freezing rain spread into southeast Kansas and southern and central Missouri during the evening hours of Thursday, December 31. The freezing rain continued into January 1, 2021, before transitioning over to minor accumulations of snow. Ice accumulations overnight and into January 1, 2021, resulted in tree damage and scattered power outages. Once the freezing rain changes to snow with a dusting to 1.5 inches of accumulation was reported. This storm was a continuation from December 31, 2020. Public reports of estimated of flat ice accumulation of 0.40 to 0.50 inches.

Probability of Future Occurrence

The probability for all the different type of winter weather is included as one probability since one storm generally incudes several different types of events. There were three (3) severe winter weather events in Wright County from 2017-2021. This equates to a 60% probability of occurrence in any given year with approximately 0.60 events in any given year.

Vulnerability

Vulnerability Overview

Severe winter storms include extreme cold, heavy snowfall, ice and strong winds which can push the wind chill well below zero degrees in the planning area. 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 excessive 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. People over 65 and those living in poverty have an increased risk of hypothermia and frostbite due to extreme cold and wind chill hazards.

In the 2018 State Plan, seven factors were considered in determining overall severe winter storm vulnerability as follows: housing density, likelihood of occurrence, building exposure, crop exposure, average annual property loss ratio, average annual crop insurance claims and social vulnerability. The state ranked each of these criteria using a scale from one to five, one being lowest and five being the highest, to rank each county's vulnerability to severe winter weather. Wright County received a vulnerability rating of medium-low.

Potential Losses to Existing Development

During the four-year period of record from 2017 to 2021, a total of $25,000 in property losses equates to $6,250 in average annual losses countywide.

Future Development

Increased development and resulting increase in population will increase exposure to damage from severe winter weather. Future commercial development can expect functional downtime and decreased revenues during periods of severe winter weather. Road construction in the county will increase the need for snow removal and slat to keep transportation lifelines open during periods of severe winter weather.

Hazard Summary by Jurisdiction

Severe winter weather can cause power outages and put structures at risk to fires when individuals in homes resort fuel heaters. The risk of extreme cold deaths and frostbite varies among segments of the populations. People over 65 and those living below the poverty level have an increased vulnerability to severe winter weather. Table 3.38 includes information on population over 65 and the percent living below the poverty level by jurisdiction.

Table 3.38. Population over 65 and Percent Living Below the Poverty Level by Jurisdiction

Jurisdiction	% of Families Living Below Poverty Level	% Population over 65
Wright County	18%	18%
City of Hartville	19.1%	27.8%
City of Mansfield	18.8%	16.5%
City of Mountain Grove	20.8%	26.2%
City of Norwood	47.6%	11.6%

Source: ACS Profiles; ACS five year estimates 2020

All jurisdictions have large percentages of families living below the poverty level. The Cities of Norwood and Hartville have the highest percentages of impoverished families. The largest populations of people over 65—by percentage—reside in Mountain Grove and Hartville. These communities have the greatest risk based on these populations.

Problem Statement

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 travelled extremely difficult and hazardous. People over 65 and those living in poverty have an increased risk of hypothermia and frostbit due to extreme cold and wind chill.

It is important that the Wright County EMA maintain a list of heating centers throughout the county as they become available. These locations could be promoted through avenues such as radio, Facebook or the county government's website. These locations can provide individuals who are at risk refuge from periods of extreme cold. Public works departments can develop snow removal plans and maintain adequate snow removal equipment and slat to quickly open roads after periods of heavy snow and freezing rain. The county and cities can work with local electric cooperatives to development vegetation management programs in rights of way to minimize damages of falling tree limbs laden with ice resulting from ice storms to minimize power outages throughout the county.

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

This section presents the mitigation strategy updated by the Mitigation Planning Committee (MPC) based on the [updated] risk assessment. The mitigation strategy was developed through a collaborative group process. The process included review of [updated] general goal statements to guide the jurisdictions in lessening disaster impacts as well as specific mitigation actions to directly reduce vulnerability to hazards and losses. The following definitions are taken from FEMA's *Local Hazard Mitigation Review Guide (October 1, 2016)*.

- **Mitigation Goals** are general guidelines that explain what you want to achieve. Goals are long-term policy statements and global visions that support the mitigation strategy. The goals address the risk of hazards identified in the plan.
- **Mitigation Actions** are specific actions, projects, activities, or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. Implementing mitigation actions helps achieve the plan's mission and goals.

4.1 Goals

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

This planning effort is an update to Wright County's existing hazard mitigation plan approved by FEMA in January of 2017. Therefore, the goals from the 2017 Wright County Hazard Mitigation Plan were reviewed to see if they were still valid, feasible, practical, and applicable to the defined hazard impacts. During planning meetings, MPC members and local stakeholders held a discussion in order to review and update the plan goals.

To ensure that the goals developed for this update were comprehensive and supported State goals, the 2018 State Hazard Mitigation Plan goals were reviewed. The MPC also reviewed the goals from current surrounding county plans.

Goal 1: Protect the Lives and Property of all Citizens of Wright County

- Identify and provide sufficient emergency shelters
- Review and maintain current warning systems for sufficient coverage

Goal 2: Preserve the Functioning of Civil Government During Natural Disasters

- Implement proper maintenance and necessary upgrades of critical buildings and infrastructures in the county
- Improve the efficiency, timing, and effectiveness of response and recovery efforts for natural hazard disasters

Goal 3: Maintain Economic Activities Essential to the Survival and Recovery from Natural Disasters

- Periodically review chain of command of government organizations for emergency situations and keep up-to-date
- Continuously review communications systems and keep in good working order

4.2 Identification and Analysis of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

During the hazard mitigation planning meetings in the county and at the final MPC work session, the results of the risk assessment update were provided to the participants for review and the key issues were identified for specific hazards. Changes in risk since adoption of the previously approved plan were discussed. The meetings concluded with the distribution of a list of possible mitigation actions submit to the MPC for their review and approval. The list included possible new mitigation actions, as well as actions from the previously approved plan that were candidates for removal, due to the nature of them not being measurable or fundable. Actions from the previous plan included completed actions, on-going actions, and actions upon which progress had not been made. SCOCOG planners discussed SEMA's identified funding priorities and the types of mitigation actions generally recognized by FEMA.

The focus of the MPC work session then shifted to development the mitigation strategy. For a comprehensive range of mitigation actions to consider, the SCOCOG planners provided information to the MPC reviewing the following information:

- A list of actions proposed in the previous mitigation plan, the current State Plan, and approved plans in surrounding counties;
- Key issues from the risk assessment and vulnerability analysis;
- State priorities established for Hazard Mitigation Assistance grants, and
- Public input via the online survey tool, and other efforts to involve the public in the plan development process.

Table 4.1 consists of a summary of the hazard mitigation actions listed within this update of the county hazard mitigation plan, by participating jurisdiction:

Table 4.1. Action Status Summary

Jurisdiction	Completed Actions	Continuing Actions (ongoing or modify)	Deleted Actions
Wright County	1	1	0
City of Hartville	0	3	0
City of Mansfield	0	5	0
City of Mountain Grove	0	3	0
City of Norwood	0	0	0
Hartville R-II	0	1	0
Manes R-V	0	1	0
Mansfield R-IV	0	1	0
Mountain Grove R-III	0	0	0
Norwood R-I	0	1	0

Table 4.2 provides a summary of the completed and deleted actions from the previous plan. The 2017 Plan had a series of county-wide mitigation actions that address five mitigation goals. Based on the status updates, there was one completed action, zero deleted actions, 16 continuing actions and two (2) new actions.

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

Completed Actions	Completion Details (date, amount, funding source)
Purchase and install a backup generator at the county courthouse which serves various governmental functions	Project was funded by FEMA HMGP and completed during the winter of 2021.
Deleted Actions	**Reason For Deletion**
None	N/A

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

Table 4.3. Mitigation Action Matrix

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
Wright1	Purchase and install a backup generator at the county courthouse which serves various governmental functions	Wright County	20	Goal 2	Thunderstorm/High Winds/Lightning/Hail	X		
Hartville1	Install new outdoor warning sirens in the community	City of Hartville	19	Goal 1	Tornado	X		
Hartville2	Develop a coordinated plan to test outdoor warning sirens on a consistent basis	City of Hartville	15	Goal 2	Tornado	X		
Hartville3	The city will attempt to improve floodplain management by identification of map amendments/updates	City of Hartville	16	Goal 3	Flooding (Flash and River)	X		X
HartvilleSchool1	Construct a 361 design tornado saferoom on the school campus	Hartville School District	18	Goal 1	Tornado		X	
Mansfield1	Reconstruct the sidewalks along Commercial Street to improve drainage	City of Mansfield	20	Goal 1	Flooding (Flash and River)	X		
Mansfield2	Install at new outdoor warning sirens in the community	City of Mansfield	18	Goal 1	Tornado	X		
Mansfield3	Develop a coordinated plan to test outdoor warning sirens on a consistent basis	City of Mansfield	15	Goal 2	Tornado	X		
Mansfield4	Purchase and install a backup generator at the city's water well	City of Mansfield	19	Goal 1	Tornado	X		
Mansfield5	The city will attempt to improve floodplain management by identification of map amendments/updates	City of Mansfield	20	Goal 1	Tornado	X		X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
ManesSchool1	Construct a 361 design tornado saferoom on the school campus	Manes School District	19	Goal 1	Tornado		X	
MansfieldSchool1	Construct a 361 design tornado saferoom on the school campus	Mansfield School District	19	Goal 2	Tornado		X	
MtnGrove1	Construct a 361 design tornado saferoom on city owned property	City of Mountain Grove	16	Goal 3	Flooding (Flash and River)		X	
MtnGrove2	Develop a coordinated plan to test outdoor warning sirens on a consistent basis	City of Mountain Grove	21	Goal 1	Tornado	X		
MtnGrove3	The city will attempt to improve floodplain management by identification of map amendments/updates	City of Mountain Grove	21	Goal 1	Tornado	X		X
MGShelter	Construct a 361 design tornado saferoom on city owned property	Mountain Grove School District	20	Goal 3	Tornado		X	
NorwoodSchool1	Construct a 361 design tornado saferoom on the school campus	Norwood School District	19	Goal 1	Tornado		X	
Wright2	Continuously identify funding sources to update buildings and infrastructure to ensure that community assets are resilient to natural disaster	Countywide	20	Goal 1	Tornado	X		

4.3 Implementation of Mitigation Actions

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

A cost benefit review of all new and continuing actions in the finalized plan was conducted during the MPC work session. 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 Missouri State Hazard Mitigation Plan. The benefit/cost review at the planning stage primarily consisted of a qualitative analysis, and was not the detailed process required grant funding application. For each action, the plan sets forth a narrative describing the types of benefits that could be realized from action implementation. The cost was estimated as closely as possible, with further refinement to be supplied as project development occurs.

FEMA's STAPLEE methodology was used to assess the costs and benefits, overall feasibility of mitigation actions, and other issues impacting project. During the prioritization process, the MPC 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 following questions and ensuing discussion:

Definitely "YES"	Maybe "YES"	Probably "NO"	Definitely "NO"
3 points	2 points	1 point	Zero points

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)

The resulting list of actions were summed and divided into classes and labeled as high, medium, or low priorities. The result of the STAPLEE analysis is found in the forthcoming mitigation action worksheets.

Figure 4.1. Blank STAPLEE Worksheet

XXXXXX 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 #): _____

In addition to the STAPLEE cost benefit review prioritization at the final MPC meeting, an implementation plan for each action was discussed. An action worksheet was used to development the implementation plan. The action worksheets are presented on the following pages.

MITIGATION ACTIONS

Goal 1: Protect the Lives and Property of all Citizens of Wright County

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Hartville
Risk / Vulnerability	
Problem being Mitigated:	The threat to human life result from tornadic storms in and around the City of Hartville Missouri. The existing sirens are old and do not function properly. One city siren must be activated manually, and the button must remain pressed for the siren to function.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**Hartville1**
Name of Action or Project:	Outdoor Warning Sirens
Action or Project Description:	Install new outdoor warning sirens in the community
Applicable Goal Statement:	Goal 1
Estimated Cost:	$10,000 to $50,000
Benefits:	Protect the lives of the citizens of the City of Hartville
Plan for Implementation	
Responsible Organization/Department:	City Public Works
Action/Project Priority:	19-HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	Hartville School District
Risk / Vulnerability	
Problem being Mitigated:	The threat to human life resulting from tornadic storms in and around the City of Hartville, MO
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**HartvilleSchool1**
Name of Action or Project:	Tornado Safe Room
Action or Project Description:	Construct a 361 design tornado saferoom on the school campus
Applicable Goal Statement:	Goal 1
Estimated Cost:	$500,000 to $1,000,000
Benefits:	Protect the lives of the students and local citizens
Plan for Implementation	
Responsible Organization/Department:	Superintendent Office
Action/Project Priority:	18-HIGH
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Mansfield
Risk / Vulnerability	
Problem being Mitigated:	Localized flooding near the intersection of Commercial and Oak Streets
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	**Mansfield1**
Name of Action or Project:	Sidewalk Reconstruction
Action or Project Description:	Reconstruct the sidewalks along Commercial Street to improve drainage
Applicable Goal Statement:	Goal 1
Estimated Cost:	$50,000 to $100,000
Benefits:	Mitigate the repetitive flooding at this location
Plan for Implementation	
Responsible Organization/Department:	City Public Works
Action/Project Priority:	20-HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	CDBG, MoDOT, Local
Local Planning Mechanisms to be Used in Implementation, if any:	Regional Transportation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Project Funded

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Mansfield
Risk / Vulnerability	
Problem being Mitigated:	The city's outdoor warning sirens are inadequate
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**Mansfield2**
Name of Action or Project:	Outdoor Warning Sirens
Action or Project Description:	Install at new outdoor warning sirens in the community
Applicable Goal Statement:	Goal 1
Estimated Cost:	$10,000 to $50,000
Benefits:	Protect the lives of the local citizens
Plan for Implementation	
Responsible Organization/Department:	City Public Works
Action/Project Priority:	18-MED
Timeline for Completion:	1 year
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	Manes School District
Risk / Vulnerability	
Problem being Mitigated:	The threat to human life resulting from tornadic storms in and around the unincorporated community of Manes
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**ManesSchool1**
Name of Action or Project:	Tornado Safe Room
Action or Project Description:	Construct a 361 design tornado saferoom on the school campus
Applicable Goal Statement:	Goal 1
Estimated Cost:	$500,000 to $1,000,000
Benefits:	Protect the lives of the students and local citizens
Plan for Implementation	
Responsible Organization/Department:	Superintendent Office
Action/Project Priority:	19-HIGH
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	Mansfield School District
Risk / Vulnerability	
Problem being Mitigated:	The threat to human life resulting from tornadic storms in and around the City of Mansfield, MO
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**MansfieldSchool1**
Name of Action or Project:	Tornado Safe Room
Action or Project Description:	Construct a 361 design tornado saferoom on the school campus
Applicable Goal Statement:	Goal 1
Estimated Cost:	$500,000 to $1,000,000
Benefits:	Protect the lives of the students and local citizens
Plan for Implementation	
Responsible Organization/Department:	Superintendent's Office
Action/Project Priority:	20-HIGH
Timeline for Completion:	3-5 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Mountain Grove
Risk / Vulnerability	
Problem being Mitigated:	The threat to human life resulting from tornadic storms in and around the City of Mountain Grove, MO
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**MtnGrove1**
Name of Action or Project:	Tornado Safe Room
Action or Project Description:	Construct a 361 design tornado saferoom on city owned property
Applicable Goal Statement:	Goal 1
Estimated Cost:	Over $1,000,000
Benefits:	Protect the lives of the local citizenry
Plan for Implementation	
Responsible Organization/Department:	City Emergency Management
Action/Project Priority:	**19 - HIGH**
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	Mountain Grove School District
Risk / Vulnerability	
Problem being Mitigated:	The threat to human life resulting from tornadic storms in and around the City of Mountain Grove, MO
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**MGShelter**
Name of Action or Project:	Tornado Safe Room
Action or Project Description:	Construct a 361 design tornado saferoom on the school campus
Applicable Goal Statement:	Goal 1
Estimated Cost:	$500,000 to $1,000,000
Benefits:	Protect the lives of the students and local citizens
Plan for Implementation	
Responsible Organization/Department:	Superintendent Office
Action/Project Priority:	21-HIGH
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Norwood School District
Risk / Vulnerability	
Problem being Mitigated:	The threat to human life resulting from tornadic storms in and around the City of Norwood, MO
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**NorwoodSchool1**
Name of Action or Project:	Tornado Safe Room
Action or Project Description:	Construct a 361 design tornado saferoom on the school campus
Applicable Goal Statement:	Goal 1
Estimated Cost:	$500,000 to $1,000,000
Benefits:	Protect the lives of the students and local citizens
Plan for Implementation	
Responsible Organization/Department:	Superintendent Office
Action/Project Priority:	21-HIGH
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Goal 2: Preserve the Functioning of Civil Government During Natural Disasters

Mitigation Action Worksheet	
Name of Jurisdiction:	Wright County
Risk / Vulnerability	
Problem being Mitigated:	Lack of back-up power source at the county's jail/dispatch/emergency operations center
Hazard(s) Addressed:	Thunderstorm/High Winds/Lightning/Hail
Action or Project	
Action/Project Number:	**Wright1**
Name of Action or Project:	Courthouse Generator
Action or Project Description:	Purchase and install a backup generator at the county courthouse which serves various governmental functions
Applicable Goal Statement:	Goal 2
Estimated Cost:	$10,000 to $50,000
Benefits:	Provide emergency backup power
Plan for Implementation	
Responsible Organization/Department:	County Emergency Management
Action/Project Priority:	20-HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	FEMA, RHSOC
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	Complete
Report of Progress	Complete

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Hartville
Risk / Vulnerability	
Problem being Mitigated:	The threat to human life result from tornadic storms in and around the City of Hartville, Missouri
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**Hartville2**
Name of Action or Project:	Siren Testing
Action or Project Description:	Develop a coordinated plan to test outdoor warning sirens on a consistent basis
Applicable Goal Statement:	Goal 2
Estimated Cost:	Little or no cost
Benefits:	Ensure sirens are functioning properly
Plan for Implementation	
Responsible Organization/Department:	City Emergency Management
Action/Project Priority:	15-LOW
Timeline for Completion:	2-3 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Mansfield
Risk / Vulnerability	
Problem being Mitigated:	The threat to human life result from tornadic storms in and around the City of Mansfield, Missouri
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**Mansfield3**
Name of Action or Project:	Siren Testing
Action or Project Description:	Develop a coordinated plan to test outdoor warning sirens on a consistent basis
Applicable Goal Statement:	Goal 2
Estimated Cost:	Little or no cost
Benefits:	Ensure sirens are functioning properly
Plan for Implementation	
Responsible Organization/Department:	City/County Emergency Management
Action/Project Priority:	15-LOW
Timeline for Completion:	2-3 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Mansfield
Risk / Vulnerability	
Problem being Mitigated:	The lack of emergency backup power at the city's water well
Hazard(s) Addressed:	Thunderstorm/High Winds/Lightning/Hail
Action or Project	
Action/Project Number:	**Mansfield4**
Name of Action or Project:	Well Generator
Action or Project Description:	Purchase and install a backup generator at the city's water well
Applicable Goal Statement:	Goal 2
Estimated Cost:	$10,000 to $50,000
Benefits:	Provide emergency backup power
Plan for Implementation	
Responsible Organization/Department:	City Public Works
Action/Project Priority:	17-MED
Timeline for Completion:	1 year
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Mountain Grove
Risk / Vulnerability	
Problem being Mitigated:	The threat to human life result from tornadic storms in and around the City of Mountain Grove, Missouri
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**MtnGrove2**
Name of Action or Project:	Siren Testing
Action or Project Description:	Develop a coordinated plan to test outdoor warning sirens on a consistent basis
Applicable Goal Statement:	Goal 2
Estimated Cost:	Little or no cost
Benefits:	Ensure sirens are functioning properly
Plan for Implementation	
Responsible Organization/Department:	City/County Emergency Management
Action/Project Priority:	18-MED
Timeline for Completion:	2-3 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Norwood
Risk / Vulnerability	
Problem being Mitigated:	The lack of emergency backup power at the city's water well
Hazard(s) Addressed:	Thunderstorm/High Winds/Lightning/Hail
Action or Project	
Action/Project Number:	**Norwood1**
Name of Action or Project:	Well Generator
Action or Project Description:	Purchase and install a backup generator at the city's water well
Applicable Goal Statement:	Goal 2
Estimated Cost:	$10,000 to $50,000
Benefits:	Provide emergency backup power
Plan for Implementation	
Responsible Organization/Department:	City Public Works
Action/Project Priority:	20 - High
Timeline for Completion:	1 year
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	New
Report of Progress	New

Goal 3: Maintain Economic Activities Essential to the Survival and Recovery from Natural Disasters

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Hartville
Risk / Vulnerability	
Problem being Mitigated:	The threat of flooding to the built environment
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	**Hartville3**
Name of Action or Project:	NFIP
Action or Project Description:	The city will attempt to improve floodplain management by identification of map amendments/updates
Applicable Goal Statement:	Goal 3
Estimated Cost:	Little or no cost
Benefits:	Improve the delivery of floodplain management services
Plan for Implementation	
Responsible Organization/Department:	Floodplain Administrator
Action/Project Priority:	15-LOW
Timeline for Completion:	2-3 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain Ordinance
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Mansfield
Risk / Vulnerability	
Problem being Mitigated:	The threat of flooding to the built environment
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	**Mansfield5**
Name of Action or Project:	NFIP
Action or Project Description:	The city will attempt to improve floodplain management by identification of map amendments/updates
Applicable Goal Statement:	Goal 3
Estimated Cost:	Little or no cost
Benefits:	Improve the delivery of floodplain management services
Plan for Implementation	
Responsible Organization/Department:	Floodplain Administrator
Action/Project Priority:	16-MED
Timeline for Completion:	2-3 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain Ordinance
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Mountain Grove
Risk / Vulnerability	
Problem being Mitigated:	The threat of flooding to the built environment
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	**MtnGrove3**
Name of Action or Project:	NFIP
Action or Project Description:	The city will attempt to improve floodplain management by identification of map amendments/updates
Applicable Goal Statement:	Goal 3
Estimated Cost:	Little or no cost
Benefits:	Improve the delivery of floodplain management services
Plan for Implementation	
Responsible Organization/Department:	Floodplain Administrator
Action/Project Priority:	14-LOW
Timeline for Completion:	2-3 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain Ordinance
Progress Report	
Action Status	Ongoing
Report of Progress	Ongoing

Mitigation Action Worksheet	
Name of Jurisdiction:	Countywide
Risk / Vulnerability	
Problem being Mitigated:	The failure and increasing vulnerability of aging infrastructure and community failures
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	**Wright2**
Name of Action or Project:	Asset Management
Action or Project Description:	Continuously identify funding sources to update buildings and infrastructure to ensure that community assets are resilient to natural disaster
Applicable Goal Statement:	Goal 3
Estimated Cost:	Little or no cost
Benefits:	Ensure that the local governments are aware of the resources available to them
Plan for Implementation	
Responsible Organization/Department:	County Emergency Management Regional Planning Commission
Action/Project Priority:	20 - HIGH
Timeline for Completion:	Less than one year
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Comprehensive Economic Development Strategy
Progress Report	
Action Status	Continue In-Progress
Report of Progress	Local jurisdictions are continuously kept up to date by SCOCOG staff on hazard mitigation funding availability

5 PLAN MAINTENANCE PROCESS

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

5.1 Monitoring, Evaluating, and Updating the Plan[10(a)]

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

5.1.1 Responsibility for Plan Maintenance

The MPC is not a standing committee, with oversight by a responsible agency or elected body. The MPC representatives and stakeholders are represented on the Local Emergency Planning Committee (LEPC) in Wright County and the Regional Homeland Security Oversight Committee (RHSOC). The LEPC is responsible for developing and implementing the Local Emergency Operations Plan and is a standing committee that meets regularly and is administered through the Wright County Emergency Management agency. The RHSOC is responsible for developing and implementing the Threat Hazard Identification Risk Assessment for the region, including Wright County. The goals and actions and representation are aligned with the missions of the RHSOC, which is a standing committee. As such, the RHSOC will be responsible for plan monitoring, evaluation and maintenance.

- Meet annually, and after a disaster event, to monitor and evaluate the implementation of the plan;
- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high priority, low- or no-cost recommended actions;
- Maintain vigilant monitoring of multi-objective, cost-share, and other funding opportunities to help the community implement the plan's recommended actions for which no current funding exists;
- Monitor and assist in implementation and update of this plan;
- Keep the concept of mitigation in the forefront of community decision making by identifying plan recommendations when other community goals, plans, and activities overlap, influence, or directly affect increased community vulnerability to disasters;
- Report on plan progress and recommended changes to the County Board of Supervisors and governing bodies of participating jurisdictions; and
- Inform and solicit input from the public.

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

5.1.2 Plan Maintenance Schedule

The RHSOC agrees to meet annually and after a state or federally declared hazard event as appropriate to monitor the progress and update the mitigation strategy. The Wright County Emergency Management Director, who also serves on the RHSOC, will be responsible for initiating the plan reviews and will invite members of the Wright County contingent to the RHSOC meeting.

In coordination with all participating jurisdictions, a five-year written update of the plan will 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 RHSCOC 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 RHSOC 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 RHSOC 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 RHSOC deems appropriate and necessary. Changes will be approved by the Wright County Commission and the governing boards of the other participating jurisdictions.

5.2 Incorporation into Existing Planning Mechanisms

44 CFR Requirement §201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

Where possible, plan participants, including school and special districts, will use existing plans and/or programs to implement hazard mitigation actions. Those existing plans and programs were described in Section Two of this plan. Based on the capability assessments of the participating jurisdictions, communities in Wright 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;
- Wright Co. 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 RHSOC members involved in updating these existing planning mechanisms will be responsible for integrating the findings and actions of the mitigation plan, as appropriate. The RHSOC 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[10(b)] review of the Hazard Mitigation Plan, the Wright County Emergency Management Director will provide the updated Mitigation Strategy with current status of each mitigation action to the County (Boards of Supervisors or Commissions) as well as all Mayors, City Clerks, and School District Superintendents[10(a)]. The Emergency Manager Director will request that the mitigation strategy be incorporated, where appropriate, in other planning mechanisms.

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

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

Jurisdiction	Planning Mechanisms	Integration Process for Previous Plan	Integration Process for Current Plan
Unincorporated County	Highway Department Capital Improvement Project List	Highway Department attended all planning meetings and identified actions relating to transportation infrastructure were included in annual update to CIP List	Highway Department attended all planning meetings. Identified new actions or ongoing actions relating to transportation infrastructure will be included in annual update to CIP List
South Central Region	Comprehensive Economic Development Strategy	Wright County Jurisdictions acknowledged some of their emergency management and response needs in the Community Improvement Project List	Federal Emergency Management Agency DFIRM maps were utilized to delineate flood hazard areas and at risk structures in the county. NOAA data was used to compile event history for hazard profiles.
South Central Region	Regional Transportation Plan	Acknowledgment of the impact of natural hazards on the prioritization of long-range improvement planning	Federal Emergency Management Agency DFIRM maps were utilized to delineate flood hazard areas and at risk structures in the county. NOAA data was used to compile event history for hazard profiles.

5.3 Continued Public Involvement

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

The hazard mitigation plan update process provides an opportunity to publicize success stories resulting from the plan's implementation and seek additional public comment. Information about the annual[10(b)] reviews will be posted in the local newspaper, as well as, on the South Central Ozark Council of Governments website following each annual[10(b)] review of the mitigation plan[10(a)] 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: PLANNING PARTICIPATION DOCUMENTATION

2021

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Small Local Governments

County: WRIGHT

Jurisdiction: ~~HARVILLE~~ WRIGHT COUNTY

Return by: Zach Williams

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: _____

Phone: _____

Email: _____

Date: _____

Please return questionnaires by mail, email, or fax to:

Name: _____

Address: _____

Email: _____

Fax: _____

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Small Local Governments

County: WRIGHT

Jurisdiction: HARTVILLE

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: Carla Spooner

Phone: 417-741-7334

Email: hartvillecityhall@hotmail.com

Date: 9/23/2021

Please return questionnaires by mail, email, or fax to:

Name: _____

Address: _____

Email: _____

Fax: _____

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Small Local Governments

County: WRIGHT

Jurisdiction: NORWOOD

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: _____

Phone: _____

Email: _____

Date: _____

Please return questionnaires by mail, email, or fax to:

Name: _____

Address: _____

Email: _____

Fax: _____

2021

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Small Local Governments

County: WRIGHT

Jurisdiction: MANSFIELD

Return by: Allen Pritchard + Tracy Davis

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: Tracy Davis Allen Pritchard

Phone: _____

Email: _____

Date: _____

Please return questionnaires by mail, email, or fax to:

Name: _____

Address: _____

Email: _____

Fax: _____

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For Small Local Governments

County: WRIGHT

Jurisdiction: MOUNTAIN GROVE

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: Robert McClerf

Phone: _____

Email: _____

Date: 9/7/21

Please return questionnaires by mail, email, or fax to:

Name: _____

Address: _____

Email: _____

Fax: _____

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: WRIGHT

School District / Educational Institution Name: HARTVILLE R-II

Return by: Mark Piper

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Prepared by: _____

Phone: _____

Email: _____

Date: 8/25/21

Please return questionnaires by mail, email, or fax to:

Name: _____

Address: _____

Email: _____

Fax: _____

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: WRIGHT

School District / Educational Institution Name: MANES - R-V School

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Prepared by: Mary Holder

Phone: _____

Email: _____

Date: _____

Please return questionnaires by mail, email, or fax to:

Name: _____

Address: _____

Email: _____

Fax: _____

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: WRIGHT

School District / Educational Institution Name: Mansfield-IV

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Prepared by: Dr. Richard White

Phone: _____

Email: _____

Date: 9/22/21

Please return questionnaires by mail, email, or fax to:

Name: _____

Address: _____

Email: _____

Fax: _____

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Wright

School District / Educational Institution Name: Mountain Grove R-3

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Prepared by: Denver Mitchell

Phone: _____

Email: _____

Date: 9/8/21

Please return questionnaires by mail, email, or fax to:

Name: _____

Address: _____

Email: _____

Fax: _____

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Wright County _____

School District /
Educational Institution Name: Norwood R-I

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Prepared by: Christy Chadwell _____

Phone: (417) 746-4101 EXT: 160 _____

Email: cchadwell@norwood.k12.mo.us _____

Date: 3/1/2022 _____

Please return questionnaires by mail, email, or fax to:

Name: Trent Courtney _____

Address: PO BOX 100 _____

Email: tcourtney@scocog.org _____

Multi-Jurisdictional Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Howell

School District /
Educational Institution Name: Richard R-5

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Prepared by: Melonie Bunn

Phone: 417-256-5239

Email: mbunn@richardsschool.k12.mo.us

Date: 4/13/2022

Please return questionnaires by mail, email, or fax to:

Name: Trent Courtney

Address: PO BOX 100

Email: tcourtney@scocog.org

MEETING SIGN-IN SHEET PLEASE PRINT CLEARLY			
Project:	HMGP Project Meetings	**Meeting Date:**	
Facilitator:		**Place/Room:**	

Name	Occupation/Affiliation	Phone	E-Mail
Trent Courtney	SCOCOG	417.256.4206	TCourtney@SCOGOG.ORG
Tommy Kingery	Western Commissioner	417-683-0599	GroveTowing@Yahoo.com
Zach Williams	Presiding Comm	417-926-2665	Zach@wrightcounty.mo.gov
Randy Pamperien	Eastern Commissioner	417.349.1836	randypamp@outlook.com

MEETING SIGN-IN SHEET PLEASE PRINT CLEARLY

Project:	HMGP Project Meetings	**Meeting Date:**	9/23/2021
Facilitator:		**Place/Room:**	Hartville City Hall

Name	Occupation/Affiliation	Phone	E-Mail
Trent Courtney	SCOCOG	417.256.4726	tcourtney@scocog.org
Carla Spooner	Hartville City Clerk	417-741-7334	hartvillecityhall@hotmail.com

MEETING SIGN-IN SHEET PLEASE PRINT CLEARLY			
Project:	HMGP Project Meetings	**Meeting Date:**	
Facilitator:		**Place/Room:**	

Name	Occupation/Affiliation	Phone	E-Mail
Steven Jarrett	Mayor	417-259-0731	norwoodmayor@centurytel.net
Trent Courtney	SCOCOG	417-256-4288	
Lori Allen	Office Adm	417-746-4602	norwoodcityhall@centurytel.net

MEETING SIGN-IN SHEET PLEASE PRINT CLEARLY

Project:	HMGP Project Meetings	**Meeting Date:**	9/24/2021
Facilitator:		**Place/Room:**	Mansfield City Hall

Name	Occupation/Affiliation	Phone	E-Mail
Trent Courtney	Scout City of Mansfield	417 256 4226	Tcourtney@scoco6.org
Tracy Davis	City Clerk	417-924-8340	tdavis@mansfieldcityhall.org
Helen Pritchard	City of Mansfield	417-259-0547	apritchard@mansfieldcityhall.org

MEETING SIGN-IN SHEET PLEASE PRINT CLEARLY

Project:	HMGP Project Meetings	**Meeting Date:**	9/7/2021
Facilitator:	Tim Schook	**Place/Room:**	MTN GROVE City Hall

Name	Occupation/Affiliation	Phone	E-Mail
Trent Courtney	SCOCOG	417-259-4226	TCourtney@SCOCOG.org
Robert MacLeod	Mtn Grove	870-371-1458	RMacLeod@mountaingrove mo.gov
Tim Schook	Mtn Grove	417-926-4162	
Becky Davis	City of Mtn Grove	417-926-4162 ext 4	mgclerk@mountaingrovemo.gov
MATT MILLER	TOTH + ASSOCIATES, INC	417-888-0645	MMILLER@TOTHASSOCIATES.COM
DAVID GARRETT	TOTH & ASSOCIATES, INC.	417.888.0645	dgarrett@tothassociates.com

MEETING SIGN-IN SHEET PLEASE PRINT CLEARLY			
Project:	HMGP Project Meetings	**Meeting Date:**	8/25/2021
Facilitator:	Mark Piper	**Place/Room:**	School

Name	Occupation/Affiliation	Phone	E-Mail
Trent Courtney	SCOCOG	417 256. 4226	Tcourtney@scocog.org
Mark Piper	Hartville R-II	417-741-7676	

MEETING SIGN-IN SHEET PLEASE PRINT CLEARLY

Project:	Hazard Mitigation Planning – 5 year update	**Meeting Date:**	9/29/2021
Facilitator:	Mary Holder	**Place/Room:**	Phone

Name	Occupation/Affiliation	Phone	E-Mail
Trent Courtney	SCOCOG	417-256-4226	Tcourtney@scocog.org
Mary Holder	Supt. / Manes R-V	417-668-5313	mholder@manes.k12.mo.us

MEETING SIGN-IN SHEET PLEASE PRINT CLEARLY

Project:	HMGP Project Meetings	**Meeting Date:**	9/22/21
Facilitator:	'	**Place/Room:**	phone call / zoom

Name	Occupation/Affiliation	Phone	E-Mail
Dr. Richard Wylie	Supt	417.924.8458	Rwylie@mansfieldschool.net
Trent Courtney	SCCOC		

MEETING SIGN-IN SHEET PLEASE PRINT CLEARLY

Project:	Hazard Mitigation Planning – 5 year update	**Meeting Date:**	3/1/2022
Facilitator:	Trent Courtney		

Name	Occupation/Affiliation	Phone	E-Mail
Christy Chadwell	Superintendent	(417) 746-4101	cchadwell@norwood.k12.mo.us
Trent Courtney	SCOCOG	(417) 256-4226	tcourtney@scocog.org

APPENDIX B: COMPLETED & DELETED MITIGATION ACTIONS

Completed Actions	Completion Details
Purchase and install a backup generator at the county courthouse which serves various governmental functions	Project was funded by FEMA HMGP and completed during the winter of 2021.
Deleted Actions	**Reason for Deletion**
NONE	N/A

APPENDIX C: PUBLIC ENGAGEMENT

Wright County Journal, PO Box 3
Mountain Grove, MO 65711

AFFIDAVIT OF PUBLICATION

STATE OF MISSOURI)
)ss
COUNTY OF WRIGHT)

I, Ron Schott, being duly sworn according to law, state that I am the Publisher of the Wright County Journal, a weekly newspaper of general circulation in the county of Wright, State of Missouri, where located; which has been admitted to the Post Office as second-class matter in the City of Mountain Grove, Mo., the city of publication; which newspaper has been published regularly and consecutively for a period of three years and has a list of bona fide customers voluntarily engaged as such who have paid or agreed to pay a stated price for a subscription for a definite period of time, and that such newspaper has complied with the provisions of Section 493.050, Revised Statues of Missouri 2000, and Section 59.310. Revised Statues of Missouri 2000. The affixed notice appeared in said newspaper in the following consecutive issues:

Vol. 98, No. 14, day of 14, month of 04, 2021

Vol.___, No. ___, day of___, month of _____, 20___

Vol.___, No. ___, day of___, month of _____, 20___

Vol.___, No. ___, day of___, month of _____, 20___

Vol.___, No. ___, day of___, month of _____, 20___

Ron Schott, Publisher

Subscribed and sworn to before me this
14 day of 04, 2021

Marylee Mabe
Mary Mabe, Notary Public in and for
Wright County, Missouri

My commission expires: May 14 2023.

Publication fee _____

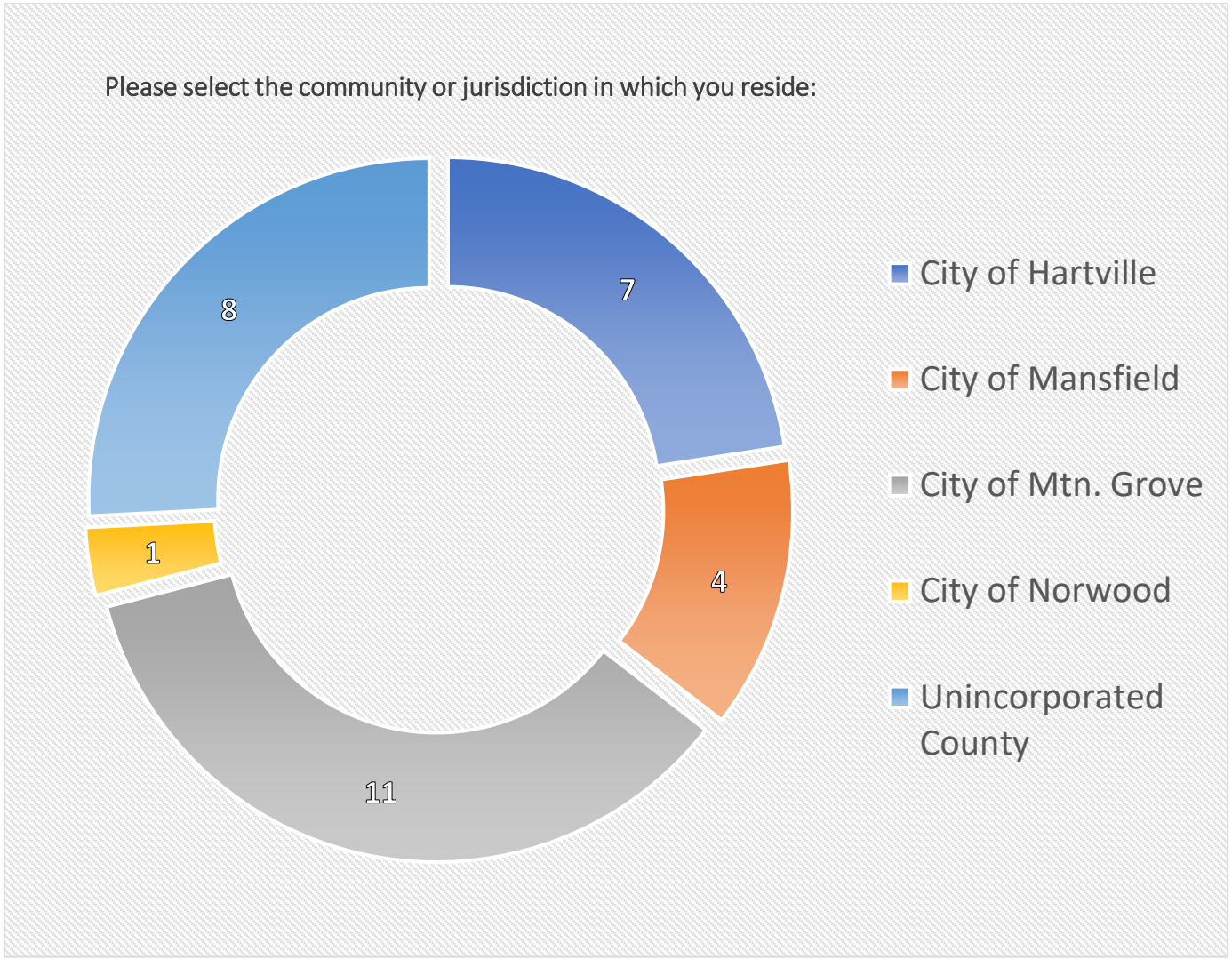
MARYLEE MABE
Notary Public – Notary Seal
STATE OF MISSOURI
Texas County
My Commission Expires May 14, 2023

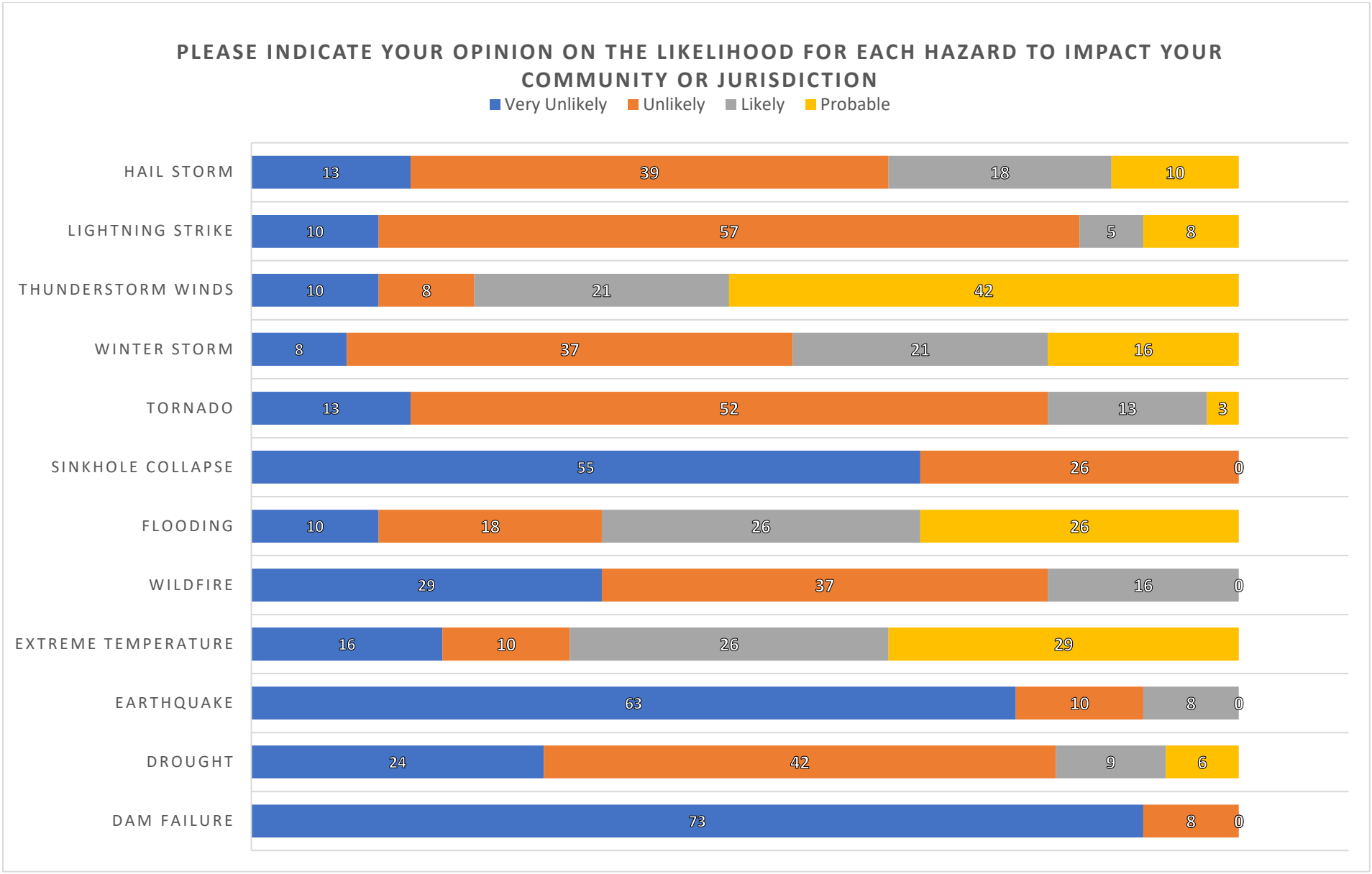
Update of the Wright County Hazard Mitigation Plan

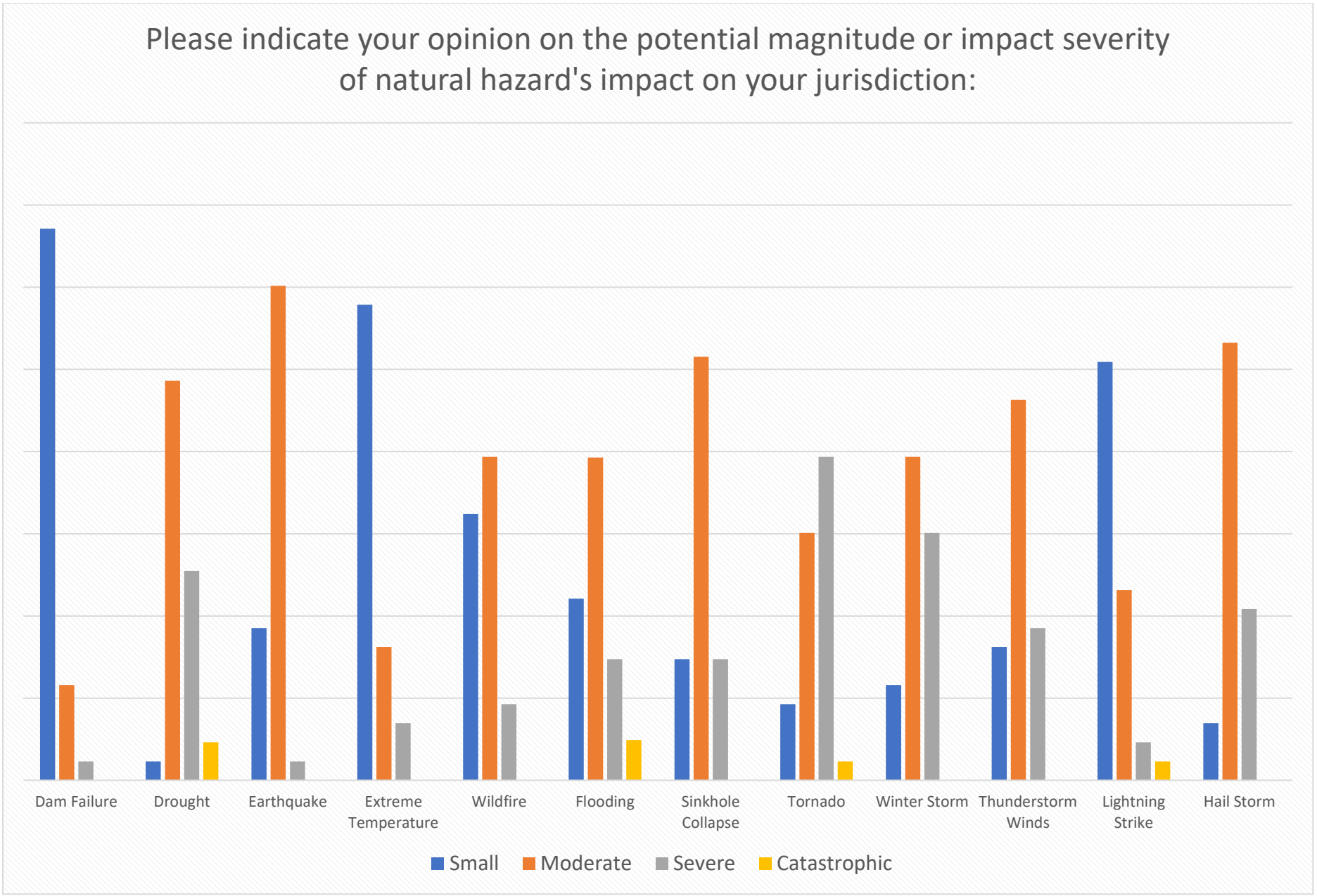
The Wright County Hazard Mitigation Plan is currently in process of its mandatory 5-year update. The purpose of Hazard Mitigation Plans are to devise and retain a strategy to reduce the impact of risks posed by disastrous natural events, such as tornados, ice storms and floods. The Plan must be updated by the county every five years and approved by the Federal Emergency Management Agency in order for the County and its municipalities & school districts to remain eligible for FEMA grant funding for current and ongoing Hazard Mitigation projects such as Tornado Safe Rooms, Flood Mitigation projects, and purchases of disaster response equipment.

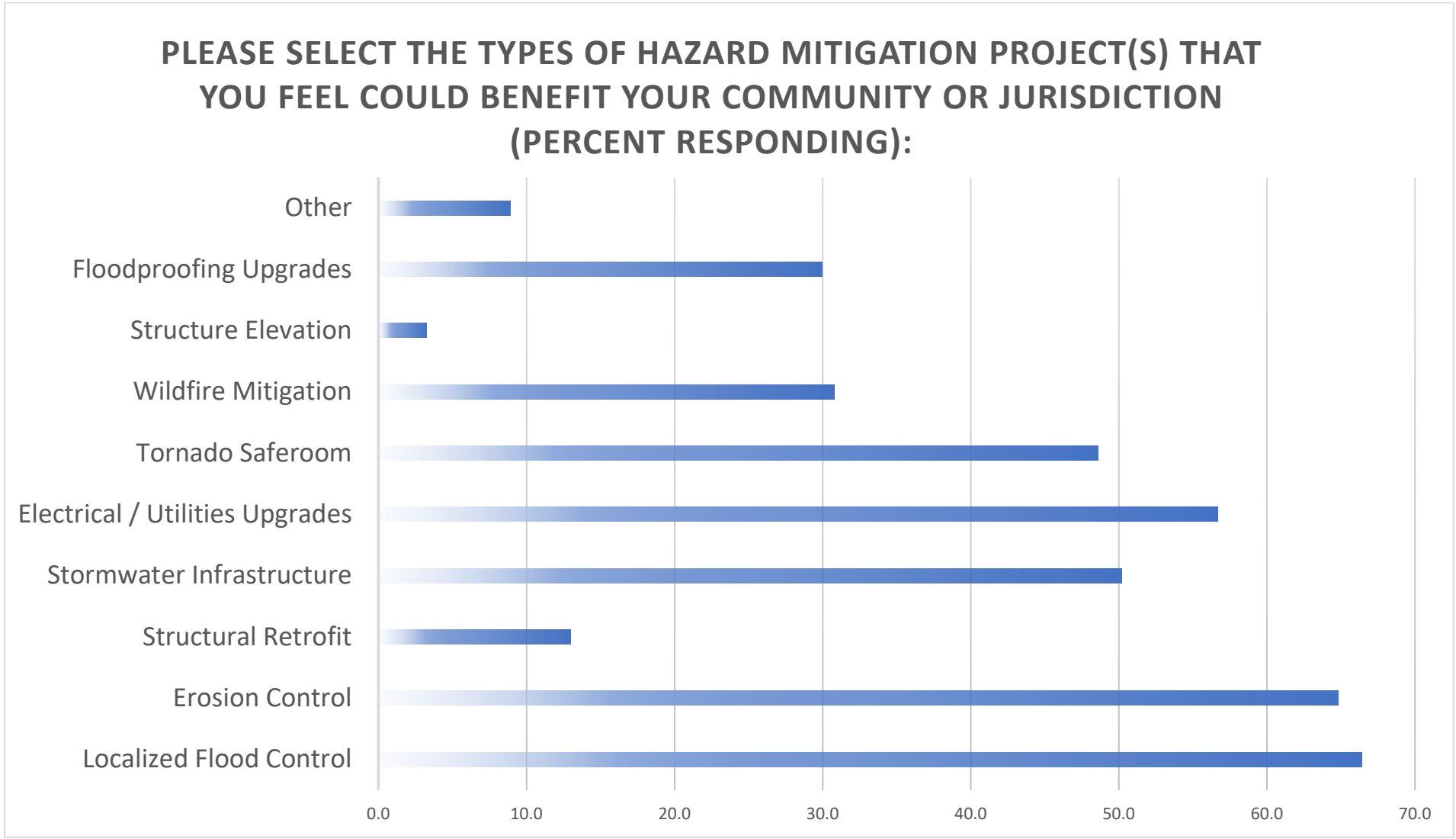
An essential part of the Hazard Mitigation planning process is to gain public input during the development of the Plan. The South Central Ozark Council of Governments has created an online survey tool to obtain input from citizens of Wright County regarding the natural hazards that threaten your county and potential solutions to address those vulnerabilities. Please navigate to the following web address and take a few minutes to respond to the survey. The survey for Wright County can be found at www.SCOCOG.org/hazard-mitigation-planning

ONLINE SURVEY RESULTS: 2022 Howell County Hazard Mitigation Plan




PLEASE INDICATE YOUR OPINION ON THE LIKELIHOOD FOR EACH HAZARD TO IMPACT YOUR COMMUNITY OR JURISDICTION
Very Unlikely
Unlikely
Likely
Probable
HAIL STORM
13
39
18
10
LIGHTNING STRIKE
10
57
5
8
THUNDERSTORM WINDS
10
8
21
42
WINTER STORM
8
37
21
16
TORNADO
13
52
13
3
SINKHOLE COLLAPSE
55
26
0
FLOODING
10
18
26
26
WILDFIRE
29
37
16
0
EXTREME TEMPERATURE
16
10
26
29
EARTHQUAKE
63
10
8
0
DROUGHT
24
42
9
6
DAM FAILURE
73
8
0


Please indicate your opinion on the potential magnitude or impact severity of natural hazard's impact on your jurisdiction:
Dam Failure
Drought
Earthquake
Extreme Temperature
Wildfire
Flooding
Sinkhole Collapse
Tornado
Winter Storm
Thunderstorm Winds
Lightning Strike
Hail Storm
Small
Moderate
Severe
Catastrophic


PLEASE SELECT THE TYPES OF HAZARD MITIGATION PROJECT(S) THAT YOU FEEL COULD BENEFIT YOUR COMMUNITY OR JURISDICTION (PERCENT RESPONDING):
Other
Floodproofing Upgrades
Structure Elevation
Wildfire Mitigation
Tornado Saferoom
Electrical / Utilities Upgrades
Stormwater Infrastructure
Structural Retrofit
Erosion Control
Localized Flood Control
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0

DRAFT PLAN REVIEW NOTICE PUBLISHED ON 4/12/21

ADD SCANNED NOTICE

APPENDIX D: JURISDICTIONAL ADOPTION DOCUMENTATION

Resolution # _____

Adopting the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the County of Wright 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 Wright fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the County of Wright desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the County of Wright 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 responsibilities under the plan;

Now, therefore, be it resolved, that the County of Wright has adopted the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 1/13/2021

Certifying Official: Zach Wilson

Resolution # 551

Adopting the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the City of Hartville 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 Hartville fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the City of Hartville desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the City of Hartville 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 responsibilities under the plan;

Now, therefore, be it resolved, that the City of Hartville has adopted the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 02-14-2022

Certifying Official: Rob Tucker

Resolution # _____

Adopting the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the City of Mansfield 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 Mansfield fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the City of Mansfield desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the City of Mansfield 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 responsibilities under the plan;

Now, therefore, be it resolved, that the City of Mansfield has adopted the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: JANUARY 18, 2022

Certifying Official: Bill Mick

on # 2022-01

g the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan

s, the City of Mountain Grove recognizes the threat that natural hazards pose to people and / within our community; and

s, undertaking hazard mitigation actions will reduce the potential for harm to people and y from future hazard occurrences; and

s, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") izing the need for pre-disaster mitigation of potential hazards;

s, the Disaster Mitigation Act made available hazard mitigation grants to state and local nents; and

s, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for on projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

s, the City of Mountain Grove fully participated in the hazard mitigation planning process to : this Multi-Jurisdictional Local Hazard Mitigation Plan; and

s, the Missouri State Emergency Management Agency and the Federal Emergency Management Region VII officials will review the Wright County Multi-Jurisdictional Local Hazard Mitigation id approved it as to form and content; and

s, the City of Mountain Grove desires to comply with the requirements of the Disaster ion Act and to augment its emergency planning efforts *by formally adopting* the Wright County urisdictional Local Hazard Mitigation Plan; and

s, adoption by the governing body for the City of Mountain Grove demonstrates the tions' commitment to fulfilling the mitigation goals outlined in this Multi- Jurisdictional Local Mitigation Plan; and

as, adoption of this legitimizes the plan and authorizes responsible agencies to carry out sibilities under the plan;

herefore, be it resolved, that the City of Mountain Grove has adopted the Wright County Multi- tional Local Hazard Mitigation Plan as an official plan

2/8/21

ing Official: _____

Resolution # 202

Adopting the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the City of Norwood 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 Norwood fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the City of Norwood desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the City of Norwood 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 responsibilities under the plan;

Now, therefore, be it resolved, that the City of Norwood has adopted the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 2/17/22

Certifying Official: _____

Resolution # _____

Adopting the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Hartville R-II School 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 Hartville R-II School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Hartville R-II School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Hartville R-II School District 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 responsibilities under the plan;

Now, therefore, be it resolved, that the Hartville R-II School District has adopted the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 2/16/2022

Certifying Official: Mark Ripp

Resolution # _____

Adopting the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Manes R-V School 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 Manes R-V School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Manes R-V School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Manes R-V School District 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 responsibilities under the plan;

Now, therefore, be it resolved, that the Manes R-V School District has adopted the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 1/14/2022

Certifying Official: Mary Holder

Resolution # _____

Adopting the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Mansfield R-IV School 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 Mansfield R-IV School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Mansfield R-IV School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Mansfield R-IV School District 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 responsibilities under the plan;

Now, therefore, be it resolved, that the Mansfield R-IV School District has adopted the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 2/11/22

Certifying Official: Zach Miller, Board President

Resolution # _____

Adopting the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Mountain Grove R-III School 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 Mountain Grove R-III School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Mountain Grove R-III School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Mountain Grove R-III School District 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 responsibilities under the plan;

Now, therefore, be it resolved, that the Mountain Grove R-III School District has adopted the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 01-19-2022

Certifying Official: Denver Mitchell - Mountain Grove R-III Schools

Resolution # _____

Adopting the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Norwood R-I School 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 Norwood R-I School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Norwood R-I School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Norwood R-I School District 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 responsibilities under the plan;

Now, therefore, be it resolved, that the Norwood R-I School District has adopted the Wright County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: July 1, 2022

Certifying Official: Christy Chadwell