

Part I: Introduction

Purpose of Plan

Natural hazard mitigation is defined as actions or activities designed to reduce or eliminate losses resulting from natural disasters. Historical records indicate that natural disasters have affected Christian County, causing injury, death, damages to property, and economic loss. Tornadoes and high winds in particular have caused significant damages in Christian County. One of the most destructive events in many years occurred on May 4, 2003 when a series of tornadoes touched down across the Ozarks. One of these tornadoes began in Newton County as an F2. The tornado progressed through Lawrence County becoming an F3, and into the Christian County panhandle, and ending in Greene County. In Christian County alone this tornado caused one death and three injuries; 150 structures were damaged and 27 completely destroyed, resulting in \$5.1 million in property losses.

Christian County has also experienced fatalities and economic loss from flood events. In September 1993 heavy rainfall throughout the region caused flash flooding along Finley Creek, damaging numerous businesses in Ozark as the creek reached record levels. Two months later, two young women drowned attempting to cross a low water bridge across Pedelo Creek during a flash flood event. The effects of natural disasters are not isolated to only a portion of Christian County. Rather, hazard events have resulted in loss throughout urban and rural areas of the county.

As Christian County's population grows and development increases, so does the risk for natural hazards to affect more residents and property. There is no way to predict when natural disasters may occur or to prevent hazard events from occurring. However, the impacts of natural hazard events can be lessened and injuries, loss of life and damages to properties can be reduced through prudent actions taken before hazard events occur.

The *Christian County Multi-Jurisdictional Natural Hazards Mitigation Plan* update represents a multi-jurisdictional approach by Christian County, municipalities and districts to establish a guide for actions that can be undertaken to help reduce the adverse impacts of hazard events and make Christian County safer. This plan only addresses natural hazards that may affect Christian County; man-made or technological hazards are not discussed other than in reference to cascading damages that could result from a natural hazard event. Additionally, levee failure is not included in this plan due to there being no significant levees located in Christian County. The natural hazards addressed in the plan include:

- Tornado and severe thunderstorm
- Riverine and flash flood
- Severe winter weather
- Drought
- Heat wave
- Earthquake

- Dam failure
- Wildfire
- Land subsidence (sinkholes)

The *Christian County Multi-Jurisdictional Natural Hazards Mitigation Plan* is an updated version of the original 2005 *Christian County Natural Hazards Mitigation Plan* developed in conformance with the requirements of the Disaster Mitigation Act of 2000. This act required local governments to develop and approve a natural hazards mitigation plan by November 1, 2004 to be eligible for federally funded mitigation assistance in the future. Mitigation plans will be required to receive mitigation assistance for all federally declared disasters and must be updated every 5 years. In accordance with this act, the local jurisdiction is required to review and revise its plan, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

In Missouri, SEMA requested the regional planning commissions to work with local governments to develop the hazard mitigation plans. With the agreement of Christian County, SEMA contracted with the Southwest Missouri Council of Governments (SMCOG) to prepare the plan for Christian County. SMCOG worked in collaboration with the county, municipalities and school districts to develop the *Christian County Multi-Jurisdictional Natural Hazards Mitigation Plan*.

Planning Authority

Section 322 of the Robert T. Stafford Relief and Emergency Assistance Act (Stafford Act), 42 U.S.C. 5165, 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. FEMA has implemented the various hazard mitigation planning provisions through regulations at 44 CFR Part 201. These reflect the need for states, tribal and local governments to closely coordinate mitigation planning and implementation efforts and describe the requirement for a state mitigation plan as a condition of pre- and post-disaster assistance, as well as the mitigation plan requirement for local and Tribal governments as a condition of receiving FEMA hazard mitigation assistance.

Assurance Statements of Compliance with FEMA

The regulations governing the mitigation planning requirements for local mitigation plans are published under 44 CFR §201.6. Under 44 CFR §201.6, local governments must have a FEMA approved local mitigation plan in order to apply for and receive project grants under the following hazard mitigation assistance programs:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Severe Repetitive Loss (SRL)

FEMA may require a local mitigation plan under the Repetitive Flood Claims (RFC) program.

SMCOG staff relied on FEMA's July 1, 2008 publication *Local Multi-Hazard Mitigation Planning Guidance* to meet the mitigation planning requirements. The *Local Multi-Hazard Mitigation Planning Guidance* is an interpretation and explanation for the Local Mitigation regulations at 44 CFR §201.6 and is FEMA's official source for defining the requirements of original and updated local mitigation plans. Additional FEMA resources frequently consulted include State and Local Mitigation Planning How-to Guides (FEMA 386-1 through 386-8).

Plan Organization and Content

The plan includes elements and information prescribed by FEMA's July 1, 2008 publication *Local Multi-Hazard Mitigation Planning Guidance*, a guide designed to assist local jurisdictions in defining the requirements for both new and updated mitigation plans.

This plan is divided into seven parts, including Introduction, Community Profile, Risk Assessment, Capability Assessment, Mitigation, Plan Maintenance, and Appendices:

- Part I - Introduction: The Introduction provides an overview of the plan's purpose and format, participating communities, assurances and authorities for development of the plan, and plan preparation methodology and schedule.
- Part II - Community Profile. This element provides a description of the political, natural, cultural, demographic, socio-economic and developmental characteristics of Christian County and local jurisdictions, including identification of critical facilities and vulnerable populations and facilities that may be affected by a hazard event.
- Part III - Risk Assessment. The Risk Assessment provides an analysis of the natural hazards addressed in the plan, including review of historical disaster events, evaluation of future risk, and assessment by jurisdiction to vulnerability of future hazard events.
- Part IV - Capability Assessment. The Capability Assessment discusses the current capabilities of Christian County and local jurisdictions to mitigate natural disaster events.
- Part V - Mitigation. The Mitigation element describes the range of mitigation categories and activities that may be employed by local jurisdictions, outlines the mitigation goals, objectives and mitigation strategies developed by Christian County, communities and districts, and provides a matrix that summarizes the mitigation strategies, priorities, responsibilities for implementation, and assessment.

- Part VI - Plan Maintenance. The Plan Maintenance section notes the process and procedures outlined by Christian County and local jurisdictions to review and monitor plan implementation and actions taken to reduce the risks of future disaster events that may affect the county. It also contains provisions for updating the plan.
- Part VII - Appendices. The Appendices includes the resolutions of plan adoption by Christian County and the participating jurisdictions, repetitive losses to the National Flood Insurance Program, glossary, acronyms, and references.

Planning Process

In accordance with Missouri's "sunshine law" (RSMo §610.010, 610.020, 610.023, and 610.024), input from the general public was solicited through media outlets, including public meeting notices published in county newspapers, county commission meeting agendas, postings on the Christian County website and "Notice of Public Meeting" flyers distributed to county and city clerks to post in places visible to the public in government buildings. The public was notified of the final four Plan Review and Advisory Committee meetings through advertisements in the Christian County Headliner. Meetings were posted on the county commissioners' agenda and posted outside the commissioners' chambers for a period beginning at least 24 hours prior to meeting times.

The preliminary draft of the plan was presented for public review and comment in an open house style meeting in the historical courthouse on the square in Ozark on May 17, 2010 prior to being submitted to SEMA for approval. This event was posted on the commissioners' agenda, advertised in local media and posted on the Christian County website with hypertext links to the SMCOG website where all meeting dates and the draft plan elements were posted for public viewing and comment. Input from city and county officials was solicited through distribution of drafts of plan elements for discussion and review at scheduled meetings and through meetings and other communications with individual community representatives and elected officials.

Neighboring jurisdictions were notified via email and letters, a notification was sent to the Nixa Chamber of Commerce and local and regional agencies. These include, Ozarks Area Red Cross, Cox Health Systems, Chair of the Region D Homeland Security Oversight Committee and the University of Missouri Extension office. A complete listing of neighboring agencies invited to participate in the planning process and what meetings they were invited to attend is included in Appendix F.

A significant amount of information presented in the plan has been updated and revised based on the review and incorporation of existing plans, studies, reports and technical information. Appendix E contains a listing of references to plans, studies, reports and technical information to incorporate into hazard profiles, risk assessment and capability sections. A few examples of information incorporated from the review of existing plans include:

- Information describing the impacts of natural hazards from the *State Missouri Hazard Mitigation Plan, 2010* was added to hazard profiles in the plan update.
- Christian County, Highlandville, Nixa and Ozark have updated their comprehensive plans since the previous plan and were used to incorporate maps indicating future development trends and areas. The comprehensive plans of Clever and Billings that were in place at the time of the previous plan were also reviewed.
- The County Emergency Management Director incorporated information from the Emergency Operations Plan into revisions to the Capability Assessment.

In most cases, SMCOG staff was responsible for the review and incorporation of revised and updated material in the plan. As new information was incorporated into the plan, updated draft materials were distributed for review and comment at Plan Review and Advisory Committee meetings.

Plan Adoption

To be eligible for mitigation funding, local governments 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 body adopt the updated plan, regardless the degree of modifications. SMCOG collaborated with the local governments in Christian County to assure participation in the planning process and the development of a plan that represents the needs and interests of Christian County and its local jurisdictions. Appendix A includes the resolutions of plan adoption by Christian County and participating local jurisdictions.

Multi-Jurisdictional Planning Participation

In order to be included in the plan as a participating jurisdiction each jurisdiction was required to send a representative to multiple mitigation planning meetings as a minimum requirement. If, however, a representative was not able to attend at least two meetings they were encouraged to arrange for a one-to-one meeting with SMCOG staff or contact the SMCOG offices to obtain information presented at any of the planning meetings. Although not required, a set of standards for participation were developed in order for each jurisdiction to participate in the planning process and account for the variability of resources within each jurisdiction. This set of standards included: reviewing and commenting on plan draft materials, submitting insured replacement values and information relating to critical facilities and completing community or district hazard mitigation surveys. Jurisdictions that met the minimum requirement and any combination of three standards are considered to have satisfactorily participated in the planning process. Table 1-1 provides a record of participation in the planning process.

Table 1-1: Record of Participation					
Jurisdiction	Plan Update Status	Nature of Participation			
		Attended Meetings	Review and Comment on Draft Materials	Submitted Critical Facilities Summary	Completed Surveys
Christian County	Continuing	X	X	X	X
Municipalities					
Billings	No Longer Participating	-	-	-	-
Clever	Continuing	X	X	X	-
Fremont Hills	Continuing	X	X	X	X
Highlandville	Continuing	X	X	X	X
Nixa	Continuing	X	X	-	-
Ozark	Continuing	X	X	X	X
Saddlebrooke	No Longer Participating	-	-	-	-
Sparta	Continuing	X	X	-	-
School Districts					
Billings R-IV	New	X	X	X	X
Chadwick R-I	New	X	-	X	-
Clever R-V	New	X	X	X	X
Nixa R-II	New	X	X	X	X
Ozark R-VI	New	X	X	X	X
Sparta R-III	No Participation	-	-	-	-
Spokane R-VII	New	X	-	X	X
Colleges					
OTC Richwood	Continuing	X	X	X	X

The following jurisdictions satisfied the participation requirements in the planning process and are included in the *Christian County Multi-Jurisdictional Natural Hazards Mitigation Plan*:

- Christian County
- City of Clever
- City of Fremont Hills
- City of Highlandville
- City of Nixa
- City of Ozark
- City of Sparta
- Billings R-IV School District
- Chadwick R-I School District
- Clever R-V School District

- Nixa R-II School District
- Ozark R-VI School District
- Spokane R-VII School District
- Ozarks Technical Community College (Richwood Valley Campus)

The following jurisdictions did not participate in the planning process and are not included in the plan:

- City of Billings
- City of Saddlebrooke
- Sparta R-III School District

The City of Billings and the City of Saddlebrook participated in the 2005 *Christian County Hazard Mitigation Plan*. Officials in both communities were sent invitation letters to participate in the plan update at the outset of the planning process. After neither community was represented at the December 3, 2009 Kick-Off meeting, the jurisdictions were contacted by telephone and email to elicit participation in the planning process. These efforts were unsuccessful in eliciting participation in the planning process. Similarly, there was no response from the Sparta R-III School District.

Plan Preparation Methodology and Schedule

In November 2009, SMCOG entered into cooperative agreements with SEMA and Christian County to prepare this multi-jurisdictional plan for Christian County. Discussions on the development of the *Christian County Multi-Jurisdictional Natural Hazards Mitigation Plan* update began on November 12th of 2009 with a meeting attended by SMCOG staff, Christian County Commissioners and the County Emergency Management Director. This meeting was conducted to discuss the timeline for developing the hazard mitigation plan, the planning process, identification of stakeholders and community organizations to include in the planning process and a date for the Kick-Off meeting to initiate participation of jurisdictions and public entities in the planning process.

SMCOG began conducting research in November 2009 and updating demographic and community profile information in advance of the Kick-Off meeting in early December. At the Kick-Off meeting the plan update process was discussed with representatives from the local jurisdictions and emergency services and the preliminary community profile updates were distributed for review, participation requirements for entities to be included in the plan and the distinctions between the original plan and the updated version that requires that school districts in particular and other districts participate as stand-alone jurisdictions to maintain eligibility for FEMA mitigation grant programs.

SMCOG staff led the development of the plan under the direction of the Emergency Management Director and the Plan Advisory Committee, which included local elected officials, municipal government staff, county government staff, emergency services personnel, road district representatives, school officials, and employees from the health

and social services organizations in the county. The Plan Advisory Committee met with SMOG on several occasions from December 2009 through April 2010 to collaborate on the development of the Plan update. Participants assisted in data collection; reviewed and revised the Plan's goals, objectives and mitigation strategies; and provided reviews and comments on the plan throughout the update process. Significant dates in the planning process for preparation of the *Christian County Multi-Jurisdictional Natural Hazards Mitigation Plan* are noted below:

November 12, 2009 Initial meeting with County Commissioners, EMD and SMOG staff:

- Prospective participants identified, EMD to review and prepare distribution list
- Commissioners to schedule kick-off meeting and provide venue
- SMOG staff to draft invitation letters and to compile community and hazard profile initial draft to begin review

December 3, 2009 Plan update Kick-Off meeting:

- 2005 plan elements distributed to jurisdictions
- Draft community profile and hazard profile distributed for review
- Timeline and requisites for participation discussed
- Plan Review and Advisory Committee established
- Community mitigation measures survey distributed

January 26, 2010 Plan Review and Advisory Committee Meeting:

- Community mitigation measures survey information and comments incorporated into community profile draft reviewed for correctness and accuracy
- Rationale of mitigation planning and further steps in the process discussed
- Identification of hazards that affect different jurisdictions

February 23, 2010 Plan Review and Advisory Committee meeting:

- A continued review of all plan updates to date
- Discussion and review of Chapter 4 "Capability Assessment"
- A discussion and review of proposed natural hazard mitigation goals, objectives and strategies

- March 11, 2010 Plan Review and Advisory Committee meeting:
- Goals, objectives and actions reviewed; new actions identified, some revised and others continuing
 - STAPLEE review and prioritization method discussed
 - A discussion of implementation strategies, funding resources and responsible agencies
- March 30, 2010 STAPLEE meeting
- Revised actions ranked and prioritized according to STAPLEE criteria and simple scores method
- April 27, 2010 Plan Review and Advisory Committee meeting:
- Common sense review of STAPLEE scoring and hazard identification and analysis by jurisdiction
 - All updated draft sections of the plan presented for review and comment
- May 17, 2010 Public Open House
- County-wide meeting held in Ozark to present the draft plan and solicit public input and comment
- May 31, 2010 Preliminary Christian County Natural Hazards Mitigation Plan Update submitted to SEMA for approval pending adoption

The individuals in Table 1-2 participated in the development of the *Christian County Multi-Jurisdictional Natural Hazards Mitigation Plan*. Participation in the development of the plan was also accomplished through telephone, fax and email communications to individual communities and through meetings with community representatives.

Table 1-2: Hazard Mitigation Plan Meeting Attendance								
Jurisdiction	Representative	12/3/2009	1/26/2010	2/23/2010	3/11/2010	3/30/2010	4/27/2010	Arranged
Christian County								
Emergency Management Director	Phil Amtower	x	x	x	x	x	x	
Emergency Management Agency	Linda Barger	x	x	x		x	x	
Christian County 911 Coordinator	Dan Clinton	x						
Christian County Commission Office	Julia Maples	x						
Christian County Commission Office	Norma Ryan					x		
Christian County Western Commissioner	Bill Barnett	x				x		
Christian County Presiding Commissioner	John Grubaugh	x	x		x	x	x	
Christian County Planning & Zoning	Bob Atchley	x			x			
Christian County Planning & Zoning	Todd Wiesehan	x	x	x		x	x	
County Clerk	Kay Brown	x						
Garrison Special Road District								
Commissioner	Jerry Mitchell	x						
Billings Special Road District								
District Manager	Danny Garbee	x	x	x	x	x	x	
City of Billings								
Ward 3 Alderperson	Christina Packwood							x
City of Clever								
Mayor City of Clever	Trish Elam						x	
Clever City Clerk	Kristy Stewart			x				x
City of Highlandville								
Mayor City of Highlandville	Clint Ellingsworth	x		x	x	x	x	
Highlandville Public Works Director	Loyd Rawlings				x			
Highlandville Deputy Clerk	Cindy Hogshooter					x		
City of Fremont Hills								
Mayor City of Fremont Hills	Ron Elkins Jr.		x		x	x	x	x
City Clerk	Jeanette Curtiss		x	x	x	x	x	x
City of Nixa								
City of Nixa Public Works Director	Doug Colvin	x		x			x	
Nixa Area Chamber of Commerce	Sharon Whitehill	x						
Nixa Fire District	Rance Duffy	x						
Nixa Fire Chief	Jimmy Sebree	x						
City of Ozark								
City of Ozark Director of Administration	Cara Jones	x	x	x				
City of Ozark Planning & Zoning	Valerie Carr	x	x	x				
City of Ozark GIS Coordinator	Marcus Heilman		x					

Table 1-2: Hazard Mitigation Plan Meeting Attendance (Continued)								
Jurisdiction	Representative	12/3/2009	1/26/2010	2/23/2010	3/11/2010	3/30/2010	4/27/2010	Arranged
City of Ozark (Continued)								
City of Ozark	Larry Martin			x				
City of Sparta								
City of Sparta Mayor/EMD	Mike Younker			x	x			
Billings R-IV Schools								
Billings Public Schools superintendent	Cynthia Brandt		x					x
Chadwick R-I Schools								
Chadwick Public Schools Superintendent	Bill Wheeler	x	x		x			
Clever R-V Schools								
Clever Public Schools Superintendent	Richard Henson						x	x
Clever Public Schools Safety & Facilities Mngr.	Benjy Fenske						x	x
Nixa R-III Schools								
Nixa Public Schools	Lance Davies	x	x	x	x		x	
Nixa Public Schools	Paul Fjordbak	x	x	x	x			
Ozark R-VI Schools								
Ozark Public Schools Superintendent	Kevin Patterson	x	x		x			
Ozark Public schools Safety Officer	Kevin Mayes	x						
Spokane R-VII								
Spokane Public Schools Superintendent	Brent Depee			x				
Ozarks Technical Community College								
OTC-Richwood Valley Campus	Steve Biermann	x		x			x	
Public Attendees								
Headliner News	Donna Osborn	x		x	x			
Private Citizen	Travis Aldridge	x						
Private Citizen	Rick Maggard	x						
Private Citizen	Lou Lapaglia		x	x	x	x		
Private Citizen	Alan Day	x						
Private Citizen	Scott Guder	x						
Private Citizen	Richard Teague	x						
Private Citizen	Jason Stutesman	x						
Private Citizen	Danny Hursh	x						
Private Citizen	Bill Stadnick			x				

Plan Review and Update Process

The plan update process for all sections of the Plan began with a review of each section from the approved 2005 *Christian County Hazard Mitigation Plan* and updating information presented in the original Plan. For example, Demographic information was updated using Census population estimates and data from the most recent American Community Survey. Original source material for the Community Profile and Risk Assessment sections were reviewed and updated as needed. For example, hypertext links for the Economic and Agricultural Census web pages and MDC wildfire statistics were tested to see if they were up to date and operational. In most cases they were, information available for the period between the 2005 plan preparation and the date of the plan update was incorporated into tables and narratives.

The bulk of revised material was developed from local jurisdiction reviews of initial section drafts and community and school district mitigation surveys. Christian County has experienced continued growth since the adoption of the 2005 plan, not only in terms of population, but also its commitment to incorporate mitigation actions and projects set forth in the 2005 plan to reduce the threat of natural hazards to people and property throughout Christian County. Table 1-3 below describes the revisions and updates incorporated into each section of the plan.

Plan Section	Updated Material
Part I-Introduction	<ul style="list-style-type: none"> • Added public involvement section describing advertised public meetings and opportunity for neighboring communities and agencies to be involved in the planning process • Added minimum participation requirements for local jurisdictions • Included a record of participation describing how each jurisdiction participated in the process • Updated list of plan participants • Updated planning methodology and plan timeline • Added table of local officials who attended meetings • Updated plan review and update process
Part II-Community Profile	<ul style="list-style-type: none"> • Updated demographic information • Updated critical, vulnerable and government facilities information • Incorporated building code, ordinance and mitigation measures based on community surveys • Incorporated revisions to community profiles as draft sections were reviewed by local officials

Table 1-3: Updates by Section of the 2010 Christian County Hazard Mitigation Plan	
Plan Section	Updated Material
Part III-Risk Assessment	<ul style="list-style-type: none"> • Included events for each hazard that occurred from 2005-2009 • Updated future probability and severity rankings • Incorporated low water crossings map for flood and wildland urban interface hazard area map for wildfire • Included new profile for sinkhole hazard • Added likely locations subsections for each hazard • Developed hazard identification and analysis methodology • Added overall summary of hazard vulnerability by jurisdiction • Added vulnerability assessment tables for each hazard and each participating jurisdiction
Part IV-Capability Assessment	<ul style="list-style-type: none"> • County EMD provided revised information from the County Emergency Operations Plan • Incorporated new information from community surveys and reviews by local officials
Part V-Mitigation	<ul style="list-style-type: none"> • 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
Part VI-Maintenance	<ul style="list-style-type: none"> • No revisions made

Acknowledgements

Several individuals provided valuable assistance throughout the process of development this hazard mitigation plan for Christian County. Special thanks are given to John Grubaugh, Christian County Presiding Commissioner, Bill Barnett, Western District Commissioner, and Tom Huff, Eastern District Commissioner, for their guidance in establishing the Plan Advisory Committee and their participation. Many thanks also go to all the county and municipal elected officials and staff, emergency services providers, residents and representatives from local school districts, who participated on the Plan Advisory Committee, reviewed and commented on the drafts of the plan, and contributed their ideas.

Thank you also to the staff from the communities and school districts in Christian County and other public and private sector institutions and organizations that provided data and other resource material used in the development of the plan.

A very special thank you to Phil Amtower, Christian County Emergency Management Director, for providing the photographs of damages from hazard events in Christian County and for his assistance throughout the process of completing the *Christian County Multi-Jurisdictional Natural Hazards Mitigation Plan*.