

# Warren County, Missouri

## Natural Hazard Mitigation Plan

### Final Report



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## **Executive Summary**

The purpose of natural hazard mitigation is to reduce loss of life and property by lessening the impact of natural disasters. Hazard Mitigation Plan forms the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. The Boonslick Regional Planning Commission on behalf of Warren County and participating jurisdictions developed a Multi-Jurisdictional Hazard Mitigation Plan that was initially approved by the Federal Emergency Management Agency (FEMA) in 2004. The plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (DMA 2000). In accordance with DMA 2000 requirements, Warren County and participating jurisdictions must update the plan every 5 years. The multi-Jurisdictional Hazard Mitigation Plan for Warren County was updated ensuring the continuity of federal mitigation project grant funding through 2014.

The Warren County Hazard Mitigation Plan is a multi-jurisdictional plan that represents several local governments within the county. The participating jurisdictions from the 2004 plan remain the same except that the 6 school districts which serve Warren County have been included in this updated plan. The following communities participated in plan development and are represented by the plan through formal adoption:

- Warren County
- Village of Innsbrook
- City of Marthasville
- City of Pendleton
- City of Truesdale
- City of Warrenton
- Wright City
- Warren County R-III School District (included in this plan)
- Wright City R-II School District (included in this plan)
- Gasconade County R-II School District (included in this plan)
- Washington School District (included in this plan)

In addition to the local governments and school districts, several other entities have been contacted to provide support and contribute to the mitigation strategy. These include:

- Alliance water
- St. John’s Mercy
- Cuivre River Electric Cooperative
- Ameren UE

The planning process followed the methodology prescribed in the *Local Multi-Hazard Mitigation Planning Guidance* published by FEMA on July 1, 2008 beginning with the formation of a Hazard Mitigation Planning Committee (HMPC) comprised of key stakeholders from Warren County, participating jurisdictions, state agencies, and other several private non-profit entities. The HMPC reviewed each section of the plan to include the planning process, risk assessment, mitigation strategy, and plan maintenance. Revisions were made as appropriate to ensure the plan reflects current vulnerability within each jurisdiction.

The goals of the Warren County multi-jurisdictional hazard mitigation plan are to:

- GOAL 1: Protect the lives and livelihoods of all citizens
- GOAL 2: Manage growth through sustainable principles and practices
- GOAL 3: Ensure continued operation of government and emergency functions in a disaster

Table below shows the goals, objectives, and action plans.

**Table 1.1**

<p><b>Goal 1: Protect the lives and livelihoods of all citizens</b></p> <p><i>Objective 1.1: Provide sufficient warning systems.</i></p> <ul style="list-style-type: none"> <li>- Identify geographic areas in need of warning systems and develop a plan to implement needed systems.</li> <li>- Improve flood alerting system capabilities.</li> </ul>
<p><i>Objective 1.2: Decrease the occurrence and impact of flooding.</i></p> <ul style="list-style-type: none"> <li>- Encourage property owners and occupants in hazard areas to participate in mitigation policy formulation.</li> <li>- Target any remaining repetitive flood loss properties for buyout.</li> <li>- Promote environmentally-sound watershed and storm water practices to decrease flash flooding.</li> <li>- Review and revise flood-fighting plans as needed.</li> <li>- Strengthen floodplain regulations as needed.</li> <li>- Improve drainage of roadways in flashflood areas. (new)</li> <li>- NFIP- Monitor development in special flood hazard areas to ensure compliance with local flood plain management ordinances.(new)</li> </ul>

<p><i>Objective 1.3: Increase knowledge of safety measures among employers and the general public.</i></p> <ul style="list-style-type: none"> <li>- Develop hazard area maps and promote use by the public.</li> <li>- Consider additional professional development and disaster mitigation training for emergency management personnel. (new)</li> <li>- Identify ways to promote FEMA safety tips and mitigation techniques.</li> <li>- To provide earthquake preparedness and safety literature every year in the school districts.</li> </ul>
<p><i>Objective 1.4: Increase and maintain appropriate emergency equipment.</i></p> <ul style="list-style-type: none"> <li>- Review and upgrade policies to identify and budget additional emergency equipment for health and medical services, mass care agencies, and public information.</li> <li>- Execute and maintain mutual aid agreements with all relevant agencies.</li> <li>- Review and upgrade redundancies for the 911 Center/EOC.</li> </ul>
<p><i>Objective 1.5: Protect residential structures.</i></p> <ul style="list-style-type: none"> <li>- Decrease wildfire risk in areas where development is adjacent to forests or grasslands by incorporating buffer zones into subdivision regulations.</li> <li>- Promote environmentally-sound, fire-resistant materials for homes.</li> <li>- Identify existing mechanisms to promote NFIP policies and earthquake/seismic insurance.</li> </ul>
<p><i>Objective 1.6: Protect large employment and commercial facilities.</i></p> <ul style="list-style-type: none"> <li>- Consider known hazards when identifying a site for new facilities and systems.</li> <li>- Encourage tornado safe rooms in new construction. Suggestions include centralized safe rooms in subdivisions and/or safe rooms incorporated into the design of front porch foundations in new homes.</li> <li>- Encourage up-to-date commercial/industrial disaster plans that are coordinated with county/city disaster plans.</li> <li>- Encourage backup systems for commercial and industrial businesses.</li> </ul>
<p><i>Objective 1.7: Identify populations with special needs or those who may be more vulnerable to the impacts of disasters or hazard events. (new)</i></p> <ul style="list-style-type: none"> <li>- Maintain inventory of special needs population, equipment &amp; ADA shelters.</li> <li>- Enhance warning systems and notifications for special populations.</li> <li>- Identify and provide mass care shelters.</li> </ul>
<p><i>Objective 1.8: Reduce the disruption to transportation infrastructure from hazard events, by reducing the vulnerability of transportation infrastructure to hazard events. (new)</i></p> <ul style="list-style-type: none"> <li>- Utilize County road right of ways as firebreaks and snow storage.</li> <li>- Maintain inventory of vulnerable infrastructure.</li> <li>- Maintain an inventory of traffic incidents.</li> </ul>
<p><b>Goal 2: Manage growth through sustainable principles and practices</b></p> <p><i>Objective 2.1: Reduce and prevent degradation of, or conflicts with, natural resources.</i></p> <ul style="list-style-type: none"> <li>- Encourage best practices for drought-resistant farming.</li> <li>- Resolve any existing environmental conflicts and take steps to prevent future conflicts.</li> <li>- Work with DNR to identify primary maintenance techniques for earthen dams and encourage their use and support periodic inspections of the dams.</li> </ul>
<p><i>Objective 2.2: Promote sustainable planning, development, and construction practices.</i></p> <ul style="list-style-type: none"> <li>- Promote building codes in incorporated areas that currently do not have such regulations.</li> <li>- Implement measures to increase the county's CRS status.</li> <li>- To reduce the effects of flash flooding and drought, promote construction and use practices that facilitate rainwater percolation into local water tables.</li> </ul>
<p><b>Goal 3: Ensure continued operation of government and emergency functions in a</b></p>

***disaster***

*Objective 3.1: Strengthen critical structures and infrastructures.*

- Review, prioritize, institute and monitor needed upgrades or retrofits for critical buildings and infrastructures.
- Review emergency access routes and evacuation routes and mitigate any problem areas.
- Maintain essential public services. (new)
- Maintain an inventory of levees in the County (new)

*Objective 3.2: Strengthen collaboration among relevant jurisdictions.*

- Identify, review, and implement mechanisms to foster collaboration among jurisdictions, agencies, special districts and private industry.
- Improve planning, funding, and response coordination. (new)

## **Prerequisites**

**Requirement § 201.6(c)(5): For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.**

*Note to Reviewers: When this plan has been reviewed and approved pending adoption by FEMA Region VII, the adoption resolutions will be signed by the participating jurisdictions and added to Appendix A. A model resolution for both the cities and school districts is provided in this Section.*

Warren County's Multi-Jurisdictional Hazard Mitigation Plan has been formally adopted by the following participating jurisdictions.

- Warren County
- Village of Innsbrook
- City of Marthasville
- City of Pendleton
- City of Warrenton
- Wright City
- City of Truesdale
- Warren County R-III School District
- Wright City R-II School District
- Gasconade County R-II School District
- Washington School District

**Requirement §201.6(c)(5): Multi-Jurisdictional plans may be accepted, as appropriate, and as long as each jurisdiction has participated in the process**

The Boonslick Regional Planning Commission on behalf of Warren County invited incorporated cities and school districts, state agencies, and other several non-profit entities in the County to

participate in the Warren County Multi-Jurisdictional Hazard Mitigation Plan update. DMA 2000 requires that jurisdictions represented by a multi-jurisdictional plan participate in the planning process and formally adopt the plan. Each participating jurisdiction was required to meet plan participation requirements as defined by Boonslick Regional Planning Commission at the beginning of the planning process. The planning process is discussed in detail under SECTION 1- Introduction & Planning Process. The sample resolutions for both the jurisdiction and school district are provided below.

**Sample Resolution for Cities, Towns, and County**

The following resolution was adopted by **Warren County**, Missouri on \_\_\_\_\_.

RESOLUTION NO. \_\_\_\_\_

WHEREAS, the Warren County Hazard Mitigation Plan is a multi-jurisdictional hazard mitigation plan prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, Warren County participated in the preparation of the Warren County Hazard Mitigation Plan; and

WHEREAS, the citizens of Warren County have been afforded an opportunity to comment and provide input on the Plan and the mitigation actions therein; and

WHEREAS, Warren County has reviewed the Plan and affirms that the Plan will be updated no less than every five years

NOW THEREFORE, BE IT RESOLVED by the County Commission that Warren County adopts the Warren County Hazard Mitigation Plan as this jurisdiction’s Hazard Mitigation Plan, and resolves to execute the actions in the Plan.

ADOPTED this \_\_\_\_\_ day of \_\_\_\_\_, 2010 at the meeting of the County Commission.

\_\_\_\_\_

Certifying Official

\_\_\_\_\_

Date

**Sample Resolution for School Districts**

The following resolution was adopted by the **County School District**, Missouri on \_\_\_\_\_.

RESOLUTION NO. \_\_\_\_\_

WHEREAS, the Warren County Hazard Mitigation Plan is a multi-jurisdictional hazard mitigation plan prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, County School District participated in the preparation of the Warren County Hazard Mitigation Plan; and

WHEREAS, the County School District have been afforded an opportunity to comment and provide input on the Plan and the mitigation actions therein; and

WHEREAS, County School District has reviewed the Plan and affirms that the Plan will be updated no less than every five years

NOW THEREFORE, BE IT RESOLVED by the School Board that the County School District adopts the Warren County Hazard Mitigation Plan as this jurisdiction's Hazard Mitigation Plan, and resolves to execute the actions in the Plan.

ADOPTED this \_\_\_\_\_ day of \_\_\_\_\_, 2010 at the meeting of the School Board.

---

School Board President

Date

## **SECTION 1 – Introduction and Planning Process**

### **1.1 Purpose**

Warren County along with six other jurisdictions and four school districts updated this multi-jurisdictional hazard mitigation plan in order to sustain actions designed to reduce or eliminate long-term risk to people and their property from natural disaster hazards. The planning process is as important as the plan itself and creates a framework for risk-based decision making to reduce damages to lives, property, and the economy from future disasters. This updated plan ensures the continuity of mitigation project grant funding through 2014.

### **1.2 Background & Scope**

Hazard mitigation is defined by FEMA as any action taken to eliminate or reduce the long-term risk to human life and property from natural and technological hazards. In 2005, the National Institute of Building Science's Multi-Hazard Mitigation Council, in response to a congressional mandate, conducted an independent study on savings generated through mitigation activities. The study concluded that mitigation grant funded projects have an overall societal benefit/cost ratio of 4.0 (i.e., for every \$1 spent on mitigation activities, \$4 are saved through loss avoidance).

Since the initial plan approval in 2004, Warren County has been impacted by 53 hazard events. Out of these 54 events, five were included as federally declared natural disasters and nine were included as USDA (United States Department of Agriculture) declared disasters. The consequences of such events have impacted the citizens of Warren County economically, socially and emotionally. Because Warren County is subject to multiple natural hazards, hazard mitigation is of great importance to the county and its residents.

Through mitigation planning, Warren County has identified areas throughout the county that are vulnerable to natural hazards and developed actions to reduce such vulnerability the next time a disaster strikes. The updated Warren County hazard mitigation plan documents the progress made on established mitigation actions and proposes new actions designed to increase the county's resistance to natural hazards. The updated plan for Warren County is the result of a collaborative effort by the following participating jurisdictions:

- Warren County
- Village of Innsbrook
- City of Marthasville
- City of Pendleton
- City of Truesdale
- City of Warrenton
- Wright City
- Warren County R-III School District
- Wright City R-II School District
- Washington School District
- Gasconade County School District

In addition to the local governments and school districts, several other entities have been contacted to provide support and contribute to the mitigation strategy:

- Alliance water
- St. John's Mercy
- Cuivre River Electric Cooperative
- Ameren UE

The updated Warren County Multi-Jurisdictional Hazard Mitigation Plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (DMA 2000) and regulations set forth in 44 CFR §201.6, *Local Mitigation Plans*. With an approved updated hazard mitigation plan, Warren County will remain eligible for grants under the following federal hazard mitigation assistance programs:

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

### **1.3 Planning Process**

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

Following the severe weather, tornado, and flood disaster that was declared in the spring of 2002 (DR-1412), Missouri’s State Emergency Management Agency (SEMA) received flood buyout project proposals from 23 communities across the state. Fortunately, they were able to help some of the communities with federal mitigation grant funding provided through the Federal Emergency Management Agency (FEMA). After November 1, 2004, communities like these were eligible for federal disaster public assistance and individual assistance, but not for mitigation assistance unless they have an approved hazard mitigation plan.

Through SEMA’s Scope of Work, Warren County contracted with Boonslick Regional Planning Commission and participated fully in the preparation of this update of the 2009 plan. Taking into consideration the updated Missouri State Hazard Mitigation Plan 2007 and the updated Warren County Emergency Operations Plan, this report has briefly discussed the manmade incidents which can be just as devastating as natural disasters in Warren County. The following man made hazards are also addressed briefly in this update: hazardous materials, transportation, utility interruptions & power failure and terrorism. The natural hazards included in this plan update are hail storms, levee failure, and severe winter weather. The natural hazards which remain the same from the 2004 plan are dam failure, drought, earthquake, extreme heat, floods, thunderstorms & high winds, tornado, and wildfire. Once this plan is approved, Warren County and cities within the county will still be eligible for future mitigation assistance from FEMA and will be able to more effectively carry out mitigation activities to lessen the adverse impact of future disasters within the county.

#### **1.3.1 Multi-Jurisdictional Participation**

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

The Disaster Mitigation Act requires that each jurisdiction participate in the planning process and officially adopt the multi-jurisdictional hazard mitigation plan. A Hazard Mitigation Planning Committee (HMPC) was created that includes representatives from each participating

jurisdiction, departments of the county, school districts and other agencies responsible for making decisions in the plan and agreeing upon the final contents. The HMPC contributed to this planning process by: providing facilities for meetings, attending and participating in meetings, collecting data, reviewing drafts, and coordinating and assisting with public involvement and plan adoptions.

Minimum participation requirements are defined as follows:

- Provide information to support plan update through **at least one** of the following methods:
  - Attend the scheduled meetings;
  - Alternately schedule meetings with BRPC staff liaison for data collection, risk assessment and mitigation strategies ; or
  - Communicate with BRPC staff through email concerning data collection, risk assessment and mitigation strategies.
    - ✓ A written delegation from the jurisdictions authorizing BRPC to participate on their behalf are included as part of their adoption resolutions. Please see attached resolutions in Appendix A.
- Formally adopt the mitigation plan.

Representatives for each participating jurisdiction are listed in the table below.

**Table 1.2 A**

<b>Jurisdiction</b>	<b>Name of the HMPC Representative</b>
Warren County	Mike Daniels, Emergency Management Director
Innsbrook	Chris McCormick, Administrator Mike Gambill, Chairman of the Emergency Management Committee
Marthasville	Dale L. Verges, Mayor Jason Schantz, Marthasville Chamber / Citizen
Pendleton	BRPC staff liaison
Truesdale	Shalene Blackwood, Alderwoman/ Citizen Lance Blackwood / Citizen
Warrenton	Greg Houdyshell, Police Chief, City of Warrenton
Wright City	Kenny Robinett JR, Utilities
Warren County School District	John Long, Superintendent
Wright City School District	Jack Sanford, Facilities Operations Director
Washington School District	Kevin Hunewill, Director of Buildings & Grounds
Gasconade County School District	BRPC staff liaison

Representatives for other entities who were willing to participate in the plan update process are shown in the table below.

**Table 1.2 B**

<b>Other participants</b>	<b>Name of the HMPC Representative</b>
Ameren UE	Larry Shroth
Alliance Water	Brian M. Pieper, Water Distribution Supervisor
St. John's Mercy Hospital	Keith Herbert, Support Services
Cuivre river electric	Doug Bagby, Safety Coordinator

Representatives who attended the Boonslick Regional Planning Commission (BRPC) Board Meeting are listed in the table below.

**Table 1.3**

<b>Jurisdiction</b>	<b>Name of the Representative Board meeting (06/28/2010)</b>	<b>Name of the Representative Board meeting (09/27/2010)</b>
Warren County	Arden Engelage, Presiding Commissioner Hubert Kluesner, Commissioner, Southern District Dan Hampson, Commissioner, Northern District Tim Schmidt, Warren County Record	Arden Engelage, Presiding Commissioner Hubert Kluesner, Commissioner, Southern District Dan Hampson, Commissioner, Northern District
Innsbrook	Chris McCormick, Administrator	Chris McCormick, Administrator
Truesdale	Murray A. Bruer, Mayor Mary Lou Rainwater, Clerk	Murray A. Bruer, Mayor
Warrenton	Michelle Schlenther, Economic Development Director	Michelle Schlenther, Economic Development Director

The distribution list for all the meetings, meeting notices, agenda, and meeting minutes are included under Appendix C.

All of the participating jurisdictions met the minimum participation requirements as indicated in the table below.

**Table 1.4**

<b>Participating Jurisdiction</b>	<b>HMPC Meeting #1</b>	<b>BRPC Board meeting (06/28/2010)</b>	<b>BRPC Board meeting (09/27/2010)</b>	<b>Public Meeting #1</b>	<b>Public Meeting #2</b>	<b>Email</b>	<b>BRPC staff liaison meeting</b>	<b>Formal adoption</b>
Warren County	X	X	X	X	X	X		
Innsbrook	X	X	X			X		
Marthasville	X			X	X	X		
Pendleton							X	
Truesdale	X	X	X	X	X	X		
Warrenton	X	X	X	X	X	X		
Wright City	X					X		
Warren County School District	X					X		

Participating Jurisdiction	HMPC Meeting #1	BRPC Board meeting (06/28/2010)	BRPC Board meeting (09/27/2010)	Public Meeting #1	Public Meeting #2	Email	BRPC staff liaison meeting	Formal adoption
Wright City School District	X					X		
Washington School District	X					X	X	
Gasconade County School District						X		
Others					Lincoln County EMD			

The other entities which were part of the public meetings include- County health department, Cuivre River electric, St. John’s Mercy Hospital, County 911, Warren County Record, and County Ambulance District.

**1.3.2 The 12-step Planning Process**

BRPC established the framework and process using FEMA’s *Local Multi-Hazard Mitigation Planning Guidance* (2008) and the State and Local Mitigation Planning How-To-Guides (2001), which include Multi-Jurisdictional Mitigation Planning (2006). The plan is structured around a four-phase process:

- a) Organize resources
- b) Assess risks
- c) Develop the mitigation plan
- d) Implement the plan and monitor progress

Further, BRPC integrated a modified detailed 12-step planning process used for FEMA’s Community Rating System (CRS) and Flood Mitigation Assistance programs into this process. Thus, the modified 12-step process used for this plan meets the funding eligibility requirements of the Hazard Mitigation Grant Program, Pre-Disaster Mitigation program, Community Rating System, and Flood Mitigation Assistance Program. Table below shows how the modified 12-step process fits into FEMA’s four-phase process.

**Table 1.3**

DMA Process	Modified CRS Process
a) <i>Organize Resources</i>	

<b>DMA Process</b>	<b>Modified CRS Process</b>
201.6 (c) (1)	1) Organize the Planning Effort
201.6 (b) (1)	2) Involve the Public
201.6 (b) (2) and (3)	3) Coordinate with Other Departments and Agencies
<i>b) Assess Risks</i>	
201.6 (c) (2)(i), (iii)	4) Identify the Hazards
201.6 (c) (2)(i), (iii)	5) Profile the Hazards
201.6 (c) (2)(ii), (iii)	6) Identify Assets
201.6 (c) (2)(ii), (iii)	7) Estimate Losses
<i>c) Develop the Mitigation Plan</i>	
201.6 (c) (3)(i)	8) Set Goals
201.6 (c) (3)(ii)	9) Review Possible Activities
201.6 (c) (3)(iii)	10) Draft an Action Plan
4) Implement the Plan and Monitor Progress	
201.6 (c) (5)	11) Adopt the Plan
201.6 (c) (4)	12) Implement, Evaluate, and Revise the Plan

**Phase 1 Organize Resources**

**Step 1: Organize the Planning Effort**

The process to develop a HMP for Warren County planning area was first initiated in 2004. This effort was revived in April 2010 as part of this update process. BRPC determined to have three meetings in this update process- one committee meeting and two public meetings (one during the drafting stage and one prior to plan approval). The sign-in sheets, minutes, and agenda are included in Appendix C—Planning Process Documentation.

The planning process resulting in the preparation of this plan document officially began with a kickoff meeting in the City of Warrenton, Missouri on April 7, 2010.

The plan was revised based on the inputs provided by:

- the HMPC through the kickoff meeting,
- correspondence through e-mails and
- correspondence with BRPC staff liaison

The revised draft plan was then mailed to the HMPC for their review and further comments.

**Step 2: Plan for Public Involvement**

**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.**

In accordance to Missouri’s “sunshine law” (RSMo 610.010, 610.020, 610.023, and 610.024), the public was notified prior to each public meeting. The public were notified through the publications in the newspaper, by posting in the BRPC website and also through the notices in the Warren County Courthouse. Copies of the notice, meeting letters and sign-in-sheets are provided in Appendix C- Planning Process. During the first public meeting, the public were provided information on the overview of the process & progress to date on the plan. The jurisdiction specific hazard maps were also presented.

During the second meeting, public was given an opportunity to provide input on the draft of the completed plan prior to its submittal to the State and FEMA. Also, the participating jurisdictions were requested to share the draft plan with any and all who have an interest on the plan.

The 2004 Hazard Mitigation Plan includes one of the mitigation actions on public participation - which encourages owners to utilize the hazard area maps (Goal #1, Action Plan 1.3.1).

**Table 1.4 HMPC Meeting Details**

<b>Meeting</b>	<b>Topic</b>	<b>Date</b>
HMPC #1- Kickoff meeting	Hazard Mitigation Planning Purpose, Disasters in Warren County, List of Participating jurisdictions and agencies, Ranking the hazards, Mitigation goals, objectives, and action plans., Prioritization of action plans, opportunity to propose, add, or delete any action plans.	April, 7, 2010
Public meeting 1	Hazard Mitigation Planning Purpose, project schedule, hazards ranked, action plans prioritized, jurisdiction specific hazard maps.	July 15, 2010
Public meeting 2	Present the plan. Public were given opportunity to comment on the plan prior to plan approval.	October 7, 2010

**Step 3: Coordinate with Other Departments and Agencies**

**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 numerous organizations whose goals and interests interface with hazard mitigation in Warren County. BRPC coordinated with the Emergency Management Directors (EMDs) of the neighboring counties on the draft plan. The EMDs were given an opportunity to review and comment on the plan. The neighboring counties include: Lincoln, Montgomery, Franklin, St. Charles, and Gasconade. The draft plan was posted on the BRPC website where any and all who have an interest on the plan have an opportunity to review and provide comments. The correspondence is attached under Appendix C- Planning Process.

## **Phase 2 Assess Risk**

### ***Step 4: Identify the Hazards***

BRPC with the help of HMPC validated the natural hazards that have impacted or could impact communities in Warren County. In the meetings, HMPC discussed about other hazards included in Missouri State Plan. The ranking of hazards was accomplished with the help of pre-prioritization voting exercise. This prioritization was used as the basis for individual prioritization of goals and action plans by each jurisdiction. Table below shows the prioritization of hazards for Warren County.

**Table 1.5 Prioritization of Hazards**

<b>Name of the Hazard</b>	<b>High/Medium/Low</b>
Dam/Levee Failure	Low
Drought	Low
Earthquake	Medium
Extreme heat	Medium
Floods/ Levee failure	Medium
Hail	Low
Severe Winter Weather	High
Thunderstorms & High winds	High
Tornadoes	High
Wildfire	Low
Hazardous Materials	High
Terrorism	Low
Transportation	Medium
Utility Interruption & Power failure	High

**Step 5: Profile the Hazards**

Web resources, existing reports and plans, and existing geographic information systems (GIS) layers were used to compile information about past hazard events. Hazard profiles from the original plan were reviewed for applicability and revised accordingly. The revised hazard profiles detail the location, previous occurrences, probability of future occurrences, and magnitude/severity of each hazard. More information on the methodology and resources used to identify and profile the hazards can be found in Sections 3.1 and 3.2.

**Step 6: Identify Assets**

After profiling the hazards that could affect Warren County, BRPC collected information to describe the likely impacts of future hazard events on the participating jurisdictions. This step included a vulnerability assessment and a capability assessment.

**Vulnerability Assessment**—these assets included total number and value of structures; critical facilities and infrastructure; natural, historic, and cultural assets; economic assets; and vulnerable populations. BRPC also analyzed development trends in hazard areas. FEMA’s loss estimation computer software, HAZUS-MH, was utilized to provide information on populations at risk as well as estimated numbers and values of buildings at risk. The assets at risk were discussed for the planning area as a whole for those hazards that do not vary geographically. Additionally, utilizing the HAZUS-MH tool, assets at risk to a 100-year flood in Warren County were discussed separately as this hazard varies across the planning area.

**Capability Assessment**—this assessment consisted of identifying the existing mitigation capabilities of participating jurisdictions. This involved collecting information about existing government programs, policies, regulations, ordinances, and plans that mitigate or could be used to mitigate risk from hazards. Participating jurisdictions collected information on their regulatory, personnel, fiscal, and technical capabilities, as well as previous and ongoing mitigation initiatives. This information is included in Chapter 2 Planning Area Profile and Capabilities.

**Step 7: Estimate Losses**

Where sufficient information was available, a variety of methods were used to estimate losses for each profiled hazard. For the flood hazard, with the help of SEMA, HAZUS-MH was utilized to estimate losses in the planning area as a result of a 100-year flood event. The methodology

is described in detail for each hazard analysis that included a loss estimate. This information can be found in Section 3.3.3.

### **Phase 3 Develop the Mitigation Plan**

#### ***Step 8: Set Goals***

The committee reviewed the goals and achieved consensus that they remain valid for the updated plan during the kickoff meeting. Later, all the jurisdictions prioritized the jurisdiction specific action plans with the help of the Committee and the staff liaisons. The specific information on the mitigation goals and action plans are detailed under Section 4- Mitigation Strategy.

#### ***Step 9: Review Possible Mitigation Activities***

Two objectives and 12 action plans were proposed which were developed prior to the kickoff meeting. These were proposed based on the data limitations within the county, guidance provided by the State Hazard Mitigation Plan, and through the discussions with the County Emergency management Director and the participating jurisdictions. The specific information on the mitigation goals, objectives, and action plans are detailed under Section 4- Mitigation Strategy.

During the kickoff meeting, a list of both the 2004 action plans and proposed new action plans were submitted to the committee in order to develop new ideas. The committee achieved consensus that both the existing and proposed action plans remain valid for the updated plan. The jurisdiction specific action plans were prioritized by the participating jurisdictions. Prioritization of the actions plans has been accomplished by the jurisdictions through special meetings with the Board of Alderman, BRPC staff liaison, Emergency management director, Mayors, School superintendent and school safety coordinator (Meeting minutes were included under Appendix C). The concepts and issues discussed for prioritization are included under Section 4- Mitigation Strategy.

The prioritization was emphasized on the importance of a Cost-Benefit Review. In addition to the cost-benefit review, STAPLEE (Social, Technical, Aministrative, Political, Legal, Economic, Environmental), a tool to assess the costs and benefits, and overall feasibility of mitigation actions was used by the jurisdictions to prioritize the action plans.

Recognizing the federal regulatory requirement to prioritize by benefit-cost, and the need for any publicly funded project to be cost-effective, BRPC staff liaison along with the participating jurisdictions decided to pursue implementation according to when and where damage occurs, available funding, local capabilities, basic Cost-Benefit Review, and jurisdictional priorities. Cost-effectiveness will be considered in additional detail when seeking FEMA mitigation grant funding for eligible projects identified in the plan or for any projects utilizing local funding. Goals, existing and proposed action plans, Cost-Benefit review, and STAPLEE process followed are discussed in detail under Section 4- Mitigation Strategy.

**Step 10: Draft the Plan**

In order to update the plan, BRPC collected and reviewed existing technical data, reports, and plans. These included County Comprehensive Plan (1995), County Emergency Operations Plan, Comprehensive Economic Development Strategy (CEDS, 2009), reports from the National Flood Insurance Program’s Community Information System, Missouri State Hazard Mitigation Plan 2007, HAZUS data as well as other data from state and federal agencies. This information was used to improve the plan’s risk assessment and to validate plan’s goals, objectives, and mitigation actions.

Table below shows the list of existing plans, studies, reports, and technical information reviewed and further incorporated into the plan.

**Table 1.6 List of existing Plans/Studies/Reports**

<b>Existing Plan/ studies/ reports etc.</b>	<b>Does the jurisdiction have this plan technical document? (Yes/No)</b>	<b>Reviewed? (Yes/No)</b>	<b>Method of incorporation into the hazard mitigation plan</b>
Warren County Master Plan 2003	Yes	Yes	Land uses, environmental issues.
County Emergency Operations Plan 2005	Yes	Yes	Mitigation measures, Inventory of critical/key/essential facilities
CEDS 2009	Yes	Yes	Provides general demographic, economic, and environmental data
Transportation Plan	Yes	Yes	Existing road networks and transportation incidents
Warren County Stormwater Regulation	Yes	Yes	Minimize the harmful effects of erosion, sedimentation, and stormwater runoff.

### Step 11: Adopt the Plan

To secure buy-in and officially implement the plan, the governing bodies of each participating jurisdiction adopted the plan. Copies of resolutions of adoption are included in Appendix C.

### Step 12: Implement, Evaluate, and Revise the Plan

The HMPC developed and agreed upon an overall strategy for plan implementation and for monitoring and maintaining the plan over time during Meeting #1. This strategy is described in Chapter 5 Plan Maintenance Process. Table below shows the sections which are reviewed and revised. Also, includes the summary of changes and their respective location in the plan.

**Table 1.7 Reviewed and Revised Sections in the 2009/2010 update process**

Plan Section	Section Reviewed	Section Revised	Basis for Revisions	Summary of Changes & Location in Plan
Planning Area Profiles	Yes	Yes	Demographic and Employment changes	Updated population and housing estimates for each participating jurisdiction; Developed jurisdictional descriptions; Section 2.
Risk Assessment	Yes	Yes	Updated hazard information	Identified hazards for each participating jurisdiction; Included both federally declared and USDA declared disasters; Added ratings for each hazards such as warning time, duration, probability and magnitude/severity; Included HAZUS flood maps; Included community assets, vulnerability by hazards and future development trends in the county; Section 3.
Mitigation Strategy	Yes	Yes	Proposed new Mitigation activities	Reviewed the old action plans; Proposed 2 new objectives (1.7, 1.8) and 12 new action plans, included the cost-benefit reviews and overall prioritization process for the action plans; Section 4.
Plan Implementation & Maintenance	Yes	Yes	Created a separate section for Plan Maintenance	Revised plan maintenance process; Section 5.
Appendices	Yes	Yes	Updated the Bibliography and added the HMPC meeting details	Added the School Districts adoption resolutions; HMPC meeting initiation letters, meeting agendas, and sign-in-sheets; Jurisdictional prioritizations of the action plans.